THE SOUTH CEMETERIES OF LISHT

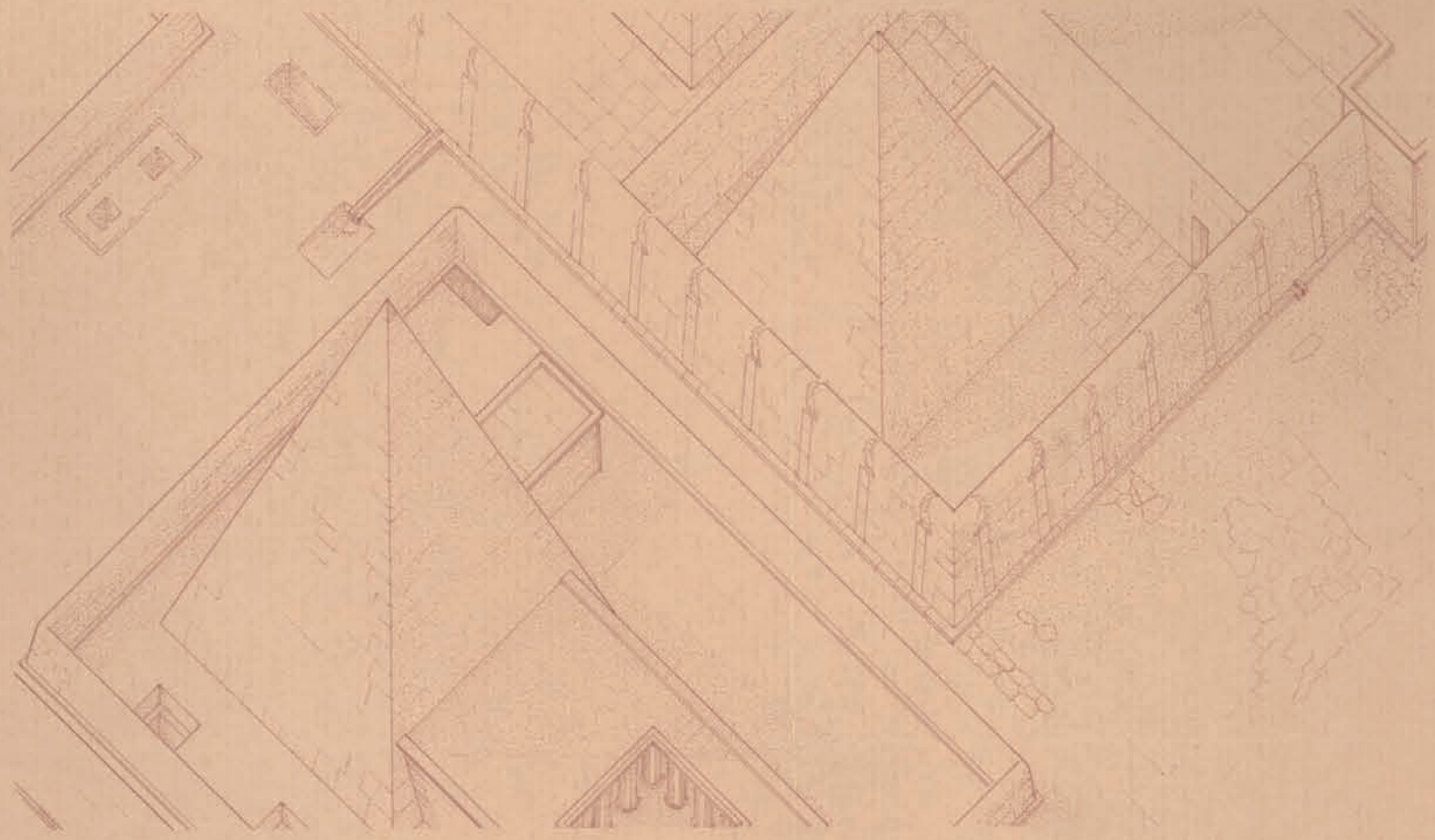
VOLUME III

The Pyramid Complex of Senwosret I

BY

DIETER ARNOLD

With contributions by DOROTHEA ARNOLD and FELIX ARNOLD
and an appendix by Cheryl Haldane



THE METROPOLITAN MUSEUM OF ART
EGYPTIAN EXPEDITION

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EGYPTIAN EXPEDITION
VOLUME XXV

This volume is dedicated to

Louise Grunwald

in appreciation of her friendship and generous support

THE METROPOLITAN MUSEUM OF ART
EGYPTIAN EXPEDITION

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VOLUME III

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DIRECTOR'S FOREWORD

As a result of The Metropolitan Museum of Art's renewed excavations in Lisht, the Egyptian Department published *The Pyramid of Senwosret I* by Dieter Arnold in 1988, followed in 1990 by *The Control Notes and Team Marks* by Felix Arnold. The first volume examined the main pyramid and its related mortuary installations, while this third volume, *The Pyramid Complex of Senwosret I* by Dieter Arnold, discusses the monuments and objects found within the outer enclosure wall of the royal pyramid, mainly the nine subsidiary pyramids and other tombs belonging to members of the royal family and their households. Although the pyramids and their surrounding installations are much destroyed and the burials pillaged, it has been possible to reconstruct, to some degree, the architecture from these ruins. Such a reconstruction is particularly important, as no other pyramid enclosures of the Middle Kingdom, and very few of the Old Kingdom, have ever been so thoroughly excavated and published. The results of this enterprise provide an important contribution to our understanding of the structure and development of the royal funerary complexes of the Middle Kingdom.

As with the other volumes on the Museum's excavations, this publication provides complete information and archaeological context for a number of important objects from Lisht that were given to the Museum as a result of the division of finds, and are now displayed in the Egyptian Galleries of the Metropolitan Museum. Also significant is the discovery of timbers from one or more ancient ships, described in the appendix. When these vessels were no longer thought to be seaworthy, they were disassembled and their timbers embedded in roads used during the construction of the pyramid complex.

Future publications on Lisht South will discuss the reliefs associated with the funerary complex of Senwosret I, private tombs that surrounded the pyramid complex, and texts associated with these tombs.

PHILIPPE DE MONTEBELLO
DIRECTOR, THE METROPOLITAN MUSEUM OF ART

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LIST OF ABBREVIATIONS AND TERMS

GENERAL ABBREVIATIONS AND TERMS

AM	Archival material of the Egyptian Department of The Metropolitan Museum of Art, consisting of catalogued plans and drawings from the Egyptian Expedition of 1906–34, numbered in 1980 (see Arnold, *Senwosret I*, 16).
Black granite Blue paste	These now outdated terms, which were used by the original Metropolitan Museum excavators, are repeated here whenever the material could not be checked. Blue paste is used to designate faience, Egyptian blue, or glass(?).
c	Cubit(s), ancient Egyptian measurement equalling 52.5 cm.
ca.	Circa
cm	Centimeter(s)
D.	Depth
Diam.	Diameter
H.	Height
Jd'E	Journal d'Entrée of the Egyptian Museum, Cairo
L.	Length
L or LN + number	Negatives by the Egyptian Expedition at Lisht. Photographs from the original Expedition are glass plate negatives (see Arnold, *Senwosret I*, 16).
Lisht Diary	Pocket calendars with sporadic and unscientific notes recording some of the day-to-day activities of the excavators.
Lisht Journal	Handwritten or typed field notes, which were subsequently numbered and bound. These notes are often unsystematic and sketchy. It is certain that not all the original notes were preserved (see Arnold, *Senwosret I*, 16).
m	Meter(s)
mm	Millimeter(s)
MMA	The Metropolitan Museum of Art, New York. Numbers that follow this abbreviation are the accession numbers of objects in the Museum. All objects from the Lisht excavation have the credit line "Rogers Fund," excepting those in the 14.3.__ series, the 22.1.__ series, and the 24.1.__ series, which have the credit line "Rogers Fund and Edward S. Harkness Gift." Bracketed numbers refer to deaccessioned objects no longer in the collections.
Neg. no(s).	Negative number. Numbers that follow this abbreviation refer to the series of negatives by the Photograph Studio of the Metropolitan Museum. Egyptian Dept. neg. no(s). refers to a series of negatives by the Egyptian Department of the Metropolitan Museum.
OCE1	Outer Court East 1
OCE2	Outer Court East 2
OCNE	Outer Court Northeast
OCN1	Outer Court North 1
OCN2	Outer Court North 2
OCNW	Outer Court Northwest
OCW1	Outer Court West 1
OCW2	Outer Court West 2
OCSW	Outer Court Southwest
OCS1	Outer Court South 1
OCS2	Outer Court South 2
OCSE	Outer Court Southeast For the location of these areas see plans I–IV.
OIM	Oriental Institute Museum, Chicago. Numbers that follow are the Oriental Institute accession numbers for pieces that were deaccessioned by the Metropolitan Museum and acquired by the Oriental Institute.
Th.	Thickness
Tomb cards	Numbered in 1980. These, prepared by William Hayes, were sometimes carefully done, with clean drawings drawn to scale. They record objects as well as observations. Unfortunately, the earlier seasons are not well represented; very often even Hayes could no longer reconstruct the provenance of objects he registered in the storerooms of the expedition house at Lisht (see Arnold, *Senwosret I*, 16).
Vessel index	The ratio between the maximum diameter and the height of a pottery vessel, multiplied by 100 (see Arnold, *Senwosret I*, 135, 140, fig. 75; for the definition of vessel shapes, especially pottery, see ibid., 135–36).
W.	Width

ARABIC TERMS

gebel	bedrock
gulleh	water bottle of greenish clay material
khor	valley, ravine
radim	debris
tafl	laminated shale
zir	water jar

SHAFT NUMBERS

Since different numbering systems were used by the original Metropolitan Museum Expedition, the current excavators have arranged the numbers of the shafts according to a grid system of 5 x 5 m squares. The grids are illustrated on plans I–IV. The numbering system used on the grids runs from 1–45 (north to south) and 1–49 (west to east). The term "pit" is used to document the recording system of the original excavation. For a concordance of the grid numbers and their place in chapter III, "Burials and Shafts in the Outer Court," see pp. 113–14.

KEY TO INITIALS

D. A.	Dieter Arnold
F. A.	Felix Arnold
J. E.-C.	Josiane d'Este-Curry
C. H.	Christian Hölzl
L. M.	Lisa Majerus
W. S.	William P. Schenck
C. S.	Claire Shanley
E. S.	Elizabeth Simpson
R. V.	Richard Velleu

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SOURCES OF TEXT FIGURES

1. D. A. from AM 2679 and new field plans
2. D. A.
3. D. A. from AM 2690–91
4. Barry Girsh from field drawings
5. D. A. from Lisht Journal I, 175
6. D. A. from *Licht*, pl. III
7. Barry Girsh from field drawings by Dorothea Arnold
8. W. S. from photos L 31–32:40, 42, 216
9. D. A. from tomb card 474
10. D. A. from tomb cards 497–99
11. D. A. from tomb card 653
12. D. A. from tomb card 654
13. D. A. from *Licht*, fig. 50
14. Barry Girsh from tomb card 326
15. Barry Girsh from tomb card 340
16. Lara Bernini from drawings by W. S.
17. Lara Bernini from drawings by W. S.
18. Lara Bernini from field drawings
19. D. A.
20. R. V.
21. R. V.

SOURCES OF PLANS

I. D. A. from AM 2623, 2629, 2678–79
II. D. A. from AM 2619, 2623, 2682–83, 2693
III. D. A. from AM 2618, 2694, 2696, 2705
IV. D. A. from AM 2620–21, 2660–63, 2718, 2720
V. W. S. from new site drawings
VI. D. A. from AM 2597, 2608A, 2615 and the sources for plans I–V

INTRODUCTION

In the first volume of the series on the South Cemeteries of Lisht, *The Pyramid of Senwosret I*, we published the central area of the funerary complex of the king, namely, the upper end of the causeway, the mortuary temple, the main pyramid, the *Ka*-pyramid, the entrance chapel, the drains of the inner court, and all other structures found inside the inner enclosure wall. This second volume deals with the structures, the monuments, and the objects of the outer court of the royal funerary complex, that is, the area between the inner and outer enclosure walls.[1]

The outer court was partially excavated between 1894 and 1895 by a French expedition led by J. E. Gautier and G. Jéquier, which worked mainly at secondary pyramids 1, 2, 4, 8, and 9, along the south side of the outer court, and in the southwest and the southeast corners of the outer court. Their main discoveries were the "puits de la perruque," the "puits A" with its thirteen offering tables, and the cache containing the ten famous seated limestone figures of the king.

The Metropolitan Museum excavations, which began at Lisht South in the winter of 1907–8, avoided the recently excavated French sites and concentrated instead on untouched areas such as the outer court south of the mortuary temple (OCE2 and OCSE), the areas between the secondary pyramids, and unexcavated pyramids 3, 5, 6, and 7. The Museum's excavations in the outer court did not actually begin until the sixth season at Lisht (1916–17), when Ambrose Lansing took over as director of the Expedition, and they then continued at intervals for five seasons, the last in 1934. A few sections of the outer court were not excavated at that time and remain untouched: the northeast and northwest corners (OCNE and OCNW), and a small section in the center of the west side (OCW2). These areas might contain a few more tomb shafts, but generally we can say that the outer court is thoroughly explored,[2] and is one of the best-studied pyramid courts in Egypt (pl. 114).

In spite of this great effort, there was little reward for an expedition that had hoped for historical information and for objects for the Metropolitan Museum. One reason is the deplorable condition of all the aboveground monuments at Lisht, which have suffered badly at the hands of stone robbers, much more than, for example, the monuments of the Memphite area. Quite frequently only core masonry and foundations remain; the casing stones, along with the inscriptions and decorations they bore, are gone. Because of this, only the names and titles of the owners of secondary pyramids 1 (Neferu) and 2 (Itakayet) could be established, and only the pyramid complex of Itakayet retained any remnants of the decoration of the funerary chapel. Another problem is the rising level of the groundwater, which has prevented archaeologists from reaching any chambers or objects at a depth of more than 18 m. The number of finds made in the outer court was accordingly meager: besides the undisturbed, but rather poor, burial of Ankhty[3] (pp. 54–58), only the wooden sledge (p. 59, cat. 28) was discovered, while a comparatively small number of mostly broken objects were found in the debris of the robbed tombs and demolished pyramids. Lacking a wealth of finds, the significance of the excavation lies in the archaeological recovery of the architecture and the construction methods. Rarely has there been preserved such a complete layout of secondary pyramids and such extensive remains of the construction system of a royal pyramid complex.

The completeness of the documentation provided by the Expedition corresponds to the importance a particular find had for the excavators. For example, the undisturbed burial of Ankhty was adequately recorded, but robbed tomb shafts were rarely drawn and many do not even appear on the plans. The provenance of many less important finds remains obscure, since they were only registered when William C. Hayes "rediscovered" them in the storerooms at Lisht and described them on the so-called tomb cards. Of great help for the reconstruction of the excavation, however, is a complete set of penciled and inked plans of the outer court drawn at a scale of 1:200. It was possible to sketch into these maps information from photos and tomb cards. The shafts discovered by the French expedition were not included on plans made by the original Metropolitan Museum Expedition, and their location can only be guessed from the rather superficial French map published at a scale of about 1:834.[4] Their probable locations are indicated with dotted lines on plans I–IV.

Fieldwork in the outer court was resumed by the Metropolitan Museum in 1984 and continued for five seasons until 1989, under the direction of the author. Since we were mainly concerned with publishing the results of the earlier Metropolitan Museum Expedition, we generally avoided reexcavating monuments investigated only by our French predecessors. An exception was made for pyramids 1, 4, and 9, which were so inadequately excavated by the French and seemed to us of such architectural interest that we reexcavated major parts of these structures: the interior of pyramid 1 was reopened, the northern half of the pyramid superstructure was reexcavated, and the two southern deposit pits were cleared; the main shaft of pyramid 4 was reopened in order to record its chamber and sarcophagus; and pyramid 9 was completely reexcavated. Furthermore, cleaning and studying were undertaken west of pyramid 2, around pyramid 4, east of pyramid 5, and north of pyramid 9. Work around pyramid 9 was undertaken intermittently during the March to May 1986, May to July 1987, and September to November 1989 seasons.

While preparing the illustrations for this volume, we realized that the condition of the negatives of the original Expedition had noticeably deteriorated since they were last printed. Nevertheless, we have included many of these photographs in the publication since they are usually the only existing documentation of excavated sites or of finds no longer available. The Museum's Photo Studio continues in its efforts to preserve and stabilize these negatives.

The fieldwork and this publication were successfully concluded thanks to appropriations from the Adelaide Milton de Groot Fund of The Metropolitan Museum of Art, New York, made available to us by the Director of the Museum, Philippe de Montebello, and thanks to generous contributions from the

[1] For a general description of the site of Lisht and a history of the excavations conducted there, see Arnold, *Senwosret I*, 14–16, 150–51.

[2] In the inner court, small areas remain unexcavated at the southeast corner and in the center of the south side of the pyramid.

[3] The spelling of "Ankhty" in this book follows the vocalization of the original excavators. According to current standards, the vocalization is "Ankhet."

[4] *Licht*, pl. 3.

private donors listed on page 6. Among these donors, special recognition goes to Louise Grunwald, who generously funded the 1986 season, and Malcolm Wiener who continued his essential support. The author and the staff members of the Metropolitan Museum Egyptian Expedition are grateful to the Egyptian Antiquities Organization for granting the concession for the South Cemetery of Lisht, and will remember the friendly support of its late presidents Prof. Dr. Ahmed Qadry and Prof. Dr. Said Tawfiq. We would like to thank the representatives of the Inspectorate of Giza and Saqqara, headed by Dr. Zahi Hawass, and our local inspectors, Ahmed Abdelhamid and Ashraf Senoussi, for their valuable assistance. We also thank Barbara Bridgers and the staff of the Photo Studio of the Metropolitan Museum for their readiness to print great numbers of photographs from the old negatives and for their efforts to preserve them. My personal gratitude goes to Adela Oppenheim for her invaluable cooperation in producing this manuscript. Marsha Hill read the manuscript and contributed valuable suggestions. I also want to thank my longtime foremen, Ali Aoud and Mohamed Ali from Qurna, for their faithful services, and The Stinehour Press, with Tony Pizzo overseeing the production of the book, for the high quality of their work.

CHAPTER I

The Outer Court and the Outer Enclosure Wall

(pls. 2–6; figs. 1–2)

SOURCES: Plans AM 2679A, B (scale 1:100)
Photos L 13–14:1186, 1205, 1254
Licht, pl. 3

The pyramid complex of Senwosret I was surrounded by two enclosure walls, an inner stone wall[5] and an outer brick wall; the area between the walls has been designated the outer court (OC, for its subdivisions see p. 9, pl. 114 and plans I–IV). Between the outside corners the outer wall measured 440 c (231 m) north-south and 485 c (254.625 m) east-west (see pl. 113). Since the inner court is centered in relation to the outer court, the distance between the walls is always 90 c (47.25 m). When the original Expedition excavated the area immediately north of the causeway, sections of the wall more than 1 m high were still standing, but these have now disappeared and only the foundations are preserved under the sand. Because the desert surface was not completely levelled during construction, the foundations follow its rise and fall; on average, the foundations are 3–4 courses high, but in the depressions more courses had to be added in order to make the wall level.

In the records it appears as if the original Expedition concluded that the foundations were usually wider than the wall itself, protruding considerably on each side. On the general map of the pyramid complex, the foundations are indicated as being 3.10 m wide (3.15 m equals 6 c), while the wall itself was drawn as being 5 c (2.625 m) wide. We were able to confirm these measurements north of the causeway (the area east of pyramid 9) and at the northeast corner of the enclosure wall.

The wall certainly had sloping faces and a rounded top, but no measurements of the inclination exist.[6] Based on a comparison with the inner stone wall, which had the same width as the outer wall and a height of 10.50 c (5.5125 m),[7] the height of the outer wall was probably at least 10 c. Small remains of the outer wall found near the northern gate and at the northeast corner confirm that it was covered with the usual whitewashed mud plaster.

The Southeast Corner of the Outer Enclosure Wall

The original Expedition noted a change in plan at the southeast corner of the outer wall, indicating two building phases. Earlier, the French expedition had noted the existence of an additional wall about 12 m in front of the south wall of the enclosure;[8] the Metropolitan Museum Expedition apparently doubted its existence, and extant drawings do not include it. In 1988 we reopened the area at the southern end of the east wall and were surprised to find not only the "French wall," but also evidence that three phases of the wall were constructed at the southeast corner of the outer enclosure wall. The three phases can, to some degree, be disentangled and explained (fig. 1).

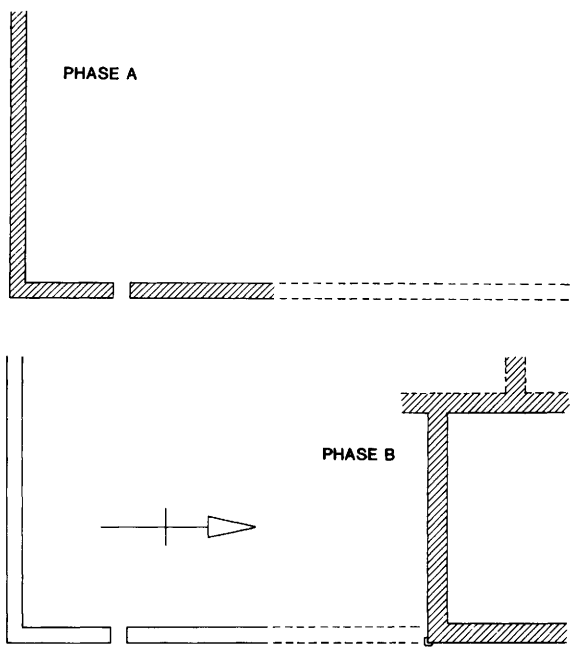


Fig. 1. The three building phases of the southeast corner of the outer enclosure wall (compare pl. 3b).

PHASE A

Lansing describes an "earlier wall, somewhat smaller and presumably the girdle wall of a mastaba to the east" at the southeast corner of the outer enclosure.[9] The foundations of this wall—only 2.40 m wide—still exists. A section of it underlies phase C, with the eastern foot of phase A directly under the phase C

[5] Arnold, *Senwosret I*, 58–63, figs. 19–22, pls. 27–37, 87–88, 92.
[6] On the basis of the limestone frame of the southern gate (see below), one would expect the inclination to have been 81–82 degrees.
[7] Arnold, *Senwosret I*, 61.
[8] *Licht*, 15.
[9] *BMMA* 15 (July 1920), pt. II, 6.

wall. The northern end of the wall has not yet been found; the original Expedition traced the phase A wall about 17 m north of the southeast corner of phase C to a point where it completely disappears under the phase B wall. To the south, it ends 1 m south of corner C. There are no indications that the wall continued to the east, as one would expect if the wall was the enclosure of a mastaba located in that direction.

After a gap of 2.20 m, the foundations of phase A continue 13.75 m southward up to corner A where, as Gautier's excavation already noted, the wall turns westward. Gautier followed the foundations 10 m to the west. Although he had no evidence for his supposition, Gautier was convinced that the wall once reached the southwest corner of the enclosure.[10]

As mentioned above, just 1 m south of the phase C southeast corner a 2.20 m break splits the phase A foundations into two sections. Both ends of the wall are cleanly finished, indicating that the gap was purposely constructed. The bottom of the gap is covered with rough fieldstones that rise steplike to the west and could be foundations for a construction ramp that might have passed through the wall at this point.

Smaller walls, with their foundations on a higher level, meet the phase A wall from the south and the east; they are certainly later additions abutting against an existing wall. One of these later walls consists of the large bricks typical of the nearby mastaba of Mentuhotep, which dates to the later half of the reign of Senwosret I. The phase A wall would thus have still been standing at that time.

It is difficult to explain the purpose of the phase A wall. From its position exactly parallel to and in line with wall phase C, one would assume that phase A was a predecessor of the final phase C royal enclosure. Because the walls of later phases are thicker, the 2.10 m width of phase A is another sign that this wall dates to the earliest construction phases of the pyramid complex.[11]

PHASE B

Before wall A was completed on the three remaining open sides of the pyramid complex, a 4 c thick wall must have been deemed insufficient and the enclosed area too large. A smaller pyramid complex (see pp. 100–101) was envisioned and a new 5 c (2.625 m) wide wall (phase B) was built north of wall A.

The original Expedition discovered a corner of this phase B wall 39 m north of the southeast corner of phase C. The corner of phase B was indicated by a limestone cornerstone and an east-west joint in the brickwork. At the corner, the wall turned to the west and its course was followed for about 14 m, past which only a foundation trench could be detected. The foundation trench ended 30 m from the southeast corner of phase B. No brickwork was preserved. Judging from the old records, these foundations were about 3.10 m thick.

If phase B had continued its course to the west it would have excluded pyramids 1, 2, and 3 from the outer court. The original Expedition assumed the plan to include those pyramids was the reason for the abandonment of the phase B wall, but I would instead assume that the builders never planned to have this western branch of the wall reach the southwest corner of the enclosure. Traces of foundation trenches suggest that after 30 m the wall branched to the north and south where it joined a large, but unfortunately unknown, structure in the southeast corner of the court.

PHASE C

Phase C should not really be considered a later and separate building phase, but rather understood as the southern conclusion of phase B. Because enclosure walls would have hindered the construction of the main pyramid complex, they could only have been erected after the completion of the pyramid and the pyramid temple.[12] Therefore phases B and C, both later than phase A, date to the second half of Senwosret's reign. The relatively late date of the walls is confirmed by the observation that the southern wall of phase C covered the earlier tomb shaft 5228 (shaft 43/46, see pp. 47 no. 124, 69).

The phase C wall was 5 c wide, as was the phase B wall, and its southeast corner was also marked by a limestone cornerstone, which the original Expedition found still in position in 1918. The remaining sections of phase A abutted this new southeast corner.

The phase C corner lies exactly 220 c (115.50 m) south of the middle axis of the pyramid complex. The continuation of phase C to the newly planned southeast corner must have been problematic because the phase A wall had already been erected in that area. Part of the older wall probably had to be torn down and the new southeast corner erected in between the existing phase A and phase B corners. Since the phase C wall was apparently thicker than the existing phase A wall, the one-half-meter increase in the thickness of the wall could not have been concealed, but would have been visible as a step at the southeast corner of phase C.

The Southern Gate and Causeway Widening

(pl. 6; fig. 2)

The outer court was entered from the east through northern and southern gates at either side of the causeway and *Pr-wrw*, permitting access to the court from the two outer lanes of the causeway. The two entrances are not in line with the axes of these outer lanes, because the stone facade of the *Pr-wrw* required that the entrances be shifted, and that the outer lanes of the causeway include sideward extensions or widenings. Since the *Pr-wrw*, the northern gate, and the causeway widening east of it have already been studied in detail,[13] only the southern gate needs to be documented here.

Large accumulations of debris prevented complete excavation of the southern causeway widening, and we were only able to find the juncture between the causeway wall and the main enclosure wall of the outer court. The two walls meet 22.20 m south of the axis of the causeway, in contrast to the 19 m distance from the axis to the corresponding wall in the north, indicating that either the causeway widened more in the south, or that we actually missed the correct southern wall.

[10] This question will be discussed in further detail in Christian Hölzl, *The South Cemeteries of Lisht: Private Tombs*, forthcoming.

[11] A similar double enclosure wall with a corridorlike court (17 m wide) between the walls was observed at the pyramid of Senwosret III at Dahshur (see De Morgan, *Dahchour* I, fig. 105, with tomb shafts D and F).

[12] For the date of the inner enclosure see F. Arnold, *Control Notes*, 30–31.

[13] Arnold, *Senwosret I*, 23–28, pls. 9a, 74, 76.

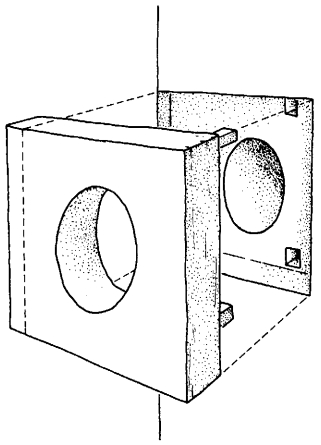


Fig. 2. A block of wood covering the bolt socket of the southern gate of the outer enclosure wall (see pl. 6).

The southern gate was made of limestone. To the south it was built into the brick enclosure wall, while to the north it leaned against the *Pr-wrw*. The foundations and pavement of the gate consisted of three adjoining limestone slabs that rested on the *gebel*. The front slab served as the threshold; the middle slab was destroyed by stone robbers who cut away the pivot stone that contained the lower door socket.

At the south side of the gate, two large blocks connected by a dovetail cramp are all that remains of the southern jamb (frame) and reveal (thickness). When first excavated, their joining and surface treatment were excellent. In the inner edge of the reveal, the socket for the door bolt was well preserved (pl. 6c). Beside the deep drill hole, a flat slab, perhaps of a hardwood, would have been inserted to protect the outer edges of the hole from breakage (fig. 2).[14] The wooden slab would have slid into the socket from right to left and been fastened with two quadrangular pegs, while a second hole above the socket was probably used as a double lock, similar to the sockets used in the Old Kingdom. The doorjamb slopes at an angle of 81–82 degrees, the usual batter of an exterior wall face.

The doorway was 1.05 m wide and about 2.10–2.625 m high, comparatively small considering that this and the northern gate served as the only access from the causeway into the enormous outer court. The secondary pyramids, the subsidiary tombs, and the mortuary temples located in the court would have generated a great deal of traffic during construction periods, funerals, and cult activities.

Two Sections Near the East End of the North Wall and the Northeast Corner of the Outer Enclosure Wall

(pls. 4, 5a)

The northeast, northwest, and southwest corners of the enclosure were also excavated by the original Expedition. Since the connecting parts of the walls were not completely excavated, we cannot tie the construction of the northeast, northwest, and southwest corners to any of the building phases discussed above. Details are only known from the northeast corner, which we reexcavated in 1989.

The wall or its foundations was also exposed at several other points by the original Expedition, for example, the west end of the south side, the center of the west side, and the east wall north of the causeway as far as the area north of pyramid 9. The following sections of the eastern end of the northern enclosure wall were excavated during the 1989 season, in order to establish a secure connection between the Grand Mastaba du Nord and the pyramid complex of Senwosret I.

SECTION A

About 60 m west of the northeast corner a narrow area of the wall was cleared. Because the *gebel* is close to the surface in this area, only remains of the first brick course were preserved. The 2.85 m wide course was much wider than the wall (2.625 m) and certainly belonged to the foundations.

SECTION B

The *gebel* surface slopes down slightly to the east, so that 38 m from section A the foundations of the enclosure wall were at least eight courses (98 cm) deep. These foundations were only 2.77 m wide and were dug into the fill of broken bricks, granite dust (from a stone cutters' area visible in many places, see pp. 39–40, 50, 100), and limestone chips, which had been thrown into the depression before the erection of the outer enclosure wall.

The debris layers and the enclosure wall itself sit on a layer of broken limestone 30–45 cm thick. The broken limestone was spread over the *gebel* surface and levelled with mud to seal an older phase of the construction site and remains of an older brick wall under the later enclosure wall. This older wall, which ran at an angle to the later enclosure, has large bricks of 15 x 23 x undetermined cm (as compared to the 10–11 x 17 x 32 cm bricks of the later wall) and could well have been a wavy wall. Limestone chip filled in from the north lies against the older wall. Only large-scale excavation of the area north of the enclosure wall would indicate the extension, shape, and purpose of this older wall.

THE NORTHEAST CORNER

(pls. 4, 5b)

The well-preserved foundations of the northeast corner of the outer enclosure wall are nine courses deep and were not dug into older layers of debris. Instead they are erected on the exposed *gebel* surface, after which a fill of broken bricks and building material was deposited against the foundations. On the inside of the corner along the east side, a 22 cm wide step indicates the foot of the actual wall, which is still covered with whitewashed mud plaster; at the inside of the north wall, which does not have a step, the plaster begins a few courses lower down. The foundations of the east wall are at least 3.10 m wide, those of the north wall 2.79 m; the outside foot of the wall itself is too badly eroded to be measured. The outside corner of the

[14] Otto Koenigsberger, *Die Konstruktion der Ägyptischen Tür*, ÄgFo 2 (Glückstadt, 1936), 50–51, figs. 60–63.

wall is marked by a 68 x 75 cm wide limestone block, a typical feature of brick architecture of the Middle Kingdom[15] and a valuable aid in determining the exact corner points. Unfortunately, the surface of the cornerstone has weathered away, obliterating the incised construction lines. Similar stones were also found at the southeast corners (phases B and C) of the enclosure wall (see p. 16 and plan I).

No pavement was observed. Inside the corner, the court was probably covered with the layers of debris (sand, chip, mud) that resulted from the process of levelling the court area.

[15] See Arnold, *Amenemhet III*, 66, pls. 29a–b, 63.

CHAPTER II

The Nine Secondary Pyramids

The extraordinary size of the outer court can be explained by the need to accommodate the nine secondary pyramids intended for the members of the royal family, though because a court of smaller dimensions was begun, all nine pyramids may not have been planned from the outset (pp. 100–101). In the early stages of construction, the tombs of the royal family may have been projected as simple shaft tombs, perhaps with mastabas on top, similar to the arrangement in the pyramid enclosures of the predecessor and the successors of Senwosret I.[16] The decision to follow the Old Kingdom practice of building secondary pyramids is another instance of the archaistic trend characteristic of the reign of Senwosret I.

Number, location, and sequence of these nine pyramids is discussed on pp. 100–101. It should be noted here that we can identify the owners of only two of the pyramids and almost none of the owners of the various tombs around them, many of whom must have been connected with the royal household. For this reason we do not know the exact dates of the construction or occupancy of the pyramids, some of which might date to the advanced Twelfth Dynasty.

Attention should be drawn to one unexpected conclusion, namely that the superstructures and the mortuary chapels, along with their sculptural decoration, had probably all been completed even though the underground apartments remained unfinished. We believe that the underground construction work was hampered by the unstable condition of the *gebel* (a deep strata of conglomerate and sand), but even more so by the uncertain intentions of the owners of these pyramids. Nearly all the crypts were left unfinished, other additional shafts were dug, and apparently in the end only a few pyramid chambers were ever used. Were the tomb owners buried elsewhere? Were, for instance, royal daughters buried in the tombs of their husbands? Was it preferable to be buried at Dahshur in the newly built funerary complex of Senwosret's successor Amenemhat II? Or should we conclude that there was discord in the royal family?

LEVELS FOR PYRAMIDS 2–5

The following level readings could not be included on plans II–III. The zero level is the eastern granite doorsill of the pillared court of the mortuary temple.

Pyramid 2

Subfoundation of northern enclosure wall −0.54 m
Pavement level of western enclosure wall 0.00 to +0.03 m

[16] See the row of tomb shafts in the western court of the pyramid of Amenemhat I (*BMMA* 17 [Dec. 1922], pt. II, 5, fig. 1). For an unfinished gallery tomb in the outer court north of Senwosret I, see pp. 41–42, no. 7 and Arnold, *Senwosret I*, 85, Drain G and the "French Statue Pit." For Senwosret III at Dahshur see De Morgan, *Dahchour* I, fig. 105.

Measurements of the Nine Subsidiary Pyramids

	Base length		*Height*				*Enclosure Dimensions*		
Number	*cubits*	*meters*	*cubits*	*meters*	*Inclination*	*Shaft*		*cubits*	*meters*
1.	40	21	36	18.90	62.5°	Center N	E–W	100	52.50
							N–S	75	39.375
2.	32	16.80	32	16.80	63.6°	Center N	E–W	72	37.80
							N–S	54	28.35
3.	32	16.80	32	16.80	63.25°	Center N	E–W	50	26.25
							N–S	50	26.25
4.	32	16.80	?	?	?	Center N	E–W	46	24.15
							N–S	43	22.575
5.	31	16.275	31	16.275	63.917°	Center W?	E–W	48	25.20
							N–S	47	24.675
6.	30	15.75	?	?	?	Far S	E–W	56	29.40
							N–S	49	25.725
7.	30	15.75	?	?	?	Far N	E–W	49	25.725
							N–S	49	25.725
8.	30	15.75	?	?	?	Center N	E–W	86	45.15
							N–S	47	24.675
9.	30	15.75	?	?	?	SW corner?	Pyramids 8 and 9 surrounded by a common enclosure wall		

Pyramid 3
Pavement level of northern enclosure wall −0.08 m
Pavement level of western enclosure wall −0.23 m
Pyramid 4
Pavement level of western enclosure wall −0.09 m
Pavement level of southern enclosure wall −0.02 m
Foot of casing of pyramid south side −0.13 m
Pavement in northern court −0.26 m
Pyramid 5
Pavement level of northern enclosure wall −0.04 m
Pavement level of western enclosure wall −0.09 to −0.16 m
Pavement level of southern enclosure wall −0.04 m
Pavement level of eastern enclosure wall −0.05 to −0.16 m
Foot of casing of pyramid south side −0.02 to −0.03 m
Pavement level in south court −0.12 m

Pyramid 1 (Queen Neferu?)

SOURCES: *Licht*, 46, 49, figs. 41–43; *BMMA* 15 (July 1920), pt. II, 6, 9–10, fig. 1; Hayes, *Scepter* I, 194
Plans AM 2608a (scale 1:500), 2623 (scale 1:200), 2671 (scale 1:100), 2678 (scale 1:100)
Photos 6 LN:54–55

J. E. Gautier cleared the pyramid and its burial apartments between 1894 and 1895. The Metropolitan Museum Expedition, during the 1917–18 campaign, searched for more burial shafts north of the pyramid, but abandoned this investigation when nothing was discovered. Our 1986–87 reexcavation was restricted to the northern half of the pyramid and the two deposit shafts south of the pyramid because of the huge dumps that had accumulated over the site by the time work stopped in 1918. The southern area of the east and west sides of the enclosure has never been excavated.

THE SUPERSTRUCTURE OF PYRAMID 1

(pls. 1, 7–8, 14a, 50; plan I)

Pyramid 1 and its enclosure differ so much in size and shape from the other eight secondary pyramids of Senwosret I that one can assign special importance to this structure. The pyramid was certainly surrounded by a stone-paved court and an enclosure wall that was possibly also made of stone. A great number of subfoundation stones from the pavement were found north and east of the pyramid as well as south of the two deposit pits (see below), but the precise edge of either the pavement or the enclosure wall could not be determined. According to the *BMMA* report, "only one trace exists [of a limestone wall]—just north of the burial shaft," but unfortunately the old plans do not indicate it.[17] The position of the east wall of the enclosure may be preserved by a slight north-south depression in the *gebel*, which also seems to indicate the southeast corner. The northwest corner may be reconstructed using a group of foundation or pavement blocks in that area, while the nearby drain B may indicate the line of the western enclosure wall. Based on these observations we can calculate that the outside dimensions of the enclosure might have been 100 c east-west (52.5 m) and 75 c north-south (39.375 m). The court walls might have been 2 c wide, making the area of the court 96 x 71 c (50.4 x 37.275 m). Pyramid 1 would thus have had the largest enclosure of the nine subsidiary pyramids.

As the pyramid was located close to the west and south walls of its court, large cult chapels have to be reconstructed to the east and north of the pyramid, though no remains of such structures or their subfoundations could be found during the 1986 excavations. However, the existence of a north chapel can be deduced from the lower part of a stela or a base for a stela 2.625 m wide, 68 cm high above the foot of the pyramid, and 45 cm deep on its upper surface, which protrudes from a casing stone (pl. 8b, c). This step in the casing would suggest a chapel 7 c (3.675 m) wide inside with two side walls of about 1.5 c (0.7875 m), making the outside width of the building 10 c (5.25 m). One block in front of the step, which served as both a foundation and paving stone, has a socket 80 cm wide and 11–14 cm deep that indicates the position of the altar.

The pyramid foundations rest on a flat step or platform cut from the bedrock; irregular and smaller slabs of poor local limestone form the subfoundations of the pyramid and the court. Both the step and the subfoundations remain visible on the west, north, and east sides, and the south edge of the southern foundations was exposed when we excavated the two deposit pits in the south (see below). On top of the subfoundations lies a 41–45 cm thick course of Tura-quality limestone slabs, arranged as headers and protruding about 42–60 cm in front of the pyramid. Smaller blocks of very brittle local limestone, too badly deteriorated to allow us to determine their exact shape and arrangement, form the core of the pyramid. They are surrounded by a casing of huge Tura-quality blocks. Five blocks laid as stretchers in the center of the north side and two blocks in the west side are still preserved, but *Licht*, fig. 42 indicates that the French excavators also saw casing blocks along the south side. The top surface of the casing blocks on the north side, which are about 0.89–1.01 m high, is stepped according to the shape of the following second course. From these blocks one can reconstruct a pyramid with a 40 x 40 c (21 m) base length, the largest of all the secondary pyramids at Lisht. The inclination of the casing is about 62.5 degrees, making the pyramid 18.90 m (36 c) high.

It is remarkable that the northern casing blocks have slots for dovetail cramps that either have no corresponding half on the adjoining blocks or do not fit. Since one has to assume that these slots were cut in pairs after the positioning of the blocks, the only conclusion is that the blocks had been joined together in another pyramid and were reassembled in a different sequence, without a new attempt to cramp them together. Where and for whom was that older pyramid built? Was it built for queen Neferu (see below)? And was it at the same spot or somewhere else in the southeast section of the outer court, perhaps in front of the *Ka*-pyramid? Or did the blocks belong to phase 1 of the *Ka*-pyramid, which was perhaps partially replaced when phase 2 was added?[18] There are no answers to these questions. If the casing blocks had been brought from another pyramid, this would be a unique example of such a reuse of stones.

[17] *BMMA* 15 (July 1920), pt. II, 10.
[18] Arnold, *Senwosret I*, 73–74.

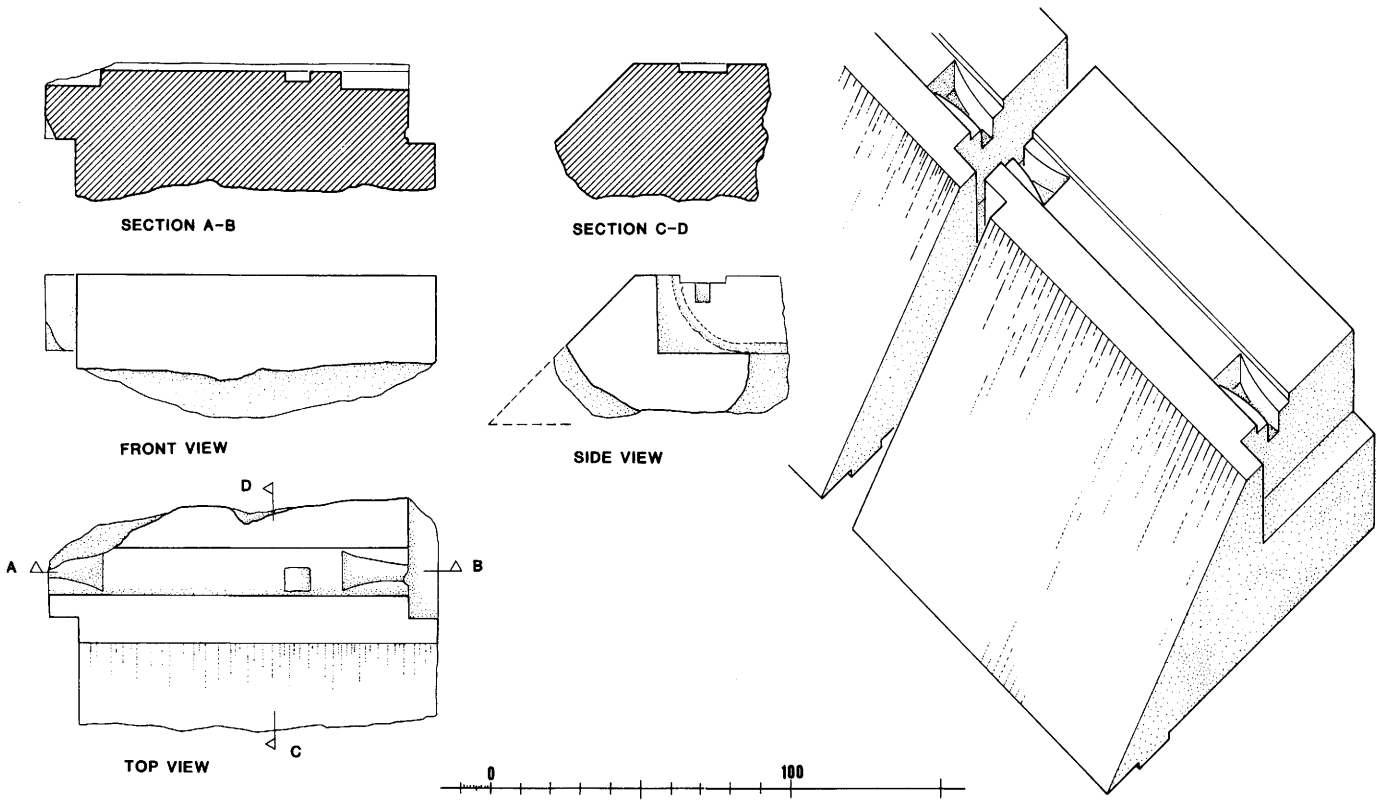


Fig. 3. Casing block with elaborate joining devices from an unidentified pyramid. Found in the OCSE. Scale 1:25.

The 62.5 degree inclination of the casing stones rules out the possibility that two other casing blocks found in the southeast corner of the outer court are connected with pyramid 1 (fig. 3). These blocks have an inclination of 42–45 degrees, which is puzzling because none of the secondary pyramids of Senwosret I have such an angle. Perhaps another structure, still unknown, lay somewhere in the southern or southeastern area of the cemetery.

THE UNDERGROUND APARTMENTS OF PYRAMID 1

(pls. 7, 14b, 15)

The interior of the pyramid was originally excavated and drawn by J. E. Gautier, who found the tomb empty; in 1986 the tomb was reopened in order to supplement Gautier's documentation.

The pyramid entrance consists of a 14 m deep shaft in front of the center of the north side of the pyramid; the bottom of the shaft joins a slightly inclined, stone-paved corridor leading to the burial apartments. A wall casing was planned for the corridor, but casing blocks were only actually placed in front of the chamber. Limestone cases the walls of the spacious (3 x 4 m) chamber; the low ceiling is carved from the natural rock. Two courses of slabs, still bearing the black dressing marks of the builders, case the walls (see p. 22). These slabs do not quite reach the ceiling, and the small gap between the large slabs and the ceiling was closed with smaller and lower blocks.

A rectangular opening in the floor gives access to the much smaller sarcophagus pit with an unfinished canopic niche in the south wall. Only the side walls and the floor of the pit are cased with limestone. The canopic niche is not cased and seems not to have been cut to its final shape and size. There is no ledge around the mouth of the sarcophagus pit that could have supported a lid, implying that the builders intended to leave the pit open. Since no fragments of a stone sarcophagus were found, one has to assume that, if the pyramid owner was buried here, the body was placed only in a wooden coffin.

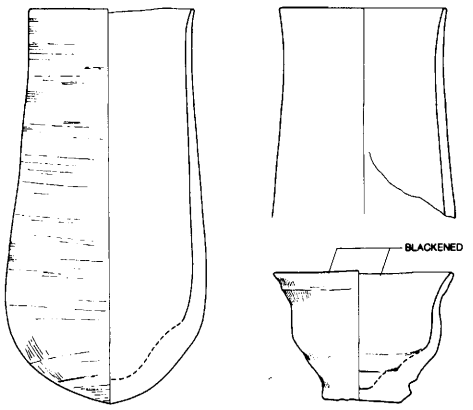


Fig. 4. Robbers' oil jar and lamp with the sherd of a second jar. Scale 1:4.

No construction shaft exists above the chamber—a not uncommon omission—so that all building material had to be lowered down the one existing shaft. The arrangement of the burial apartments with a sarcophagus pit in the floor of the chamber is also not uncommon, though this combination of a very wide upper chamber and a corridorlike lower chamber or sarcophagus pit is unique in the Middle Kingdom.

Two completely preserved pots, the usual robbers' oil jar and lamp, were found in the sand fill of the shaft. A sherd originally belonged to a second oil jar (fig. 4). Since the shaft was opened by the French expedition, these pots must have either fallen in or been thrown in after the excavation.

DEPOSITS INSIDE THE ENCLOSURE WALL OF PYRAMID 1

(pls. 9–13; plan I)

Pyramid 1 was surrounded by at least six deposit pits. Four pits (nos. 6–9), excavated by the original Metropolitan Museum Expedition, were arranged along the north side of the enclosure wall and seem to have been partly or completely covered by this wall. Photo L 33–34:183 (unpublished) shows the location of some of them. These deposit pits must have been dug and filled before the construction of the wall foundations, a peculiar sequence of events if the deposits are connected with a burial in pyramid 1. A 2 x 7 m pit is divided in the middle by a brick wall, thus creating space for two deposits (nos. 6–7): 33/37 E and W. Deposit 36/37 (no. 8), with its irregular roundish shape, could have been a later intrusion postdating the destruction of the wall. Deposit 37/37 (no. 9) measures 1.50 x 2.70 m and was apparently still covered by a foundation stone when it was excavated in the 1916–17 season. None of these pits contained any trace of original contents, leading us to question whether they were ever filled.

Two very unusual stone-lined pits were discovered in the south court of pyramid 1 by J. E. Gautier,[19] who had considered them to be limestone sarcophagi; in order to clarify this enigmatic discovery we reexamined the two pits in 1986 (p. 46, nos. 110–11). About 3.30 m south of the south side of the pyramid, two enormous limestone basins, their northern inner faces aligned, are sunk into the bedrock parallel to the pyramid. Their floor levels are 2.64 and 2.72 m below the assumed court level, so that the foundation and pavement slabs of the court must have run over their ceilings, covering the cavities with about 1 m of stone. Each basin was constructed of three huge floor slabs, four wall blocks, and an unknown number of approximately 32 cm thick roofing blocks. The pits were a few centimeters wider than the casing, and the gap between *gebel* and wall was filled with bricks and sand. All blocks were carefully dressed and positioned according to exact plans and tracings. In both pits the middle axis and the foot of the intended walls were scratched into the surface of the pit pavement. All walls were still covered by a system of black dressing marks, which were arranged in columns of ten strokes with 15–18 cm between columns. This technique, well known from Middle Kingdom limestone walls, was used as a measuring device before the final dressing of the surface.

Both of the southern pits were looted by treasure hunters, who also removed parts of the central floor slabs and began a tunnel that extends 2.50 m from the east pit towards pyramid 1. Subsequent to the French excavation, the eastern basin was partly removed by stone robbers, who left only the floor slabs and the lower halves of the eastern and southern walls. All ceiling blocks have disappeared, but a backing stone in the northeast corner of the west pit still shows the position and thickness of the ceiling slab to which it was originally attached.

The dimensions of the southern pits are:

	West Deposit	East Deposit
Length	2.60–2.64 m (5 c = 2.62 m)	2.60 m (5 c = 2.62 m)
Width	1.57–1.59 m (3 c = 1.58 m)	1.28–1.35 m (2½ c = 1.31 m)
Depth	1.56 m (3 c = 1.58 m)	Destroyed

A leg bone of an ox was found in the sand filling of the west pit, but since this pit was cleared by the French expedition, the bone may well have fallen in with the sand that refilled it, and thus not have been among the original contents. As no other traces were found of the contents of either pit, we can only theorize about their function.

First, we can rule out the possibility that the pits were used for human burials,[20] because important burials—and important they would have been judging from the quality of the stonework—would have been placed in much deeper shafts. Secondly, the existence of two pits argues against the possibility that they were drainage pits, as does their fine execution.[21] Only one possibility remains, namely that the structures are deposit pits. We know that throughout Lisht South an unusually large number of deposits were made in connection with building or funerary ceremonies,[22] none, however, in such a costly fashion. One must assume that some very important or valuable objects or groups of objects were to be deposited, certainly at the burial of the owner as the pits were not building deposits covered by walls (see deposits 7–9). The dual number and the position along the south side of a tomb suggests boat burials,[23] but the shape of the pits does not support this theory. Unfortunately, without parallels the contents and exact purpose of the deposits cannot be determined.

While excavating the two southern deposit pits in 1986, the rims of two tomb shafts were exposed in the area of the south enclosure wall of pyramid 1. These shafts are certainly identical with the two shafts (35/45 and 37/45) excavated by the French expedition, which are said to be located south of the "Petite Pyramide," and drawn in *Licht*, pl. 3. If our reconstruction of the alignment of the south wall is correct, these shafts could only have been dug after the destruction of the enclosure wall of pyramid 1. More unexplored shafts may still exist in this area under the debris.

THE OWNER OF PYRAMID 1

No inscription was found inside the enclosure of pyramid 1 revealing the name of its owner. However, three inscribed granite objects (see cats. 22, 24, and 25, pp. 58–59), one of them certainly a statue, found outside the enclosure of pyramid 1 in the area of its southeast corner, indicate that pyramid 1 belonged to the "daughter of the king, the king's wife, the mother of the King of Lower Egypt [and of Upper Egypt] Neferu." Since pyramid 1 differs in many respects from the other secondary pyramids, thus pointing to the burial of a more important person, the identification of Neferu as the wife of Senwosret I

[19] *Licht*, 45, 49, fig. 43.

[20] The chambers have some similarity to the burial chambers of the *Mnevis*-bulls at Heliopolis (see M. G. Daressy, "La Tombe d'un Mnévis de Ramsès II," *ASAE* 18 [1918]: 196–201). However, burials of this kind in a queen's funerary complex are without parallel.

[21] One can observe that a drainage pit, such as that shown in W. M. Flinders Petrie, *The Palace of Apries (Memphis III)*, British School of Archaeology in Egypt and Egyptian Research Account, Fifteenth Year, 1909, 17 (London, 1909), 2, pls. 1, 12 (lower right), has a striking similarity to the pits at Lisht.

[22] See Arnold, *Senwosret I*, 87–93.

[23] Two boats were buried along the south wall of the mastaba of Imhotep (*BMMA* 10 [Feb. 1915], supp., 10, fig. 7). Christian Hölzl pointed out to me that two boats must also have been buried in the core of the mastaba of Senwosret-ankh, west of the cult niche. From the First Dynasty onward, the south sides of pyramids, pyramid temples, and sun temples seem to have been a favorite spot for the burial of boats.

seems to follow.[24] However, aside from the location of her pyramid near that of Senwosret I, no evidence shows conclusively that Neferu was the wife of Senwosret I.

From the inscriptions we learn that Neferu was:

1. The daughter of a king
2. The wife of a king
3. The mother of a king

Theoretically Neferu could have been:

1. The daughter of Mentuhotep IV Nebtauwyra, the wife of Amenemhat I, and the mother of Senwosret I, a possibility that cannot be ruled out because the mother of Senwosret I was *Nfrj-T3-tnn*,[25] a name that could have been shortened to Neferu. Senwosret I may well have buried his mother close to his own pyramid, especially since no tomb suitable for a queen was found near the pyramid of Amenemhat I. The name of a "royal mother Nefert" was discovered, however, in the area of the pyramid of Amenemhat I[26] suggesting at least a funerary cult of this person in Lisht North, though this Nefert has been thought to be the mother of Amenemhat I.[27]
2. The daughter of Amenemhat I, the wife of Senwosret I, and the mother of Amenemhat II. This identification remains a serious possibility, because a Neferu or Nofret is mentioned in the story of Sinuhe as the queen of Senwosret I and we know that the mother of Amenemhat II was a Queen Neferu. The above-mentioned objects would then have been dedicated after Amenemhat II had become king.
3. The daughter of Senwosret I, the wife of Amenemhat II, and the mother of Senwosret II. Amenemhat II was also married to a Queen Neferu who was the daughter of Senwosret I. It is possible that the pyramid complex of Amenemhat II at Dahshur was unfinished when this queen died and that her tomb was prepared at the pyramid of her father. No tomb of a Queen Neferu was found near the pyramid of Amenemhat II. The objection to this theory is that pyramid 1 was distinguished from the other secondary pyramids, which we tend to attribute to the daughters of the king.

The question of Neferu's identity is not solved by the unfinished state of the chambers in pyramid 1 or by the lack of evidence that a burial took place;[28] these observations merely suggest that the queen was buried elsewhere and that pyramid 1 was only used as a cenotaph. That a funerary or *Ka*-cult for a Queen Neferu was actually maintained at Lisht South can be concluded from a dozen seal impressions found—together with others—south of the mastaba of Imhotep.[29] But where was this Neferu finally buried, at Lisht North or at Dahshur? And with which of the above is she to be identified: wife of Amenemhat I and mother of Senwosret I, wife of Senwosret I and mother of Amenemhat II, or daughter of Senwosret I and wife of Amenemhat II?

Two architectural implications should also be remembered in connection with the ownership of pyramid 1. First, the casing of this pyramid was reused. Had the tomb of queen Neferu already been prepared somewhere else, perhaps at Lisht North? The second clue is the casing block (fig. 3, p. 21) from a hitherto undiscovered pyramid southeast of the pyramid of Senwosret I. Whose pyramid was it? Was there another secondary pyramid?

Pyramid 2 (Princess Itakayet)

SOURCES: Lisht Journal I, 32–33, 146–51
Lisht Diary Jan. 10–31, 1934
Tomb cards 385–99
Licht, 49–50, figs. 48–49; *BMMA* 29 (Nov. 1934), sec. II, 4–5, figs. 1–2
Plans and sections AM 2682+2683 (scale 1:200), 2686 (scale 1:100)
Drawings of decoration AM 2684 (scale 1:10), 2685 (scale 1:5)
Photos L 33–34:237–39, 241–44, 246, 277, 330, 332–34, 387–93 (superstructure); L 33–34:368–69 (substructure)

The French expedition thought pyramid 2 was a mastaba, and only excavated tomb shafts in the southern part of the mortuary precinct. Their main discovery, in tomb shaft 25/42, east of the southeast corner of the pyramid, was a sealed wooden box containing a wig. During the 1933–34 season, the Metropolitan Museum Expedition cleared the entire pyramid 2 precinct, including the burial chamber of Itakayet and the remains of her offering chapel.

THE SUPERSTRUCTURE OF PYRAMID 2

(pls. 22, 50)

On top of a long stretch of the foundations of the western enclosure wall, only a few blocks from this wall and some slabs from the subfoundations of the pyramid court were still preserved in 1934; the wall blocks have now disappeared. These remains are sufficient, however, to reconstruct a precinct 54 x 72 c (28.35 x 37.80 m) outside and 50 x 68 c (26.25 x 35.70 m) inside. The enclosure wall was 2 c wide at its foot, and rested on large foundation slabs connected with dovetail cramps. A high layer of builders' debris, apparently originally prepared to bear a wall with deeper foundations, underlies the slabs.

A block (pls. 22d, 28A) with a rounded top and a batter of 1 in 25 was found in the enclosure wall foundation. If we try to reconstruct the section of the enclosure wall using this block, we discover that, based on the proportions of Egyptian walls, it would only fit into a wall about 5 m high. A wall of this height would have required wider foundations than those around pyramid 2 and we therefore have to conclude that the block derives from another wall. A second block, of which no

[24] Hayes, *Scepter* I, 194; W. K. Simpson, *LÄ* V, 890 (Sesostris I).

[25] Henri Gauthier, *Le Livre des Rois d'Égypte* I (Cairo, 1907), 263, 282. The name of the queen is peculiar.

[26] MMA 22.1.21, Rogers Fund and Edward S. Harkness Gift, 1922; *BMMA* 17 (Dec. 1922), pt. II, 12, fig. 11; Henry G. Fischer, "Some Early Monuments from Busiris, in the Egyptian Delta," *Metropolitan Museum Journal* 11 (1976): 14, n. 43.

[27] Hayes, *Scepter* I, 177.

[28] The casing of the inclined entrance passage was not put in place and the surface of the walls of the burial chamber and the sarcophagus pit did not receive final dressing. We even have reason to doubt that the queen was buried in this tomb, because no stone sarcophagus was ever placed in the sarcophagus pit and no trace of a wooden coffin was discovered. One would expect that Queen Neferu would have been buried in a stone sarcophagus similar to those found in other secondary pyramids and private tombs of Lisht.

[29] See *BMMA* 28 (Apr. 1933), sec. II, 21. To be published in Geoffrey Martin, *Scarabs and Seal Impressions from Lisht*, forthcoming.

drawing exists but which is visible on photo L 7–8:533 (unpublished), was the corner topstone of a wall, probably the enclosure wall of pyramid 2.

Inside the court along the eastern half of the northern wall, an enigmatic brick wall 2 c wide was excavated by the original Expedition. The wall rested partially on a fill of debris and partially on the usual layer of bricks placed on edge; both of its ends have been destroyed and its original course is unknown. As it is improbable that such a wall was constructed after the destruction of the pyramid court, one has to assume that it is another remnant of the brick walls from the construction period that have been found south and west of the pyramid of Senwosret I. Such construction walls must be dated to building phases that preceded the stone construction of the secondary pyramids.

The pyramid consisted of a 20 x 20 c core, carefully built of rough fieldstones held together with mortar; five to seven layers of the core masonry still existed in 1934. Surrounding the core were casing blocks and their backing stones set into 3 m wide foundation trenches. Nothing remains of this casing, which gave the pyramid a base of 32 x 32 c (16.80 m). One fragment still preserved the 1 in 2 (1 palm back on 2 palms up) inclination of the casing that corresponds to the 63.6 degree angle of the other secondary pyramids, suggesting a pyramid 32 c (16.80 m) high.

The pyramid is positioned so close to the west and south walls of its enclosure that one would expect that offering chapels were placed north and east of the pyramid (see below). A foundation trench in front of the north side of the pyramid indicates an entrance chapel about 8 c (4.20 m) wide and 7 c (3.675 m) deep. No such remains can be seen east of the pyramid, so that the existence of a second offering chapel is, in spite of the large space available, uncertain. All architectural and decorative fragments in the following description may then belong to only one chapel.

THE DECORATION OF THE FUNERARY CHAPEL OF PYRAMID 2

(pls. 17c, 18–21)

Among the architectural fragments of the chapel were at least three pieces of a corner torus molding (pl. 28B–D) from the sun-damaged exterior of the building. The torus had a diameter of 10.5 cm, a batter of 1 in 45, and had no traces of paint. Several limestone fragments of slightly channeled "proto-doric" columns or pillars with at least thirty-two sides were also recorded (pl. 17c). The columns were built up in drums, with the abacus and the top drum in one piece. On the top surface of the abacus, a mortise 6.50 x 9 x 9 cm was roughly cut to receive a dowel that fixed the architrave to the column. These columns can be estimated to have been about 2.80 m high (with base and abacus), which would make the total height of the chapel, including the architrave, about 6.50 c (3.41 m).

The columns were painted to resemble red granite, a rather strange feature because channeled columns were never actually made of granite.[30] On each column, an incised inscription, painted green, covered the space equivalent to three channels. According to a reconstruction made by the original Expedition, the inscription reads, "The hereditary princess, great of grace, great of favor, the countess, she-who-sees-the-Horus-Seth, the king's daughter, whom he loves, Ita-kayet, possessor of honor." We could not determine whether these columns stood *in antis*, in the open front of the chapel, or inside, immediately behind the door.

At least 130 small fragments from the decoration of the chapel were recorded by the Museum excavators. The records are confusing, as some fragments were recorded in drawings (AM 2685), some in photos (L 33–34:414–16, 420–21, 424–30), and some only in general descriptions on the tomb cards. From this documentation we can deduce that the outer face of the chapel had an unpainted, incised inscription of 9 cm wide columns. The existence of a painted cavetto and a torus molding, different from the one mentioned above, indicates that an inner shrine stood inside the chapel. Similar shrines, perhaps with the stela in the back wall and a statue in front of the stela, were found in the temple of Mentuhotep Nebhepetra.[31] Space in the chapel need not have been restricted, because the sloping side of the pyramid formed the back wall. A shrine erected in front of the pyramid casing could have used the same device found in the north chapel of pyramid 1, and stood on a step protruding from the casing of the pyramid.

The cavetto, decorated with red-blue-green-blue-red leaves, and the torus molding of the shrine were 1 c high (pl. 21). The frame of the outer door of the shrine, as well as the inner doorframe of the chapel itself, had a vertical column of low relief text listing the titles and name of Itakayet in the same sequence as on the channeled columns. Existing fragments indicate that at least three versions of Itakayet's titulary existed.

Paintings on the side walls of the shrine showed the usual pattern of a door (see pl. 21); the inside walls of the chapel itself must have been decorated with offering bearers, priests performing mortuary rituals, offering lists, and, at the end of the side walls, Itakayet seated at an offering table. From a few fragments it is clear that the offering bearers were identified by their names and titles. Conventional representations of piled offerings were probably depicted in the top register; the top of the wall was terminated by a *kheker*-frieze.[32] The rear wall of the shrine was certainly adorned with a limestone false door (pl. 20d).

The distribution of the relief decoration cannot be reconstructed. All reliefs were carefully executed and painted, indicating that the chapel and its decoration were completed. The following fragments of the chapel decoration deserve individual mention here.

a) False Door (pl. 20d)
Jd'E 63944ab

SOURCES: Tomb card 391a
Photo L 33–34:414

Fragment of a stela with three columns of incised vertical hieroglyphs, painted blue, repeating versions of the formula, ". . . the king's daughter of his body, whom he loves, Ita-kayet, possessor of honor."

[30] Channeled limestone columns were common at the pyramid sites of Amenemhat I and Senwosret I (see Gustave Jéquier, *Manuel d'Archéologie Égyptienne* [Paris, 1924], 177–79; Arnold, *Senwosret I*, 41, 54, pl. 25a). The eight-sided pillars on the front portico of the Theban tomb of Meketra had the same imitation granite decoration (see Dorothea Arnold, "Amenemhat I and the Early Twelfth Dynasty at Thebes," *Metropolitan Museum Journal* 26 [1991]: 22, 45–46 n. 115, fig. 23).

[31] Edouard Naville, *The XIth Dynasty Temple at Deir el-Bahari* II, The Egyptian Exploration Fund, Thirtieth Memoir (London, 1910), pls. 11–20.

[32] A few fragments indicate the existence of dancing and marsh scenes, but their position on the walls cannot be ascertained.

b) Doorframe (pl. 21)

SOURCES: AM 2685
Photo L 33–34:415

Inscribed with painted hieroglyphs in low relief, "the hereditary princess, great of grace, great of favor, the countess . . . "

c) Torus Molding (pl. 21)

SOURCES: Tomb card 392

Painted with black ribbons on a yellow ground; the leaves on the underside of the cavetto are painted red-blue-green.

d) Procession of Offering Bearers (pls. 18a, 21)

SOURCES: Tomb cards 389–90
AM 2685
Photo L 33–34:428

The upper register shows the legs of three people wearing green bead anklets; the lower register is inscribed with the names and titles of the people in the lower procession. The baseline is black.

e) Dancing Girl (pl. 18a)

SOURCES: Tomb card 390
Photo L 33–34:428

The head of the yellow-skinned girl is either flung forward or upward, with flying hair and a necklace thrown out in front. Smaller in scale than the relief of the offering bearers.

f) Marsh Scene (pl. 19c)

SOURCES: Tomb card 388
Photo L 33–34:425

Over a rectangular pool of blue water, marsh fowl fly between green papyrus thickets. The birds are yellow with red legs. A 4.5 cm wide vertical block border, painted yellow with green edges, runs along one edge.

THE UNDERGROUND APARTMENTS OF PYRAMID 2

(pls. 16, 17a–b)

The underground apartments of pyramid 2 were built using a layout that is quite different from the system used for the other secondary pyramids; only the more elaborate pyramid 3 apartments (see pp. 27–28) can be compared to it. Two shafts (23/39 and 24/39) provided access to the tomb, with the western shaft certainly acting as the original main entrance. This western shaft was used during the construction of the tomb and the lowering of the stone casing, and then abandoned when the entrance chapel was erected over its mouth. In order to complete the tomb and inter the body, a second shaft was dug to the east of the first one.

The arrangement of the apartments at this pyramid and at pyramid 3 poses two problems. First, it is difficult to understand why the builders did not foresee that the chapel would cover the western shaft, and so simply construct the entire tomb using the eastern shaft. Second, we do not know how the tomb corridor and burial chamber were kept accessible. A short connecting corridor joins the eastern shaft to the original western one, which was used below this juncture. Only the upper section of the original shaft could then be filled, but how was the fill kept in position? In the *Ka*-pyramid a similar problem was solved by building a heavy stone roof in the main shaft to carry the fill above,[33] but no such stone construction was found when pyramid 2 was opened. Could there have been a brick vault resting on two rock ledges in the north and south walls of the shaft? Such a vault could have supported the weight of the fill and allowed access from the connecting corridor back to the main shaft. The connecting corridor continues about 4 m beyond the west shaft, perhaps because extra space was needed to construct the brick vault over the main shaft. A note in Lisht Journal I, 151 stating that a "great amount of brick dust and broken brick (were) found in the west shaft," may confirm this theory.

At the bottom of the main shaft the tomb continues along a slightly sloping corridor-chamber paved with stone. According to the excavators, the entrance to the corridor was sealed with "horizontal slabs," indicating that the tomb had been closed. The chamber has the same width as the corridor, and is only differentiated from it by the horizontal position of the floor and roofing slabs, and by the huge canopic niche in the eastern wall. This type of construction was not the builder's original intention. An empty rock-cut cave behind the wall casing in the area of the burial chamber indicates that originally a much larger, true chamber had been begun, but that the plans were altered before the cutting of the rock had been completed and the corridor-chamber was built instead. Rock cavities also show that another niche was prepared in the east wall, as well as a niche for a sliding block that would have closed the burial chamber in the same way as in pyramid 3.

Simplification of the original plan was apparently required when Itakayet died unexpectedly and the tomb had to be completed quickly. The lack of any trace of a stone sarcophagus or canopic box may also point to a premature burial. One wonders, however, why neither fragments of a wooden coffin nor any other objects that would prove the existence of a burial in pyramid 2 were preserved. That the pyramid was actually used seems likely from the burial of the box with the wig, the deposits along the north wall of the enclosure, and other finds. The situation becomes even more confusing because the entrance to the corridor-chamber was discovered sealed with the original horizontal limestone slabs (pl. 17a), which thieves had broken only enough to squeeze through and remove valuable portable objects, so that a coffin or canopic box could not have been moved without smashing it into pieces and leaving fragments. But if there was no coffin or burial in the chamber, what was the point of blocking the entrance?[34]

[33] Arnold, *Senwosret I*, 74, foldout V.

[34] An unused burial chamber with similar blocking was found in the unfinished tomb of Amenemhat I at Thebes (see Dorothea Arnold, "Amenemhat I and the Early Twelfth Dynasty at Thebes," *Metropolitan Museum Journal* 26 [1991]: 5–7, fig. 4).

SECONDARY SHAFTS INSIDE THE ENCLOSURE WALL OF PYRAMID 2

(for positions see plan II)

The enclosure of pyramid 2 contains only two secondary shafts, which seem to have been used for deposits, not burials, and are similar to those outside the north wall of the enclosure (see below). This unusual lack of secondary burials could help to confirm the suggestion that the princess might not have been buried in pyramid 2.

a) Shaft 25/42 (Gautier's "Puits de la perruque")

SOURCES: *Licht*, 49–50, pl. III

A quadrangular shaft 8 m deep lies 1.20 m in front of the eastern casing of the pyramid. A cavity at the bottom of the shaft was sealed by a slab, behind which Gautier found a wooden chest (W. 47 cm; D. 68 cm; H. 31.5 cm) containing a huge wig of black hair.[35]

b) Shaft 25/43

SOURCES: Tomb card 395

The shaft is 8 m deep and leads into a chamber measuring 2.45 x 2.70 m. Originally it also might have contained some kind of deposit.

DEPOSITS OUTSIDE THE ENCLOSURE WALL OF PYRAMID 2

(for positions see plan II)

Along its north and east sides, the pyramid enclosure is surrounded by at least six deposits. The deposits along the north wall were considered to belong to the king, but since they are much closer to the enclosure of Itakayet, one could better assign them to the princess's funerary precinct.[36]

a) Deposit 20–21/37 (South Wall Deposit no. 2)

Nothing is known about this deposit except that it was plundered.[37]

b) Deposit 24/37 (South Wall Deposit no. 3)

This deposit, which was also plundered, seems to have contained only three saucers and a small broken bowl.

c) Deposit 27/37 (South Wall Deposit no. 4, Sledge Deposit)

SOURCES: Lisht Diary, Apr. 12, 1918
Tomb card 397
BMMA 15 (July 1920), pt. II, 10
Photos 18 L:10, 12–14

A pit approximately 2 m square was discovered about 2 m south of the enclosure wall of Senwosret I; it was filled with the red sand that forms the surface layer in this area. At a depth of a little over 1 m there was a rough flooring of brick, mud mortar, and chip, which had been placed directly over the deposit. The flooring was 15–30 cm thick; below it was the wooden sledge (p. 59, cat. 28, MMA 24.1.84).

d) Deposit 30/37 (South Wall Deposit no. 5)

SOURCES: Lisht Diary, Apr. 14, 1918
BMMA 15 (July 1920), pt. II, 10

According to the *BMMA*: "The eastern one (that is deposit 30/37) was found to be entirely plundered. Only a few small pieces of cedar wood had been left, and these are not enough to give a clue to the nature of the object which had been placed there." From the size and shape of the pit, one may conclude that it was a long and narrow object about 4.20 m long. It could, therefore, have been another sledge sufficient to carry the wooden coffin and its canopy.

e) Double Deposit 29/39 and 29/40

The nature of the pit is unknown (see p. 45, no. 79).

THE OWNER OF PYRAMID 2

According to the inscriptions of the offering chapel, the pyramid was owned by "the king's daughter of his body, the hereditary princess and countess Ita-kayet." She could have been a daughter of Senwosret I, but we cannot rule out the possibility that she was either the daughter of Amenemhat I, or perhaps even of a later king.

The offering chapel had been finished, but the burial crypt was incomplete when the princess died, and the work was completed in an abbreviated manner. As noted above, no trace of a stone sarcophagus, a wooden coffin, or a canopic chest was found behind the blocked tomb entrance. Is it possible, as we were forced to consider for pyramid 1, that the actual burial took place in another tomb?

Tombs with shapes similar to that of Itakayet—with no real burial chamber and a sarcophagus squeezed into the rear section of the sloping corridor—are unknown in the early part of the Twelfth Dynasty. Examples are known from the mastaba field north of the pyramid of Senwosret III at Dahshur[38] and from the tomb of King Hor.[39] Could it be that the final layout of Itakayet's tomb has to be dated to a later period? Was the tomb of pyramid 2 left unfinished by its original owner and later usurped by Itakayet, only to remain unoccupied in the end? But who was Itakayet, and where was she actually buried?

[35] For other burials of wigs see: *BMMA* 28 (Nov. 1933), sec. II, 26, fig. 39; A. Lucas, "Ancient Egyptian Wigs," *ASAE* 30 (1930): 190–96. A wig found at the Grand Mastaba du Nord at Lisht South is recorded in Lisht Journal I, 4.

[36] For south wall deposit 1 see Arnold, *Senwosret I*, 92, 112–15, figs. 40–41, pl. 66, foldout I.

[37] Deposits 20–21/37 and 24/37 are mentioned in a letter, Lansing to Winlock, Feb. 8, 1932.

[38] De Morgan, *Dahchour* I, 17, fig. 19; 24, figs. 30–32; 25, fig. 33.

[39] De Morgan, *Dahchour* I, 91, fig. 211. For the similar situation of Princess Nubhetpetkhered see ibid., 107, fig. 249.

Pyramid 3

SOURCES: Lisht Journal I, 162–85
Lisht Diary, Jan. 2 to Feb. 15, 1934
Tomb cards 406–18
BMMA 29 (Nov. 1934), pt. II, 5–8, figs. 3–10
Plans and sections AM 2688 (scale 1:100), 2689 (scale 1:25), 2690 (scale 1:10)
Photos L 33–34:211, 270–76, 331–32; L 33–34:311–13, 370, 378–86 (substructure)

THE SUPERSTRUCTURE OF PYRAMID 3

(pls. 23, 28E–F, 50)

When the pyramid was excavated by the Metropolitan Museum during the 1933–34 season, the foundation trenches, which still contained the foundation blocks of the enclosure wall, indicated a complex of 50 x 50 c (26.25 m). The blocks in the western trench were completely preserved; those in the north and south only partially so. Their top faces showed the sockets for the foot of the enclosure wall, which seems to have been 2 c thick. As is usual, the pyramid was erected close to the west and south sides of the enclosure wall in order to leave more space for the northern and eastern chapels.

The foundation trenches of the pyramid were still preserved and permit us to reconstruct a pyramid with a 32 c (16.80 m) base length. In the area of the core masonry, the rock surface is slightly higher than the trench and covered by fifty to one hundred large limestone slabs, up to 1.40 m long, embedded in foundation sand. The core masonry had disappeared before the 1933–34 season. The interior slabs of the subfoundation were still visible in the foundation trenches, along with sockets for the actual foundation slabs on which the pyramid and its chapels stood (on court level). No casing blocks were found, but a few fragments of the pyramidion were discovered (see below).

Foundation trenches and some foundation blocks (two courses thick) confirm the existence of northern and eastern chapels, but the surfaces of the blocks were so badly eroded that no setting lines could be detected. The eastern chapel seems to have been 4 m wide and 4.20 m deep.

The following architectural fragments were documented.

a) The Pyramidion

SOURCES: Tomb card 406
Photo L 33–34:570

A few small fragments of the red granite pyramidion were found, including a piece from just below the peak that permits us to reconstruct an inclination of 63.25 degrees (1 in 2). This measurement corresponds to the slope of secondary pyramids of the Old Kingdom[40] and some of those at the complex of Senwosret I (see table on p. 19). From the fragments and the given base length, the height of the pyramid can be calculated to have been 32 c (16.80 m). No piece with the bottom surface of the pyramidion was preserved, and the fragments were charred and blackened by fire.[41]

b) Cornice Block with Drain Channel (pl. 28E)

SOURCES: Lisht Journal I, 165

Near the northeast corner of the pyramid, a badly eroded limestone block with a torus, parts of a cornice, and a drain channel was found.

c) Corner Cavetto Block (pls. 24b, 28F)

SOURCES: Lisht Journal I, 166–67
Photo L 33–34:386

In the eastern pit of the pyramid (shaft 15/39) lay a well-preserved corner cavetto block. Torus and cavetto together are 67.5 cm high, permitting us to reconstruct a chapel over 3 m high.

The top surface of the block is dressed in an interesting manner. The roof of the chapel, which was surrounded by the ledge of the cornice, had a slight curvature intended either to drain rainwater or to imitate the vaulted roof of a *pr-nw* chapel.

d) Limestone Molding

SOURCES: Tomb card 407

The fragments of a limestone molding are probably from a pyramid chapel, but their precise origin cannot be determined. The rounded surface was dressed fairly smoothly, but has now been damaged by the sun; the other faces are well-made flat joint surfaces.

e) Stone Fragments (cats. 32–34, see p. 60, and pl. 74)

A granite fragment (cat. 32), an offering table (cat. 33), and a relief fragment (cat. 34), which had probably fallen from the northern chapel, were found in the main shaft of pyramid 3.

THE UNDERGROUND APARTMENTS OF PYRAMID 3

(pls. 24–27)

As was the case with pyramid 2, two shafts on the northern side of the pyramid provided access to the burial chamber. The western shaft (14/39), which was covered by the entrance chapel, is on the axis of the pyramid and its underground chamber. The long rectangular shaft functioned as a construction shaft and was properly proportioned for the lowering of the sarcophagus into the burial chamber (see below). When the chapel was built above the western shaft, the shallower eastern shaft was connected to it by a short and, at the end, steeply sloping passage, and the upper parts of the western shaft were filled in. In contrast to pyramid 2, we have no indication of the

[40] A. Labrousse, J.-Ph. Lauer, and J. Leclant, *Le temple haut du complexe funéraire du roi Ounas*, Bibliothèque d'Étude 73 (Cairo, 1977), 55; J.-Ph. Lauer and J. Leclant, *Le temple haut du complexe funéraire du roi Téti*, Bibliothèque d'Étude 51 (Cairo, 1972), 37.

[41] Numerous fragments of a granite pyramidion, which were also blackened by fire, were discovered in 1988 in the area of the tomb of the Vizier Mentuhotep.

system used to keep the lower part of the western construction shaft free of debris during the time when access to the crypt was via this passage between shafts 14/39 and 15/39. The western shaft widens out below the level where it meets the connecting passage roof. One can only suggest that this otherwise unnecessarily wide lower part of the western shaft was either intended to be or really was used to build a brick lining covered by a vault, with a side entrance from the eastern shaft. No traces of such a construction are mentioned in the old records. As was the case with pyramid 2, we are confronted by the problem as to why two shafts were dug during the construction of the tomb, since both shafts are wide enough to allow stone blocks and a sarcophagus to be lowered. A single shaft, positioned so that it would not have been covered by later building activities, would have been sufficient.

A secondary tomb system, of which we have no written description, opens in the south wall of the eastern shaft, 2.30 m above the bottom. From the plan and sections we can see that it consisted of at least five burial niches, all oriented north-south, connected by a corridor only 1 m high. Incomplete extensions to the north and west were also found in the western shaft.

When the bottom of the west shaft was cleared, the first door of the tomb, consisting of a huge limestone slab fitted into a limestone doorframe, was revealed in the south wall. A hole just large enough to admit a slim man had been opened in the upper right corner. The robbers did not empty the entire shaft in order to reach the blocking stone, but cut a vertical chimneylike shaft behind the southeast corner of the west shaft, probably in order to avoid the loose masses of debris filling the main shaft. The position of the entrance into the robbers' hole indicates that the thieves dug the hole from the secondary tomb system of the east shaft.

Behind the blocked entrance, a passage, divided into two sections by a second door consisting of two sliding blocks, leads into the burial chamber. The front section of the passage is nearly horizontal, cased and roofed with limestone, and has a bedrock floor. Interesting joining between the wall blocks was observed, achieved not with wooden dovetail cramps, but with longish flints (fig. 5).

The second door, at the far end of the front section of the corridor, was blocked by a pair of sliding slabs drawn on wooden skids from recesses cut into the rock on both sides. The slabs were drawn together until they met and completely closed this end of the room. It may be presumed that the designer of the tomb expected the skids to rot or become compressed so that the slabs would rest directly on the stone floor, because if this had not been the case, it would have been easy to open the doors by levering them back into the recesses. The second section, also cased and roofed with limestone slabs and with a bedrock floor, sloped slightly downward and was slightly narrower than the front section. It was blocked and completely filled by four huge stones, two of which were broken by the plunderers as they forced their way into the sarcophagus chamber.

As a further deterrent to tomb robbers, the end of this corridor was blocked by a third door consisting of a single slab, also on skids, which slid from a deep recess in the east wall. A unique blocking device was provided by a long slab of stone that stood upright in the recess behind the door slab when the doorway was open, and fell against the door slab's hidden edge when it slid closed. This system effectively prevented the door from being pushed back into the recess and forced the plunderers to chisel through the door. The tomb robbers first tried to

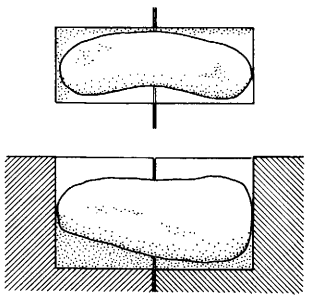


Fig. 5. A pebble used as a cramp in the crypt of pyramid 3.

break through to the left, then along the bottom, but each time they hit more stone. Finally, they chiseled through the center of the blocking. These blocking devices were apparently designed for less persistent thieves, who theoretically would have been deterred by stone, but they could never withstand the perseverance of robbers with heavy tools.

The crypt behind the third door was actually not a true chamber, but a continuation of the corridor, with a canopic box of light-colored quartzite in a niche at the south end of the east side (see below). The space is so narrow and shallow that the burial must have taken place before the sarcophagus was pushed into place. It is astonishing that the plunderers managed to lift the heavy lid in such a narrow space without breaking it. In order to remove the treasure, the robbers had to work from the front with levers, placing rollers under the lid, which then had to be pushed halfway out of the room, this time working from the rear. Later, they broke through the bottom and the sides of the sarcophagus in the hope of finding a recess in the lining of the chamber that might contain valuable objects.

a) The Sarcophagus (pls. 24a, d, 26a–c,e)

SOURCES: Lisht Journal I, 168–71
BMMA 29 (Nov. 1934), sec. II, 6, 8, figs. 4–9
Drawings AM 2691–92 (scale 1:10)
Photos L 33–34:370, 378–84

This beautifully worked quartzite sarcophagus, which still remains in the tomb, is an outstanding example of the capability of Egyptian artisans. The measurements show no variations, the thickness is absolutely uniform, and the surface of the stone, while not highly polished, was smoothed to exact planes. Four battens support the box, and its lid is slightly vaulted. The most interesting and unusual feature is the unique shape of the interior of the sarcophagus, which was carved with four battens[42] and a vaulted, gable-ended lid in order to resemble a wooden coffin. Large pieces of gold leaf were found adhering to the quartzite, showing that the gilded wooden coffin fitted tightly into the stone cavity. Numerous black guidelines and marks are preserved on the interior of the sarcophagus. One corner of the lid

[42] Other sarcophagi with "negative" battens include those of Ibu at Qaw and tomb no. 4 in the cemetery north of the pyramid of Senwosret III at Dahshur (see De Morgan, *Dahchour* I, 24, fig. 31 and Angela Schwab, "Die Sarkophage des Mittleren Reiches: Eine Typologische Untersuchung für die 11. bis 13. Dynastie" [Ph.D. diss., University of Vienna, 1989], 260 no. 60, 276 no. 111, pls. 30–31, 50).

had been repaired with a patch fitted with a sliding dovetail joint that was so finely worked as to be practically imperceptible.

At both short ends the lid was fixed to the chest with a rectangular locking bolt. One of these locking bolts, made of basalt and with a slightly tapering top and bevelled corners, was found in the debris. A *nfr*-sign written with one bar 𓄤 was inscribed on one of the wide faces of this bolt; it corresponds to a 𓄤 -sign written beside one of the cavities on the sarcophagus.[43] Similar locking devices are found on the sarcophagus of Princess Ita.[44] The carefully and precisely dressed bolt had been fixed with red plaster.

Dimensions:

	Sarcophagus	Coffin Cavity
Length	222 cm	193 cm
Width	80.5 cm	52 cm
Height	96 cm	67 cm

b) The Canopic Box (pls. 24c–d, 26d)

SOURCES: Lisht Journal I, 168, 172–73 (includes drawing)
BMMA 29 (Nov. 1934), sec. II, 8, figs. 8, 10
AM 2692 (scale 1:10)
Photos L 33–34:380–82

The canopic box is made of the same material as the sarcophagus and displays the same careful workmanship. It was found smashed to pieces, but was reassembled for drawing and photography. As far as can be ascertained without reopening the pyramid, the box should still be in the tomb.

Dimensions: 80 x 80 x 80 cm (with lid)

THE OWNER OF PYRAMID 3

As the sarcophagus was uninscribed and no other inscribed material was found, the name of the owner of the pyramid remains a mystery. Fragments of bone were found in the sarcophagus, but were too badly smashed to be examined. One may assume, however, that the pyramid belonged to either a wife or a daughter of Senwosret I. The pottery found in the main pit—if it actually belongs to the tomb—suggests a burial dating close to the middle of the Twelfth Dynasty. Because the decoration of the funerary chapel(s) was finished, the crypt blocking was closed when the robbers broke into it, and a few finds were made in the crypt and the main shaft, we may conclude that the pyramid owner was properly buried. A black granite fragment with the name Mentuhotep was found in the main pit (see p. 60, cat. 32), possibly indicating the name of the tomb owner, but the fragment could also have been thrown in when the pit was opened by thieves. The inscription might refer to the Vizier Mentuhotep, whose tomb was discovered in 1988 southeast of the complex of Senwosret I. A fragment of a diorite female statue (p. 60, cat. 31, MMA 34.1.196) from the funerary chapel would indicate that pyramid 3 belonged to a woman. Since both men and women were called Mentuhotep, the name cannot be used to determine the sex of the tomb owner.

Pyramid 4

SOURCES: Lisht Diary, Jan. 23, 1934
Letter, Lansing to Winlock, Mar. 9, 1932
Licht, 45–46, figs. 39–40, pl. 3
Plan AM 2705 (scale 1:200)
Photos L 31–32:38, 40–45, 86–87, 89, 216

Pyramid 4 and the area surrounding it were cleared by the original Expedition in the 1931–32 season, but since the building had been partially excavated and identified as a "mastaba" by Gautier, the Museum's documentation of this area was somewhat halfhearted. We concentrated our 1986 efforts on shaft 4/28 and the area between pyramid 4 and the inner enclosure wall of Senwosret I.

THE SUPERSTRUCTURE OF PYRAMID 4

(pls. 30–31, 50)

From remains of the foundation trench and from foundation slabs still in position along the west and south sides, one can estimate that the enclosure was 46 c (24.15 m) wide east-west, and 43 c (22.575 m) wide north-south. The foundation was one course high and rested in sand and debris. On the surface of the foundation, a wall 1½ c (0.7875 m) wide and only about 2–2.50 m high left its traces. A drainage channel through the foundations of the south side is still preserved.

The pyramid is not centered, but lies closer to the west and south walls, in order to allow space for chapels in the north and east. Both chapels are further attested by an extension of the rough fieldstone foundation of the pyramid. Judging from the photographs, a few foundation slabs still seem to have been in position in 1931–32, but only a fragment of a torus and a cornice were found in 1986.

The pyramid core consisted of rough and irregularly shaped boulders and fieldstones arranged in steps. No traces of the casing remain, but in the center of the south side, two foundation slabs for the casing were still in position. From these rough traces one can estimate that the pyramid originally measured 32 x 32 c (16.80 m).

A wooden cramp with the cartouche Kheperkara was probably found in the area of the pyramid (see cramp list, p. 98, no. 7).

THE UNDERGROUND APARTMENTS OF PYRAMID 4

(pls. 29, 33)

Our understanding of the underground apartments is hampered by several circumstances, the first being inaccurate and

[43] The head of a sarcophagus lid from El-Arabah is also marked with a 𓄤 -sign that corresponds with a notch in the sarcophagus (see John Garstang, *El Arabah*, Egyptian Research Account 1900 [London, 1901], 7, pl. 6, lower left).

[44] Jacques de Morgan, *Fouilles à Dahchour en 1894–1895* (Vienna, 1903), 46, fig. 105.

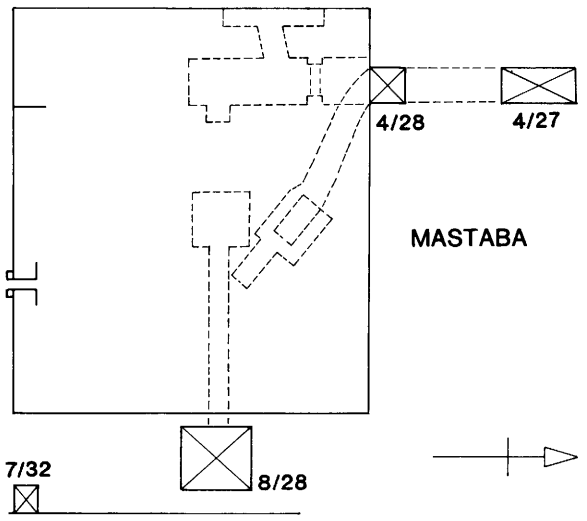


Fig. 6. Gautier's plan of pyramid 4 according to *Licht*, pl. III.

insufficient documentation. Gautier excavated all the underground systems of this pyramid, but he apparently did not correctly locate them on his tiny map (fig. 6). Lythgoe reexcavated some of these shafts, but did not leave any records. During the 1986 reexcavation of the area it seemed too costly to reopen all the shafts for a third time, especially since our predecessors had already disturbed the area twice, so we only cleared the upper part of shaft 4/28 and its quartzite sarcophagus. The second hampering circumstance is the unfinished and reused state of this burial system. Finally, it is not possible to determine whether shaft 8/28 or shafts 4/27–4/28 lead to the actual crypt of the pyramid owner.

The older system of apartments might have belonged to shaft 8/28, which begins with an unusually wide (3.80 x 3.80 m) shaft under the northeast corner of the enclosure. Our only information about the shaft comes from Gautier's sketch (fig. 6), which suggests a long corridor sloping down to the west (the slope can be seen on pl. 33a) into a quadrangular chamber close to the center of the pyramid.[45] The width of the shaft and the long sloping entrance corridor indicates that it actually is, or was at least planned to be, rather deep and wide enough for lowering a stone sarcophagus and casing blocks into the crypt.

The mouth of the shaft was covered by the northeast corner of the pyramid enclosure, indicating that tomb 8/28 was older than the wall and had been started before the final project was developed. Is the older brick enclosure wall (see below) the wall for shaft 8/28?

The western tomb system has two shafts, the original shaft 4/28 west of the northern chapel, and the secondary shaft 4/27 in the north outside the enclosure wall. They lead into three different burial crypts, the chronological sequence of which cannot easily be determined. In other tombs the original crypt is usually the deepest; later additions are sometimes made on the same level, but are more frequently found higher up the shaft. One would therefore assume that the original burial chamber is the deepest one, located southwest of shaft 4/28 and near the center of the pyramid. Gautier's sketch (fig. 6) shows a rectangle in the center of the chamber that could indicate either a pit or a sarcophagus. The position of the shaft on the side of the northern chapel, with this crypt close to the center of the pyramid, is typical of the main burial apartments of pyramids.

At a later date, another tomb was added somewhat higher in shaft 4/28 on its south side. A corridor (see below) leads into a chamber lined with limestone slabs. The chamber is so narrow (1.05 m) and shallow that a stone sarcophagus would not have fit, at least not the 1.07 m wide sarcophagus standing in the corridor (see below). The casing of the chamber is made of thin limestone slabs, the paving from small, irregular stones. The canopic niche, in its traditional place at the south end of the east side, was only whitewashed and was too small to house a stone canopic chest.

That this tomb was actually used seems probable because of a tiny fragment of gold foil found on the floor in front of the chamber and from the brick wall blocking the entrance to the chamber. Two huge limestone slabs still lying in the corridor were perhaps intended to be used for paving the corridor or sealing the chamber, but they were apparently abandoned by the builders, and the brick wall was built over the slabs (brick size 12 x 20 x 38 cm). From the location and size of the crypt, one could suppose that it was not made for the owner of pyramid 4, but added later.

The entrance shaft (4/28) was later joined by another entrance from the north. Outside the northern enclosure wall a larger shaft (4/27) was dug and a corridor connecting it to the older shaft was added. Shaft 4/27 was proportioned for the lowering of the sarcophagus that still stands in a roughly dressed cavelike chamber north of the limestone crypt described above.

This last accommodation for a burial remained incomplete and was apparently never used (see below). The bottom of the cavelike chamber is considerably lower than that of the limestone chamber. The rock had been roughly dressed and lining with limestone had just begun. In some corners of the cavelike chamber plaster was found adhering to the rock, indicating either a preliminary step to secure the *tafl* rock or evidence of an attempt to finish the work prematurely with plaster. The builders apparently had already started to case two niches in the east wall with limestone: the paving slab of the southern niche exists and shows the traces for the wall slabs, while fragments of the paving slab for the northern niche were found just outside the niche. The southern niche was probably intended for the canopic chest, and could have contained a 1 x 1 x 1 c square box.

The quartzite sarcophagus, also unfinished, had nevertheless been introduced into the incomplete chamber and pushed against the west wall. This suggests that the tomb was hastily prepared for a burial, but the lack of stains on the interior of the sarcophagus indicates that it did not take place.

The Sarcophagus (pl. 32, 33b)

The quartzite sarcophagus, which stands along the west wall of the cavelike chamber with its lid propped up against its east side, has been published by Gautier.[46] The bottom of the sarcophagus is slightly chamfered and has a pair of battens at each end; the lid is slightly rounded with two thick ledges at each end. The work was carried out carefully and accurately, but was not completed, as can be seen on the top of the lid, where rougher areas still remain on bosses and smoothly hammered bands along the edges and corners. The final smoothing had not been started.

[45] Photos L 31–32:86–87 show a wide sloping passage "to the north." Since Gautier's passage undoubtedly leads westward, we are uncertain about the identity of the corridor.

[46] *Licht*, 42, 46, fig. 40.

It is surprising that in spite of this unfinished state the two handling knobs were smashed off, something that was normally done after the burial and the closing of the lid. The sarcophagus seems to be unused, as it does not show any sign of discoloration from either a burial or robbers' activities.

Dimensions:

	Bottom	Lid
Length	2.655 m	2.685 m
Width	1.065 m	1.075 m
Height	0.895 m	0.385–0.420 m

To the southwest of the sarcophagus, a roughly dressed tunnel with a T-shaped plan opens in the south wall of the corridor of tomb 4/27–4/28. It was either made by tomb robbers or it was a trial passage abandoned by the builders. The floor is covered by fallen ceiling material but does not seem to contain anything else, though its extremely precarious state did not permit us to either clear or measure it.

A few potsherds, dating approximately to early in the reign of Amenemhat III, and a sherd of a Canaanite jar were found in the canopic niche of the limestone-cased chamber (fig. 7), but no sure connection can be established to any of the different construction phases of the tomb complex in this area. They may have belonged to the burial in the limestone chamber, but could also have been left there by the previous excavators.

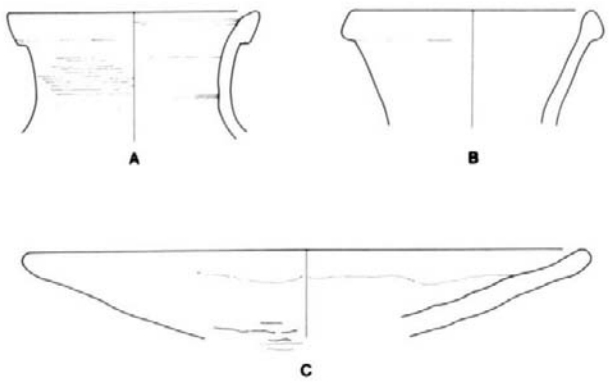


Fig. 7. Fragments of: *A*. a large "Canaanite" jar; *B*. a large bottle; *C*. a large plate. Scale 1:4.

a) Fragment of a "Canaanite" Jar 86/28[47] (fig. 7)

A fragment of the neck of a "Canaanite" jar. The jar is of yellow reddish clay, grayish on the inside, and has fine wheel marks.

Dimensions: Diam. ca. 13.3 cm; H. of fragment ca. 6.5 cm

b) Bottle Fragment 86/15 (fig. 7)

A fragment of the neck of a large bottle. The bottle is of Nile clay C, red coated on the outside.

Dimensions: Diam. ca. 13.8 cm; H. of fragment ca. 6 cm

c) Plate Fragment 86/29 (fig. 7)

A fragment of a large plate of Nile clay B2-C, with red ochre on the inside and outside of the rim. The outside of the bottom is handmade.

Dimensions: Diam. ca. 30 cm; H. of fragment ca. 4.6 cm

SHAFTS INSIDE THE ENCLOSURE WALL OF PYRAMID 4

a) Shaft 6/28

No information.

b) Shaft 7/32

SOURCES: Tomb cards 581–83

The tomb cards are labelled "Untouched Pit?" and the description of the fill of the mouth of the shaft seems to confirm this statement. The tomb cards, however, do not contain any information about the progress of the excavation, which the photographs tell us was certainly carried out. Perhaps the shaft was unfinished.

BRICK WALLS IN THE AREA OF PYRAMID 4

(fig. 8)

East of the pyramid 4 complex and in front of the enclosure wall of the royal pyramid, the original Expedition excavated a system of brick walls. Since no records were kept by the original Expedition, we opened three trenches in this area in 1986. Three phases of wall construction could be differentiated:

Phase A: Wavy walls, discovered in the east, are the oldest walls. One can reconstruct the original shape of the enclosed area as an elongated rectangle with the longer sides running north-south. The wall was preserved to its fourth course. The structure enclosed by the wall is unknown, but could have been shaft 8/28.

Phase B: Later, the upper section of the wavy wall was demolished and the debris piled against its inner (west) side. On top of this fill, a new wall 1.15 m thick was erected, of which only the east side with the northeast and southeast corners is preserved to its third course. We do not know either its western extension or its purpose, though it also might have some connection with tomb 8/28. Wavy wall and brick wall clearly antedate the stone enclosure of pyramid 4 and might be seen as a precaution taken by the owner of pyramid 4 in case of premature death.

Phase C: The brick wall was destroyed during the final construction phase, when the stone enclosure wall was built on top of it and the fill of the surrounding court area levelled with the help of the so-called levelling walls (see p. 97). Remains of levelling walls were also seen in this area east of the enclosure of pyramid 4. One north-south branch of the levelling walls separated the wavy wall and the large brick wall, both of which were on a lower level. The heads of several levelling walls were

[47] 86/_ numbers refer to the current excavation's pottery register.

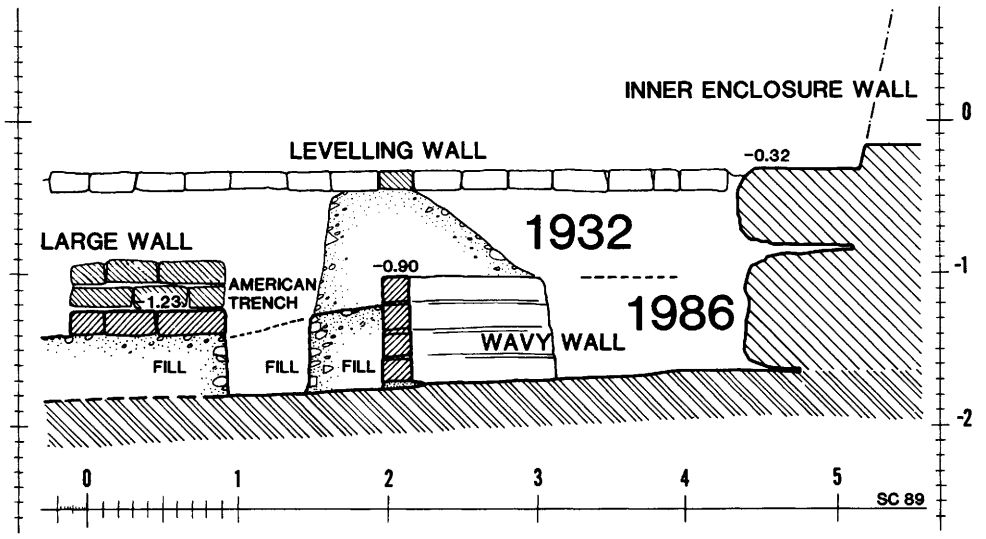


Fig. 8. Section through the walls east of pyramid 4. Upper part destroyed after 1932 excavation. Scale 1:50.

found along the stone enclosure of the pyramid of Senwosret I and a long section of walls was found north of pyramid 4. In photos (L 31–32:40–42) and on a plan (AM 2705), the remains of more brick constructions are visible; their purpose cannot be definitely stated, though they might be remains of construction ramps for either the pyramid of Senwosret I or pyramid 4.

Other remains connected with the construction include a transport road that ran along the foot of the western enclosure wall of the king, traces of which were found to the southeast and northeast of pyramid 4 (see below). The road was apparently removed when the wavy wall was erected, because no traces of it were found in the area along the wavy wall.

THE OWNER OF PYRAMID 4

The owner of pyramid 4 remains unknown. From the unusually complicated development of the tomb shafts, one can speculate that the intended owner of the pyramid died before the construction of the pyramid was begun and was interred in tomb 8/28. This tomb was probably originally designed to serve as a provisional burial place until the pyramid was completed.

Three more tombs (in shafts 4/27–4/28) were later added to the pyramid, one of which contained a quartzite sarcophagus that apparently was neither completed nor used. We do not know either who the owners of these tombs were or how they were related to the owner of pyramid 4.

Pyramid 5

SOURCES: Lisht Journal I, 130–41
Letter, Lansing to Winlock, Apr. 11, 1932
BMMA 28 (Apr. 1933), sec. II, 16–19, figs. 13–15
Tomb cards 471–80, 486–89, 494–99
Plans AM 2705 (scale 1:200), 2707 (scale 1:100), 2714–15 (scale 1:50)
Photos L 31–32:22–31, 49–52, 70–80, 113, 144–45, 174, 213, 215; L 33–34:365–67

During the 1931–32 season great efforts were made to open the burial shafts around this pyramid, but with the exception of the discovery of the burial of Ankhty (see pp. 54–58 and pl. 57c–d), these excavations did not result in any substantial finds.

THE SUPERSTRUCTURE OF PYRAMID 5

(pls. 34, 50)

The foundation trench of the pyramid enclosure still contained some 66 cm thick foundation blocks, essential for determining the dimensions of the structure: the pyramid enclosure was 48 c (25.20 m) east-west and 47 c (24.675 m) north-south. The wall was 1.31 m (2.5 c) wide, somewhat thicker than those of the other small pyramids, and probably higher as well, perhaps 2.625 m.

Placement of the pyramid 3.5 c (1.837 m) from the south enclosure wall and 4 c (2.10 m) from the west enclosure wall allowed space for chapels to the east and north. In addition to extensions of the pyramid foundations, we have a fragment of a corner torus from a chapel (see below).

The pyramid was 31 x 31 c square (16.275 m). Pieces of several hard white limestone casing blocks, two of which still showed cramp slots, were found in the "crater of the great pit" (shaft 2/14). The backs of the stones had been broken off for reuse, but the front slopes were preserved, indicating that the pyramid had an angle of 63.917 degrees. This angle of inclination corresponds to that measured from fragments of the granite pyramidion (see below), making the pyramid 31 c (16.275 m) high, a measurement equal to the base length.

Packed rough fieldstones, which were enclosed by unusually large, roughly dressed backing stones, formed the stepped core of the pyramid. Control notes were found on two core blocks, but unfortunately neither one included a regnal year.[48]

a) Fragments of the Pyramidion

SOURCES: Tomb card 471
Photo L 33–34:53

[48] F. Arnold, *Control Notes*, 152, S 6.

In the "crater pit" (shaft 2/14), nine fragments of the red granite pyramidion were discovered, including two pieces from the lower corners and one fragment preserving parts of three sides from just below the peak. The bottom surface was cut flat but not polished, while the outer surfaces were polished; the bottom edges are slightly bevelled. In some places the granite was burnt. The angle of the sides with that of the bottom is 63.917 degrees.

b) Corner Cornice Block (fig. 9)

SOURCES: Tomb card 474

East of the pyramid, a block was found that included the corner torus and the lower part of the cornice. The block certainly belongs to one of the two chapels of pyramid 5.

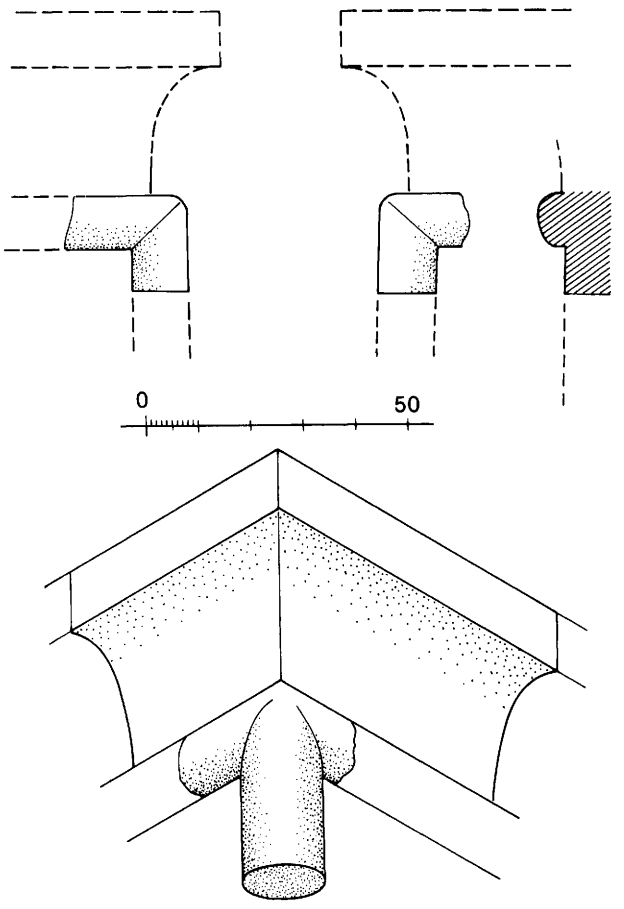


Fig. 9. Fragment of and reconstruction of the corner cornice of the mortuary chapel of pyramid 5. Scale 1:150.

THE BRICK CHAPEL

(pls. 36c, 37a)

SOURCES: Plan AM 2705 (scale 1:200)
Photos L 31–32:71, 215; L 33–34:366

Remains of a brick chapel were excavated in 1932, outside the south end of the east side of the enclosure of pyramid 5. Since the plan drawn at that time proved to be inadequate, we re-cleaned and measured the last remaining traces of the building in 1987. While a few brick courses remained in 1932, only vague traces of the lowest course were still preserved in 1987; they suggest a rectangular enclosure 5 x 8.60 m, with its western side leaning against the inclined stone enclosure of the pyramid. The interior was dominated by two small structures: a 3.20 x 3.20 m shrine built against the stone wall in the southern half and another such structure measuring 2.60 x 2.85 m in the northeast corner. One can assume that the larger structure was the actual shrine, while the second building might have been a small shelter for a priest. Both buildings had brick pavements and were probably covered with roofs. The remaining parts of the court consisted of flattened *gebel* covered with mud. From the state of preservation of the walls in 1932, one can conclude that the entrance into the enclosure was at the east end of the south wall and the entrance to the shrine in the center of its east wall. The door of the shelter was also on its southern side.

No finds were recorded that indicate to whom the chapel was dedicated, but it was either the place for a funerary cult or a sanctuary for a minor deity. If this chapel was used for a funerary cult, it is strange that there is no tomb shaft near the chapel. If the building was a sanctuary, the faience model figures, found only 10 m to the southwest in the area of the boat pit, could possibly have formed a votive deposit connected to a cult. The faience figurines, if associated, date the structure to the late Middle Kingdom (see pp. 78–79).

SHAFTS AFFILIATED WITH PYRAMID 5

(pls. 34d, 35, 36a–b)

Pyramid 5 is surrounded by shafts that might provide access to the burial chamber, but in spite of intensive excavation work, the original Expedition did not discover the crypt. Two shafts at the north side of the pyramid (5/10 and 4/11) were apparently excavated by the original Expedition, but since no records exist, we may assume that these shafts did not lead into the pyramid. On the south, a third shaft (5/18–19; the so-called Great Sand Pit) was also excavated (see p. 43, no. 30). One of its numerous chambers actually reaches under the southern part of the pyramid, but this tomb is too crude and poor to have belonged to a member of the royal family.

The most likely access to the tomb chamber would have been through shaft 5/12, which lies directly under the northern chapel of the pyramid, but after 5 m this shaft was abandoned by the ancient builders. One might conjecture that, similar to pyramid 4, the original plan was to connect shaft 5/12 with shaft 5/9 further to the north, shaft 5/12 being the burial shaft and shaft 5/10 the construction shaft.

Only shaft 2/14 remains as a possible burial shaft, in spite of its unusual position west of the pyramid.

Shaft 2/14 (So-called Pyramid Crater Pit) (pls. 34d, 36a–b)

SOURCES: Lisht Journal I, 131–40
Letters, Lansing to Winlock, Mar. and Apr. 1932
BMMA 28 (Apr. 1933), sec. II, 20, fig. 15
Photos L 31–32:22–31 (29–30 showing a caisson in the "pyramid crater"), 174

In the area of this shaft, the upper stratum of the *gebel* consists of 10 m of sand covered only by a thin stratum of conglomerate. In order to dig down through this dangerously loose sand the ancient builders used a caisson, on top of which they erected the brick lining of their pit (fig. 10).[49] When work began in

[49] The caisson stone was 2.52 m (north-south) x 2.83 m (east-west) with an opening of 1.25 x 1.51 m, making the stone about 65 cm thick. The upper

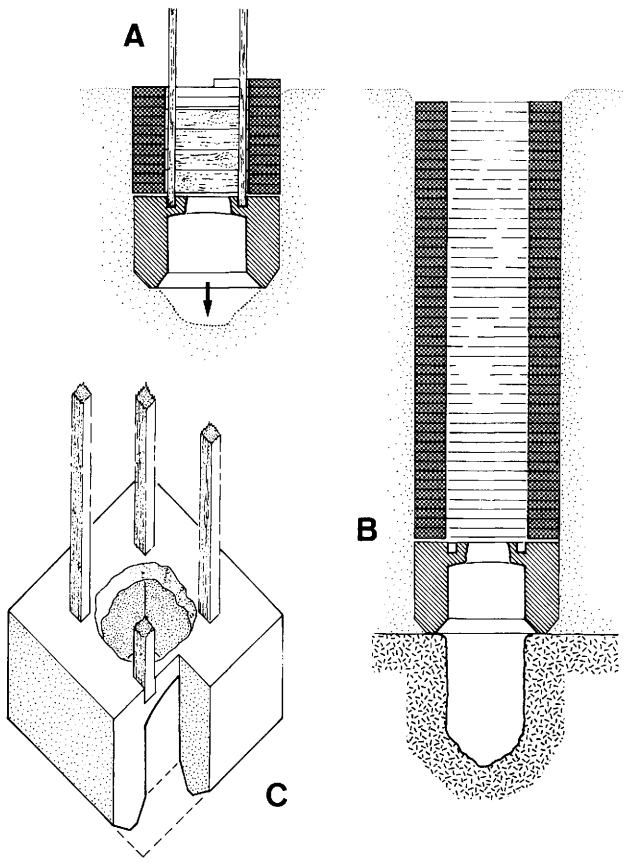


Fig. 10. Caisson technique used for digging shafts at Lisht: *A*. beginning of the work; *B*. caisson reaching solid bedrock; *C*. isometric reconstruction of a caisson.

1932, the brick lining was missing, forcing the excavators to dig a huge crater in order to prevent the sand from refilling the cavity. They finally found it necessary to use a modern caisson until they reached the more solid *tafl* strata.

A corridor, 14 m from the top of the shaft, opened to the east in the direction of the pyramid. It probably led into the burial chamber, but because of its collapsed ceiling the original Expedition could not follow it. The shaft continued down, and 18.70 m from the top a second passage opened in the direction of the pyramid. Again, the condition of the half-collapsed corridor did not permit excavation.

Lansing, in order to reach the chambers believed to be under the center of the pyramid from a safer shaft, used the unfinished shaft 5/12 to reach a depth of 17.50 m. From this point, a tunnel was cut toward the center of the pyramid, but the chamber was not located. Another shaft was dug from the center of Lansing's corridor, which corresponded to the center of pyramid 5, but after 5 m (22.50 m from the surface) groundwater was reached.

The excavations clearly show that between 17.50 and 22.50 m no chamber exists under the center of pyramid 5, but the chamber could be above this level. The upper corridor of shaft 2/14 points to the center of the pyramid at a depth of only 14 m and I would suggest that the chamber is located at that level.

We do not know why the pit under the northern chapel and the pit further to the north (shaft 5/10) remained unfinished. The sand layers could not have caused the abandonment of the shafts, because the builders could have managed that problem with the help of caissons, as they did in pit 2/14. We also do not know why the builders would have moved the entrance of the pyramid from the traditional location under the northern chapel to the unusual site west of the pyramid outside the enclosure wall. Instead, we must question whether or not pit 2/14 is really the main access to the pyramid.

For the boat pit found south of the pyramid, see pp. 52–53.

BRICK STRUCTURES IN THE CRATER OF PIT 5/18–19

SOURCES: Tomb cards 475–85
Photos L 31–32:22–25, 28

While clearing the wide crater around the mouth of shaft 5/18–19, a group of six small rectangular structures of brick was discovered. Pottery dates them to the Roman period. One of the structures could have served as a shelter, but the others are too small to have housed humans and their purpose cannot be explained. Perhaps they could have been used to trap or keep small animals.

THE OWNER OF PYRAMID 5

The owner of pyramid 5 remains unknown. We can only assume that the pyramid was completed since the funerary chapel was apparently decorated. Lansing assumed that the as yet undiscovered burial chamber(s) was unplundered, because the sand he removed from pit 2/14 was free from any traces suggesting the activity of tomb robbers. He thought that the robbers failed to descend into the shaft because of the sand below the pyramid. However, a few objects from a rich Middle Kingdom burial were found nearby (see cats. 85–87, p. 64), and could have belonged to the owner of pyramid 5. The original Expedition undertook intensive excavation work in order to establish the identity of the owner of pyramid 5, because for unknown reasons they had assumed it to be the tomb of the famous Sinuhe.[50] According to a stela fragment (cat. 82, p. 64), the owner's(?) name included the letters "*k3t*," which might suggest a female name.

Pyramid 6

SOURCES: Plans and sections AM 2718 (scale 1:200), 2719 (scale 1:50), 2720–22 (scale 1:200)
Photos L 31–32:142–43, 167, 170–73, 213, 217; L 32–33:14, 119; L 33–34:191–92, 226–27, 249–52

Pyramid 6 was apparently built as a twin to pyramid 7, as both are aligned, share the same enclosure wall, and are identical in size and in layout. Excavation of pyramid 6 was begun during the 1931–32 season. Some work was probably done here by Gautier,[51] but the main excavation was carried out by Lansing in 1932–33.

surface of the caisson stone was about 10.60 m underground. The size of the bricks was 14–15 x 22 x 45 cm. For caissons see Arnold, *Building in Egypt*, 211–12, fig. 5.1.

[50] In his story Sinuhe tells us, "A stone pyramid was built for me in the midst of the pyramids. The masons who build tombs constructed it. A master draughtsman designed in it. A master sculptor carved in it. All the equipment that is placed in a tomb-shaft was supplied. Mortuary priests were given me." (Lichtheim, *Ancient Egyptian Literature* I, 233).

[51] The "monticule" (see *Licht*, 44).

THE SUPERSTRUCTURE OF PYRAMID 6

(pls. 37b, 38–39, 41–42, 50)

In the foundation trench of the enclosure wall enough foundation slabs remained to determine that the wall dimensions were 49 c (25.725 m) north-south and 56 c (29.40 m) east-west (including the eastern partition wall); the wall was 2 c (1.05 m) thick. The wall's foundation slabs were placed on rather small and irregular subfoundation stones. Because it rested on the *gebel* at the bottom of the trench, the cornerstone seems to have been thicker than those adjoining it. The courts were covered with a pavement of limestone chip, pebbles, *tafl*, and brick.

The pyramid measured 30 x 30 c (15.75 m). The core stood on a foundation platform of *gebel*, the center of which was hollowed out in order to create a chamberlike depression opening to the north; this was surrounded by a 3–3.50 m thick "wall" of bedrock. The builders apparently planned either to sink a 3.20 x 4.20 m shaft into the center of the pyramid or to build the chamber in the center of the pyramid, a project abandoned when a sand stratum was found 3 m below the surface of the pyramid core.

Subfoundations for the casing are very well fitted and are laid into a 2–8 cm deep bed of sand. The foundation blocks were set in place and then dressed down to the necessary level. The core blocks are large, irregularly shaped boulders or roughly dressed fieldstones. No casing blocks from the pyramid have survived.

All that remains of the northern chapel is the foundation trench, but the foundations of the eastern chapel were still well preserved (pl. 41) with the tracing lines of a small building with a corner torus. From these traces one can calculate that the eastern chapel was 6⅔ c (3.50 m) wide and 6 c (3.15 m) deep (outside) with an estimated inside height of 5 c (2.625 m). No architectural fragments were found.

THE DATE OF PYRAMID 6

The following control notes[52] were recorded on the Tura-quality foundation blocks of the pyramid and its enclosure wall:

"Second month of winter, day 23 . . . " (S 7.1)
"Year 1[3, third month] of winter, day 8.
Removed [from the ship? Brought] from the embankment." (S 7.3)
"Third month of summer, day 9. ‹by› Sais." (S 9)

They indicate that construction of the pyramid was not begun until at least year 13 of Senwosret I, perhaps even somewhat later, as we do not know how much time passed between the shipment of the blocks and their inclusion in the foundations.

The technique and shape of the small jar discussed below (cat. 220, p. 76) suggest that it could have been placed in a foundation deposit. Tomb card 649 describes its findspot as "Pyramid A (equivalent to pyramid 6) southeast corner of court" and seems to suggest a connection with pyramid 6. The pot dates from the early Twelfth Dynasty.

SHAFTS AFFILIATED WITH PYRAMID 6

(pls. 39–40)

None of the pits found within the enclosure of pyramid 6 led to a burial chamber.

a) Shaft 13/3

Probably only a deposit hole; no information.

b) Shaft 17/7

SOURCES: Photos L 31–32:171–73

Directly adjoining, but not undercutting, the enclosure wall, a rough deposit hole was cleared in the southeast corner of the court. A few broken bricks lay at the bottom of the hole. Although it is in a position similar to that of shaft 22/7, which is under the southeast corner of the court of pyramid 7, we have no indication that pit 17/7 was connected with the royal deposits.

c) Shaft 10–11/5

SOURCES: *BMMA* 28 (Apr. 1933), sec. II, 18–19
Position AM 2718 (scale 1:200)
Plan and section AM 2725 (scale 1:100)
Perhaps identical with "brick lined pit OCNW" on photos L 31–32:49–51(?) and tomb cards 620–25(?)

The shaft has the extraordinary depth of about 22 m. The upper section was dug through unstable sand strata and had to be lined with bricks to a depth of 9 m. Traces of decayed wood belonged to a caisson that had rotted in the damp ground. Below the sand, the *tafl* layers were also unstable and only when limestone was reached, about 19 m from the surface, were chambers built. On the west side of the shaft, a rather large but shallow chamber contains nine empty loculi for coffins. A partially collapsed corridor leading to the east passes two more such loculi before reaching an irregular cavelike room; another shallow cave adjoins it to the north. To the east of the corridor, just under the western edge of pyramid 6, a small corridor slopes downward into the groundwater. The shape and irregular disposition of the system does not suggest that shaft 10–11/5 is the tomb of the owner of pyramid 6.

A limestone lamp is the only find recorded from this tomb (cat. 90, p. 65).

d) Shaft 14/2

Nothing is known about this shaft or its excavation. The original Expedition may have tried to use it to gain access to the eastern continuation of the 10–11/5 system.

[52] For an evaluation of the control notes found in connection with pyramid 6 see F. Arnold, *Control Notes*, 152–53, S 7–9.

THE OWNER OF PYRAMID 6

From the remains of over life-size granite statues (cat. 89, p. 65), we may conclude that pyramid 6 was built for an important wife or daughter of Senwosret I. Her relationship to the person who owned pyramid 7 must have been very close, because their pyramids formed one common funerary complex. Control notes indicate that the complex was built rather early during the construction period of the king's pyramid, again indicating that pyramids 6 and 7 were of some importance.

Because of the unstable sand strata, the systems originally planned for the burial apartments of the two pyramids had to be abandoned. It is not clear how the builders of these pyramids altered the original plans, because none of the shaft systems known to us seem to belong to a queen's tomb. However, the existence of statuary indicates that the pyramid complex was used for the funerary cult or at least a statue cult of a queen.

Pyramid 7

SOURCES: Lisht Journal I, 117–21
Plans and sections AM 2718, 2720–22 (all scale 1:200), 2725 (scale 1:100)
Photos L 31–32:167, 171; L 32–33:13, 15, 119, 341–42; L 33–34:180–81, 193–94, 199–201, 227

Since pyramids 6 and 7 are twin pyramids with a common wall between them, the western section of pyramid 7 was also excavated during the 1931–32 season. The main excavation of pyramid 7 was done in 1932–33, with some additional work in 1933–34. High dumps that now cover the area prevent re-excavation.

THE SUPERSTRUCTURE OF PYRAMID 7

(pls. 39, 43, 50)

Pyramid 7 has the same dimensions and structure as its neighbor pyramid 6, the only difference being that the central cavity in the rock of pyramid 7 was dug less than a meter before it was abandoned. This might indicate that the workers digging the central shaft of pyramid 6 had at that point already struck the sand layers so that the project of a central shaft or crypt was abandoned simultaneously at both sites.

The foundation trenches of the two chapels remain in the east and north, but the stonework has completely disappeared. The enclosure wall had the same north-south dimensions as that of pyramid 6, but its eastern court was only 11 c (5.775 m) wide, perhaps due to the entrance cut of the king's pyramid, which was either still open or filled with material not suitable for carrying foundations. Including the western partition wall, the east-west length is 49 c (25.725 m); the total length of the enclosure of the two pyramids was 103 c (54.057 m).

SHAFTS AFFILIATED WITH PYRAMID 7

a) Shaft 24/5 (Brick-lined shaft) (pls. 39, 44)

SOURCES: Lisht Diary, Feb. 19–20, 1933
Plan and section AM 2725 (scale 1:100)

The pit that lies about 15 m east of the pyramid is the only one that could, with any certainty, be considered to be the entrance shaft to the crypt.

The builders apparently had problems digging a shaft into the sand layers, but did not make use of the caisson technique that was (later?) successfully used around pyramid 5. They did succeed in reducing the problem by excavating an eastward-sloping open trench, casing its walls with brick, and covering it with a vault. At the east end of this slope, they dug the shaft to a depth of 4 m, at which point they reached more solid *tafl*, though the shaft had to be lined with brick to a depth of 11 m. At a depth of 18 m, a westward sloping corridor was cut in the direction of the pyramid center. Unfortunately, Lansing gave up clearing this mud-filled corridor, for the groundwater level, which is known from shaft 10–11/5 to be at about 21 m, might have permitted him to enter the chamber that seems to lie under the center of the pyramid.

No information concerning finds is recorded.

b) Shaft 20/1

No information.

c) Shaft 20/8

French excavation; no further information.

d) Shaft 21/9

No information.

e) Shaft 22/7 (Entrance Cut Deposit)

SOURCES: Tomb cards 639–47
Photos: Position: L 32–33:342; L 33–34:199
Contents: L 31–32:173; L 32–33:52–53
Pottery: L 32–33:234–37

This pit has been discussed previously.[53] From its position under the southeast corner of the enclosure of pyramid 7 and its relation to the entrance cut, we concluded that it was probably made in connection with building activities at the pyramid of Senwosret I.

[53] Arnold, *Senwosret I*, 92, 109–12, fig. 39, pls. 64c–d, 65.

Pyramid 8

SOURCES: Tomb card 653
BMMA 10 (Feb. 1915), supp., 5–7, figs. 1–3; *Licht*, 27–28, figs. 21–22
Plans AM 2622, 2660, 2662 (scale 1:200)
Photos L 13–14:1004–9, 1017, 1070–73, 1077–78, 1081–86, 1090–1110, 1160–63, 1188, 1204, 1237–41

Pyramids 8 and 9 were excavated by Gautier, who apparently could not interpret the architectural remains he found.[54] With the exception of the plans and photos listed above, there are no records of the 1913–14 reexcavation by the Metropolitan Museum Expedition. In 1987 we cleaned the surface of pyramid 8, but found that the core masonry, still well preserved in 1914, had been reduced to an insignificant heap of fieldstones.

THE SUPERSTRUCTURE OF PYRAMID 8

(pls. 45, 46b–c)

Though pyramids 8 and 9 are twin structures surrounded by a common enclosure wall, they were not necessarily built at the same time (see p. 39). Unlike pyramids 6 and 7, which had a wall between them, there was no division between pyramids 8 and 9. The enclosure abutted the inner enclosure wall of the king, which therefore must have already been completed. The enclosure was 47 c (24.675 m) north-south and 86 c (45.15 m) east-west. From the remains of wall foundations, still well preserved, one can measure the width of the wall to 1½ c (0.787 m), meaning that the wall could not have been higher than 4 c (2.10 m). Two stones of the wall's rounded coping were found in the debris (see below).

The foundations of the northern enclosure wall—at least near pyramid 9—consisted of three courses of bricks with limestone slabs on top. The foundations of the southern enclosure wall consisted of a course of huge, roughly dressed blocks supported by smaller stones, and a top course of thin slabs of very soft white limestone. In 1894, ten seated statues of Senwosret I were discovered against the south side of these foundations.[55] One of the roughly dressed blocks is inscribed with team marks; nearby a control note mentioning year 11 was found, though because one would expect a later date for the construction of pyramids 8 and 9, its connection with pyramid 8 seems doubtful.[56]

No remains of funerary chapels have been recorded; the reconstructed chapel area east of pyramid 8, included on the plans of the original Expedition, seems to be pure assumption. However, a foundation trench approaching the pyramid from the east could have been made for an eastern chapel.

The pyramid core was extremely well preserved when first excavated, but was subsequently reduced to a heap of rubble by stone robbers. It consisted of a stepped construction of small, rough fieldstones set into or coated with mortar or mud; four steps were still preserved. The plans of the original Expedition suggest an inner core of stones other than fieldstones, but photos clearly show that the interior of the pyramid was composed of the same material as the steps. Backing stones were set into the core steps, with the casing stones adjacent to the backing stones. No traces of the backing stones, casing stones, or foundations for the casing remain, though one may assume that the foundations for the casing consisted of two courses of limestone slabs. The dimensions of the pyramid were probably 30 x 30 c (15.75 m).

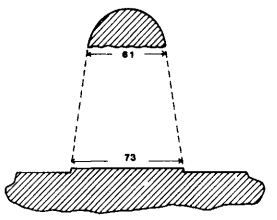


Fig. 11. Section through foundation and coping stones of the enclosure wall of pyramid 8.

Coping Stones (fig. 11)

SOURCES: Tomb card 653

Two stones with rounded coping were found, one at the southeast corner of pyramid 9, the other between pyramids 8 and 9. They were broken at the bottom, but 25 cm down from the top they measured 61 cm across.

If the measurements of the coping stones are correct, it is difficult to place them in a wall only 73 cm wide at ground level. The problem could be solved by assuming that there was practically no batter (8.5 cm on 2.10 m), but this would conflict with the pointed top, which requires battered walls. Are the coping stones not part of the enclosure wall, but rather part of a mortuary chapel?

THE UNDERGROUND APARTMENTS OF PYRAMID 8

(pl. 46a)

SOURCES: Photo L 13–14:1237 (position)

The burial apartments, opened by Gautier,[57] seem to be directly under the center of the pyramid, accessible through a rectangular shaft north of the pyramid, which is half-covered by the northern enclosure wall. The entrance shaft (43/12) proved to be so unstable that Gautier's men dug a connecting tunnel from the nearby shaft 44/11 to the entrance passage of the pyramid tomb.

The sloping passage was lined on all four sides with heavy limestone slabs, reducing the tunnel to a size of 1 m square. Behind the passage were two chambers, which had collapsed when the tomb robbers tore out their original limestone casing. Gautier did not dare to excavate the cave, though his drawing shows a sarcophagus pit in the first chamber and an elongated second chamber beyond it, a plan that is somewhat similar to the arrangement of the upper chambers found in pit 4/28 near pyramid 4.

[54] *Licht*, 27, fig. 21.
[55] *Licht*, 30–31, figs. 23–24, pl. 9. The foundations are visible on the left side of the lower photo. See also Arnold, *Senwosret I*, 56.
[56] F. Arnold, *Control Notes*, 150, S 1.2. For control notes without years see ibid., 150, S 1.2; 153, S 10–11.
[57] *Licht*, 28, fig. 22.

The tomb was reexcavated during the 1913–14 season, but no records remain. Nothing is known about the owner of the pyramid.

Pyramid 9

SOURCES: Lisht Diary, Apr. 24 and 26, 1914
Tomb cards 653–54
BMMA 10 (Feb. 1915), supp., 5–10, figs. 3–5; *Licht*, 27, fig. 21, pl. 3
For plans see pyramid 8
Photos L 13–14:1003, 1057–59, 1123–25, 1240, 1247–79 (see also photos under pyramid 8)

THE SUPERSTRUCTURE OF PYRAMID 9

(pls. 47–50)

The enclosure wall has been discussed above in conjunction with pyramid 8. In addition, it should be noted that around pyramids 8 and 9, and especially near pyramid 9, remains of brick constructions have been discovered on the *gebel* surface. Some of these constructions, mainly those along the south end of the west side and along the south side, are clearly part of the foundations of the pyramid, but some are disconnected from the brick structures in the foundations and were possibly used during the construction of the pyramids.

Pyramid 9 had a brick core, unlike pyramid 8, which had a stepped core of rough fieldstones similar to that of the king's pyramid. Bricks in the core are set in even horizontal layers and are also mixed with stone in the foundations of the core and along the outer edges of the foundations of the casing.[58] Apparently bricks were used once the available stone material had been exhausted.

The foundations of the casing of the pyramid consist of a course of huge, rough, undressed slabs covered by a second course of carefully dressed and fitted, though badly weathered, limestone slabs of better quality. The limestone slabs surround the pyramid core in two rows and are connected by dovetail cramps in both directions (heading and stretching in relation to the sides of the building, see cramp list, p. 99, nos. 26–33). These slabs supported the casing and its backing stones. Remains of one casing block without its surface and almost all the backing stones from the first course were still in position. While the backing stones consist of poor brownish limestone, the casing block was of fine white limestone. The dimensions of the foundations suggest a pyramid of 30 x 30 c (15.75 m).

To the east and north of pyramid 9, remains of foundations for the two funerary chapels were still preserved, consisting of heavy blocks protruding into the court and some brickwork in the foundations of the northern chapel.

THE FOUNDATION DEPOSITS OF PYRAMID 9

(fig. 12; pl. 48)

SOURCES: Lisht Diary, Apr. 24, 1914
BMMA 10 (Feb. 1915), supp., 6, fig. 5
Tomb card 654
Photos L 13–14:1261–79

Few written records are available for the foundation deposits, except the report in the *BMMA* that is quoted here *in extenso*:

> . . . under the platform there was found at each of the four corners of the pyramid a 'foundation deposit.' These were practically identical in character and in each instance had been placed in a square pocket about 80 cm. in diameter and 1 metre in depth excavated in the bed-rock upon which the platform rested. The bottom of the pocket had been covered in each case with about 5 cm. of clean gravel upon which were some twenty-five to thirty small pottery model dishes and vases, while scattered among them were a number of small lozenge-shaped blue glazed beads. On these objects were laid the skull and some of the bones of an ox which had been sacrificed as a part of the ceremonial. The pocket had then been completely filled with gravel in which, at about half its depth, was laid a small model brick of sun-dried Nile mud. Finally the pockets were covered by massive limestone blocks which in each case formed the corner blocks of the pyramid-platform.

One can add a few notes to this account. The northwest deposit had actually already been opened and emptied by the French expedition. The northeast deposit could only be reached from the side of the brick-lined mouth of shaft 49/12. A square limestone block with a circular hole in the center was found southeast of the southeast deposit, embedded into the surface just beside the mouth of the deposit pit (pl. 48a; fig. 12). This stone might have held the round pole used for the stretching of the cord ritual during the foundation ceremonies.[59]

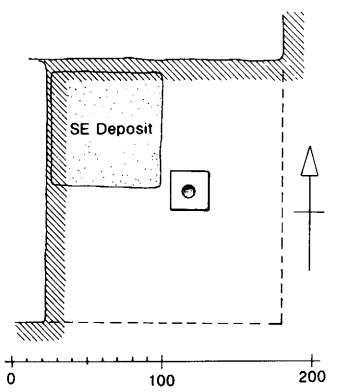


Fig. 12. Southeast corner of pyramid 9 after the removal of the cornerstone (see pl. 48a). Scale 1:50.

[58] Brick sizes range from 21 x 42 to 23 x 46 cm; they are made of black Nile mud. The bricks are different from those used in the royal buildings (see Arnold, *Senwosret I*, 24, 29, 31), and are more like those from the mastaba of Mentuhotep.

[59] For other stones with round drill holes but equally unknown purpose see Arnold, *Amenemhet III*, 64(F), pl. 61F; Arnold, *Senwosret I*, pl. 59d–e. Similar holes can be seen on a few corner (core) blocks of one of the queen's pyramids of Mycerinus at Giza. They have never been reported from the corner blocks of larger pyramids.

Finds from the northeast and southeast corners went to the Metropolitan Museum and in 1953 were transferred to the Oriental Institute Museum, University of Chicago. The material from the southwest deposit went to the Egyptian Museum, Cairo. For descriptions and an evaluation of the pottery see pp. 83–91 (cats. 283–346) and figures 16–17.

a) The Northeast Deposit

31 model pots; MMA [14.3.179–.209]; OIM 27514–44; neg. nos. 29090–91
2 oxen bones; MMA [14.3.210–.211]
1 string of beads; MMA [14.3.212]; neg. no. 27502

b) The Southeast Deposit

33 model pots; MMA [14.3.213–.245]; OIM 27545–66, 27568–78; neg. nos. 29092–93
2 oxen bones; MMA [14.3.246–.247]
1 string of beads; MMA [14.3.248]; neg. no. 27504
1 model brick; MMA 14.3.249; neg. no. 29095

THE DATE OF PYRAMID 9

The analysis of the pottery from the foundation deposits suggests that pyramid 9 was constructed at about the time of Amenemhat II to Senwosret II (see pp. 88–89), that is about fifty years after the completion of the pyramid of Senwosret I. This date is surprisingly late, and one wonders why a pyramid was built at Lisht after the royal cemeteries had been transferred to Dahshur and Illahun.

The common enclosure wall of pyramids 8 and 9 suggests that the pyramids were planned together and that there was a link between the two. However, the structure of the two pyramids was different; the brick construction of pyramid 9 indicates a shortage of stone building material, a deficiency that might have occurred at the end of building activities at Lisht South (for the structures of the pyramids see pp. 37–38). The sequence of events could therefore have been: 1) construction of pyramid 8, without an enclosure wall, after year 22 of the reign of Senwosret I; 2) construction of pyramid 9 under Amenemhat II or Senwosret II; 3) enclosure of both pyramids with a common limestone wall.

SHAFTS AFFILIATED WITH PYRAMID 9

No tomb has yet been found which could be considered the burial chamber of the owner of pyramid 9, as neither shaft 45/16 nor 49/12 seem suitable.

Shaft 45/16 [Pit 5103]

SOURCES: *BMMA* 10 (Feb. 1915), supp., 5–6
Photo L 13–14:1277

The only existing record of the original Expedition excavation of shaft 45/16 is the following from the *BMMA*:

> This shaft, which was about 2 m. square, descended perpendicularly through the bed-rock of the plateau to a depth of about 15 m., where a passage led off diagonally northeast to a chamber approximately under the center of the pyramid. The filling of the shaft consisted of Nile mud packed down so hard that the implements of our workmen could with difficulty be driven into it, thus showing the great length of time that it had lain undisturbed; but the presence of broken pottery vessels and other material in the filling at various points prepared us for the result which we finally derived—the chamber had been completely plundered at some ancient period.

In 1987, we reexcavated the shaft and discovered that there is a large chamber branching off to the east at the bottom of the shaft. The corridor leading to the center of the pyramid starts from the northeast corner of this chamber, not, as Lythgoe had described, from the shaft itself. The small size, irregular shape, and direction of the corridor shows that it was not the original tomb corridor, but only a trial tunnel cut by tomb robbers who suspected that the pyramid chamber lay somewhere under the center of the pyramid. The robbers also sunk another test pit in the middle of their trial tunnel. The final chamber mentioned by Lythgoe is not a chamber, but irregular extensions of the tunnel to the east and north. Work in the wet *tafl* clay was difficult and dangerous.

Because neither shaft 45/16 nor 49/12 (below) led into the burial chamber of pyramid 9, we thought that there was the possibility that the "missing chamber" could be reached by a hitherto undiscovered shaft. Since the most plausible location for the chamber would be somewhere under the center of the pyramid, we used a Hilti drill to dig a new 1.40 x 1.50 m wide shaft in the center of the pyramid during the 1989 season. About 12.50 m below the *gebel* surface we reached hard limestone and at 13.70 m we abandoned the shaft. If a chamber does exist, it is not located under the center of the pyramid, but perhaps lies to the east. It is possible that the upper corridor of shaft 48/10 (below) was the entrance to the tomb chamber of the pyramid, but the dangerous condition of the *gebel* did not permit us to follow this corridor. Otherwise, one would have to accept that shaft 45/16 was the chamber of pyramid 9, even though it is unfinished and unusual in position and shape.

THE AREA NORTH OF PYRAMID 9
(pl. 56)

During the 1989 season, while searching for the entrance shaft of pyramid 9, we excavated a partially untouched area directly north of the enclosure wall of pyramid 9. The area was cleared down to the *gebel* surface and only shaft 48/10 (see p. 42, no. 16 and pl. 56b) was found. This shaft had been cleared by the French expedition, which had opened several oval-shaped test holes in this area.

The whole excavated area north of pyramid 9 was covered by a 30–40 cm thick accumulation of broken bricks. A *tafl* dump, which may be the debris from the ancient excavation of shaft 48/10, lies along the east side of the excavated area; a bundle of linen (see p. 83, cat. 275), certainly deposited in ancient times, was found buried here (pl. 56d). Shaft 48/10 is located immediately north of the dump and cuts from a higher level through the brick accumulation. Another ancient stratum, consisting of limestone chip with great quantities of broken flints, perhaps the remains of the tools used to dress the lime-

stone, covered the *tafl* dump and was also found along the north side of the excavated area.

In the same area we excavated a wall one-half brick wide, partially sunk into the limestone and flint layer. The brick wall, consisting of very hard gray bricks ranging in size from 10 x 17–18 x 34 cm, runs east-west, clearly sloping upwards in the west. The wall retains a roadlike surface of *tafl* and mud. Because we suspected that the wall was really a construction ramp, we cleared the roadlike surface as far north as was permitted by the huge French dump. The surface is preserved at least 6 m more to the northeast without a corresponding retaining wall in the north, which still might exist outside the limits of the excavation. Shaft 48/10 was cut into by this "ramp," which is dated to the period of Senwosret III/Amenemhat III by a mass of potsherds found on top of the ramp and in front of its brick retaining wall.[60] One third of this pottery consists of pointed meat containers, while the rest are large rough jars and sherds smeared with gypsum, apparently remains of the activities of the workmen. The "ramp" does not point to any visible monument in the west and its purpose remains unclear, though it is similar to the ramp on the west (see pp. 93–94), also retained along the sides by bricks, which was used in connection with the construction of the pyramid complex of Senwosret I.

For the finds see p. 83, cats. 275–82.

Shaft 49/12

SOURCES: *BMMA* 10 (Feb. 1915), supp., 5
Photo L 13–14:1261

The shaft was excavated by Gautier and then used during the 1913–14 season to cut an access tunnel into the northeast foundation deposit of pyramid 9 (see pl. 48b).

The following information is recorded in the *BMMA*: ". . . a shaft which they discovered at its northeast angle, hardly more than 5 m. in depth and leading to a small, roughly worked chamber, was obviously not the main burial chamber of such a monument." One should add that the mouth of the shaft was lined with bricks.

[60] Dating by Dorothea Arnold.

CHAPTER III

Burials and Shafts in the Outer Court

Large funerary monuments such as royal pyramids always attracted builders of smaller tombs or simple burials, and usually the royal pyramids are surrounded by hundreds or even thousands of smaller, private burials. Normally these burials date from a later period, when the cult and the guardianship of the royal monument were less strictly observed.

At the site of the pyramid of Senwosret I there were no such tombs in the inner court, indicating that this area was off limits during the Middle Kingdom. After that period the pyramid was dismantled and soon covered with such high mounds of sand and debris that the area could not be used for burials.

The outer court was originally destined for the burial of the members of the royal family, and some of the secondary pyramids might have been planned simultaneously with the main pyramid, while some were probably added later. Shaft tombs were dug within the enclosures of the secondary pyramids, presumably for the members of the royal households, while others surrounded the pyramid enclosures. The location within the huge outer court granted security, proximity to ritual activities, and prestige, so that it is quite natural that the number of these burials could not be limited. Most of the finds and the ceramic evidence suggest that the several hundred tomb shafts and burials in the area probably date to the Middle Kingdom. Tomb shafts were not restricted only to the outer court, but soon spread over the whole desert plateau, generally clustering around the large mastaba tombs that had been erected throughout the Twelfth Dynasty.[61]

During and after the destruction of the pyramid complex, that is from the Second Intermediate Period onwards, burial activity declined and was only resumed in Roman times, when a great number of rather poor surface burials were laid out around the pyramid, mainly in the east.

Except for the tomb of Ankhty, no Middle Kingdom burial in the outer court was found untouched. All had been so thoroughly pillaged that the few surviving objects were found only in the surface debris or in the fill of shafts into which they might have fallen from above. Pottery or potsherds remaining in tomb pits, the only material normally available for evaluation, was rarely recorded by the French and Metropolitan Museum expeditions. In most cases, therefore, we are unable to date the burials securely enough to outline the development of the shaft tombs, though the construction of some of them is of interest.

The following lists provide information as to the excavators of the shafts and burials in the outer court. Some of the shafts excavated by the original Metropolitan Museum Expedition were probably reexcavations of French shafts, but unfortunately that information was not always recorded. The five shafts opened by the current Expedition are reexcavations of pits already excavated by either the French or Metropolitan Museum expeditions; no new shafts were cleared.

French Excavations: Shaft numbers 6–7, 10–12, 14, 16, 19–21, 33–34, 36, 38, 43, 46, 49, 56, 65–68, 71–76, 81, 86, 89, 92–93, 97, 99–109, 113–19, 194, 197
Metropolitan Museum Excavations (1906–34): Shaft numbers 1–5, 8–9, 13, 15, 17–18, 21–32, 34–42, 44–45, 47–48, 50–55, 57–64, 69–71, 77–80, 82–85, 87–88, 90–91, 94–96, 98, 110–12, 120–93, 195–98
Metropolitan Museum Excavations (1984–89): Shaft numbers 16, 27, 29, 34, 71

Burials and Shafts of Known Location

1. Shaft 20/1

No information (see p. 36).

2. Shaft 14/2

No information. Possibly connects to shaft 10–11/5 (see p. 35).

3. Shaft 13/3

No information (see p. 35).

4. Shaft 10–11/5

See pyramid 6, p. 35.

5. Shaft 24/5

"Brick lined shaft," (see p. 36).

6. Shaft 48/5

No information.

7. Shaft 31–32/6

SOURCES: AM 2621
Photos 6 LN:19, 25, 29, 34 (for position)
BIBLIOGRAPHY: *Licht*, 29, 38, pl. 15[1]; J. E. Gautier and Gustave Jéquier, *Fouilles de Licht*, Revue Archéologique ser. 3, vol. 29 (Paris, 1896), 14–15; Arnold, *Senwosret I*, 21, pl. 58d

"French statue pit (grand cirque)." From photos and a faint

[61] Those tombs outside the enclosure will be dealt with in Christian Hölzl, *The South Cemeteries of Lisht: Private Tombs*, forthcoming.

pencil outline on plan AM 2621, one may assume that the pit lay about 10 m north of drain pit G (31/8, no. 13, below). Since the area is now covered by high mounds, the location cannot be checked.

Shaft 31–32/6 and drain pit G were probably part of an abandoned tomb gallery. Drain pit G is similar to the shaft, suggesting that the builders might have intended to make an underground connection between the two pits. The shaft was probably dug during the earlier stages of construction at the main pyramid. The 21.75 m deep shaft is oriented east-west; the bottom is unfinished, and there is no chamber.

In 1895, Gautier discovered six Osiride statues of the king that had been broken from their bases and thrown into the large sand-filled mouth of the shaft; they probably originated from the upper end of the causeway. We must assume that the mouth of the pit had already been opened by tomb robbers when the statues were thrown in.

8. Shaft 17/7

The only information is contained on photos L 31–32:171–73, which show the position of the shaft and bricks thrown into its fill (see p. 35).

9. Shaft 22/7

Entrance cut deposit (for details see Arnold, *Senwosret I*, 92, 109–12, pls. 64c–d, 65).

10–12. Shafts 47/7, 14/8, and 20/8

No information.

13. Shaft 31/8

Drain pit G (for details see Arnold, *Senwosret I*, 85, pls. 59a–b, 103). The builders probably originally intended the unfinished pit to be part of a gallery tomb connected to shaft 31–32/6 (see above, no. 7).

14–15. Shafts 47/8 and 21/9

No information.

16. Shaft 48/10 (pl. 56a–b)

The shaft was cleared by the French expedition and included on their map. It was reexcavated in 1989 by the Metropolitan Museum (see pp. 39–40).

The mouth of the shaft is 2.10 x 2.25 m with a step around the four sides; there are remains of brick repair in the upper, less solid section of the shaft. At 5 m, a collapsed cavity, probably a chamber or passage, opens to the south and at 6.50 m, a 2.60 m deep side chamber opens to the north; neither chamber was excavated due to the condition of the *gebel*. Remains of brickwork, perhaps a doorframe, were found at the entrance to the south cavity. The nearly square (2.90 x 2.50 m) main chamber, which is still in *tafl*, opens to the south of the shaft, 10.30 m from the surface of the *gebel*. A flat bench was carved from the east wall. The floor of the chamber is now 26 cm above the level of the bottom of the shaft, but the builders probably intended to lower the floor to the shaft level, an operation that would have transformed the bench into a kind of a sarcophagus niche along the east side of the chamber.

In the main chamber, between a few bones and a few fragments of conical cups and jars, a piece of a hemispherical cup (a lamp?) dating to the Thirteenth Dynasty was left by the French expedition.

17. Shaft 5/9

Presumably the northern entrance shaft of pyramid 5 (see p. 33).

18. Shaft 5/10

SOURCES: Lisht Journal I, 95

Probably identical with shaft 5/12 (no. 22, below).

19–20. Shafts 4/11 and 42/10

No information.

21. Shaft 44/11 [LSP 84]

The shaft was first explored by the French excavation and possibly reexcavated by the Metropolitan Museum Expedition. According to *Licht*, 28, fig. 22, in 1896 the French expedition used the shaft in order to dig a connecting tunnel to shaft 43/12 (see p. 37).

22. Shaft 5/12 [LSP 66]

SOURCES: Lisht Diary, Dec. 7, 1932 to Feb. 17, 1933
Letter, Lansing to Winlock, Apr. 11, 1932

The irregular shaft was abandoned 4 m below the beginning of the sand layer and used by the Metropolitan Museum Expedition in order to dig under pyramid 5 during their search for the burial chamber (see p. 33).

23. Shaft 7/12 (pl. 57c–d)

Burial of Ankhty (see pp. 54–58).

24. Shaft 43/12

Northern entrance shaft of pyramid 8 (see p. 37).

25. Shaft 49/12 [LSP 83]

SOURCES: Photo L 13–14:1261

A square shaft with a brick lining near the mouth, which lies directly in front of the northeast corner of pyramid 9. No further information is available. The shaft was used by the Metropolitan Museum Expedition to cut into the northeast foundation deposit of pyramid 9 (see pp. 38, 40 and pl. 48b).

26. Shaft 2/14 (pl. 36b)

"Pyramid crater" or "crater pit"; western entrance shaft of pyramid 5 (see p. 33).

27. Shaft 45/16 [5103]

The original Expedition incorrectly suggested that this was a southwest entrance shaft into pyramid 9 (see p. 39).

28. Burial 5–7/17

SOURCES: Tomb card 539
Photos 6 LN:72, 74–76, 81–82

A burial in the boat pit (see p. 53 and pls. 64, 65d). The only information recorded on the tomb card is mention of a "brick vault." In the photos one sees a small, whitewashed brick chamber erected on top of the brick vault of the boat pit, west of the center of the pit, which could be the tomb. On the other hand, photos 6 LN:81–82 show remains of a chamberlike limestone construction in the interior of the western end of the boat pit that could also be the tomb.

For the finds see pp. 78–80.

29. Shaft 45/17

This shaft is the drain pit of pyramid 8. It measures 1.80 x 1.80 m; at the mouth it is 2–2.20 m wide and rounder. When the shaft was reexcavated in 1987, it was found filled with clean, windblown sand, probably from the 1933–34(?) excavation.

30. Shaft 5/18–19 (So-called Great Sand Pit) (pls. 35, 36a)

SOURCES: Lisht Journal I, 123–29
Tomb cards 494–99
Plans and sections AM 2714–15 (scale 1:50), 2716 (scale 1:10)
Photos L 31–32:12 (location only), 52 ("caisson pit" showing stone caisson)

The square shaft is about 18.50 m deep. Since solid *tafl* starts 8 m below the desert surface, the builders had to use a caisson in order to safely dig through the upper strata (see pp. 33–34). The upper part of this shaft is carefully cased with a wall one brick thick (brick size 13 x 21 x 42 cm). The lower part of the shaft passes through solid *tafl* layers; only the north chamber is embedded in solid limestone. This square chamber, 20 m below the surface and accessible by means of a 12 m long sloping corridor, is probably the original tomb chamber, but even though the chamber is positioned under the southern edge of pyramid 5, it seems unlikely that it is the actual burial chamber of the pyramid. East of the shaft lies a chamber with four coffin loculi, and south of it is another group of two loculi, making a total of seven burial places.

For the finds see pp. 65–66, cats. 91–95.

31. Burials around 6/26

SOURCES: Photos L 31–32:88–90

Twelve surface burials were uncovered about 12 m north of pyramid 4. Only no. 10 is drawn on plan III, though the location of others can be guessed from the photos.

32. Shaft 7/26

SOURCES: Photo L 31–32:216 (position)

A square shaft is mapped 5 m northwest of drain pit E (see plan III), but no further information is available.

For the finds see p. 66, cats. 96–102.

33. Shaft 3/27

No information.

34. Shafts 4/27 and 4/28 (pl. 29)

Entrance shafts of pyramid 4 (see pp. 31–32).

35. Shaft 6/28

Shaft in the court of pyramid 4 (see p. 31).

36. Shaft 8/28 (pls. 30, 33a)

SOURCES: *Licht*, pl. 3 (tiny plan, see here p. 30, fig. 6)
Photos L 31–32:41–42 (position)

According to the French plan, the 4 x 4 m shaft is of enormous size; its depth remains unknown. A 9 m long corridor leads westward into a square burial chamber about 3 x 3 m.

The shaft opens under the north end of the eastern enclosure wall of pyramid 4; its position indicates that it must have been dug before the enclosure wall was built, but the sources do not clarify its relationship to pyramid 4. On the French plan, the shaft is incorrectly located in front of the center of the pyramid. The burial chamber of this shaft might be located below the north chapel of the pyramid, but since there are more convincing candidates for the burial shaft of pyramid 4 (see pp. 31–32, shafts 4/27–4/28), shaft 8/28 must be considered a separate tomb.

37. Shaft 43/28 [5404?]

SOURCES: Tomb card 380

The tomb card only records the information, "South of temple, tomb entrance? Break in pavement next to transverse wall (1916) blocked suggesting mouth of tomb. Topmost stone only 10 cm thick." See also p. 48, no. 169.

38. Shaft 45/28 [5008?]

SOURCES: Tomb card 338
Licht, 26–27(?)

According to the French, the apparently brick-lined shaft is "un puits sans intéret."

For the finds see p. 66, cats. 103–4.

39. Shaft 1/29(?) [Pit 2]

SOURCES: Tomb cards 590, 592
Photo L 31–32:38

The square shaft 4.50 m deep leads into a small irregular chamber, possibly located to the south.

A rough field sketch without scale or numbering (tomb card 590) shows eleven pits in the area between pyramid 4 and the outer enclosure wall and continuing to the northwest. Photo L 31–32:38 (pl. 57b) confirms the sketch, but no individual identifications are possible, except that pit 2 and pit 1 must also be in this area.

40. Shaft 1/31(?) [Pit 1]

SOURCES: Tomb cards 590–91

A square shaft 4.50 m deep leads into a small irregular chamber, possibly located on the south (similar to pit 2, above).

41. Shaft 7/32

Shaft in the court of pyramid 4 (see p. 31).

42. Shaft 5/33 [Pit 3]

SOURCES: Tomb cards 590, 593
Position AM 2694 (scale 1:100)

The shaft was dug at the outer edge of the southern enclosure wall of pyramid 4, apparently using the base of the wall to strengthen its northern rim. The square shaft, 4.10 m deep, leads to a small chamber on the south.

43. Shaft 6/33

No information.

44. Shaft 1/34 [Pit 10]

SOURCES: Tomb cards 590, 600
Position AM 2694 (scale 1:100)

A square shaft 4.90 m deep leads to a small chamber on the south.

45. Shaft 3/34 [Pit 5] (pl. 54A)

SOURCES: Tomb cards 590, 595
Position AM 2694 (scale 1:100)

A square shaft 11 m deep leads into several chambers. A single chamber is located higher up the shaft to the south. A much larger chamber, with six loculi for coffins, is also to the south at a lower level. Another chamber on the lower level opens to the north, accidentally breaking through to the chambers of shaft 3/35 (pit 6, see below).

46. Shaft 8/34

No information.

47. Shaft 2/35 [Pit 8]

SOURCES: Tomb cards 590, 598
Position AM 2694 (scale 1:100)

A square shaft 4.50 m deep leads to a small chamber on the south.

48. Shaft 3/35 [Pit 6] (pl. 54A)

SOURCES: Tomb cards 590, 596
Position AM 2694 (scale 1:100)

A square shaft 11 m deep leads to a chamber directly under the shaft, from which six coffin loculi branch off. A brick wall was erected against the northern wall of the lower end of the shaft in order to seal a hole accidentally cut from shaft 3/34 (pit 5, see above).

49. Shaft 8/35

No information.

50. Shaft 1/35 [Pit 11]

SOURCES: Tomb cards 590, 601
Position AM 2694 (scale 1:100)

A square shaft 4.50 m deep leads to a small chamber on the south.

51. Shaft 1–2/36–37 [Pit 12]

SOURCES: Tomb cards 590, 602
Position AM 2694 (scale 1:100)

This shaft is located so close to shaft 1/37N (pit 13) that its builder probably had no knowledge of that shaft; shaft 1–2/36–37 is therefore probably later in date.

The rectangular (1 x 2.35 m) shaft leads to a small chamber on the south with a canopic niche in the east wall.

52. Shaft 2/36 [Pit 9] (pl. 51A)

SOURCES: Tomb cards 590, 599
Position AM 2694 (scale 1:100)

A square shaft 11 m deep leads to three small irregular chambers on three different levels; two lie on the south, one lies on the north (see section on pl. 51).

53. Shaft 4/36 [Pit 7]

SOURCES: Tomb cards 590, 597
Position AM 2694 (scale 1:100)

A square shaft 4.50 m deep leads to a small chamber on the south.

54. Shaft 5/36 [Pit 4]

SOURCES: Tomb cards 590, 594
Position AM 2694 (scale 1:100)

An unusually wide (1.70 x 1.90 m) square shaft 5 m deep leads to a probably unfinished small chamber on the north. The ceiling has collapsed, perhaps due to some intentional action.

55. Shaft 1/37N [Pit 13]

SOURCES: Tomb cards 590, 603
Position AM 2694 (scale 1:100)

A square shaft 4 m deep leads to a small chamber on the south.

56. Shaft 1/37S

No information.

57. Shaft 12/37

South wall deposit 1; pottery deposit (see Arnold, *Senwosret I*, 112–15).

58. Shaft 20–21/37

South wall deposit 2 (see Arnold, *Senwosret I*, 115–16).

59. Shaft 24/37

South wall deposit 3 (see p. 26).

60. Shaft 27/37

South wall deposit 4; sledge deposit (see pp. 26, 59 no. 28).

61. Shaft 30/37

South wall deposit 5 (see p. 26).

62. Shaft 33/37

South wall deposits 6–7 (see pp. 22, 49 no. 191).

63. Shaft 36/37

South wall deposit 8 (see p. 22).

64. Shaft 37/37

South wall deposit 9 (see p. 22).

65–68. Shafts 5/38, 6/38, 7/38, and 14/38

No information.

69. Shaft 18/38

Drain pit C.

70. Shaft 31–32/38

Drain pit B.

71. Shaft 36/38

Entrance shaft of pyramid 1 (see pp. 21, 48 no. 145).

72–74. Shafts 1/39, 4–5/39, and 10/39W

No information.

75–76. Shafts 10/39E and 11/39

No information.

77. Shafts 14/39 and 15/39

Entrance shafts of pyramid 3 (see pp. 27–28).

78. Shafts 23/39 and 24/39

Entrance shafts of pyramid 2 (see p. 25).

79. Double Shaft 29/39 (North) and 29/40 (South) [LSP 42 or 6LP 42–43]

SOURCES: AM 2623 (scale 1:200)
Photo L 33–34:184

No drawings exist, but from plan AM 2623 (see plan II) one can conclude that there was a double pit surrounded by a brick wall. The regular arrangement may indicate that the shafts were originally dug as deposit pits for pyramid 2.

Pottery from the northern pit dates to the late Twelfth to Thirteenth Dynasties; dates for the pottery from the southern pit stretch from the early Twelfth Dynasty to the New Kingdom or later, indicating various intrusive burials. For the finds see pp. 66–67, cats. 105–13.

80–84. Shafts 31–32/39, 1/40, 9/40, 10/40, and 11/40

No information.

85. Burial(?) 18/40

No information.

86–89. Shafts 2/41, 9/41W, 9/41E, and 11/41

No information.

90. Burial(?) 18/41

No information.

91. Shaft 19/41 [Pit 20?] (pl. 52B)

SOURCES: Plan and section AM 2687 (scale 1:100)
Photo L 33–34:329 (position)

The shaft breaks into the building ramp (pp. 92–93) from above, and is certainly later than this structure.

A large square shaft 8 m deep leads into a northern chamber with four coffin loculi and a southern chamber with six coffin loculi. No information is available for either the ten burials or the position of the objects.

For the finds see pp. 67–68, cats. 114–18.

92. Shaft 18/42

No information.

93. Shaft 25/42

The "puits de la perruque" of the French excavation (see p. 26).

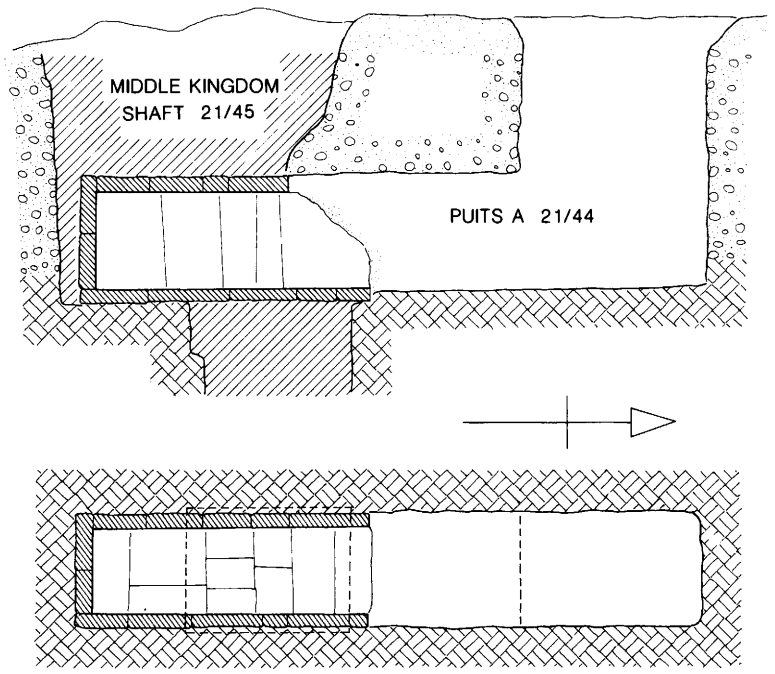


Fig. 13. Plan and section of the French expedition's "puits A" (shafts 21/44 and 21/45). No scale.

94. Shaft 10–11/43 [6LP 22]

No information.

95. Shaft 16/43 [6LP 19?]

Court of pyramid 3. No information.

96. Shaft 25/43

Court of pyramid 2 (see p. 26).

97. Shaft 28/44

No information.

98. Shaft 10/44 [6LP 21]

No information; the position of the shaft is shown on AM 2693 (scale 1:100).

99. Shaft 11/44

No information.

100. Shaft 12/44W

No information; the position of the shaft is shown on AM 2693 (scale 1:100).

101–6. Shafts 12/44E, 14/44, 16/44, 17/44, 18/44, and 19/44

No information.

107. Shaft 21/44 (fig. 13)

SOURCES: *Licht*, 50–59, fig. 50

"Puits A," excavated by the French expedition, is actually a Middle Kingdom tomb shaft overlaid by a rectangular burial chamber with an entrance pit to the north. Nothing is known about the older tomb below. The coffins found in the upper tomb, which is just 2 m below the surface, indicate that it might date from Ptolemaic/Roman times, though the tomb could have been older and only reused in the later period (see no. 113).

The most interesting finds from the tomb were thirteen Twelfth Dynasty offering tables that were used as building material in the chamber walls. For the finds see p. 68, cats. 119–22.

108–9. Shafts 23/44 and 31/44

No information.

110. Shaft 34–35/44

Western deposit pit in the court of pyramid 1 (see p. 22).

111. Shaft 37/44

Eastern deposit pit in the court of pyramid 1 (see p. 22).

112. Shaft 44/44 [5227] (pl. 57A)

SOURCES: Photos 16 L:182–83

No information is available about the shaft itself, but directly south of it, the lower part of a seated statue was found; both the pit and the statue are visible on photos 16 L:182–83. The statue now stands behind the Metropolitan Museum's house at Lisht, and since it probably represents the Vizier Mentuhotep, it will be published in connection with the tomb of Mentuhotep.

113. Shaft 21/45 (fig. 13)

Chamber of "puits A" (see shaft 21/44, no. 107).

114–17. Shafts 27/45, 28/45, 32/45, and 33/45

No information.

118–19. Shafts 35/45 and 37/45

No information. The north rims of the shafts may have been uncovered in 1986 (see p. 22).

120. Shaft 44/45 [5222]

SOURCES: Photo 16 L:161

No information. Post-New Kingdom burial 5224 is located beside the mouth of the pit.

121. Shaft 45/45S [5225] (pl. 55B)

SOURCES: Tomb card 368

A square shaft 10–11 m deep leads to a 2 m long corridor and a rectangular chamber on the north.

122. Shaft 45/45N [5221] (pl. 51C)

SOURCES: Tomb card 366

A square shaft 10–10.50 m deep leads to a square chamber on the north with three coffin loculi on the north side.

123. Shaft 46/45 [5220] (pl. 55A)

SOURCES: Tomb card 365

A square shaft 15 m deep leads to chambers on three different levels, all on the north.

124. Shaft 43/46 [5228] (pl. 53B)

SOURCES: Tomb card 369

A square shaft 11 m deep leads to a chamber on the south with three coffin loculi and a chamber on the west with four coffin loculi. The shaft was covered by phase C of the outer enclosure wall (see p. 16), and therefore must have a relatively early date, but pottery found in the shaft points to a burial of the time of Amenemhat II. The question remains how and why the shaft was opened when the enclosure wall was still standing on top.

For the finds see p. 69, cats. 124–27.

Burials and Shafts of Unknown Location (Probably OCE1 and OCSE)

125. Shaft 5000

SOURCES: Tomb cards 318–20

An unfinished shaft 8 m deep with two post-New Kingdom burials across the northern part of the mouth of the pit.

126. Shaft 5001

SOURCES: Tomb card 321

The tomb card only records a northern chamber, but the vague wording of the description leaves the possibility that there are actually two chambers.

For the finds see p. 69, cats. 128–31.

127. Shaft 5002

SOURCES: Tomb card 322
Photos L 7–8:388–90

A rectangular shaft 2.50 x 4.20 m wide extending east-west. A post-New Kingdom burial lies 90 cm below the surface in the northeast corner of the pit.

128. Burial 5003

SOURCES: Tomb cards 323–24
Photos L 7–8:394–96

Two post-New Kingdom burials.

129. Shaft 5004

SOURCES: Tomb cards 325–27
Photos L 7–8:385–87

A rectangular shaft 8 m deep with a coffin recess at the bottom that contained the plundered burial of an adult male, perhaps Minhotep, son of the princess Sat-Sobek (early Thirteenth Dynasty). Pottery from the Second Intermediate Period to the early New Kingdom was also found. Fragments of brick casing remained at the mouth of the shaft.

For the finds see pp. 69–70, cats. 132–41.

130. Shaft 5005

SOURCES: Tomb cards 328–29
Photos L 7–8:399–401

The tomb cards record two post-New Kingdom burials across the "middle of pit, lying east-west. Brickwork of pit had been cut away slightly at head and feet to make room for coffin."

131. Burial 5006

SOURCES: Tomb cards 330–36

The tomb cards record two post-New Kingdom burials.

132. Burial 5007

SOURCES: Tomb card 337

The tomb card records a post-New Kingdom burial.

133. Shaft 5008

SOURCES: *Licht*, 26–27
Tomb card 338

The tomb card records the location of the shaft as being, "SE of temple," suggesting an identification with 45/28 (see p. 43, no. 38), which lies south of the brick chamber of the funerary temple of Senwosret I.

134. Shaft 5009 (pl. 51D)

SOURCES: Tomb cards 339–40

A large (1.60 x 3.25 m) rectangular shaft 8.50 m deep with a niche in one of the side walls and a rectangular cavity at the bottom. The shaft may be unfinished.

For the finds see p. 70, cats. 142–44.

135. Shaft 5010 (pl. 51B)

SOURCES: Tomb card 342

A large (1.60 x 3.20 m) rectangular shaft 7.50 m deep leads into a rectangular chamber with two wall niches along one long side.

The pottery found here suggests a burial of the Ptolemaic period. For the finds see pp. 70–71, cats. 145–69.

136–37. Shafts 5011–12

No information. For the finds see pp. 71–72, cats. 170–75.

Burials and Shafts of Unknown Location East of the *Ka*-Pyramid, East of Pyramid 1, and Outside the Outer Enclosure Wall

138–40. Burials 5201–3

Post-New Kingdom burials.

141–42. Shafts 5204–5

No information.

143–44. Burials 5206–7

Post-New Kingdom burials.

145. Shaft 5208

Entrance shaft of pyramid I (see pp. 21, 45 no. 71, shaft 36/38).

146–56. Burials 5209–19

Post-New Kingdom burials.

For 5220–22 (shafts 46/45, 45/45N, and 44/45) see pp. 46–47, nos. 120, 122–23.

157. Shaft 5223

No information.

158. Burial 5224

Post-New Kingdom burial.

For 5225 (shaft 45/45S) see p. 46, no. 121.

159. Shaft 5227

No information.

For 5228 (shaft 43/46) see p. 47, no. 124.

160. Burial 5229

Post-New Kingdom burial.

161–63. Burials 5230–32

No information.

164–65. Burials 5233–34

Post-New Kingdom burials.

Shafts North of and in the Area of the *Ka*-Pyramid

166. Metropolitan Museum Expedition number 5401

Probably a collective number used for the *Ka*-pyramid area.

167. Shaft 5402

North shaft of the *Ka*-pyramid (see Arnold, *Senwosret I*, plan V, top right, wrongly labelled 5102).

168. Burials 5403

Two post-New Kingdom burials.

169. Shaft 5404

SOURCES: Tomb card 380

The comment "S of temple, tomb entrance? Next to transverse wall 1916," on the tomb card seems to indicate identity with shaft 43/28 (see p. 43, no. 37).

170. Burial 5405

SOURCES: Tomb card 381

Post-New Kingdom burial.

Shafts of Partially Unknown Location with 6LP Numbering

We know that the original Metropolitan Museum Expedition used the numbering system 6LP 1 to 6LP 43 for the shafts inside the outer court south and southwest, as well as for some shafts outside the court. But since no master plan is preserved, the precise location of most of the shafts remains unknown. The first twenty numbers certainly belong to shafts outside the outer court south, and will be published in another volume.[62] Only

[62] For 6LP 1–14 (double row of pits along the outer side of the southern enclosure wall) and 6LP 15–20 (six pits in the court of the tomb of Sehetepibreankh), see Christian Hölzl, *The South Cemeteries of Lisht: Private Tombs*, forthcoming.

the precise locations of pits 6LP 21–22 are known. Shafts 6LP 23–40 are said to be "inside brick enclosure wall near south west corner," and shafts 6LP 41–43 "south of limestone enclosure wall at a point south of south-east corner of pyramid."

171. Shaft 6LP 21

Identical with shaft 10/44 (see p. 46, no. 98).

172. Shaft 6LP 22

Identical with shaft 10–11/43 (see p. 46, no. 94).

173. Shaft 6LP 23

SOURCES: Tomb card 453

A square shaft 7.40 m deep leads to a rectangular chamber. A post-New Kingdom burial covered the mouth of the shaft.

174. Shaft 6LP 24

SOURCES: Tomb card 454

A square shaft 7 m deep leads to a slightly sloping chamber. The entrance was walled up with huge bricks that measured 14 x 22 x 45 cm. The chamber contained only a child's skeleton that had been broken by fallen stones; there was no trace of a coffin.

175–77. Shafts 6LP 25–27

No information.

178. Shaft 6LP 28

SOURCES: Tomb card 455

A square shaft 6.50 m deep leads to a rectangular chamber.

179–190. Shafts 6LP 29–40

No information.

191. Shaft 6LP 41

South wall deposits 6–7 (see pp. 22, 45 no. 62).

192. Double Shaft 6LP 42–43

Double pit 29/39N and 29/40S (see p. 45, no. 79).

Shafts of Unknown Location in the OCS2 (Numbered 1–6)

SOURCES: Tomb cards 422–23

Tomb card 422 includes an accurate location sketch of six pits numbered 1–6, but unfortunately omits any point of reference. It is, therefore, impossible to locate these six pits. Only pit 1, mentioned on tomb card 423, is recorded, while the remaining five pits are from the French expedition. From *Licht*, 49 one would suggest that the French shafts (pls. 53A, 54B) must have been in this area. This group of tomb shafts, designated pits 1–6, is apparently different from pits 1–13 in the OCSW (see pp. 43–45, nos. 39–40, 42, 44–45, 47–48, 50–55).

193. Pit 1 (pl. 52A)

A square shaft 9 m deep leads to four chambers arranged on two levels. On an upper level, three chambers adjoin the shaft on the north, west, and south sides. On the lower level, one larger chamber, perhaps the original, leads to the west. Post-New Kingdom burials were found on top of the shaft.

194. Pit 2

"French," located 8 m south of pit 1.

195. Pit 3

"Old pit," located 24 m south of pit 2.

196. Pit 4

The pit is located 4.10 m east of pit 2.

197. Pit 5

"Large pit (French)," located 18.70 m east of pit 4.

198. Pit 6

The pit is located 1.20 m east and 2 m south of pit 4.

CHAPTER IV

Other Constructions in the Outer Court

Houses

During the course of their excavations, the original Metropolitan Museum Expedition exposed several houses or houselike structures in and around the outer enclosure of Senwosret I. Since these remains were deemed unimportant, no notes or adequate plans were made, and our report completely depends on a few existing photos and sketchy plans. Three structures seem to date to the period of construction and ritual activity at the pyramid complex, while two others were erected later, on top of its ruins, and are therefore of uncertain date.

1. HOUSE IN THE OCSW

(pl. 58a)

SOURCES: Plan AM 2619 (scale 1:200)

The house was probably excavated during the 1923–24 season and then covered by enormous dumps. The building is a rectangular structure 8.50 x 9 m made of brick walls that were 50 cm thick and probably 1½ bricks wide; it has an entrance on the south that leads into a court with two chambers on the eastern side. The precise orientation and the location of the house in the outer court of the pyramid of Senwosret I seems to indicate that the building was somehow connected with the outer court cemetery.

The original Metropolitan Museum Expedition plan (AM 2619) includes only this house, while a shaft (10/39W) was drawn in this location on the French plan.[63] Our plan II combines these two older drawings, and its accuracy is therefore dependent on their precision.

If the shaft really was inside the house, it is possible that the structure was a tomb, though the shaft could also have been a later addition. Instead, I would suggest that the building was used for the accommodation of the guards or caretakers of the cemetery or for some similar purpose, especially since the plan of the structure corresponds to Middle Kingdom domestic architecture.[64]

2. HOUSE WEST OF THE OCW2

(pls. 58b, 59a)

SOURCES: Plan AM 2618 (scale 1:200)
Photos 6 LN:88–89

The structure was excavated in the 1923–24 season and was thereafter covered by an excavation dump. At least three compartments of an irregular brick structure remained, with some additional partition walls in the northern section. The two southern compartments were constructed of brick walls that were only one-half brick thick, suggesting that the walls were not very high and could not have supported a roof. The northern part of the building is constructed of walls one brick thick that probably supported a light roof. The building was not completely excavated and seems to continue to the west.

From the existing photos, one can assume that the building was on the same level as the construction area of pyramid 4. Carelessly laid bricks, which apparently had little or no mortar, indicate that this was a temporary structure, perhaps serving as a shelter for guards or craftsmen during the construction of the pyramid complex. The small amounts of chip found around the building make it unlikely that it was a stonemasons' workshop.

3. "ROMAN HOUSE" NEAR THE *KA*-PYRAMID

(pls. 60a, 61a, c–e)

SOURCES: Plan AM 2677 (scale 1:100)
Photos 16 L:66–67, 116–17, 137, 184–85;
L 31–32:176–78

Unfortunately, the building as a whole appears only in the background of photos and only two photos show any details. However, we can determine that the structure was erected about 0.50 m above the level of the outer court, on top of the debris of the southern enclosure wall of the *Ka*-pyramid. The enclosure wall must have been completely levelled before the house was built.

Two rooms were fairly well preserved, while a third room to the south is less complete. Remains of walls seem to lead in all directions, indicating that the original building was large, perhaps about 20 x 20 m.

From the irregular shape of the plan, such utilitarian installations as the underground storage chambers in the easternmost of the two rooms, and several benches (mastabas) along the walls, one can conclude that the structure was a farmhouse. To the northwest, numerous beehive-vaulted cellars (silos) were found that certainly belonged to this farm, or to others that might have been in the area but had disappeared before the 1916–17 excavations. The remains of the "Roman house" were removed during that excavation.

One detail, documented in a photo, should be mentioned. A niche in the west wall of the smaller room leads down to a subterranean round chamber; in its floor a hole breaks into another cavity below. This installation may be a sewer or a latrine.

This structure and the following one were assigned to the Roman period by the original Expedition because Roman pottery and glass were found in the vicinity of another late domestic

[63] *Licht*, pl. 3.

[64] Felix Arnold, "A Study of Egyptian Domestic Buildings," *Varia Aegyptiaca* 5 (1989): 77–78.

structure, which was located further to the west in the south mastaba field.[65]

4. "ROMAN HOUSE" AT THE NORTHEAST CORNER OF THE INNER ENCLOSURE WALL

(pls. 60b, 61b, 108b)

SOURCES: Lisht Diary, Nov. 11, 1923
Plan AM 2726 (scale 1:100)
Photos 6 LN:34–35, 38–39

In 1923–24, remains of a structure similar to house 3 (see above) were discovered on top of the ruins of the northeast corner of the inner enclosure wall, an area now covered by debris. As was the case with Roman house 3, only a few remains of the original building were preserved. Benches were built against some walls; two roundish objects on the plan were labelled "hearth," but are not recognizable on photos. No beehive-vaulted cellars (silos) were discovered in the area. Fragments of glass found among the walls made the excavators suggest the Greco-Roman date.

5. GYPSUM WORKERS' HOUSE SOUTHEAST OF THE TEMPLE

(pl. 59b–d)

SOURCES: Tomb card 314
Photos L 7–8:377–78; L 12–13:377 (pottery)

According to the tomb card, a small, well-preserved building was excavated during the 1907–8 season "S.E. of Temple. (Cemetery)." Its exact location is unknown, though the photos suggest that it was built against either the inside or the outside of the outer enclosure wall.

The building consisted of one chamber, which was apparently entered through a slightly vaulted door in the front short side. Inside, against the back wall, were found the refuse of a gypsum kiln(?) with broken early Twelfth Dynasty pottery,[66] two wooden spatulas (p. 73, cat. 183), and a peg.[67] Three storage jars were sunk into the floor of the chamber in front of the heap of refuse.

Craftsmen may have used the building when tombs were added to the cemetery around the pyramid. The refuse in the cabin may have been moved from the actual gypsum production area, since the cabin itself probably did not contain a kiln. In the photos, the walls do seem to be darkened, but are not blackened to the extent that would indicate heavy firing. In the original sources, the word lime is used instead of gypsum, but I decided to exchange it because apparently no analysis of the discovered material was made, and lime is believed to have been introduced into Egypt only in Greek and Roman times. If the original Expedition really had discovered the remnants of a Middle Kingdom limekiln, we would have the earliest occurrence of lime in Pharaonic Egypt.[68] Unfortunately, the opportunity of solving this question was missed.

From the remains visible in the photos and by the date of the pottery, the installation has a close parallel in the gypsum production area outside the northern gate of the outer enclosure wall.[69]

Beehive-Vaulted Cellars (Silos)

(pls. 62–63)

SOURCES: Lisht Journal I, 23, 153–61
Tomb cards 178, 402–5
BMMA 19 (Dec. 1924), pt. II, 35; *BMMA* 29 (Nov. 1934), sec. II, 5, fig. 1
Plans AM 2682–83 (scale 1:200; neither plan is comprehensive)
Photos 6 LN:1–4, 8–17, 20–22, 26–27; 18 L:11, 15; L 33–34:205–10, 220–22, 239–41, 243, 330, 332–34, 387–92

A group of about thirty beehive-vaulted brick cellars or silos were discovered when the Metropolitan Museum Expedition cleared the area in the southeast corner of the pyramid of Senwosret I during the 1918 and 1923–24 seasons, and later during the 1933–34 season, when they cleared pyramid 2 (Itakayet). The cellars were clustered in two groups, one on the slopes of the debris in the southeast corner of the pyramid of Senwosret I, and the other in an elongated file along the north side of pyramid 2. Both groups were probably part of the same storage area.

The cellars on the king's pyramid, four north of the southeast corner of the main pyramid and about ten to twelve west of the corner, were not documented and were gradually removed during the cleaning of the pyramid slope. Existing photos show, however, that these cellars were similar to the better-recorded cellars found north of pyramid 2. They were certainly built after the pyramid of Senwosret I had lost its casing and backing stones, and were sunk into the sloping debris at different levels starting from court level up to 5 to 7 m. According to tomb card 178, one isolated cellar was erected at the northwest corner of the *Ka*-pyramid, "built partly on the pavement which butts against the pyramid casing." These underground cellars, which were entirely preserved, consisted of corbelled domes built of about ten rings of bricks set edgewise with a stone slab sealing the last ring. No information about their contents was recorded.

Fifteen more of these structures were found in the debris covering the northern part of pyramid 2,[70] where the builders dug down through the soft sand layers until they reached the limestone chip and stones that provided a solid foundation for the cellars. In the lower sections of the cellars, stones were used to strengthen the foot of the structures. Although none of these cellars was completely preserved, they too probably consisted

[65] For details see Christian Hölzl, *The South Cemeteries of Lisht: Private Tombs*, forthcoming.

[66] Photo L 12–13:377 (unpublished) depicts a marl clay C storage jar (Arnold, *Senwosret I*, 114, fig. 59, no. 2); a medium-sized bowl (ibid., 127, fig. 64, no. 152); and a hemispherical cup with an approximate vessel index of 216.

[67] Compare Arnold, *Senwosret I*, 28, fig. 5, also from a gypsum production area.

[68] A. Lucas and J. R. Harris, *Ancient Egyptian Materials and Industries* (London, 1962), 74–79.

[69] For the gypsum production area outside the northern gate of the outer enclosure wall see Arnold, *Senwosret I*, 26–28.

[70] There are photos that show that even more cellars of this type were found, but their location is uncertain. Photo 18 L:11 shows two examples, apparently in the neighborhood of deposit pit 4 (see p. 26), one north and one south of the inner enclosure wall. Photo 18 L:15 shows two cellars somewhere outside the south enclosure wall. In one of them a reed mat, probably from a burial, is visible.

of about ten courses of bricks set on edge. Ten to eleven cellars, numbered 1–10 on our plan, were described (see sources, above) and can be identified with those visible on plans and photos; the same sources indicate the existence of about five more unrecorded cellars.

The Metropolitan Museum Expedition had previously discovered about two hundred cellars dating to the Twenty-second Dynasty in the settlement surrounding the pyramid of Amenemhat I, "Some of them certainly belong to the houses, being used as receptacles for corn, firewood, etc.; others most certainly do not, for their openings are on a different level from that of the houses, and in some cases they deliberately cut through their walls."[71] The excavators observed that in this settlement the cellars were always dug into the ground so that the opening at the top was flush with the ground or floor level.[72] Using this evidence, it is certain that the cellars at Lisht South were not erected on top of the debris, but also dug into it from above. The upper floor level, which the Expedition did not observe in the cellars of the South Cemetery, should also have contained the remains of the buildings adjacent to the cellars.

Beehive-vaulted cellars are a rare type of Egyptian domestic building,[73] and though it cannot be explained at present, the existence of so many of these structures at Lisht must have had a special reason. With the exception of the "Roman house" (see pp. 50–51) near the *Ka*-pyramid, no other structures directly associated with the cellars have been found at Lisht South. It is therefore possible that the cellars either belonged to a settlement farther away, perhaps even in the valley, or that the remains of the attached buildings had totally disappeared or were overlooked by the excavators.

As in Lisht North, some cellars on the south were certainly used, and probably reused, as tombs. One, probably near the southeast corner of the king's pyramid,[74] contained a child buried in a jar shaped like those used in the Late Period to bury embalming material.[75] From the photo, one can recognize that the jar was a pottery coffin with an oval lid at the shoulder, but no drawing or description is available.

At Lisht South more is known about cellar 11, apparently situated southeast of group 8–10 and later used as a tomb.[76] It contained a fully extended body lying on the right side covered with a thick papyrus cloth and wrapped in a large palm stick mat.[77] Since the covered body was 1.27 m long, longer than the cellar, the brick dome had to be pierced at the east side, 30 cm aboveground. To the south of the head end of the burial lay a pot with a cup used as a lid. Four bricks lined the south end of the burial and a series of bricks was laid on top. These in turn were covered by a quantity of small tamarisk branches, and on top, the tomb was filled with debris and small stones. The cupola was strengthened with forked branches of tamarisk trees.[78]

"In a silo near the southeast corner of the pyramid," and perhaps "on the south side," a contracted body lying on its right side with its hands in front of its face was found. Nothing is known about the burial except what is visible on the photos, namely that the head rested on a small mat, the knees were bound together with a cloth, and the body, except the head, was covered by another larger reed mat.

The date of the cellars at Lisht South is unknown, but they could only have been built after the destruction of the pyramid in the Eighteenth Dynasty. One might assume that they have the same Twenty-second Dynasty date as those of the north cemetery, a time frame that was established from the general date of the north settlement and from "a number of glaze amulets, mostly sacred eyes, which may be XX dynasty in date, but which could not in any case be later than XXII dynasty." A Twenty-second Dynasty date is also suggested by the elongated jar and the ovoid jars found in cellar 11, which are comparable to similar pottery assemblages found at Illahun.[79]

The Boat Pit[80]

(pls. 64–65)

SOURCES: Letters, Lansing to Lythgoe, Mar. 20 and Apr. 3, 1924
Tomb card 539
BMMA 19 (Dec. 1924), pt. II, 37
AM 2618
Photos 6 LN:71–82; L 32–33:121–22

In March 1924, the original Expedition discovered an elongated brick chamber 3.30 m south of the southern enclosure wall of pyramid 5. The excavators considered it to be an unusually shaped tomb, the plan of which was dictated by the nature of the ground. This misunderstanding is amazing, because the east-west orientation, the location directly under the surface, and the boat-shaped outlines of the structure clearly indicate a boat pit. Unfortunately, only a sketchy outline of it appears on plan AM 2618 (scale 1:200!), supplemented by some photos that do not permit recognition of details, as the pit was excavated but not really cleaned. A gaping crater is all that now remains.

[71] *BMMA* 16 (Nov. 1921), pt. II, 13, figs. 2, 6–7. This material is currently being studied and will be published in Felix Arnold, *The North Cemeteries of Lisht: The Settlement*, forthcoming.

[72] The photos of these cellars or silos are misleading because they suggest aboveground, freestanding structures. All these cellars were certainly underground.

[73] There is one good parallel at Amarna (H. Frankfort and J. D. S. Pendlebury, *The City of Akhenaten Part II: The North Suburb and the Desert Altars*, Fortieth Memoir of The Egypt Exploration Society [London, 1933], 73, fig. 8) and numerous others in Ptolemaic/Roman Karanis (see Arthur E. R. Boak and Enoch E. Peterson, *Karanis* (Ann Arbor, 1931), fig. 6, plans IV–V.

[74] Photo 6 LN:9. The negative numbers of the photos suggest a connection with the tombs on the southeast corner of the pyramid.

[75] Rather frequent and usually dated to the Twenty-first and Twenty-second Dynasties: see Herbert E. Winlock, *The Tomb of Queen Meryet-Amun at Thebes*, Publications of The Metropolitan Museum of Art Egyptian Expedition 6 (New York, 1932), 42–43, fig. 22, pl. 38; idem, *Excavations at Deir el Bahri 1911–1931* (New York, 1942), pls. 93–94; W. M. Flinders Petrie, *Hyksos and Israelite Cities*, British School of Archaeology in Egypt, and Egyptian Research Account, Twelfth Year, 1906, 12 (London, 1906), pl. 17a, no. 4 (with lid and rim!); Petrie, *Qurneh*, pl. 51, nos. 807–11; Dorothea Arnold, "Zweiter Vorbericht über die vom Deutschen Archäologischen Institut Kairo im Asasif unternommenen Arbeiten: Die Keramik," *MDAIK* 21 (1966): 90, pl. 20d.

[76] The identification with the tomb on pl. 63b is not certain. According to Lisht Journal I, 159–61, it was excavated January 3–5, 1934, but photos presumably taken later still show the complete construction.

[77] A similar, but not identical, burial of a child (about eleven years old?) in an unidentified cellar (photo 18 L:15) also contained such a mat. Photos L 33–34:238–39, 277 show that immediately northwest of cellar 10, but not in a cellar, a similar burial containing a mat was found.

[78] Photo L 33–34:263.

[79] Petrie, *Lahun* II, pl. 59, type 45C (seen on Metropolitan Museum photo 6 LN:9) and type 56B. The cellar pot is partly shown on photo L 33–34:222.

[80] See also pp. 43 no. 28, 78–80.

The boat was enclosed in a brick chamber[81] 15.20 m long that was sunk about 4 m below the surface of the court. In order to correspond to the shape of a boat, the pit is wider in the middle and narrower at either end; photos indicate that both bow and stern rose considerably.[82] The floor was paved with bricks, while the vaulted ceiling originally consisted of a double ring of bricks set edgewise. The vault was wider in the middle and narrower at either end; its thrust was carried by a course of headers set against the outside of the vault. Near the east end of the pit, a rising brick construction supported the stern. A similar construction would be expected at the bow, but this area was disturbed by the addition of later walls.

No traces of the boat itself were recorded, but since the structure was not recognized as a boat pit, fragments of wood may have been ignored or overlooked during the excavation. Because the vault was sealed, one would assume that a boat was actually buried in the trench.

The western end of the pit was later used as a tomb. From the surface, a pit lined with stone slabs was constructed at the apex of the vault and a partition wall was erected in order to create a tomb chamber in the western end of the pit. The tomb chamber apparently had a floor, and probably also a ceiling, of limestone slabs. The objects, described below (pp. 78–80, cats. 235–49), were not found in the tomb, but near the eastern end of the boat pit, so that no sure connection between these objects and the burial can be established. We therefore cannot date the construction of the tomb with certainty. If the objects were originally connected with this tomb, the burial would date to the Thirteenth Dynasty (see p. 78).

There is no evidence with which to determine the owner of the boat pit. Since boat pits are normally built along the south and not at the west side of a tomb,[83] the boat pit probably belonged not to the king, but to the owner of pyramid 5. However, since no other secondary pyramid at Lisht was equipped with a boat pit, and no boat pit belonging to the king was found along the southern enclosure wall of his precinct, the slight possibility remains that the boat was deposited for the king himself.

Three parallels for such brick-lined boat chambers occur in other Middle Kingdom pyramid complexes. At Dahshur, an 18 m long brick chamber lay south of the enclosure of the pyramid of Senwosret III.[84] This pit was carved into the ground, sealed by a huge brick vault five courses thick, and enclosed by walls at both ends. A second boat pit was also found at Dahshur, south of the pyramid enclosure of Amenemhat III, where a brick chamber 15 m long and 5.57 m wide was discovered directly under the desert surface. It too had a vaulted roof and was later used as a tomb. Just to the east, a similar, but more badly damaged, structure was found. Neither of the Amenemhat III boat pits contained the remains of boats (unpublished material).

[81] According to tomb card 539, brick size was 14 x 22 x 45 (sic) cm.

[82] The raised ends of the pit can clearly be seen on photos L 32–33:121–22, which show the western end of the pit. They also show an opening to the west, either ancient or cut by the excavators, for the accommodation of the bow of the boat.

[83] At the south side: Cheops, Djedefra, Chephren, Senwosret II, Senwosret III, Amenemhat III (Dahshur), Imhotep (Lisht). Along the south side of the causeway: Unas. A boat pit was also found along the south side of the sun temple of Niuserra.

[84] De Morgan, *Dahchour* I, 81–82, figs. 105, 201–2. Dimensions of the chamber were: L. outside 22 m; L. inside 18.20 m; W. inside 4.10 m; H. of vault inside 3.88 m. See here also p. 103, n. 234.

CHAPTER V

Catalogue of Finds

Only objects currently in The Metropolitan Museum of Art were examined by the authors for this publication. Other descriptions and identifications of material are based on the notes of the original excavators. This especially applies to such terms as "blue paste," "ivory," "black granite," etc.

Finds from the Burial of Ankhty (Shaft 7/12)

(pls. 66–69)

SOURCES: Lisht Journal I, 130
Tomb cards 505–38
Drawings of coffin inscriptions AM 2708–13 (no scales)
Photos L 31–32:72–77, 125–38

In March 1932, the undisturbed burial of an elderly lady named Ankhty was discovered near the northeast corner of the enclosure wall of pyramid 5. The tomb was cut into the desert conglomerate, with the mouth half-covered by a foundation block of the northern enclosure wall of pyramid 5. The orientation of the tomb does not exactly follow that of the wall, but is considerably oblique from northeast to southwest.

Little care was taken in the construction of the tomb. The irregularly shaped shaft is only 5 m deep and ends in loose conglomerate. Two steps lead from the bottom of the shaft into the chamber, also irregularly shaped.

Because the mouth of the pit was covered by the foundations of the enclosure wall of pyramid 5, the burial must predate the erection of the wall, leading to the assumption that Ankhty died before the construction of pyramid 5 had been begun, and that a tomb at that site had been allocated to her because of her family or other connections. Such a situation might have occurred from regnal year 10 onward, when the plans for pyramid 5 were still being formulated; a date before the middle of the reign of Senwosret I is also appropriate for the pottery. Such chronological precision is noteworthy, for it allows us to date the texts on the coffin of Ankhty.

The simple burial was laid on a noticeable slope and consisted of an inscribed wooden coffin, a mask covering the mummy's head, a bead necklace, a mirror, a wooden *hes*-vase, a head rest behind the head, and five pots arranged outside the coffin along its eastern side. The head of the mummy faced east.

1. Coffin (pl. 66b–c)

The ordinary, rectangular, cedar wood coffin with four battens and a low, flat lid rested directly on the floor, sloping down considerably from head to foot. The floor boards were held together by five tenons placed between each pair of boards. None of the tenons was dowelled through transversely, but simply driven home tight. There were three thin "veneer" patches 2–3 mm thick on the interior faces of the head and foot ends and on the left side, each held in place by a dozen small dowels. At the foot end, the lid was held in place by only one dowel, which was driven through the top of the foot end into the lid batten. The head end of the lid was secured by a single dowel driven down through the lid into the top of the left side.

The exterior of the coffin was painted yellow with blue inscriptions, the interior was covered with inscriptions painted directly on the wood. On the left side, near the head end, were a pair of large *udjat*-eyes and, on the other side of a painted false door, were offerings and an offering list. The bottom of the coffin was inscribed with religious texts.[85]

Because of the dampness in the tomb, the wood was badly rotted. The lid was in the best condition; the right side of the coffin, caved in and broken by the weight of the fill, was the most damaged. Colors had flaked off and were often barely visible. The present location of the coffin is unknown.

Dimensions: L. 214 cm; W. 54 cm; H. with battens 60 cm; H. of lid 7 cm

2. Mask

The mask was composed of two layers of coarse linen, with a thick coat of white plaster on the inside and a thin layer of white plaster on the outside. The ears were made of sycamore wood. The entire exterior of the mask was painted, with the face and ears yellow, the headdress and side extensions of the eyes blue, and the rims and pupils of the eyes black. A three row necklace and a seven row broad collar were painted between the tabs of the headdress; the bottom part of the mask was yellow. The 58 cm length of the mask suggests that it covered the upper one-third of the body.

Due to the dampness in the tomb, the material rotted and crumbled into tiny pieces.

Dimensions: L. 58 cm; bottom of painted broad collar 44 cm

3. Wrappings

The linen bandages were soaked with a black oily unguent. The mummy was wrapped in the following stages:

1. A series of spiral, coarse linen bandages 13 cm wide, placed next to the body. The limbs were not wrapped separately.
2. At least nine layers of coarse linen shawls that were wrapped from head to foot around the mummy.

[85] The texts and decoration of the coffin will be included in James Allen, *The Cemeteries of Lisht: Funerary Texts*, forthcoming.

3. Several layers of fine linen shawls that were folded over and around the mummy.

4. A thick layer of a black, pitchlike substance that was poured molten over the body after it was placed in the coffin.

5. Several coarse linen shawls that were probably folded in a bale over the top of the mummy.

The mask was fixed under layer three. A sort of mattress, about 2 cm thick, composed of linen and probably sawdust, was placed under the mummy and covered the whole floor of the coffin.

4. Mummy (pl. 67a)

The mummy was that of a female approximately 65–70 years old. The 168 cm skeleton was sparsely covered with blackened skin; hair still remained on the top of the skull. It lay half-turned on the left side, with its hands together over the pudenda. Teeth were strong and sound, but extremely worn; the hair was black, wavy, and fairly thick and long. The woman was uncommonly sturdy and robust, and was taller than the average Egyptian woman.

During the embalming process the brain was not removed. The body was soaked in salt solution and drenched with a dark oily unguent, but it was too badly decayed to answer questions about incisions, absence of intestines, etc.

Dimensions:

Total height:	168 cm
Skull measurements:	
Sagittal measurement:	17.7 cm
Transverse measurement:	13.6 cm
Cephalic index:	76.8 cm

5. Bead Necklace (pls. 67b, 68)
MMA 32.1.108

ADDITIONAL SOURCES: Photos L 31–32:137–38; neg. no. 89586

The necklace was found around the neck of the mummy on the left side of the chest. Though the string had disintegrated, fifty beads still adhered to the body. Three types of beads were recovered:

a) 1095 tiny glazed disk beads (1023 blue, 72 white); mean Diam. 2 mm; mean Th. 0.7 mm.
b) 1 carnelian disk bead; Diam. 2 mm; Th. 1 mm.
c) 13 larger beads of various sorts.

From the position of the beads on the body, the necklace was reconstructed in the following manner: Blue pendant bead in the center. On either side of the pendant, thirty-six blue disk beads, then a large bead, then thirty-six white disk beads, then another large bead. The rest of the necklace is composed of thirty-six blue disk beads followed by large beads, until the large beads presumably ran out, and the remainder of the necklace was strung with only the blue disk beads.

Dimensions: L. after restringing 86 cm

6. Mirror (pl. 67b)
MMA [32.1.103]

ADDITIONAL SOURCES: Photos L 31–32:137; neg. no. 89509
BIBLIOGRAPHY: Hayes, *Scepter* I, 241; Christine Lilyquist, *Ancient Egyptian Mirrors from the Earliest Times through the Middle Kingdom* (Munich/Berlin, 1979), 17, n. 183

The badly corroded mirror of copper or bronze was positioned against the left side of the mummy, below the shoulder. There is no trace of the tang, but a jagged break at the edge of the mirror suggests that it probably broke off.

Dimensions: H. 15 cm; W. 17.5 cm; maximum Th. 6 mm

7. *Hes*-Vase (pl. 67b)
MMA [32.1.105]

ADDITIONAL SOURCES: Photos L 31–32:137; neg. no. 89585

The *hes*-vase was laid on the chest of the mummy. It is made of unpainted cedar wood that has become warped, very dry, and soft.

Dimensions: H. 15 cm

8. Headrest (pl. 67b)
MMA [32.1.104]

ADDITIONAL SOURCES: Photos L 31–32:137; neg. no. 89984
BIBLIOGRAPHY: Hayes, *Scepter* I, 258

The unpainted cedar wood headrest was on the floor of the coffin above the head of the mummy. A curved top separates the column from the base.

Dimensions: H. 16.5 cm

9–21. Pottery
(by Dorothea Arnold)

According to tomb card 506, the two jars and three of the carinated cups were found in front of the center of the east side of the coffin (see pls. 66b, 67a). The remainder of the pottery was found in the fill.

The ceramic vessels from the tomb of Ankhty are of crucial importance for the study of Egyptian pottery. Here is a group of vessels that represents the production of *Jt-t3wj* potters in the second decade to the middle of the reign of Senwosret I (see p. 58).

Functionally, the group found beside the coffin consists of pedestal cups, which were probably used for ritual purposes, and beverage jars.[86] Drinking cups and plates, which could have been used as lamps during the preparation of the tomb, were found in the fill.

The ware and shape of the vessels are typical for a transitional phase of pottery development that falls between First Intermediate Period and Twelfth Dynasty ceramic styles. It is significant, however, that while a glance at the group as it is shown on plate 69 may suggest strong ties to the First Intermediate Period, a closer examination reveals important departures from that style.

The impression that the Ankhty group belongs to the First Intermediate Period is mainly conveyed by the carinated cups (cats. 11–13, pl. 69). Following certain predecessors in the Old Kingdom,[87] such cups are a dominant type of First Intermediate

[86] For the New Kingdom see Nagel, *Céramique du Nouvel Empire* I, 202–5.
[87] George A. Reisner, *A History of the Giza Necropolis* II, completed and revised by William S. Smith (Cambridge, Mass., 1955), 85, fig. 122, G 7560B.

	Shape	*Fabric*	*Ware*	*Current Location*	*Remarks*
9.	Medium-sized, round-bottomed plate (pl. 69)	Nile B1	Red-coated interior	MMA 32.1.106 Photos L 31–32:136; neg. no. 89525	Found in the fill of the chamber, about 20 cm above the middle of the coffin.
10.	Medium-sized, hemispherical cup (pl. 69)	Nile B1	Red-coated interior and exterior; grooves around the middle of the exterior	MMA [32.1.109] OIM 29484 Photos L 31–32:136; neg. no. 89527	Found in the fill of the pit and chamber. Vessel index 192.
11.	Medium-sized, carinated pedestal cup (pl. 69)	Nile B1	Red-coated interior and exterior	MMA [32.1.110] OIM 29485 Photos L 31–32:136; neg. no. 89587	Found east of the coffin. The surface has dark oily spots.
12.	Medium-sized, carinated pedestal cup (pl. 69)	Nile B1	Red-coated interior and exterior	MMA [32.1.111] OIM 29486 Photos L 31–32:136; neg. no. 89587	Found east of the coffin. The surface has dark oily spots.
13.	Medium-sized, carinated pedestal cup (pl. 69)	Nile B1	Red-coated interior and exterior	MMA [32.1.112] OIM 29487 Photos L 31–32:136; neg. no. 89587	Found east of the coffin. The surface has dark oily spots.
14.	Large, globular jar; H. 33.2 cm; W. 27.4 cm (pl. 69)	Nile B2	Baked pink; red-coated	MMA [32.1.113] OIM 29488 Photos L 31–32:136; neg. no. 89544; OIM P.67845/N.46621	Found east of the coffin. A used pot with a worn and dirty surface; filled with sand; no stopper.
15.	Medium-sized, ovoid jar H. 19.9 cm; W. 15.2 cm (pl. 69)	Nile B2	Red-coated	MMA [32.1.107] OIM 29483 Photos L 31–32:136; neg. no. 89526; OIM P.67837/N.46613	Found east of the coffin. A very clean (possibly new) jar filled with sand; no stopper.
	Fragments				
16–17.	Two medium-sized, round-bottomed plates	?	?	Discarded	Found in the fill of the pit and chamber. One plate was much blackened on the interior; possibly used as a lamp.
18.	Hemispherical cup	?	?	Discarded	Found in the fill of the pit and chamber.
19.	Carinated pedestal cup (same as cats. 11–13)	?	?	Discarded	From the fill of the upper part of the pit.
20.	Medium-sized jar (same as cat. 15)	?	?	Discarded	Found in the fill of the pit and chamber.
21.	Large bowl(?) (dish)	Nile B1 or 2	Red-coated on interior	Discarded	Found in the fill of the pit and chamber.

Period pottery in the Memphite to Fayum-entrance area, a region that is best represented by the corpus from Sidmant. In their publication on Sidmant, William Flinders Petrie and Guy Brunton collected carinated cups with flat bases, with simple foot bases, and with pedestal foot bases under the collective number 30.[88] The flat-based cups 30c, the simple footed cups 30f, and the carinated pedestal cups 30k, 30p, and 30v are the predominant variants during the main part of the period (the Ninth, Tenth, and late Eleventh Dynasties).[89] In the latest phase

[88] Petrie, *Sedment* I, pl. 29.

[89] These variants were found with types 16k: 64d, k, m, p; 84v; 89d, h, t in graves 503, 511, 1520, 1522, 1586, and 1590 in cemetery G at Sidmant (see Petrie, *Sedment* I, pls. 29–38 [with registers]).

of the style, which continues at least through the reign of Amenemhat I, variants 30h and 30t predominate.[90] The Ankhty carinated cups differ from all these First Intermediate Period variations, including 30h and 30t, in the narrowness of the stem of the pedestal base, the shallowness of the lower body between the narrowest point of the base and the carination, and the pronounced conical shape of the upper body. An additional feature of the Ankhty cups is the profiled rim of the base plate, the outline of which appears as a flat disk, while the bases of the Sidmant cups usually have an inverted conical shape.[91]

Close parallels to the Ankhty variants of carinated pedestal cups were found at Deir Rifa in graves 52, 254, and 323.[92] Besides the carinated pedestal cup, Rifa grave 52 contained a carinated cup with a simple foot of more shallow proportions, a type which is known from the early graves at Riqqa.[93] In addition to two jars very close in shape to the large Ankhty jars (cats. 14–15, pl. 69), Rifa grave 254 also contained a shouldered pot that is certainly of a Twelfth Dynasty type.[94] Finally, in Rifa grave 323 the carinated pedestal cup was accompanied by two globular jars with even outlines.[95] All Rifa parallels clearly demonstrate that the particular variant of the carinated pedestal cup seen in the Ankhty group is a Twelfth Dynasty variation that developed from the First Intermediate Period type.[96]

Medium-sized, fairly shallow plates with somewhat flattened rims (cat. 9, pl. 69) have a long history through the First Intermediate Period. Type 8n is the most common variant at Sidmant, where it occurs frequently in cemetery G and lasts until the reign of Amenemhat I, the latest phase of the Sidmant style.[97] Plates of type 8n are either plain or coated with a rather dark brown ochre. Also plain, and close in shape to Sidmant 8n, is a medium-sized plate found in the northwest foundation deposit of the pyramid of Senwosret I.[98] When compared with Sidmant 8n and this deposit plate, the Ankhty plate has a more even outline. The evenly outlined, medium-sized plate is a common type throughout the Twelfth Dynasty.[99] The closest parallel for the Ankhty plate at Lisht South is a plate found in the so-called "entrance cut deposit,"[100] a deposit that also has a position similar to that of the Ankhty burial: just as the enclosure wall of pyramid 5 covers the Ankhty burial, the enclosure wall of pyramid 7 partly covers the deposit hole (p. 42, no. 9). Neither the northwest foundation deposit plate nor the plate from the "entrance cut deposit" have an ochre coating. On the other hand, sherds of such plates from the basin in the "brick chamber" in the pyramid temple of Senwosret I have the same interior ochre coating found on the Ankhty plate.[101] The Ankhty plate, therefore, like the pedestal cups, is an early representative of the Twelfth Dynasty style.

The development of the hemispherical drinking cup (cat. 10, pl. 69) from the First Intermediate Period to the early Twelfth Dynasty has been previously described.[102] The cup found with the burial of Ankhty is a typical example of the early Twelfth Dynasty phase of this development. Key stylistic elements are the thin walls and the ochre coating on the interior and exterior. The vessel index[103] of 192 is fairly low, but well inside the parameters established for the reign of Senwosret I.

Finally, the jars of the Ankhty burial (cats. 14–15, pl. 69) are a significant source of information regarding the state of ceramic development preceding the erection of pyramid 5. Broad jars are a rare feature in the First Intermediate Period pottery repertoire of the Memphite to Fayum-entrance region. A large, globular, shouldered type of bottle, which was doubtlessly derived from similar bottles of the Memphite Old Kingdom,[104] survived until the middle of the First Intermediate Period[105] and a medium-sized jar type with a broad neck and a slightly accentuated shoulder appears intermittently until just before the last phase of the Sidmant style.[106] All other jar and bottle types are slender, and very often have narrow bodies.[107] In contrast to this decided preference for slender bodies during the First Intermediate Period, the pottery repertoire from the reign of Senwosret I is rich in broad and globular shapes. They occur not only at Lisht,[108] but also at Deir Rifa,[109] at Gurob,[110] and at Abusir.[111] Wherever such broad vessels are found, it can usually be shown that they postdate the First Intermediate Period,[112] but the Ankhty burial is the first discovery of such jars that can be firmly dated to the reign of Senwosret I.

As with the plate, a significant feature of the Ankhty jars is the evenness of their profiles; broad jars of slightly earlier date do not possess a comparably even outline. This is true not only in the Memphite to Fayum-entrance region,[113] but also in Upper Egypt, at least as far as jars of Nile alluvial clay are concerned.[114] Upper Egyptian marl clay jars of globular shape and even outline go back to the late Old Kingdom and the very beginning of the First Intermediate Period.[115] During the reign of Senwosret I, the potters who were making broad jars of Nile clay with even outlines in Upper Egypt and in the Memphite to Fayum-entrance region were quite possibly inspired by the Upper Egyptian marl clay jar tradition.

In conclusion, it can be stated that the group of pots from the Ankhty burial represents a phase of pottery development that

[90] Petrie, *Sedment* I, pl. 29, from grave 1001 in cemetery N. For cemetery N and its chronological placement see Arnold, *Senwosret I*, 144–45.

[91] Only type 30p resembles the Ankhty cups (see Petrie, *Sedment* I, pl. 29).

[92] For the contents of these graves see Petrie, *Gizeh and Rifeh*, pl. 13A, nos. 8–13; 13B, nos. 70, 79.

[93] Engelbach, *Riqqeh and Memphis* VI, pl. 28, no. 10p.

[94] Petrie, *Gizeh and Rifeh*, pl. 13A, no. 9.

[95] Petrie, *Gizeh and Rifeh*, pl. 13B, nos. 70, 79.

[96] Another example of this late version of pedestal cups was found at Ghurab at the Fayum-entrance (see Brunton, *Gurob*, pl. 11, no. 6).

[97] Petrie, *Sedment* I, pl. 29. A late occurrence is found, for instance, in grave 2111 (ibid., pl. 39).

[98] Arnold, *Senwosret I*, 108, fig. 54, no. 1.

[99] Engelbach, *Riqqeh and Memphis* VI, pl. 28, no. 2f4.

[100] Arnold, *Senwosret I*, 111, fig. 55a, no. 3.

[101] Arnold, *Senwosret I*, 116, table 2; 118, table 3.

[102] Arnold, *Senwosret I*, 140–41.

[103] Arnold, *Senwosret I*, 135, 140, fig. 75.

[104] George A. Reisner, *A History of the Giza Necropolis* II, completed and revised by William S. Smith (Cambridge, Mass., 1955), fig. 83, G 5221A; fig. 86, G 2370A.

[105] Petrie, *Sedment* I, pl. 34, no. 82d, f, k.

[106] Petrie, *Sedment* I, pl. 35, no. 94p.

[107] For jars see Petrie, *Sedment* I, pl. 31, nos. 50–51; for bottles see ibid., pls. 32–35, nos. 62–67, 86–90.

[108] Arnold, *Senwosret I*, 130, 132, figs. 67, 72.

[109] Petrie, *Gizeh and Rifeh*, pl. 13A, no. 10; 13B, nos. 70, 79; 13C, nos. 116, 123, 132, 140, 146.

[110] Brunton, *Gurob*, pl. 11, nos. 9–16.

[111] Heinrich Schäfer, *Priestergräber und andere Grabfunde vom Ende des Alten Reiches bis zur Griechischen Zeit vom Totentempel des Ne-User-Rê* (Leipzig, 1908), 37, fig. 40.

[112] Stephan J. Seidlmayer, *Gräberfelder aus dem Übergang vom Alten zum Mittleren Reich*, Studien zur Archäologie und Geschichte Altägyptens 1 (Heidelberg, 1990), 296, 344–45.

[113] W. M. Flinders Petrie and Ernest Mackay, *Heliopolis, Kafr Ammar and Shurafa*, British School of Archaeology in Egypt and Egyptian Research Account, Eighteenth Year, 1912, 24 (London, 1915), pl. 27, no. 24, found with no. 26 in tomb 509C, while nos. 19 and 22 were in 509B (see pl. 12 for plan of tomb).

[114] Jar found with the burial of Wah (see Dorothea Arnold, "Amenemhat I and the Early Twelfth Dynasty at Thebes," *Metropolitan Museum Journal* 26 [1991]: 38, fig. 61).

[115] Petrie, *Qurneh*, pl. 16, nos. 336–52; pl. 17, no. 391.

is decidedly different from the First Intermediate Period style. Since many significant traits that appear in the vessels are closely linked to the pottery of the remainder of the Twelfth Dynasty, the Ankhty group provides important evidence that the potters at *Jt-t3wj* were developing the Twelfth Dynasty style at the time Ankhty was buried.

In *The Pyramid of Senwosret I*, we published a number of groups of pottery vessels and sherds that were found in deposits below the outer court pavement ("south wall deposit 1") and below the enclosure wall of pyramid 7 ("entrance cut deposit").[116] We also described pottery from areas inside and just outside the pyramid temple, as well as from a number of dumping areas. This material could be categorized as: a) from the beginning of the building activities at Lisht South; b) from the time before or during the construction of monuments in the outer court; c) from the time when the pyramid temple was first in use; and d) from the later use of the temple and surrounding area. The Ankhty group belongs to category b. All pottery from this phase of the pyramid complex of Senwosret I is decisively different from the style of even the latest First Intermediate Period pottery, which probably continued until the beginning of the Twelfth Dynasty. By the time Ankhty was buried, and the "south wall 1" and "entrance cut deposits" were put in place, the First Intermediate Period pottery style had clearly come to an end at *Jt-t3wj*.

Finds Associated with the Secondary Pyramids

PYRAMID 1

22. Fragments of an Inscribed Offering Stand of Queen Neferu (pl. 70)
MMA [34.1.10]

SOURCES: Tomb cards 294–95
Photos L 12–13:283; L 33–34:440; neg. no. 98637
BIBLIOGRAPHY: Hayes, *Scepter* I, 194

Though the fragments were found in the southeast corner of the outer court ("old material"), we may assume that the piece originally stood in the mortuary chapel of the queen's pyramid. Five fragments remained of the "black granite" (or diorite?) object, originally about 49 cm in diameter. Both the interior and exterior are finely polished, and an inscription is incised around its interior. Only fragments of the rim and upper part of this marvellous piece exist to a height of 11 cm; the shape of the lower part is questionable. Because of the unusual size and the traces of a protrusion below the rim, one might suggest that it was not an isolated dish, but part of an offering stand with a more projecting rim. Similar granite offering stands include one for Amenemhat I and Senwosret I in the Metropolitan Museum[117] and others published by Henry G. Fischer.[118]

The inscription covered the sloping inner side just below the rim. From the five fragments, William C. Hayes reconstructed the following two texts:

a) "Long live the Horus *'nḫ-mswt*, the son of Re Senwosret. The pyramid of the great king's wife, the mistress of all the wives, the possessor of honor, Neferu."

b) "Long live the Horus *'nḫ-mswt*, the perfect god, lord of the two lands Kheperkara. The pyramid of the king's wife in *Ḥnmt-swt*, the possessor of honor, Neferu."

Hayes's reconstruction, with the rather abrupt connection between the name of the king and that of the queen's pyramid, is unsatisfactory. Instead, one might suggest a reconstruction with the formula "Long live the Horus *'nḫ-mswt*, the perfect god, lord of the two lands Kheperkara. He made this as his monument for the pyramid of the king's wife in *Ḥnmt-swt*, the possessor of honor, Neferu."

Dimensions: Diam. as reconstructed 49 cm; H. 11 cm

23. Fragment of an Inscribed Offering Stand of Princess (Neferu?)-Sobek or Sat-Sobek (pls. 70, 71a)
MMA 34.1.11

SOURCES: Tomb card 295
Photos L 12–13:286–87; L 33–34:440; neg. no. 98156
BIBLIOGRAPHY: Hayes, *Scepter* I, 194

The fragment is said to have been found in the southeast corner of the outer court ("old material"), and originally belonged to the rim of the bowl-shaped upper part of an offering stand. The exterior of the heavy syenite fragment is polished and has an incised inscription, while the interior is unpolished. The preserved hieroglyphs suggest *s3t-n(jswt) Sbk-///*, but the last part of the name is illegible. There are traces of the last sign, possibly a *nfr*-sign, which would permit us to reconstruct the name as Neferu-Sobek. No horizontal bar of the *nfr* is visible, however, and no clear traces of further *nfr*-signs are preserved. One therefore cannot be sure about the reading Neferu-Sobek and cannot completely rule out the reconstruction *(s3t-njswt) S3t-Sbk m3'.t ḫrw*, though such a reading would make it difficult to explain the *n*-sign in front of *S3t*.[119] A princess with the name Sat-Sobek is mentioned on a magic wand (pp. 69–70, cat. 135, MMA 08.200.19).

Dimensions: Original Diam. ca. 29 cm

24. Fragments of an Altar or Statue (pls. 70, 71a)

SOURCES: Tomb card 296
Photo L 33–34:440

The two granite fragments, each with a vertical column of incised hieroglyphs along the right edge, were found at the southeast corner of the outer court and probably originate from the same monument. Since the backs are not smoothed, they probably originally belonged to the bottom face and the upper face (inscription) of a base.

The inscription reads ". . . daughter of the king . . . mother of the King of Lower Egypt, Neferu . . . "

Dimensions: Preserved H. 23.5 cm; preserved W. 27 cm; Th. 16 cm

[116] Arnold, *Senwosret I*, 106–46.

[117] MMA 63.46, Gift of Dulaney Logan, 1963.

[118] Henry Fischer, "Offering Stands from the Pyramid of Amenemhet I," *Metropolitan Museum Journal* 7 (1973): 123–26. Another one was recently auctioned at Sotheby's (see Sotheby's, *Antiquities and Islamic Art* [New York, June 18, 1991], no. 29).

[119] There is a note on tomb card 295 that states, "cf. frag. limestone relief (altered) from temple with same name as queen." Two photos of a fragment of a queen's name do exist. They are both labelled LNP, so that the identification cannot be established. The queen's name reads: */// ḥm.t nfr.t ḥḏ.t Sbk///*.

25. Fragments of a Seated Statue of Neferu

SOURCES: Tomb card 297

The two inscribed fragments of "black granite" (or diorite?), which were found separately at the "S.E. corner O.C." and on the north side of the pyramid, probably belong to the same seated life-size statue. Unfortunately, no photographs were taken and the fragments were probably left at the site. The first piece may be from the left side of the front of the throne. The second piece, the underside of which is unfinished, is certainly the edge of the base of the statue.

The person depicted is called ". . . and daughter of the king's body . . . " and "(mother[?]) of the King of Upper Egypt and mother of the King of Lower Egypt, Nefer."

Dimensions: W. of text columns 6.2 cm

PYRAMID 2

26. Wooden Box (pl. 71b)

SOURCES: Tomb cards 398–99
Photos L 33–34:264–65

A wooden box was found 4.50 m east of pyramid 2, slightly southeast of the supposed eastern chapel, on about 45 cm of dirty *radim* above the *gebel*; it was not found in situ. It is roughly and carelessly made of unplaned bits of a coniferous wood, perhaps pine, with several patches. The exterior is white-washed; the joints on the interior are smeared with coarse white stucco. The drawing on tomb card 398 shows how the boards were kept together with wooden pegs. Found in the box were a little chopped papyrus pith that resembled straw, a scrap of fine linen sheet, fragments of an ovoid red water jar of common Middle Kingdom type, and a pottery cup (cat. 27). These items were probably not the box's original contents, as it was either removed from the tomb by robbers or it belonged to the equipment of the funerary chapel.

Dimensions: 36 x 36 x 47 cm

27. Cup (pl. 71b)

SOURCES: Tomb card 399

Fragments of a small, plain cup of fairly fine, soft brown ware (Nile clay B2?), which was found in the wooden box (cat. 26).

28. Sledge (pls. 72–73)
MMA 24.1.84

SOURCES: Lisht Diary, Apr. 12, 1918
Tomb card 397
BMMA 15 (July 1920), pt. II, 10–11, fig. 7
Photos 18 L:12–14; neg. nos. 59240, 131111
BIBLIOGRAPHY: Hayes, *Scepter* I, 193, fig. 118; Arnold, *Senwosret I*, 92 n. 284, 113; Arnold, *Building in Egypt*, 276–77, fig. 6.36

Found in the south wall deposit no. 4. The sledge is made of cedar wood and consists of two runners that are 1.725 and 1.735 m long. The heads of the runners curve slightly upwards and are rounded; they are connected by two cross braces, the tenons of which reach deeply into the runners and are fixed by vertical pegs. The rear of the sledge is chamfered at the lower edge.

In front of the front cross brace and behind the rear cross brace, tie rods are inserted into the runners, each of which is carefully and regularly rounded with the ends fitted into the round sockets of the runners. In addition, these ends are fixed with vertical pegs. Besides these six pegs in each runner, there are the following four groups of dowel or tongue holes. Their position and outlines had been carefully measured and indicated with black color.

a) Each runner has two L-shaped slots, which start on the top face and end in the side face, that were intended to hold the straps used for securing objects on the sledge.

b) Each runner has two wide sockets (1.5 x 3.5 cm) used to insert tenons that must have protruded downwards from the object set on the sledge.

c) Each runner also has two elongated sockets that possibly served the same purpose as the wide sockets.

d) On each cross brace there is one wide socket flanked by another more elongated socket. These may have been added as an afterthought, with the intention of filling them with separate dowels hammered in from the outside in order to prevent the object on the sledge from sliding back and forth and breaking the tenons.

From this arrangement, one may conclude that the object placed on the sledge was 59 cm long, 67 cm wide, and made of wood. Lansing's suggestion that it was a (wooden) statue (in a shrine) may therefore be correct. More precisely, one might suggest that it was the shrine for a *Ka*-statue either similar to that of King Hor[120] or to the many *Ka*-statues represented in Old Kingdom tomb reliefs.[121]

The undersides of the sledge runners do not have scratches, indicating that it was not pulled over rough surfaces, and they are also carefully covered with plaster that smoothed the irregular wood and allowed the surface to be painted a pinkish color. These features might indicate that the sledge did not pull the shrine to the pyramid, but instead served some ceremonial function during the placement of the statue in the tomb chapel. From the existence of the sledge, one may further conclude that even if the body of the princess was buried elsewhere, the *Ka*-statue was actually placed in the tomb (see p. 26).

THE BURIAL CHAMBER OF PYRAMID 3

29. Staff(?)

SOURCES: Lisht Journal I, 171

On the top of the south end wall of the sarcophagus were the rotted remains of a cypress wood staff or a similar object.

[120] De Morgan, *Dahchour* I, 91–93, figs. 215–16. The dimensions of the shrine were: L. 92 cm; W. 68 cm; H. 209 cm.

[121] Marianne Eaton-Krauss, *The Representations of Statuary in Private Tombs of the Old Kingdom* (Wiesbaden, 1984), passim.

30. Shell

SOURCES: Lisht Journal I, 171

A common type of large, oval bivalve shell was found under the southeast corner of the sarcophagus. It was plain and uninscribed.

THE MAIN PIT OF PYRAMID 3

31. Foot of a Statue (pl. 74)
MMA 34.1.196

SOURCES: Photos L 33–34:442; neg. no. 98466

A diorite fragment of toes from a female foot of a probably slightly under life-size statue; the work is of high quality and the fragment has a fine polish. Since the sole of the foot is also carved with such features as the wrinkles under the toes, the legs must have been either crossed in front of the figure or the figure must have been kneeling, thus exposing the undersides of the feet. Female stone statues in this attitude are rare (see, for example, the figure of Sat-Snofru from Adana; MMA 18.2.2).[122] The statue may have originated in the funerary chapel of pyramid 3, indicating female ownership of the pyramid.

32. Granite Fragment (pl. 74)

SOURCES: Tomb card 408

A fragment from the corner of a "black granite" monument with the name "...*Mntw-ḥtp*..." incised in awkward and shallow hieroglyphs. Both extant surfaces are smoothly dressed and lightly polished. The monument was either an altar or a statue (thronebase?) that belonged to a person named Mentuhotep, perhaps the Vizier Mentuhotep whose tomb lies southeast of the pyramid enclosure of Senwosret I (see also cat. 81, p. 64 for part of the shrine in which this statue may have stood). However, one cannot rule out the possibility that "Mentuhotep" refers to a female (see p. 29).

33. Offering Table (pl. 74)

SOURCES: Tomb card 409
Photo L 33–34:441

A limestone offering table with a smooth top; the sides and bottom were planed flat, but not smoothed. A hard brown crust (glue?) adhered to the broken upper edge of the sun-damaged stone, perhaps indicating that a repair had been made in antiquity.

34. Relief Fragment (pl. 74)

SOURCES: Tomb card 409
Photo L 33–34:441

The large-scale relief fragment has parts of the *f*- and *d*-signs in raised relief.

35–42. Pottery

SOURCES: Tomb cards 410–11
Photo L 33–34:534

The following pottery was found in the main pit of pyramid 3. Because of the coarseness of the clay material, two large bottles (cat. 41) probably postdate the reign of Senwosret I; bottles from the time of Senwosret I are made of a medium fine Nile clay material.[123] On the other hand, the globular shape of another jar (cat. 42) links it to vessels made early in the Twelfth Dynasty. If this group (cats. 35–42) is more or less contemporary, it should, therefore, be dated around the middle of the Twelfth Dynasty. A beaker jar (cat. 39) could have been left behind by tomb robbers.

35. Lower Part of a Jar or Bottle (pl. 74)

The lower part of a plain, globular jar or bottle of greenish white *gulleh* ware, with gray-green on the break (marl clay A3; fired soft).

36. Lower Part of a Tureen(?) (pl. 74)

The lower part of a ring-based tureen(?) of fine, soft brown ware (Nile clay B1), red-coated on the exterior.

37. Three Lower Parts of Beaker Jars (pl. 74)

Three lower parts of medium-sized, ring-based beaker jars of fine, soft brown ware (Nile clay B1), with thin red coating on the exterior.

38. Cup (pl. 74)

A fragmentary, plain, ring-based cup of fine, soft brown ware (Nile clay B1).

39. Lower Part of a Beaker Jar (pl. 74)

The lower part of a plain, round-bottomed beaker jar of fine, medium soft reddish brown ware (Nile clay B1). The bottom is whittled in wide strokes.

40. Fragment from the Bottom of a Beaker Jar (pl. 74)

A fragment from the bottom of a large, flat-bottomed beaker jar of very coarse, soft brown ware (Nile clay C); there is blue on the break and traces of red coating on the exterior. The beaker jar fragment may have been used as a paint pot.

41. Fragments of Two Bottles (pl. 74?)

Fragments of two large, ovoid bottles of the most common Twelfth Dynasty type. The bottles are made of a soft, coarse brown ware (Nile clay C), with blue on the break and traces of red coating on the exterior. The sherds may have been used as paint pots.

[122] Hayes, *Scepter* I, 215, fig. 132; Rogers Fund, 1918.
[123] "Nile B2, near C," (Arnold, *Senwosret I*, 126).

42. Jar Fragments

Two fragments of a very large, wide-mouthed, globular storage jar (*zir*). The handmade jar is made of a hard red *tafl* mud ware (marl clay C), with traces of a buff surface layer.[124] No drawing or photograph exists.

THE "PITS" OF PYRAMID 3

The following objects (cats. 43–65), recorded on tomb cards 412–17, have the general provenance "small pyramid 3 (?) pits." Catalogue numbers 43–46 date to either the Second Intermediate Period or the early New Kingdom.[125]

43. Jar Stopper (pl. 75)
Jd'E 63873

SOURCES: Tomb card 412
Photo L 33–34:465

A "solid blue paste" (Egyptian blue?) jar stopper with an outlined yellow ray pattern painted on the top. The underside of the rim has a vent. The stopper probably belongs to the jar fragments below (cat. 44).

44. Jar Fragments (pl. 75)

SOURCES: Tomb card 412
Photo L 33–34:465

Fragments of a small "blue paste" jar with the remains of a painted yellow ray pattern on the body. The above-mentioned stopper (cat. 43) probably belongs with these fragments.

45. Ring Stand (pl. 75)
MMA 34.1.199

SOURCES: Tomb card 412
Photos L 33–34:465; neg. no. 98440

A small ring stand of Egyptian blue[126] found in the west shaft (14/39) of pyramid 3.

Dimensions: Diam. 4 cm; H. 2 cm

46. Uraeus (pl. 75)

SOURCES: Tomb card 412
Photo L 33–34:465

The head and neck of a "blue paste" uraeus modelled in the round. There is a dowel hole in the broken base of the neck and a wide black stripe down the chin and throat.

47. Mouth of a Hippopotamus (pl. 75)
Jd'E 63869

SOURCES: Tomb card 413
Photo L 33–34:465

Two fragments of a muzzle and the roof of a wide open mouth from a relatively large statuette of a hippopotamus. The "blue paste" fragments are carefully modelled and have bore holes for inserting teeth, which were made of a different material. The holes for the large incisors are 5 mm in diameter, the other teeth holes 4 mm; all the holes are 11 mm deep. Teeth made of a material different than that of the rest of the figure are unusual, but do occur occasionally.[127]

48. Girdle Bead (pl. 75)

SOURCES: Tomb card 413
Photo L 33–34:465

The top of a common sedge flower girdle bead of "blue paste." It is pierced with two holes at the top and one hole at the bottom.

Dimensions: W. 11.3 mm; Th. 4.7 mm

49. Girdle Bead

SOURCES: Tomb card 413
Photo L 33–34:465

An elongated barrel bead of "blue paste."

Dimensions: L. 21 mm; maximum Diam. 4.5 mm

50. Girdle Beads

SOURCES: Tomb card 413
Photo L 33–34:465

Three long, tubular beads of "blue paste."

Dimensions: L. 30.5 mm; Diam. 3.2 mm

51. Jar Lid (pl. 75)

SOURCES: Tomb card 413
Photo L 33–34:465

A white alabaster lid with fine, closely spaced rippled markings; the surface is planed, but unpolished. There is a hole in the center for a missing inlay.

SEVEN FAIENCE FIGURINES (GROUP A) FROM THE "PITS" OF PYRAMID 3

(for group B see cats. 235–46, pp. 78–79)

52. Statuette Group (pl. 75)
Jd'E 63864

SOURCES: Tomb card 414
Photo L 33–34:519

A blue-glazed faience group depicts a squatting man facing a

[124] For the type see Arnold, *Senwosret I*, 112, 114–15, figs. 55b, 56, 62, pls. 65a–c, 66c.
[125] Henry Wallis, *Egyptian Ceramic Art: Typical Examples of the Art of the Egyptian Potter* (London, 1900), 14, fig. 27.
[126] Information provided by Christine Lilyquist, who has included the piece in a series of analytical studies on Egyptian blue and glass.
[127] Henry Wallis, *Egyptian Ceramic Art: The MacGregor Collection* (1898), 4, fig. 7. Auction catalogue Sotheby's (London, July 10, 1990), 94–97, no. 319. See here also cat. 55, p. 62.

standing hippopotamus.[128] The figures are at opposite ends of a long, flat base.

Dimensions: L. of base 16.5 cm; W. 4 cm; H. 1.4 cm; H. of human figure 4 cm

53. Monkey Statuette (pl. 75)

SOURCES: Tomb cards 414–15
Photo L 33–34:519

A statuette of a monkey made of pale greenish blue to deep rich blue glazed faience. The figure squats on a low base with a rounded back; the head is missing.

Dimensions: H. of remaining figure 7.7 cm

54. Frog Statuette (pl. 75)
Jd'E 63865

SOURCES: Tomb card 415
Photo L 33–34:519

A statuette of a squatting frog sitting on a low oval base. The statuette is made of blue-glazed faience that has considerably faded.

Dimensions: H. 4.8 cm; base 0.35 x 5.4 x 6 cm

55. Jaw of a Hippopotamus Statuette (pl. 75)

SOURCES: Tomb card 415

A fragment of the lower jaw from a large hippopotamus statuette of blue-glazed faience. The fine bright blue color has faded; details of the fragment are delineated with black glaze. There are bore holes for inserting the teeth, which were made of a different material (see cat. 47, p. 61).

Dimensions: W. 5 cm; L. to neck 3.7 cm

56. Rodent Statuette (pl. 75)

SOURCES: Tomb card 415
Photo L 33–34:519

A fragment of a statuette of a small rodent, perhaps a field mouse, in a half-sitting position. The figure is made of a glossy white glazed faience; the back and tail are mottled with brown glaze.

Dimensions: W. 2.7 cm

57. Model Fruit(?) (pl. 75)

SOURCES: Tomb card 416
Photo L 33–34:465

Perhaps a model fruit made of blue-glazed faience(?) with a brownish core. The glaze is almost gone and the surface is brownish from the ferruginous matter in the ware.

58. Model Fruit(?) (pl. 75)

SOURCES: Tomb card 416
Photo L 33–34:465

Glossy white glazed faience fragments that perhaps belonged to the tip of a cucumber.

ADDITIONAL FINDS FROM THE "PITS" OF PYRAMID 3

59. Flail Tubes (pl. 75)

SOURCES: Tomb card 416
Photo L 33–34:465

Long, tapering flail tubes of blue-glazed faience. The five fragments are in two sizes:

a) Wide band of black glaze spiralling around the entire tube.

Dimensions: L. 21 + x cm; Diam. top 9.5 mm; maximum Diam. 13.5 mm

b) Plain blue-glazed faience.

Dimensions: L. 9.5 cm; Diam. top 6.5 mm; Diam. bottom 9.5 mm

60. Tubular Bead (pl. 75)

SOURCES: Tomb card 416
Photo L 33–34:465

Example of a "blue paste" tubular bead encased in gold leaf.

Dimensions: L. 20 mm; Diam. 3 mm

61. Long Drop Beads (pl. 75)

SOURCES: Tomb card 417
Photo L 33–34:465

Fragments of about a dozen drop beads. They are made of blue-glazed faience and encircled by a spiral of black glaze.

62. Two Inlays (pl. 75)

SOURCES: Tomb card 417
Photo L 33–34:465

Two disk-shaped inlays of blue-glazed faience.

63. Flower Bead (pl. 75)

SOURCES: Tomb card 417
Photo L 33–34:465

A flower bead of bubbly, dark greenish blue glazed faience. There are rings for suspension at either end.

64. Double Ring (pl. 75)

SOURCES: Tomb card 417
Photo L 33–34:465

Fragment of a small double ring of blue-glazed faience.

[128] For hippopotami figurines see Janine Bourriau, *Pharaohs and Mortals: Egyptian Art in the Middle Kingdom* (exhibition catalogue, Cambridge, 1988), 119–20 with additional bibliography.

65. Copper Hooks (pl. 75)

SOURCES: Tomb card 417
Photo L 33–34:465

Fragments of two heavily oxidized copper hooks.

THE *RADIM* OF PYRAMID 3

The following objects (cats. 66–81), without exact provenance, are from the "*radim* in vicinity of small pyramid, Outer Court S 2." They are recorded on tomb cards 418–21.

66. Scaraboid (pl. 76a)

SOURCES: Tomb card 420

A blue-glazed faience scaraboid with an incised legend. The top is worn and the ends are chipped on top.

Dimensions: L. 15 mm

67. Scarab (pl. 76a)

SOURCES: Tomb card 420

A green-glazed faience scarab with an incised legend, perhaps the name of a king. Half of the back is broken away.

Dimensions: L. 9 mm

68. Pendant Beads (pl. 76a)

SOURCES: Tomb card 420

Two pendant beads in the shape of insects. The green-glazed faience has become worn and has turned gray.

Dimensions: L. of one example 14 mm

69. Pendant Beads (pl. 76a)

SOURCES: Tomb card 420

Two pendant beads of greenish blue glazed faience. One bead was fired gray-blue.

Dimensions: L. 14 mm

70. Ring

SOURCES: Tomb card 420

Fragment of a small, roughly shaped ring of deep blue glazed faience.

Dimensions: Diam. 12 mm; Th. 4.5 mm

71. Wooden Object (pl. 76a)

SOURCES: Tomb card 421

Wooden fragment from the sole of a sandal, a jar lid, or some similarly shaped object. All extant surfaces are stuccoed and painted black.

Dimensions: L. 5 cm

72. Gilded Stucco Object

SOURCES: Tomb card 421

A small piece of white stucco surfacing from an elaborately modelled object, possibly the ear of a funerary mask. The surface is brown with gold leaf.

Dimensions: 0.20 x 2.5 x 3 cm

73. Gilded Wooden Object

SOURCES: Tomb card 421

Part of the flat surface of a wooden box or coffin. According to the tomb card, it was cast in pitch and *tafl*, with an 8 mm wide band of gold leaf along one corner.

Dimensions: Complete fragment 3.5 x 2.5 cm

74. Tubular Bead (pl. 76a)

SOURCES: Tomb card 421

A large, roughly shaped tubular bead of pale blue glazed faience.

Dimensions: L. 23 mm

75. Drop Beads

SOURCES: Tomb card 421

Fragments of four long drop beads of blue-glazed faience with a spiral band of black glaze.

Dimensions: L. 6 cm; Diam. top 3.2 mm; Diam. bottom 6 mm

76. Tubular Beads

SOURCES: Tomb card 421

Fragments of about fifty tubular beads from a girdle or broad collar.

a) Blue-glazed and black-glazed faience; L. 2–2.3 mm; Diam. 2.2–2.3 mm.
b) "Blue paste"; L. 10 mm; Diam. 3.3 mm.
c) L. 7–12 mm; Diam. 3.3 mm.

77. Inscribed Granite Fragment (pl. 76a)

SOURCES: Tomb card 419
Photo L 33–34:446

A fragment of an inscription on "black granite" with a "plane," semipolished surface. Parts of two columns of incised hieroglyphs remain. The style seems to be Middle Kingdom.

78. Relief Fragment (pl. 76a)

SOURCES: Tomb card 419
Photo L 33–34:446

Part of the upper arm and shoulder of a *sem*-priest with a

leopard's skin claw draped over the shoulder. The flesh of the priest is red; the leopard skin is a mottled yellow with black. The style seems to be Middle Kingdom.

Dimensions: 1.5 x 5 x 9 cm

79. Jar Spout (pl. 76a)

SOURCES: Tomb card 419
Photo L 33–34:446

The spout of a jar with a roughly modelled crocodile. The spout is made of a fine, soft brown ware (Nile clay B1), with a red band around the rim and red coating on the crocodile. The red band and applied figure point to a date not before the late Twelfth Dynasty.[129]

80. Decorated Jar Fragments (pl. 76a)

SOURCES: Tomb card 419
Photo L 33–34:446

Two small fragments from the shoulder of a large, decorated Eighteenth Dynasty pottery jar made of a fine, medium hard red ware, with orange-buff slip and deep purple decoration.

Dimensions: Th. 7 mm

81. Inscribed Doorjamb(?) (pl. 76a)

SOURCES: Tomb card 418
Photo L 33–34:446

According to the tomb card, the wooden doorjamb was found "in the *radim* in the vicinity of the small pyramid 3 in S 2." The fragment has holes for tying a rope or copper wire to another board or post that would have been to the left. The piece is well made, with the front and left side edges painted red.

A shallow incised inscription reads, "The hereditary prince, the count, the treasurer of the King of Lower Egypt, the (sole) companion///."

This title belongs to the famous Vizier Mentuhotep, whose tomb was discovered in 1988, 180 m to the east of pyramid 3. The jamb could, therefore, have easily belonged to a statue shrine of Mentuhotep that would have contained a life-size statue. A granite fragment (p. 60, cat. 32) could have belonged to this statue. We do not know why the statue and the shrine fragment were placed in the area of pyramid 3. Did Vizier Mentuhotep set up this shrine in the enclosure of the pyramid, or were the fragments moved there for unknown reasons by the tomb robbers? That parts of his tomb equipment were moved westward might also be indicated by the lower half of a life-size seated statue that might have belonged to Mentuhotep. It was found in the outer court southeast and will be published in the volume on the tomb of Vizier Mentuhotep.

Dimensions of doorjamb: Th. 4.7 cm; W. at front 13 cm; preserved L. 50 cm

PYRAMID 5

Only a few finds were recorded from the area of pyramid 5. Two relief fragments, if complete, would have revealed the name of the pyramid's owner.

82. Stela Fragment (pl. 77a)

SOURCES: Tomb card 490
Photo L 33–34:131

Fragment of a "black granite" stela with a shallow incised inscription and a fairly well polished surface. The fragment may have originated in the funerary chapel, but it was found in the "crater pit" (shaft 2/14). The piece might well have been the stela of the mortuary chapel of pyramid 5. There are traces of a name(?) "*///k3t///.*"

83. Offering List Fragment (pl. 76b)

SOURCES: Tomb card 491
Photo L 33–34:132

A limestone fragment of a low relief from the top of an interior wall of the funerary chapel that was found in the "crater." The stone is badly worn and most of the relief surface has disintegrated. Traces of an offering list describing "Upper Egyptian natron" and "Lower Egyptian natron" can be deciphered.

Dimensions: Maximum Th. 7.5 cm

84. Mummy Mask Fragment (pl. 77a)

SOURCES: Tomb card 492
Photo L 33–34:57

A fragment of the left eye and brow of a plaster mummy mask that was found in the *radim* of pyramid 5. The mask was originally about 17 cm wide and "in every way similar to the masks found in 'Old Kingdom Cemetery,' Pit 21 (Season of 1931–32)."

Dimensions: 0.5–1.5 x 8 x 10 cm

85. Canopic Jar Fragment

SOURCES: Tomb card 493

A fragment of a white alabaster jar with wavy brown markings that was found in the "*radim* above mouth of crater pit." The carefully made jar was finely and evenly polished on the exterior.

86. Jar Fragment

SOURCES: Tomb card 493

A fragment of a white alabaster (canopic?) jar from the same findspot as the canopic jar fragment (cat. 85). The exterior is well polished, but not extremely glossy.

87. Shell

SOURCES: Tomb card 493

A large, oval bivalve shell, perhaps that of an oyster, from the

[129] For red bands and spots on spouted vessels of the time of Amenemhat III see Janine Bourriau, *Umm el-Ga'ab: Pottery from the Nile Valley Before the Arab Conquest* (exhibition catalogue, Cambridge, 1981), 69, no. 126. For applied animals see Petrie, *Gizeh and Rifeh*, pl. 13d, no. 171.

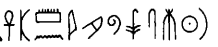
same findspot as the canopic jar fragment (cat. 85) and the alabaster jar fragment (cat. 86).

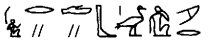
Dimensions: 8.5 x 13.5 cm

88. Ostracon (pl. 77a)
MMA 33.1.162

SOURCES: Tomb card 470
Photos L 32–33:258; neg. no. 93727

A flake of limestone with a hieratic inscription in black ink on



one side. The text reads,  "Ramesses beloved by Amun, l.p.h., Mery son of Beder(?),"[130] and probably dates to one of the Ramesside kings of the Twentieth Dynasty.

Since the destruction of the pyramid complex of Senwosret I had begun in the early Eighteenth Dynasty, an ostracon of the Ramesside period must be connected with other destructive activities in the area.

Dimensions: 3 x 9 x 10 cm

PYRAMID 6

89. Fragments of Queens' Statues (pl. 77b)

SOURCES: Tomb card 650
Photo L 33–34:129

In the "Outer Court N 2, small pyramid (6), *radim*," remains of at least three "black granite" statues of royal quality were found, all carefully carved with great precision and distinct polishing. Judging from fragment a), they certainly belonged to statues of a princess or queen, and probably would have been set up in one of the chapels of pyramid 6. Photo L 33–34:129 shows a fourth fragment that is not described on tomb card 650.

a) A fragment of the right side, middle of the top, and front of the head of a well over life-size statue. The headdress is carved with the feathers of a vulture's wing. On the front of the head is an elaborately carved uraeus, with details of a serpent's breast and fan delineated.

Dimensions: 8 x 14 x 17 cm

b) A fragment of the buttock of a seated figure and the right-hand corner of the back of the throne, which rises 9 cm above the seat. Along the top edge of the right side of the throne is an incised block border 3.5 cm wide. The statue is slightly over life-size.

Dimensions: 11 x 15 x 18 cm

c) Same section of another statue, slightly larger and distinctly colossal. The distance between the outer edge of the throne and the right buttock of the figure is 8.5 cm. A block border 4 cm wide runs along the edge of the salient back piece.

Dimensions: 9.5 x 14 x 16 cm

90. Lamp (pl. 77b)
MMA 32.1.114

SOURCES: Tomb card 626
Photos L 31–32:240; neg. nos. 89545, 137034
BIBLIOGRAPHY: *BMMA* 28 (Apr. 1933), sec. II, 16, 19, fig. 14; Hayes, *Scepter* I, 260–61, fig. 167

A common Twelfth Dynasty lamp of white "Tura" limestone, which was smoothed but not polished. There is little evidence that the lamp was used.

Dimensions: H. 10 cm; Diam. 25 cm

Finds from Shafts and Burials in the Outer Court

SHAFT 5/18–19

One would expect a great number of objects and burial remains from such a large tomb, but actually only these few objects (cats. 91–95) were preserved or recorded. Only one skeleton is mentioned in the records.

91. Broad Collar (pl. 78)
MMA 32.1.235 (end piece and one example of each bead type)

SOURCES: Tomb card 500
Photo L 31–32:164

In the "south gallery, west chamber," the end piece of a collar and beads glazed in white, blue, and black were found. The collar was too fragmentary to be restrung.

a) End piece of white glaze with seven string holes along the lower edge.

b) 22 pendants of light blue glaze.

c) 274 tubular beads of light blue glaze; Diam. 4 mm; graduated L. 5.3–10.8 mm.

d) 257 black tubular beads; L. 5.8–10.4 mm; Diam. 4 mm.

e) 3 ring beads of white glaze; Diam. 3 mm; Th. 1 mm.

92. Pair of Bead Anklets (pl. 78)
MMA 32.1.117ab

SOURCES: Tomb cards 501–2
Photos L 31–32:164; neg. no. 89589
BIBLIOGRAPHY: A. Lansing, *Ancient Egyptian Jewelry: A Picture Book* (New York, 1940), pl. 2; Millia Davenport, *The Book of Costume* I (New York, 1962), 19, pl. 39; Hayes, *Scepter* I, 308

In the "south gallery, west chamber," beads of blue and black glaze and carnelian were found loose in the rubbish around the ankles of the skeleton. The restoration shown on plate 78 is based on small groups of beads that were found together in their original arrangement.

[130] Ranke, *PN* I, 99(20); W. Golénischeff, "Papyrus Hiératique de la Collection W. Golénischeff," *Recueil de Travaux* 21 (1899): 77(9).

The two anklets consist of:

a) 126 light blue tubular beads; Diam. 3.5–4 mm; L. 9–10.5 mm.

b) 84 black tubular beads; Diam. 3.5–4 mm; L. 9–10.8 mm.

c) 28 carnelian tubular beads; Diam. 3.8–4.4 mm; L. 11.8–12.6 mm.

Dimensions: L. of reconstructed anklets 18.5 cm; W. at center 2.7 cm, tapering slightly towards the ends

93. Whetstone or Hone(?) (pl. 78)
MMA 32.1.118

SOURCES: Tomb card 503
Photos L 31–32:164; neg. no. 89565

All the surfaces of this rectangular slab of gritty gray stone (gritstone) are perfectly flat, though two of its edges are worn from rubbing (or honing?). The piece was certainly used for finer, more delicate work.

Dimensions: L. 8.7 cm

94–95. Pottery

This pottery forms a typical set of the oil jar and lamps used by tomb robbers.

94. Beaker Jar (pl. 78)

SOURCES: Tomb card 504
Photo L 33–34:146B

A small beaker jar of soft brown ware (Nile clay B2?), red-coated on the exterior. There is a dark brown crust on the interior; the exterior is caked with salt. A scraper was used to finish the round bottom.

95. Two Cups (pl. 78)

SOURCES: Tomb card 504
Photo L 33–34:146B

Two small, plain cups of fine, soft brown ware (Nile clay B1). The cups were stained with a dark oily liquid and were filthy from mud and salt.

SHAFT 7/26

SOURCES: Tomb cards 584–86
Photo L 33–34:99

96. *Wsḫ*-Collar Pendant (pl. 79)

A blue-green faience pendant pierced along the edge with string holes.

Dimensions: W. 7.6 cm; H. 4 cm

97. Flint Knife (pl. 79)

Dimensions: L. 4.6 cm

98. Flagellum Bead (pl. 79)

A flagellum bead of faded blue-green faience.

Dimensions: Diam. 1.1 cm; H. 8 mm

99. Beads of a *Wsḫ*-Collar (pl. 79)

Ten beads of faded blue-green faience.

Dimensions: L. 2.5 mm

100. Tubular Beads (pl. 79)

331 tubular beads of white faience.

Dimensions: Diam. 4 mm; L. 8 mm

101. Two Fangs (Claws) (pl. 79)

Two fangs or claws of horn. Half of one of them is painted red.

Dimensions: L. 4 cm

102. Disk Beads (pl. 79)

Five disk beads of faded light blue faience.

Dimensions: Diam. 3 mm

SHAFT 45/28 [5008?]

SOURCES: Tomb card 338

103. Inscribed Granite Fragment (pl. 79)

The fragment is inscribed, "///of all///of the king's house without end."

104. Flagellum Beads

Six beads of blue glaze.

DOUBLE SHAFT 29/39 (NORTH PIT) AND 29/40 (SOUTH PIT) [LSP 42 OR 6LP 42 AND 43]

SOURCES: Tomb cards 382–84
Photos 6 LN:169–70; L 33–34:152

105. Model of a Boy with a Dog (pl. 79)
MMA 24.1.46

ADDITIONAL SOURCES: Photo neg. no. 58849
BIBLIOGRAPHY: Hayes, *Scepter* I, 223; Christiane Desroches-Noblecourt, "Quatre objets protodynastiques provenant d'un 'trésor' funéraire," *La Revue du Louvre* 2 (1979): 115, fig. 26; Bodil Hornemann, *Types of Ancient Egyptian Statuary* (Copenhagen, 1951–69), no. 1314

Two squatting figures of now discolored faience sit opposite

each other on a base. The figures are not easily identified: the boy could really be a little monkey, and the dog might be another animal.

Dimensions: L. 6.9 cm

106. Bead (pl. 79)
MMA 24.1.122

A drop-shaped lapis lazuli bead.

Dimensions: L. 1.5 cm; Diam. 5.5 cm

107. Bead (pl. 79)
MMA 24.1.122

A drop-shaped felspar bead.

Dimensions: L. 1.5 cm; Diam. 5.5 cm

A globular bead of lapis lazuli, also in the Metropolitan Museum, is visible on plate 79, and may be associated with the two preceding beads (cats. 106–7).

Dimensions: Diam. 4.5 cm

108. Cup (pl. 79)

A medium-sized, hemispherical cup of fine brown ware (Nile clay B1), with a vessel index of 166. A flat object was used to smooth the rounded bottom. The cup was found in the "north pit" (shaft 29/39).

109. Cup (pl. 79)

A medium-sized, flat-based, carinated cup of fine brown ware (Nile clay B1) that was found in the "north pit" (shaft 29/39). This cup probably dates from the Thirteenth Dynasty.[131]

110. Cup (pl. 79)

A medium-sized, blunt-pointed, hemispherical cup of fine brown ware (Nile clay B1). The exterior has whitish material, perhaps a whitewash; there are also whitish traces on the interior. The exterior of the bottom of the cup was thrown on the wheel, thus dating the cup to the New Kingdom or a later period. It was found in the "south pit" (shaft 29/40).

111. Cup (pl. 79)

A medium-sized, round-bottomed, hemispherical cup of fine brown ware (Nile clay B1). The cup was found in the "south pit" (shaft 29/40).

112. Fragmentary Cup (pl. 79?)

A medium-sized pottery cup with red coating on the interior and exterior. The cup was found in the "south pit" (shaft 29/40).

113. Bowl (pl. 79)

A small, round-bottomed bowl with a square rim; the bottom was shaped with a flat instrument. The fine brown ware bowl (Nile clay B1) was found in the "south pit" (shaft 29/40).

With the exception of a cup (cat. 110), the vessels from the "south pit" (shaft 29/40) may date to the early Twelfth Dynasty. Note that the fragmentary cup (cat. 112) is red coated.[132]

SHAFT 19/41 [PIT 20?]

SOURCES: Tomb cards 424–26

114. Gold Leaf (not illustrated)

A few small scraps of gold leaf, probably from the overlay of a funerary mask, with thin red sizing on the back. James Frantz and Deborah Schorsch (Department of Objects Conservation of the Metropolitan Museum) analyzed similar red discoloration on gold from Lisht North and determined that it was caused by oxidation.[133]

115. Loom Weight (pl. 80)

A limestone loom weight, roughly whittled to the shape shown.

Dimensions: L. 7.3 cm; Th. 2.7 cm

116. Beads (pl. 80)

Quantity	*Bead Shape*	*Material*	*Color*	*Size*
68	tubular	faience	blue	L. 5–9 mm; Diam. 3.5–4.8 mm
10	tubular	faience	black	L. 6.2–8.2 mm; Diam. 4–5 mm
67	ring	faience	blue	Diam. 4.7 mm; Th. 1.2 mm
2	pendant	faience	blue	L. 2.7 cm (see pl. 80)
2	pendant	faience	blue	L. 2.2 cm (see pl. 80)
3	barrel	faience	blue	L. 1.1 cm; Diam. 8 mm (see pl. 80)
2	globular	faience	blue	Diam. 7.5 mm
2	globular	faience	glossy green	Diam. 6.5 mm

(table continued on next page)

[131] A similar cup was found used as a robbers' lamp in the shaft of pyramid I (see p. 21, fig. 4).
[132] Arnold, *Senwosret I*, 136, 141.
[133] James Frantz and Deborah Schorsch, "Egyptian Red Gold," *Archeomaterials* 4 (1990): 133–52.

Quantity	*Bead Shape*	*Material*	*Color*	*Size*
4	globular	carnelian		Diam. 6–7.8 mm
4	globular	lapis lazuli		Diam. 3.5 mm
2	globular	Egyptian blue		Diam. 8.3 mm
3	ring	beryl		Diam. 3 mm; Th. 1 mm
8	ring	beryl		Diam. 3.3 mm; Th. 1.7 mm
2	ring	carnelian		Diam. 2.9 mm; Th. 1.2 mm
5	ring	lapis lazuli		Diam. 2.75 mm; Th. 1.5 mm
1	girdle (papyrus umbel)	faience	green	H. 11.2 mm; W. 14 mm; Th. 5.5 mm
2	elongated barrel	faience	blue	L. 17.8 mm; Diam. 4.2 mm
1(?)	elongated barrel	Egyptian blue		L. 17.3 mm; Diam. 4 mm
1	flail tube	faience	blue	Diam. top 6 mm
2	long slender drop	?	?	Diam. top 4 mm

117. Beaker (pl. 80)

A medium-sized beaker of fine, medium hard, reddish black ware (Nile clay B1); the bottom was shaped by scraping.

118. Vessel (pl. 80)

A globular vessel of fine, hard, brownish pink ware (marl clay C); the exterior appears to have a thin buff surface layer.[134]

SHAFTS 21/44 AND 21/45

119. Thirteen Offering Tables

SOURCES AND BIBLIOGRAPHY: *Licht*, 50–59, figs. 51–63; Ahmed Bey Kamal, *Tables d'offrandes*, Catalogue Général des Antiquités Égyptiennes du Musée du Caire nos. 23001–23256 (Cairo, 1909), nos. 23029, 23049–56, 23061–64; Joseph-Étienne Gautier and Gustave Jéquier, *Fouilles de Licht*, Revue archéologique, ser. 3, 29 (Paris, 1896), 22, 32–34, fig. 24

The tables, found by the French expedition, are of carefully dressed limestone. Their origin is unknown, but one might suggest that there was a community burial in the area, perhaps within the enclosure of pyramid 2, though there is no trace of such a burial. All the tables (published and studied elsewhere, see above) are similar and were dedicated to female staff members of the royal household who had the titles *jry-ʿ.t* "hall keeper" and *wbȝy.t* "female butler." Fragments of two more tables were discovered by the original Metropolitan Museum Expedition in the "*radim* of S 1" (see cats. 120–21). The offering tables have never been more precisely dated than to the Twelfth Dynasty.[135]

120. Offering Table Fragment (pl. 80)
Jd'E 63947

SOURCES: Tomb card 400
Photo L 33–34:438

A fragment of a carefully dressed limestone table. All surfaces are flat and smooth, except the bottom, which has rough chisel marks. An upside down *ankh*-sign was roughly scratched on the front.

The inscription reads, "///honored with the king, the house servant Renpet-nefret, justified, possessor of honor," and "///(Renpet)-nefret, born of Byt."[136]

Dimensions: Maximum preserved H. 31.6 cm; maximum preserved W. 28 cm; Th. 10 cm

121. Offering Table Fragment (pl. 80)
Jd'E 63948

SOURCES: Tomb card 400
Photo L 33–34:438

A small fragment of an offering table with the remains of an inscription. Only the word "honored///" could be deciphered.

Dimensions: W. of text column 5 cm

122. Coffins

J.-E. Gautier recorded that rough wooden anthropoid coffins painted with lively colors were found in the tomb. Poorly mummified bodies in cartonnages with mediocre masks were also discovered.[137] Gautier dated them, and therefore the whole tomb, to the Ptolemaic/Roman period. The graves seem to be similar to numerous surface burials found by the Metropolitan Museum Expedition.

SHAFT 44/44 [5227]

123. Fragment of a Seated Statue (pl. 57a)

SOURCES: Photos 16 L:182–83

The lower part of a seated, life-size statue, possibly made of diorite. Since the statue may represent the Vizier Mentuhotep,

[134] For small, globular marl clay C jars or bottles see Arnold, *Senwosret I*, 134, fig. 74, nos. 183–84.
[135] For similar examples see Charles Kuentz, "Bassins et tables d'offrandes," *BIFAO* supp. 81 (1981): 254–55.
[136] Ranke, *PN* I, 224(11), *Rnp.t-nfr.t*; ibid., 93(9–12), *bjj* without *-i*.
[137] *Licht*, 50.

it will be published with the other examples of Mentuhotep's sculpture. For other pieces that probably originated from the same tomb, see a granite fragment (cat. 32, p. 60) and an inscribed doorjamb (cat. 81, p. 64).

SHAFT 43/46 [5228]

124–27. Pottery

SOURCES: Tomb cards 370–71
Photo L 33–34:540

124. Bottle (pls. 80–81)

A large, globular bottle of soft brown ware (Nile clay B2), with a thin red coating on the exterior. The proportions of the neck date the bottle to the reign of Amenemhat II.[138] The cup described below (cat. 125) could have served as a lid for the bottle.

125. Cup (pls. 80–81)

A round-bottomed, carinated cup of fine, soft brown ware (Nile clay B1), with dark red coating on the interior and exterior. Small mounds of clay are stuck below the exterior of the rim. The cup could have served as a lid for the bottle described above (cat. 124).

126. Bowl (pls. 80–81)

A small bowl of fine, soft brown ware (Nile clay B1), with black spotty discoloration on the interior and exterior.

127. Plate (pls. 80–81)

A medium-sized, round-bottomed plate of fine, soft brown ware (Nile clay B1); red coating on the interior and exterior. The surfaces, especially those on the interior, are smooth.

Finds from Shafts and Beehive-Vaulted Cellars (Silos) of Unknown Location (Probably OCE1 and OCSE)

SHAFT 5001

SOURCES: Tomb card 321
Photo L 12–13:589

128. Stela (pl. 81)

A primitively painted limestone stela, broken into four pieces but nearly complete. It depicts a priest(?), who is dressed in an unusual gown and carries a stick, standing opposite a woman. Food offerings are placed between them. Remains of an inscription above the woman reads "/// honored with Anubis ///" and above the man, "///Osiris(?) Lord of Djedu(?) ///."

129. Beads

Four carnelian beads.

130. Piece of Sandstone

A piece of sandstone used to sharpen bronze tools.

131. Limestone Fragments

Two limestone fragments, one of which has a blackened end shaped like a beard.

SHAFT 5004

SOURCES: Tomb cards 325–27
Photos L 7–8:385–87

132. Coffin (pl. 81)

The coffin, which seems to have been a rectangular wooden chest, was too rotten to allow either an exact description or measurements. It is elaborately painted on the outside, with a pink band with blue hieroglyphs above and red panels, in groups of two, outlined in black below. The tops of the panels are black.

133–34. Inner Coffin and Skeleton

According to tomb card 326, "Remains of elaborate inner coffin, with stucco mask, painted and gilded . . . Burial (male? adult) on left side, head north . . . Skull smashed to pieces."

135. Magic Wand (pls. 82–84a)
MMA 08.200.19

ADDITIONAL SOURCES: Photos L 10–11:216, 244; neg. nos. 32229, 136445, 248037

BIBLIOGRAPHY: G. Steindorff, "The Magical Knives of Ancient Egypt," *The Journal of the Walters Art Gallery* 9 (1946): 106, n. 41; Hartwig Altenmüller, *Die Apotropaia und die Götter Mittelägyptens* (Ph.D. diss., University of Munich, 1965) [not seen by author]; idem, "Ein Zaubermesser aus Tübingen," *Die Welt des Orients* 14 (1983): 30–45 [does not discuss MMA 08.200.19]; idem, "Ein Zaubermesser des Mittleren Reiches," *SAK* 13 (1986): 1–27

In 1981, during the reinstallation of the Egyptian Department galleries, the arrangement of these fragments was slightly modified. The photographs published here reflect this new restoration.

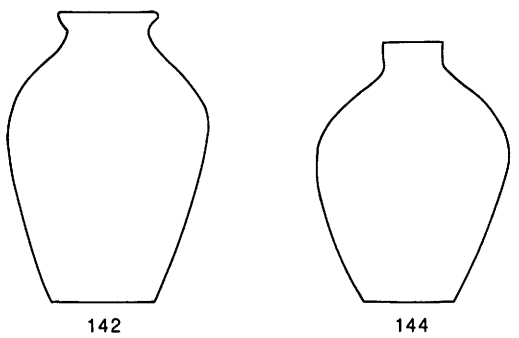
The wand was found in several fragments in the fill of shaft 5004. According to Ann Heywood of the Museum's Objects Conservation Department, the wand is made of hippopotamus tusk. The workmanship is of high quality, but unfortunately about one fourth of the piece is missing; the tip has rubbed off

[138] See the chart in Arnold, *Senwosret I*, 142, fig. 76, where the bottle has its place just above no. 92, which was found in the east dump of the cabin.



137 138

Fig. 14. Two jars from shaft 5004. Scale 1:4.



142 144

Fig. 15. Two jars from shaft 5009. Scale 1:4.

from frequent use. The top surface is slightly rounded and decorated, and has the usual magic guardians marching from left to right. The flat lower surface is inscribed with the text, "Words said by the numerous guardians: We have come to extend our protection herewith upon the healthy child, Minhotep, may he live, be prosperous and healthy, born by the princess Sat-Sobek, may she live, be prosperous and healthy."

Because it was found in a simple shaft containing the remains of a male, one can assume that the wand did not belong to the funerary equipment of the princess. The tomb owner could have been "the healthy child" Minhotep, son of the princess, but one cannot exclude the possibility that the magic wand fell into the fill of shaft 5004 after the tomb was robbed. The tomb of princess Sat-Sobek has not been identified, but may have been in the area (see p. 47, no. 129). H. Altenmüller assigns the piece to class VI of his typology of wands, a group that he dates to the early Thirteenth Dynasty.

Dimensions: L. between the center of the two ends 32.5 cm; W. 2.7–3.9 cm; W. in center 3.7 cm

136. Figure of a Standing Baboon

A clay figure, colored green, that was found in the fill.

137–38. Pottery

The following two jars (cats. 137–38) are of Second Intermediate Period to early New Kingdom date.[139]

137. Jar (fig. 14)

A small, carinated vessel of "drab color" (marl clay A3 or B), with a pointed bottom and a straight neck. It was found in the fill.

138. Jar (fig. 14)

A small, round-bottomed, wide-necked jar of "common brown ware" (Nile clay B2?).

139. Pieces of a Handle(?)

Two pieces of "ivory" that may have been part of a handle. They were found in the fill.

140. Pieces of a Small Pillar

Three pieces of a small, fluted pillar of glaze. They were found in the fill.

141. Disk Beads

A few carnelian and green- and blue-glazed gilt shell disk beads from a collar. They were found in the fill.

SHAFT 5009

SOURCES: Tomb card 340

142. Jar (fig. 15)

A large, flat-bottomed, carinated jar of light brown ware (Nile clay B2?), with irregular rope marks.[140] It was found in the wall niche.

143. Jar

A large, flat-bottomed jar similar to the one described above (cat. 142), but probably found in fragments.

144. Jar (fig. 15)

A large, flat-bottomed jar similar to the one described above (cat. 142), but with a cylindrical neck.[141]

SHAFT 5010

SOURCES: Tomb cards 341, 343
Photo L 12–13:356

145–48. Miscellaneous Objects

According to tomb card 341, "Circa 30 (cm) below surface, in middle of pit, a layer of black earth, decomposed plant matter, bones etc. In this there were scattered several small pots (cat. 145), 2 mussel shells (cat. 146), 1 flint flake (cat. 147), and 1 gl(azed) bead (cat. 148)."

149. Juglet

A pottery juglet of yellow smooth ware with a narrow, funnel-shaped neck.[142]

[139] Compare Brunton, *Gurob*, pl. 21, nos. 24a, 40.
[140] Engelbach, *Riqqeh and Memphis* VI, pl. 31, no. 55p.
[141] Engelbach, *Riqqeh and Memphis* VI, pl. 32, no. 60p, t.
[142] Philippe Brissaud, "Répertoire préliminaire de la poterie trouvée à San el-Hagar (1re Partie)," *Cahiers de la Céramique Égyptienne* 1 (Cairo, 1987), pl. 22, no. 380 (Ptolemaic/Roman).

150–59. Pottery

The following pottery seems to date to the Ptolemaic period.

150. Fragment of a Jar or Bottle (pl. 81)

Body of a slender, footed jar or bottle of "smooth red ware."[143]

151. Incense Burner (pl. 81)

The upper part of a bowl from an incense burner with the stem broken off; "red blackened inside."

152. Pointed Vessel (pl. 81)

The globular lower part of a vessel with a pointed bottom; "yellow" ware.[144]

153. Jar or Bottle (pl. 81)

The lower part of a slender jar or bottle.

154. Jar (pl. 81)

Neck and shoulder of a necked jar of "yellow ware."[145]

155. Juglet (pl. 81)

A juglet of "yellow smooth ware."[146]

156. Juglet[147] (pl. 81)

157. Juglet (pl. 81)

The body of a juglet similar to those described above (cats. 155–56).

158. Juglet (pl. 81)

A juglet similar to those described above (cats. 155–57).

159. Juglet (pl. 81)

The lower body of a juglet similar to those described above (cats. 155–58?).

160. Fragments of Water Pots

A small sketch at the margin of the tomb card seems to indicate an upper part and a rim of two or three large Nile clay C bottles.

161. Pot

The bottom of a smaller, round-bottomed pot; no drawing exists in the records.

162. Saucer Fragment

A fragment of a small saucer; no drawing exists in the records.

163. Handle Fragment

A fragment from the handle of a large pot; described as "later?" on tomb card 343. No drawing exists in the records.

164. Bottom of a Flat-Bottomed Pot

165. Bone Fragments

A few scattered bones of a man. No skull was found.

166. Animal Bones

Three or four bones of a small animal, perhaps a calf.

167. Small Shell (Fossil?)

168. Tiny Glaze Cone

169. Gold Foil

Two or three scraps of gold foil.

SHAFT 5011

SOURCES: Tomb card 344

170. Scarab

The remains of half of a blue stone scarab.

171. Gold Foil

Scraps of gold foil.

172. Amulets

Two amulets of blue glaze, one of which retains its original string.

173. Model Plate

A model plate of pottery with a yellow-brown color.

[143] Cf. W. M. Flinders Petrie, *Memphis* I, British School of Archaeology in Egypt and Egyptian Research Account, Fourteenth Year, 1908, 17 (London, 1909), pl. 46, nos. 77–78; Petrie, *Qurneh*, pl. 42, no. 731.

[144] W. M. Flinders Petrie, *Tanis* II, Fifth Memoir of the Egypt Exploration Fund (London, 1888), pl. 35, no. 46 (Late Period); Petrie, *Qurneh*, pl. 42, no. 751.

[145] Petrie, *Riqqeh and Memphis* VI, pl. 39, no. 113 (Late Period).

[146] Petrie, *Memphis* I, British School of Archaeology in Egypt and Egyptian Research Account, Fourteenth Year, 1908, 17 (London, 1909), pl. 46, no. 74 (Ptolemaic).

[147] W. M. Flinders Petrie and Ernest Mackay, *Heliopolis, Kafr Ammar and Shurafa*, British School of Archaeology in Egypt and Egyptian Research Account, Eighteenth Year, 1912, 24 (London, 1915), pl. 45, nos. 34–35 (Ptolemaic).

174. Model Plate

A model plate of pottery that is smaller than the one described above (cat. 173).

SHAFT 5012

SOURCES: Tomb card 345

175. Whip Pendant

A whip (flagellum?) pendant of dark glaze.

BEEHIVE-VAULTED CELLARS (SILOS)

SOURCES: Lisht Journal I, 160–61
Tomb cards 403–5
Photo L 33–34:565

176. Jar (pl. 84b)

A pale reddish brown ovoid jar with a wide, straight neck; the bottom of the exterior was wheel thrown. It is made of fairly fine, hard Nile ware (Nile clay B2) and has a plain surface. This jar and the cup below (cat. 177) date to the Third Intermediate Period.[148]

177. Cup (pl. 84b)

A cup of the same ware as the jar (cat. 176); the bottom of the exterior was also wheel thrown. It is dirty from use, and the exterior is fire blackened. The cup was found inverted, covering the mouth of the above-mentioned jar (cat. 176).

178. Jar Fragments

Four fragments of common, large, wide-mouthed, marl clay C jars. No documentation exists for these fragments.

179. Papyrus Mat (pl. 84b?)

Jd'E 63868; MMA sample 34.1.197

ADDITIONAL SOURCES: Photo neg. no. 98460

Tomb card 403 records the following description:

> Rectangular piece of coarse cloth, 110 x 92 cm. Woven edge along each side; warp strands simply cut off at both ends.
>
> Warp: 2-ply papyrus pith cord, 1.5 mm in diameter.
>
> Weft: Long strips of the inner bark of the papyrus reed, 1.5–2 cm. wide.
>
> There are two weaves in the cloth which alternate with one another every 5 weft strands, as follows:
>
> a) The weft strand passes over 2 and under 1 warp strand, the adjacent weft strands reversing the process.
>
> b) The warp strand passes over 2 and under 2 warp strands, the adjacent weft strands doing the same thing in the reverse sense.
>
> This produces stripes across the cloth, each stripe being the width of 5 weft strands (10 mm. for the 2-and-1 weave; 8 mm. for the 2-and-2 weave).
>
> At the side edges the warp strands are doubled, there being 2 double warp strands along each edge; all the weft strands pass alternately over and under both of the double warp strands; the ends of the weft strands are tucked in between the two cords of the outer warp strand, all from the upper side of the cloth.
>
> To distances of 9 and 12 cm. respectively in from each end, only weave "a" is employed, thus producing wide bands of the coarser weave at each end; and indicating that the piece of cloth is not a fragment, but is complete in its present dimensions.
>
> The piece is much broken, rotted, and shredded.
>
> The appearance and quality of the cloth is, in general, that of heavy burlap.
>
> The lengths of weft strand have been knotted to one another at intervals, the knots (half-hitches) and the projecting ends of the lengths of strand appearing on the under side of the cloth.

Dimensions: 92 x 110 cm; MMA sample 14 x 7.5 cm

180. Palm Stick Mat

Forty-six sticks placed with alternating thick and thin ends. The sticks are tied with fourteen strips of *halfa*-grass.

Dimensions: L. 201 cm

181. Rope (pl. 84b)

A rope of two-ply palm fiber.

Dimensions: L. 160 cm; Th. 1.7 cm

Finds from the *Radim*

Metropolitan Museum records contain a considerable number of notes on objects that were found scattered in the debris, without any connection to a particular monument inside the outer court. Other objects without clear labelling were "discovered" by W. C. Hayes in the storerooms of the expedition house. Quite frequently, the origin of these finds was not indicated more precisely than "LSP?" or "old material." The finds are listed here according to their original designations such as OCNE, OCN1, OCN2 (see abbreviations list, p. 9).

OCE2 (POSSIBLY MIXED WITH OCSE)

182. Stela Fragments (pl. 89)

SOURCES: Tomb card 299

Ten to twelve fragments of a "black granite" (or diorite?) stela. All extant surfaces are highly polished; there are no traces of inscriptions. The fragments are dated to the Twelfth Dynasty.

[148] Many jars of this type were found in the settlement located west and north of the pyramid of Amenemhat I at Lisht North. For this Third Intermediate Period type see David Aston, *Cahiers de la Céramique Égyptienne*, forthcoming.

183. Two Wooden Implements (pl. 89)
One piece MMA 34.1.36; location of the second piece is unknown

SOURCES: Tomb card 314a
Photos L 12–13:377; L 33–34:560; neg. no. 98274
BIBLIOGRAPHY: Hayes, *Scepter* I, 244

The piece in the Metropolitan Museum is a flat elliptical object carefully carved of cypress wood. Both ends are stained with a resinous(?) crust; one end is slightly worn from use (scratched).

These implements, found in the gypsum workers' house (see p. 51), may be a kind of spatula. Similar objects were found on top of a gypsum layer in front of the northern causeway gate,[149] suggesting a common use of the tools by gypsum workers. Spatulas of precious materials such as ivory and slate are known and are thought to have been used for cosmetics.

Dimensions of MMA 34.1.36: L. 21 cm; Th. 1.6 cm

OCSE

184. Statuette Fragment

SOURCES: Tomb card 298

A "black granite" (or diorite?) fragment of the left arm and bent elbow of an apparently seated figure. The figure is slightly less than one-half life-size.

Dimensions: L. elbow to wrist 9.5 cm

185. Statuette Fragments

SOURCES: Tomb card 298

Small diorite fragments of an arm or leg of a one-half life-size statuette.

186. Inscription Fragment (pl. 89)

SOURCES: Tomb card 298

A granite fragment, possibly from a column or statue, with a rounded, highly polished surface and remains of a carefully incised hieroglyph.

187. Inscribed Bead (pl. 89)
MMA 34.1.27

SOURCES: Tomb card 317
Photos L 33–34:576; neg. nos. 98197, 230042

A blue steatite cylindrical bead (or seal?) with the Kakheperre cartouche of Senwosret II.

Dimensions: L. 2.5 cm; Diam. 8 mm

OCS1

188. Fragment of a Pigeon-Shaped Meat Box(?) (pl. 89)

SOURCES: Tomb card 393
Photo L 33–34:471

A fragment of the bottom of a small, carefully carved cedar box in the shape of a trussed pigeon. Traces of white stucco remain on the exterior face. A dowel hole for the attachment of the lid was placed in the top of one end. The excavators dated the fragment to the Twelfth Dynasty, but the closest wooden parallels date to the Eighteenth Dynasty.[150]

Dimensions: L. 10.8 cm

189. Inscription Fragment (pl. 89)

SOURCES: Tomb card 393
Photo L 33–34:471

A very carefully polished fragment of gray granite with an incised inscription.

190. Mason's Mallet

SOURCES: Tomb card 393

A common type of tamarisk wood mallet. A horizontal groove runs around the center of the battered head.

Dimensions: L. 29 cm; maximum Diam. of head 13 cm; L. of handle 12.5 cm; Diam. of handle 3.5 cm

191. Ring with the Name of Haremhab (pl. 89)

SOURCES: Tomb card 401

A fragment of a ring bezel of bright blue glazed faience with the prenomen of King Haremhab. The findspot is unclear. The tomb card is labelled "Outer Court S 1 *Radim* 1933–34."

OCS2

The caption of photo L 32–33:5 indicates that the following objects were found in the *radim* of the OCS2. The approximate dimensions are taken from the photos.

192. Left Arm of a Wooden Statuette (pl. 89)

Dimensions: L. ca. 15 cm

193. Door from a Wooden House Model (pl. 89)

Dimensions: H. of door ca. 7.4 cm

[149] Arnold, *Senwosret I*, 28, fig. 5, pl. 12b, d.
[150] Herbert E. Winlock, *The Tomb of Queen Meryet-Amun at Thebes*, Publications of The Metropolitan Museum of Art Egyptian Expedition 6 (New York, 1932), 28–29, 72–73, pl. 28A.

194. Fragments of the Doorframe of a Wooden House Model (pl. 89)

Dimensions: W. of doorway ca. 7.2 cm

195. Baldachin Pole (pl. 89)

The pole probably belonged to a model ship.

Dimensions: L. ca. 18.4 cm

196. Top of the Mast of a Model Sailing Boat (pl. 89)

Dimensions: L. ca. 17.6 cm

197. Fragment of a Steering Oar (pl. 89)

Dimensions: L. ca. 13.8 cm

OCW2

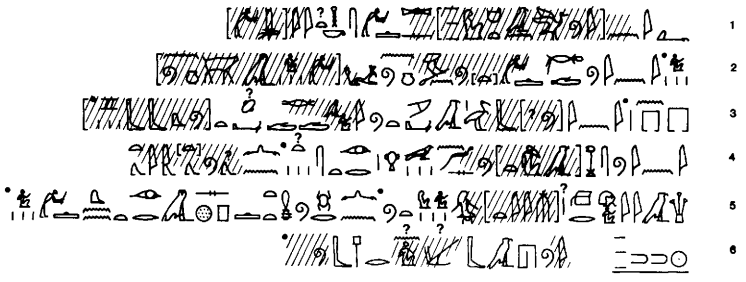
198. Hieratic Ostracon (pl. 90)
(by Felix Arnold)
MMA 32.1.119

SOURCES: Tomb card 565
Photos L 31–32:291; neg. nos. 89552, 229993

BIBLIOGRAPHY: *BMMA* 28 (Apr. 1933), sec. II, 8, fig. 4; Hayes, *Scepter* I, 179; Wolfgang Helck, *Der Text der "Lehre Amenemhets I. für seinen Sohn"* (Wiesbaden, 1969), 61–71, IX, Xa; Lichtheim, *Ancient Egyptian Literature* I, 137; Hellmut Brunner, *Altägyptische Weisheit, Lehren für das Leben* (Zurich and Munich, 1988), 175

A fragment of a large green-gray jar or amphora (most probably marl clay D) that was found in ten pieces. The ostracon has six lines of a New Kingdom hieratic inscription in black ink.

Part of the ostracon is missing, but except for some gaps in the middle, the inscription is complete. The text is a Nineteenth Dynasty school exercise of the ninth stanza of the "Admonitions of King Amenemhat I."



Stanza: Had women ever marshaled troops?
Are rebels nurtured in the palace?
Does one release water that destroys the soil?
Does one befoul commoners in their doing?
Harm has not come up behind me since my birth,
The like has never happened to a brave one.

The last line begins with the rubric date "day 23" followed by the title of the tenth stanza, "I journeyed to Elephantine."

Dimensions: 1 x 16 x 23 cm

199. Ring Fragment (pl. 91)
MMA 32.1.123

SOURCES: Tomb card 566
Photos L 31–32:211; neg. no. 89566

A signet of King "Haremhab-(mery-A)mun" of light blue glazed faience.

Dimensions: L. of remaining fragment 1.3 cm

200. Decorated Pot Fragment (pl. 92)

SOURCES: Tomb card 566

A fragment of a New Kingdom decorated pot of hard, fairly coarse red ware (marl clay A2 or 4?), buff on the surface. The decoration is in brown and light blue.[151]

201. Plate (pl. 92)
MMA [32.1.122]; OIM 29491

SOURCES: Tomb card 567
Photos L 31–32:238; neg. no. 89530

A plain, medium-sized plate of fine, soft brown ware (Nile clay B1). The bottom was finished by hand.

Dimensions: Diam. 19 cm

202. Bowl (pl. 92)
MMA [32.1.121]; OIM 29490

SOURCES: Tomb card 567
Photos L 31–32:238; neg. no. 89529

A footed bowl of fine, soft brown ware (Nile clay B1) with thin red hematite slip on the exterior, which is now well worn.

Dimensions: Diam. 15.5 cm

203. Bowl (pl. 92)
MMA [32.1.120]; OIM 29489

SOURCES: Tomb card 567
Photos L 31–32:238; neg. no. 89528

A bowl of fine, soft brown ware (Nile clay B1) with red slip inside and out. A white crust covers the bottom of the interior; patches of the exterior surface are caked with salt.

Dimensions: Diam. 22 cm

204. Vase (pl. 91)
MMA [33.1.163]

SOURCES: Tomb cards 568–69
Photos L 32–33:19; neg. no. 944262 (after restoration)

A fragmentary inscribed alabaster vase with a lid. The piece is exquisitely crafted and polished, with remains of a skillfully incised inscription. The combination of signs suggests that a

[151] Similarly decorated pots are of late Eighteenth to early Nineteenth Dynasty date, see Nagel, *Céramique du Nouvel Empire* I, 30, fig. 20, no. 67; 73, fig. 56, no. 10.

royal personage was named in the inscription. The name, unfortunately lost, was followed by the *'nḫ wḏ3 snb*-wish.

Dimensions: H. 13.5 cm; Diam. 18 cm; lid Diam. 16 cm

205. ***Kohl*-Pot** (pl. 91)

SOURCES: Tomb card 570
Photo L 33–34:77

A fragment of an alabaster kohl pot of good quality. There are traces of green material, probably malachite, on the bottom.

Dimensions: H. 3.2 cm; Diam. 3.05 cm

206. Vessel Fragment (pl. 91)

SOURCES: Tomb card 570
Photo L 33–34:77

A longitudinal section of an unpolished, poor-quality alabaster jar.

207. Bead (pl. 91)

SOURCES: Tomb card 571
Photo L 33–34:77

A faience bead from a ceremonial whip (flagellum); the faience has worn away.

Dimensions: H. 1.2 cm; Diam. 1.8 cm

208. Button(?) (pl. 91)

SOURCES: Tomb card 571
Photo L 33–34:77

A mushroom-shaped button of aragonite. The underside of the top has marks indicating that a shaping instrument was pressed on the material; the surface of the top has traces of red paint.

Dimensions: Diam. 1.75 cm

209. Two Bowls (pl. 92)

SOURCES: Tomb card 573
Photo L 33–34:147

Two similar large bowls of fine, soft brown ware (Nile clay B1), with red hematite coating inside and out; they date to the early Twelfth Dynasty.[152] Both bowls were found dirty and caked with salt. The exterior of the bottom of the smaller bowl is stained in places with a dark oily liquid. Both were found "beside the foot on the brick enclosure wall on its east side." The smaller bowl was found "up-ended and mouth down in the larger one." The larger bowl is illustrated here.

Dimensions of Smaller Bowl: W. 23 cm; H. 13 cm

210. Two Figures from Model Boats (pl. 92)

SOURCES: Tomb card 578
Photo L 31–32:200

Two well-modelled "cedar" wood figures from a good-quality boat. The bodies are painted white, the wigs black, and the faces red. Dampness has rotted the wood. According to the tomb card, the figures were found in the "mastaba enclosure S.W. corner below pavement level," that is probably at the southwest corner of pyramid 4.

a) A seated man dressed in a long garment that conceals his arms. He wears a short black wig and is seated on a plain rectangular block. The figure must represent the deceased dignitary to whom the boat belonged.

Dimensions: H. 9.7 cm; W. of seat 4 cm

b) A seated man with his knees drawn up, clad in a long garment that conceals the limbs. This type of figure is often placed behind the coffin on model boats and occurs once in the model of a granary.[153]

Dimensions: H. 8 cm; W. 3.8 cm

OCW

211. Jar Fragment (pl. 92)

SOURCES: Tomb card 465

A fragment of a finely polished oil jar of good white alabaster.

212. Statuette Base (pl. 92)

SOURCES: Tomb card 465

The base of a small, badly weathered, rough limestone statuette.

213. Four Mallets (pl. 93)
MMA [24.1.73], 24.1.74–.76

SOURCES: Tomb card 458
Photos 6 LN:155; neg. nos. 58938–39

Four hardwood masons' mallets of uncertain date. They seem to have been found together, along with the two rollers described below (cat. 214), east of drain pit F (p. 93).

Dimensions: [24.1.73] 30.5 cm
24.1.74 30 cm
24.1.75 29.5 cm
24.1.76 28 cm

214. Two Rollers (pl. 93)
MMA 24.1.77, [24.1.78]

SOURCES: Tomb card 459
Photo neg. nos. 58941, 137132
BIBLIOGRAPHY: Hayes, *Scepter* I, 290, fig. 192

Two hardwood rollers that were used for moving stone. According to the tomb card, "Date uncertain. Probably not long after end of XII Dyn."

Dimensions: L. 32.5 and 29.5 cm

[152] Arnold, *Senwosret I*, 111, fig. 55a, no. 9.
[153] James H. Breasted, Jr., *Egyptian Servant Statues* (New York, 1948), 38, pl. 38a (MMA [32.1.125]).

215. Beads (pl. 93)

SOURCES: Tomb cards 457, 460–64

The tomb cards describe a great number of beads and amulets; only those documented by drawings (tomb cards 461–62) are included here.

a) "Blue paste," roughly carved; L. 12 mm.
b) Cloudy quartz or crystal; Diam. 8 mm.
c) Faience, now gray; L. 12 mm.
d) Dark bluish green glazed faience with a granular surface; L. 12 mm.
e–h) Bright blue glazed faience; L. 4.1–4.2 mm.
i) Two examples of bright blue glazed faience, both with plain backs; Th. 4 mm.
j) Bright blue glazed faience; Th. 3.5 mm.
k) Dull pale blue glazed faience; Th. 3 mm.
l) Poor-quality disk bead of pale blue glazed faience; Diam. 10 mm.

Other objects:

m) Pendant bead of pale greenish blue glazed faience from a collar; L. 25 mm.
n) Fragments of three examples of blue-glazed faience hair(?) rings; Diam. 17 mm (not illustrated).
o) Bright blue glazed faience fragment from the lip of a small vase with black linear decoration on the exterior; Th. 5.5 mm.

216. Fragments of a Bead Girdle[154] (pl. 93)

SOURCES: Tomb card 456
Photo L 33–34:134

a) Fragment of half the width of a bead work girdle of blue, white, and black ring beads; original W. 2.5 cm.
b) 2 papyrus beads of blue-glazed faience; H. 10 mm; W. 20 mm; Th. 6 mm.
c) 1 lily bead of black-glazed faience; H. 12 mm; maximum W. 13 mm; Th. 6 mm.
d) 24 elongated barrel beads of blue-glazed and black-glazed faience; L. 15.5–22 mm; maximum Diam. 4–5.2 mm.
e) 1 quatrefoil bead of black-glazed faience; H. 5 mm; Diam. 5 mm.

217. Broad Collar Beads

SOURCES: Tomb card 456

a) 12 black-glazed tubular beads; L. 20–24 mm.
b) 8 black-glazed tubular beads; L. 19–24 mm.
c) 20 blue-glazed tubular beads; L. 13–27 mm.
d) 2 fragmentary dark "blue paste" tubular beads; Diam. 4 mm.

OCN

218. Relief Fragment (pl. 94a)

SOURCES: Tomb card 631

A limestone relief depicting the upper part of a head. The incised eyebrow and eye are outlined in black paint.

219. *Udjat*-Eye

SOURCES: Tomb card 648

An *udjat*-eye of greenish blue glazed faience. The brow and pupil are applied in black glaze.

Dimensions: L. 18 mm; H. 13 mm

220. Offering Pot (pl. 94a)

SOURCES: Tomb card 649
Photo L 33–34:156

A plain pot of fairly fine, soft brown ware (Nile clay B2). "From the shoulder made on the wheel; below, hand made." The pot is very rough and irregular in shape, as is usual for pots of this and similar type from foundation deposits of the earlier Twelfth Dynasty.[155] On tomb card 649, the findspot of this pot is described as "Pyramid A (i.e. 6) southeast corner of court." The pot, therefore, could have belonged to a foundation deposit of this pyramid court.

221. Limestone Patch(?) (pl. 94a)

SOURCES: Tomb card 635

In addition to several other fragments of differently shaped stone objects not included here, this one is of some interest. The front and underside are smoothly dressed and covered with red paint, the rear and the left side are roughly smoothed, and the top is broken off. The object was probably a patch used to repair a limestone monument.

OCE1

222. Amulet (pl. 94b)

SOURCES: Tomb card 658
Photos L 33–34:515–16

An amulet of very dark blue glazed faience in the form of the head of a hippopotamus(?).

223. Cartouche Plaque (pls. 94b, 95)
MMA 34.1.22

SOURCES: Tomb card 659
Photos L 33–34:515–16; neg. no. 98193
BIBLIOGRAPHY: Hayes, *Scepter* I, 201

A plaque of glazed greenish gray steatite. An inscription, roughly scratched on the surface, probably reads "*Nj-m3ʿt-Rʿ*" (Amenemhat III).

Dimensions: 1 x 1.8 cm

[154] Arthur C. Mace and Herbert E. Winlock, *The Tomb of Senebtisi at Lisht*, Publications of The Metropolitan Museum of Art Egyptian Expedition 1 (New York, 1916), 68–72, pl. 27.
[155] Arnold, *Senwosret I*, 106, 108, figs. 52–54. Note, however, that cat. 220 is of somewhat different shape.

224. *Udjat*-Amulet (pl. 94b)
MMA [34.1.24]

SOURCES: Tomb card 659
Photos L 33–34:515–16; neg. no. 98195

An amulet of pale bluish green glaze (steatite).

Dimensions: L. 20 mm

225. *Udjat*-Amulet (pl. 94b)

SOURCES: Tomb card 659
Photos L 33–34:515–16

An amulet of bright blue glaze that is smaller but more elaborate than the amulet described above (cat. 224).

Dimensions: 4.5 x 10 x 13 mm

226. *Udjat*-Amulet (pl. 94b)

SOURCES: Tomb card 659
Photos L 33–34:515–16

An amulet of badly fired bluish green glaze with a black brow and pupil. This amulet has less detail and is inferior to the amulets described above (cats. 224–25).

Dimensions: 7 x 15.5 x 18 mm

227. *Udjat*-Amulet (pl. 94a–b)
MMA [34.1.23]

SOURCES: Tomb card 659
Photos L 33–34:515–16; neg. no. 98194

An amulet of badly fired bright blue glaze. The brow and pupil are a ridge and a lump of dark blue glaze.

Dimensions: 4 x 12 x 16 mm

228. Pendant (pl. 94b)

SOURCES: Tomb card 659
Photos L 33–34:515–16

A pendant of blue-glazed faience (rough glaze over coarse faience).

Dimensions: H. 20 mm

229. Eye Inlay (pl. 94b)
MMA [34.1.26]

SOURCES: Tomb card 660
Photos L 33–34:515–16; neg. no. 98273

A rim inlay of dark purplish blue glass with the front edges polished. The inlay is well made, with a smooth and even finish.

Dimensions: L. 4 cm

230. Scarab (pls. 94b, 95)
MMA 34.1.25

SOURCES: Tomb card 660
Photos L 33–34:515–16; neg. no. 98196

A green-glazed (steatite) scarab that has now faded. The design is well carved and crosshatched. An oxidized copper wire or pin runs through the scarab and projects slightly from the ends.

Dimensions: L. 16 mm

231. Button (pl. 94b)

SOURCES: Tomb card 660
Photos L 33–34:515–16

A bone button with an incised design on top; the bottom is flat and plain.

Dimensions: Diam. 21 mm

232. Three Rough Scarabs (pls. 94b, 95)

SOURCES: Tomb card 660
Photos L 33–34:515–16

a) Steatite, slightly higher quality and more detailed; L. 16.5 mm.
b) Coarse faience; L. 19 mm.
c) Coarse faience; L. 15 mm.

233. Inscribed Bottle Fragments (pl. 95)

SOURCES: Tomb card 661
Photo L 33–34:568

Two inscribed fragments from the shoulders of two large, ovoid bottles with narrow, ribbed necks.[156] The jars are made of buff *gulleh* ware with pink on the break (marl clay C compact). Only the ends of two hastily written inscriptions in black ink are preserved. The fragment on plate 95 could read *rmnn* or *rmn.t*, either for "Lebanon" (*WB* II, 421,5) or "kind of pot" (*WB* II, 420,15). The other fragment on plate 95 could read *ḥ'* "measure for beer" (*WB* I, 221,16).

Dimensions: a) 0.5–0.75 x 15 x 26 cm
b) 0.75 x 8.5 x 12 cm

234. Fragments of a Dish with the Name of Princess Nen-sed/// (pl. 94b)

SOURCES: Tomb card 667

The fragments of a dish, possibly of faience. The handle fragment has a lotus flower design incised with a pointed implement; its back is plain. The other fragment has the hieroglyphs in low relief on the exterior and incised on the interior. The inscription reads "///the king's daughter Nen-sed." The fragments were found at the "North Temple Gateway," i.e. the northern entrance into the outer court, an expression that could also refer to the whole area north of the upper end of the causeway.[157]

[156] Type Petrie, *Lahun* II, pl. 57, no. 46 M2. This type does not occur in earlier Twelfth Dynasty context (see Arnold, *Senwosret I*, 122, nos. 84/122–23). See also Dorothea Arnold, "Ägyptische Mergeltone ('Wüstentone') und die Herkunft einer Mergeltonware des Mittleren Reiches aus der Gegend von Memphis," in *Studien zur altägyptischen Keramik*, ed. Dorothea Arnold (Mainz, 1981), 186, fig. 4.

[157] Arnold, *Senwosret I*, 33.

Finds from the Boat Pit

(pls. 85–88)

TWELVE FAIENCE FIGURINES (GROUP B)

SOURCES: *BMMA* 19 (Dec. 1924), pt. II, 37–38, fig. 2
BIBLIOGRAPHY: Kemp, *Minoan Pottery*, 167, pl. 22

In his report in the *BMMA* Lansing stated, ". . . not far below the surface at the east end [of the boat pit], evidently dropped as valueless, was an unusually complete set of faience models." From his description, one gets the impression that this find was not made at the west end of the boat pit, where the tomb was built, but at the east end, perhaps even outside the actual pit.

On the Metropolitan Museum register cards, the findspot is described as, "Pit No. 6L. Brick Vault (W. of N.W. corner of pyramid between the two enclosures)." This description of the findspot would suggest that the objects were actually found in the tomb ("pit"?). However, since we have a contradictory statement from the excavator, we cannot decisively connect the objects with the boat pit tomb. Instead, we must consider the possibility that they were buried intentionally by a priest or hidden by tomb robbers in the debris of the court near the east end of the boat pit.[158]

The findspot is especially important because this group resembles faience model figures that are known not only from numerous Middle Kingdom tombs at Lisht North and South,[159] but also from several temple deposits that mainly date to the Early Dynastic Period and the Old Kingdom.[160] According to Dreyer, such model figures should be understood as votives that were later buried in or near the temple when their number made it necessary to dispose of them. In this case, the nearest cult building would have been the brick chapel attached to the enclosure wall of pyramid 5 (see p. 33). During the demolition of this little sanctuary, the buried faience figures might have been exposed and thrown away; several round holes, which could have contained hidden figures, were found in the area of the sanctuary. The subjects represented in the Lisht objects, such as women with babies, small animals, and fruit, resemble those found in older deposits and might indicate the purpose of their donation to the god(dess). Therefore, we cannot be sure that the faience group originated in the boat pit.

During excavations in the area of pyramid 3, a few more examples of similar objects were collected (see group A, pp. 61–62). Another deposit of faience figurines was discovered in the tomb of Hepy, east of the enclosure of Senwosret I.[161] The so-called E. L. B. Terrace Group was said by a dealer to come from Lisht, taken from a tomb robbed by local people in or before 1974.[162] Because faience figures of the same type were certainly found with a burial at Abydos,[163] a connection with a tomb cannot be entirely ruled out for the Lisht faience group.

The execution of faience figurines differs considerably. While those of earlier times are generally crude or abstract, most Middle Kingdom faience figurines are more naturalistic and detailed. Some of them can be considered works of "minor art."[164] While such figures are difficult to date more precisely than to the Middle Kingdom, the Abydos burial is certainly Thirteenth Dynasty.[165]

235. Figure of a Woman (pl. 85)
MMA 24.1.47

SOURCES: Tomb card 540
Photos 6 LN:114–15, 119; neg. no. 58864
BIBLIOGRAPHY: *BMMA* 19 (Dec. 1924), pt. II, 38, fig. 2; Hayes, *Scepter* I, 221

A discolored faience figure of a standing woman holding a baby. Traces are visible of green on several parts of the figure and of black on the wig.

Dimensions: H. 9.1 cm

236. Figure of a Woman (pl. 85)
MMA 24.1.48

SOURCES AND BIBLIOGRAPHY: See cat. 235

A faience figure of a standing woman holding a baby. Traces of the original dark green color are visible. The base, the wig, and the eyes are black.

Dimensions: H. 7.4 cm

237. Figure of a Woman (pl. 86)
MMA 24.1.49

SOURCES AND BIBLIOGRAPHY: See cat. 235

A faience figure of a squatting woman holding a child on her knee. Traces of the original dark green color are visible. The base, the wig, and the eyes are black.

Dimensions: H. 5.55 cm

238. Figure of a Cow (pl. 86)
MMA 24.1.50

SOURCES: Tomb card 541
Photos 6 LN:114–16; neg. nos. 58865, 137000
BIBLIOGRAPHY: *BMMA* 19 (Dec. 1924), pt. II, 38, fig. 2; Hayes, *Scepter* I, 224, fig. 140

A recumbent cow of green faience with black spots. The base is black.

Dimensions: L. 5.6 cm

[158] *BMMA* 19 (Dec. 1924), pt. II, 38.
[159] See pp. 61–62, cats. 52–58.
[160] Günter Dreyer, *Der Tempel der Satet, Die Funde* I, Elephantine VIII (Mainz, 1986), passim.
[161] To be published in Christian Hölzl, *The South Cemeteries of Lisht: Private Tombs*, forthcoming; for now see *BMMA* 29 (Nov. 1934), sec. II, 30, 35, fig. 29.
[162] Kemp, *Minoan Pottery*, 165–66, pls. 23–26.
[163] Kemp, *Minoan Pottery*, 135–47.
[164] For a detailed study of the subject see Kemp, *Minoan Pottery*, 161–68 and Janine Bourriau, *Pharaohs and Mortals: Egyptian Art in the Middle Kingdom* (exhibition catalogue, Cambridge, 1988), 102–3, 108–9, 116–22.
[165] For the pots, compare Kemp, *Minoan Pottery*, 117, fig. 38; Guy Brunton, *Qau and Badari* III, British School of Archaeology in Egypt, 1926, 50 (London, 1930), pl. 15, types 34H, 34G; for no. 7, Kemp, *Minoan Pottery*; Brunton, ibidem, pl. 15, type 42S; pl. 16, type 52P; pl. 28, type 147; for no. 11, Kemp, *Minoan Pottery*.

239. Figure of a Dog (pl. 86)
MMA 24.1.51

SOURCES: Tomb card 541
Photos 6 LN:114–16; neg. nos. 58867, 137000
BIBLIOGRAPHY: *BMMA* 19 (Dec. 1924), pt. II, 38, fig. 2; Hayes, *Scepter* I, 224, fig. 140

A squatting dog, rising in front, of dark green faience with black spots.

Dimensions: L. 5.3 cm

240. Figure of a Cat (pl. 87)
MMA 24.1.52

SOURCES: Tomb card 541
Photos 6 LN:114–16; neg. nos. 58868, 137000
BIBLIOGRAPHY: See cat. 239

A crouching cat with its head lowered onto its front paws as if it is about to spring. The figure is made of green faience and has black spots.

Dimensions: L. 5.4 cm

241. Two Cucumbers (pls. 87–88)
MMA 24.1.53–.54

SOURCES: Tomb card 543
Photos 6 LN:114–15, 117–18; neg. nos. 58854, 137434
BIBLIOGRAPHY: *BMMA* 19 (Dec. 1924), pt. II, 38, fig. 2; Hayes, *Scepter* I, 337–38, fig. 225

Two cucumbers, one of blue faience and one of white faience.

Dimensions: MMA 24.1.53 (blue) L. 12.2 cm
MMA 24.1.54 (white) L. 11 cm

242. Bunch of Grapes (pls. 87–88)
MMA 24.1.55

SOURCES: Tomb card 544
Photos 6 LN:114–15, 117–18; neg. nos. 58862, 137434
BIBLIOGRAPHY: *BMMA* 19 (Dec. 1924), pt. II, 38, fig. 2; Hayes, *Scepter* I, 337–38, fig. 225

A bunch of black faience grapes. The black paint does not seem to have been fired.

Dimensions: L. 10 cm

243. Four Figs (pl. 88)
MMA 24.1.56–.59

SOURCES: Tomb card 545
Photos 6 LN:114–15, 117–18; neg. nos. 58824, 137434
BIBLIOGRAPHY: See cat. 242

Four brown faience figs, each of which has one hole in the middle and one hole on top.

Dimensions: L. 1.85, 1.95, 2, 2.25 cm

244. Four Fruits (pl. 88)
MMA 24.1.60–.63

SOURCES: Tomb card 546
Photos 6 LN:114–15, 117–18; neg. nos. 58851, 137434
BIBLIOGRAPHY: See cat. 242

Four pear-shaped fruits of green faience.

Dimensions: L. 2.1, 2.3, 2.7, 2.7 cm

245. Four Grains (pl. 88)
MMA 24.1.64–.67

SOURCES: Tomb card 547
Photos 6 LN:114–15, 117–18; neg. nos. 58861, 137434
BIBLIOGRAPHY: *BMMA* 19 (Dec. 1924), pt. II, 35, 38, fig. 2; Hayes, *Scepter* I, 337, fig. 225

Four grains of white faience with black spots.

Dimensions: Diam. ca. 6 mm

246. Figure of a Jerboa (pl. 88)
Jd'E 48395

SOURCES: Tomb card 542
Photos 6 LN:114–16, 118

An upright squatting animal (desert rat?) of faience. Its front paws are raised to its mouth in a feeding position.

Dimensions: H. 3.6 cm

ADDITIONAL FINDS FROM THE BOAT PIT

247. Mace Head (pl. 88)
MMA 24.1.68

SOURCES: Tomb card 548
Photos 6 LN:120; neg. no. 58856
BIBLIOGRAPHY: *BMMA* 19 (Dec. 1924), pt. II, 38; Hayes, *Scepter* I, 283

A hard limestone mace head.

Dimensions: H. 6 cm

248. Eye Inlay (pl. 88)
MMA [24.1.69]

SOURCES: Tomb card 549
Photos 6 LN:121; neg. no. 58866
BIBLIOGRAPHY: *BMMA* 19 (Dec. 1924), pt. II, 38

A "blue paste" eye inlay from the eye panel of a coffin.

Dimensions: L. 10.1 cm

249. Beads (pl. 88)
MMA 24.1.86

In addition to the eye inlay (cat. 248), photo 6 LN:121 shows

the following objects, which originated from the same findspot.

a) 2 lotus bud shaped beads from a girdle.
b) 1 barrel-shaped bead.
c) 2 tubular beads.
d) 1 globular bead of a black shiny material, possibly glass.

Miscellaneous Find

250. Relief Fragment (pl. 88)
MMA 34.1.183

SOURCES: Photos L 33–34:508; neg. no. 98366
Field slip 34LO 73

The bituminous or limestone black relief fragment was found at the "north gateway of temple." Probably this is the gate from the northern lane of the causeway into the outer court, and not the northern exit of the transversal corridor into the inner court of the pyramid.

The little relief, which depicts the face and upper part of a man wearing a necklace (shell?) and an Egyptian wig, was probably an inlay of some sort or part of a decorated vessel. The face has a foreign expression that recalls the heads on the famous harvester vessel from Agia Triada (Late Minoan Ib) in the Museum of Iraklion, Crete.

Dimensions: H. 2.5 cm; W. 1.5 cm

Finds from the Offering Hall of the Mortuary Temple of Senwosret I

(pls. 96–100a)

During the 1987 season, the eastern half of the offering hall of the mortuary temple of Senwosret I was excavated. Our aim was to search for drainage installations, which are quite common in Old Kingdom temples, but had not been recorded in this temple. No drain was found, but some interesting objects, described below, were discovered.

As mentioned in *The Pyramid of Senwosret I*,[166] the stone robbers completely removed the pavement of the offering hall. The few alabaster fragments found during the 1987 season might indicate that the pavement consisted of that precious material, but it is remarkable that the removal of the alabaster slabs produced so few broken stones and chips. Beneath the missing pavement there were two courses of foundation slabs. Above the *gebel* surface was a course of 50–80 cm thick limestone blocks, which were up to 1.50 m long. These were roughly dressed local stones inscribed with numerous, well-preserved team marks and control notes.[167] On top of these stones, lay another course of smaller and quite irregular poor-quality slabs with very brittle surfaces, which carried the weight of the now missing pavement. Under the walls of the offering hall, the stones of the upper course were of much higher quality, because they carried the walls and the heavy roof construction. These blocks, probably of Tura limestone, were large, regularly shaped, and roughly dressed.

Treasure-hunting thieves, who were hoping to find hidden deposits, also chiseled away the edges of the foundation blocks; in the northeast corner of the offering hall they opened a particularly deep hole. Smoke-blackened areas of the stones indicate that the robbers also used this hole to build a fire fueled with wooden temple furniture. Temple furniture either fell into the wide spaces between the blocks when the stones were torn out, or the thieves hid the wood there, intending to use it as firewood; the spaces between the stones made a good storage area since the 10–30 cm wide joints were filled with loose sand. In these joints, close to the smoke-blackened openings, remains of furniture were discovered broken into handy pieces and either partially or completely burned (pl. 100a).

With the exception of one piece, the find consisted of the remains of small wooden statuettes, probably all female, which had been donated to the sanctuary. There may be a connection between the female statuettes and the fifteen offering tables belonging to female staff members of the royal household discovered near pyramid 2 (see p. 68, cats. 119–21). Similar Middle Kingdom figurines were found in the vestibule of the antechamber of the mortuary temple of Pepi II.[168]

In addition to the many fragments that had been burned into unrecognizable bits of charcoal, the following pieces are recorded. Bracketed numbers refer to the excavation's object register.

251. Feline Face [III–1] (pl. 96)

The frontal face of a leopard or panther in very flat relief, incised into a board of wood 1 cm thick. The surface of the wood was covered with a thin layer of plaster, most of which has disappeared. Remains of gilding were found in the protected areas of the eyes, but it is possible that more areas were originally gilded. Traces of dark (black or blue?) paint near the ears show that some areas of the face were also painted.

The object is life-size and without any attachment devices, leaving only one possible explanation for this unique object, namely that it is the leopard's head from the leopard skin gown of a funerary priest. The head was probably inserted into the skin and its edges sewn into it. Though numerous representations depict this costume,[169] the only similar objects known to me are the two leopard (or cheetah?) heads from the tomb of Tutankhamun. These heads, which are 17.5 cm high and 16.9 cm wide, are slightly smaller than our head, are shaped in much higher relief, are hollow, and have hooks for mounting on the back. One was found connected with a real leopard skin, the other one with an imitation skin.[170]

The date of the Lisht leopard head, as well as those of the following objects, cannot be precisely determined. Since the mortuary cult in the king's temple did not survive the Thirteenth Dynasty, the objects must predate the end of this period. The general expression of the face also seems to favor an earlier date. The Tutankhamun specimen and the one on the statue of

[166] Arnold, *Senwosret I*, 48.
[167] F. Arnold, *Control Notes*, 135–41, pl. 12.
[168] Gustave Jéquier, *Le Monument Funéraire de Pepi II Volume III: Les Approches du Temple* (Cairo, 1940), 30–35.
[169] Cyril Aldred, *Jewels of the Pharaohs* (London, 1971), pl. 151; Claude Vandersleyen, *Das Alte Ägypten*, Propyläen Kunstgeschichte 15 (Berlin, 1975), pl. 187b.
[170] Jd'E 62629; *Treasures of Tutankhamun* (exhibition catalogue, New York, 1976), 104–5, no. 4, pl. 3.

Anen[171] have roundish, friendly looking, catlike faces. The Middle Kingdom head from Lisht, as well as that of the statue of Amenemhat III from Mit Faris,[172] show more elongated features, especially the nose, and a fierce predatory expression.

Dimensions: H. from top of head to maximum preserved neck 21 cm; W. across ears 17.40 m

252. Fragment of a Statuette [II–12] (pl. 97a–b)

Only the head and part of the chest are preserved; the right side of the face and chest and the rest of the body were burned away. The eyes are rimmed with copper and have inlays consisting of quartz and a black stone, possibly basalt. The copper is badly corroded, but pieces are still attached to the small plaster fragments.

As all the other statuette fragments suggest female figures, one would also like to see this figurine as the representation of a woman. The long hair, the expression of the face, and the chest seem to suggest a female figure. However, one cannot rule out the possibility that the statue represents the fecundity deity ("Hapi"), as the shape of the breast and the hairstyle would also be correct for this deity. The absence of a beard seems to point to a female personification, so that one could suggest a unique three dimensional representation of a female fecundity deity.[173] A votive of this type would echo the fertility theme expressed by the parade of two hundred male fecundity figures on the hawk panels of the inner enclosure wall and on the altar found in the court of the temple. The figurine was certainly a little masterpiece of the Twelfth Dynasty, comparable to the female head found at Lisht North.[174]

Dimensions: Preserved H. 13.9 cm; preserved W. 5.9 cm; H. from chin to top of head 5.9 cm

253. Fragments of the Head of a Figurine [III–25]

Two fragments of the head of a figurine; the fragments do not join, but they are of the same scale, and seem to belong to the same object.

a) The right lower half of the face, which was completely burned. The tip of the nose, the mouth and the eye socket are still recognizable.

Dimensions: Maximum H. 3.4 cm

b) A fragment of the top of a bald head, with peg holes for attaching a wig; the upper edge of the right eye socket is visible.

254. Statuette Base [III–2] (pls. 98a–b, 99a–b)

A rectangular wooden base, slightly burned on the back of the bottom and damaged by insects. The figurine was fixed by downward tenons in the heels, which were sunk into the base and fixed by pegs driven sideward into the long sides of the block. The front parts of the feet, with delicately carved toes and toenails, are preserved.

The inscription reads, "A boon which the king gives and a boon (which) Anubis, the lord of Djedu (gives): that there may be invocation offerings consisting of bread, beer, ointment, and cloths and all [good] things at every day for the *Ka* of the [honored] Dedet, justified."

Dimensions: L. of block 19.4 cm; W. 8.5 cm; H. 3.9 cm; L. of right foot 6.5 cm; W. of right foot 2.227 cm; L. of left foot 6.3 cm; W. of left foot 2.37 cm

255. Statue Base [III–3] (pls. 98c–d, 99c)

A rectangular wooden base without indications that it was burned. Only the mortise hole of the left foot remains; the tenon of the missing right foot is still in position.

The inscription reads, "An invocation offering consisting of bread, beer, oxen, and fowl and all good things for the *Ka* of the honored Shendet, born to Senet."[175]

Dimensions: L. of block 23.7 cm; W. 6 cm; H. 3.7 cm; plug holes for feet 0.8 x 2.1 cm

256. Eye Inlay [III–11]

The left eye of a wooden statuette. The outer edge is rimmed with badly corroded copper; the white of the eye is white quartz, the pupil is rock crystal. Plaster, which was used to attach the eye to the wood, still remains. Judging from the dimensions of the eye, the statuette must have been at least one-half life-size, and thus bigger than the other figurines.

Dimensions: L. 2.45 cm; H. 1.1 cm; Diam. 1 cm

257. Eye Inlay [III–16]

The left eye of a figurine. The copper is so badly corroded that only a rough shape can be distinguished.

Dimensions: L. 2.2 cm; H. 1.2 cm; Diam. 1.1 cm

258. Eye Inlay [III–16]

The right eye of a figurine. The copper is partially corroded. The white of the eye is quartz, the pupil is crystal.

Dimensions: L. 2.2 cm; H. 8 mm; Diam. 7 mm

259. Shoulder of a Figurine [III–13]

The shoulder and upper part of a left(?) arm, with the wooden peg used to attach it to the chest. The fragment, broken off above the elbow, is made of several tiny pieces of wood glued together.

Dimensions: Maximum preserved L. 6.1 cm

260. Hand of a Figurine [III–7] (pl. 97c)

The left hand and bracelet are well preserved, but the rest of the arm was burned away. The hand, with its elegant long fingers, is carefully carved, showing such details as the fingernails and the palm. The plaster coating is slightly preserved.

Dimensions: Preserved L. 8.15 cm; L. of hand without bracelet 6 cm; W. of hand 1.9 cm

261. Right Leg of a Figurine [III–19A]

Probably the right leg of a female figurine, with the lower edge of a skirt, a tenon for inserting the statuette into the base, and

[171] Claude Vandersleyen, *Das Alte Ägypten*, Propyläen Kunstgeschichte 15 (Berlin, 1975), pl. 187b.
[172] Hans Gerhard Evers, *Staat aus dem Stein* (Munich, 1929), pl. 128.
[173] See John Baines, *Fecundity Figures* (Warminster, 1985), 110–11.
[174] *BMMA* 2 (Oct. 1907), 163, fig. 2.
[175] See Ranke, *PN* I, 329(6).

a front notch for attaching the front part of the now missing foot. The ankles are well modelled.

Dimensions: Preserved H. 8.1 cm; H. without tenon 6.9 cm

262. Left Leg of a Figurine [III–19B]

Probably the left leg of the preceding figurine (cat. 261), with the edge of the skirt and the tenon for fixing the statuette preserved. The front of the leg has the tenon for attaching the front part of the foot. The downward tenon has a peghole for a peg penetrating the base from the side (see cat. 28, p. 59 and cat. 254 for the same method of attachment).

Dimensions: Preserved H. 10.7 cm; H. without tenon 9 cm

263. Fragment of a Leg [III–20]

A fragment of a left leg with an anklet and the edge of a skirt. There are some traces of red paint on the skirt. The piece is broken at the point where it joined with the forward leg.

Dimensions: Preserved H. 13.7 cm; H. from bottom to rim of skirt 4.7 cm

264–68. Fragments of Feet

The front halves of at least five wooden feet were recorded. They were carved as separate pieces and attached to the rear part of the foot with a backward tenon, which fitted into a corresponding notch in the front of the leg. Model figurines of Mentuhotep Nebhepetra from Deir el-Bahari also use this technique.[176] Details such as toes and toenails, and even the unseen undersides of the feet, were carefully carved.

264. Left Foot [III–5] (pl. 97d)

Dimensions: L. without tenon 4.6 cm

265. Right Foot [III–6] (pl. 97d)

Dimensions: L. without tenon 4.35 cm

266. Fragment of a Left Foot [III–8]

Dimensions: Preserved L. 4.24 cm

267. Right Foot [III–9]

Dimensions: L. without tenon 2.85 cm

268. Right Foot [III–15]

Dimensions: L. without tenon 4 cm

Finds from the So-called Pyramid Slump

When using the term "pyramid slump," the original Metropolitan Museum excavators were describing the mounds of debris that covered and surrounded the pyramid, and spread over the inner court into the area of the outer court. There is no clear separation from the so-called *radim* material. The following objects from the western "slump" are worth noting.

269. Amphorae (pl. 100b)

SOURCES: Tomb cards 203, 205–6
Photo L 32–33:40

Two large amphorae, each with a long wide neck, round bottom, and two small handles. One has a pot mark that was scratched in after firing. They date to the later New Kingdom.[177]

Dimensions: H. ca. 66 cm

270. Amphora (pl. 100b)

SOURCES: Tomb cards 203–4
Photo L 32–33:40

A large amphora with a short wide neck, rounded bottom, and two small handles. It dates to the later New Kingdom.[178]

Dimensions: H. ca. 51 cm

271. Inscribed Stone (pl. 100d)

SOURCES: Photo L 33–34:87

A fragment of an offering table(?), probably of limestone, with the beginning of an offering formula in sunk relief.

Dimensions: L. of fragment ca. 22 cm; H. ca. 8 cm; H. of inscription ca. 5 cm

272. *Kohl*-Pot (pl. 100c)

SOURCES: Photo L 33–34:9

A polished stone *kohl*-pot with a broken rim and a protruding foot.

Dimensions: H. ca. 6 cm

273. Stamp(?) (pl. 100c)

SOURCES: Photo L 33–34:9

This object could be a stamp, but it could also be a lid with a handle.

Dimensions: Diam. ca. 5 cm

[176] Dieter Arnold, *Der Tempel des Königs Mentuhotep von Deir el-Bahari II: Die Königlichen Beigaben* (Mainz, 1981), pl. 22.

[177] Nagel, *Céramique du Nouvel Empire* I, 27, fig. 17, no. 43; Janine Bourriau and David Aston in Geoffrey T. Martin, et. al., *The Tomb-Chapels of Paser and Ra'ia at Saqqara* (London, 1985), 46, pl. 36, no. 87; and David Aston on the pottery from Qantir, forthcoming.

[178] Nagel, *Céramique du Nouvel Empire* I, 28–29, figs. 18–19 (Ramesside).

274. Wooden Wheel(?) (pl. 100c)

SOURCES: Photo L 33–34:9

A round disk with a center hole. This object may be a spindle whorl.

Dimensions: Diam. ca. 4.5 cm

Finds from the Area North of Pyramid 9

275. Linen Bundle (pl. 56c–d)

During the 1989 season, a linen bundle was found about 3.50 m north of the northern enclosure wall of pyramid 9 and 2.80 m south of pit 48/10. It was buried 30 cm above the *gebel*, in and under a *tafl* layer that might be the debris from the cutting of pit 48/10.

The roundish coiled mass of several linen sheets was twisted into arm thick bundles. Brownish stains from some liquid covered the linen, which also had worm holes. The linen was probably stuffed into a body during the mummification process, and might have been buried intentionally as a deposit of mummification material. The area was completely cleared, but no other remains were found (see pl. 56a).

A linen mark in discolored brown ink was written on the upper right corner of one of the sheets (pl. 56c). It consisted of the enigmatic  -sign, which is well known from other linen marks and a mark on a chisel of the Eleventh Dynasty found at Thebes,[179] followed by *pr-ḥḏ*, "treasury." The meaning of the first sign, which to my knowledge appears here for the first time outside Thebes, is still unknown. We may now be sure that it does not represent an obelisk-shaped monument referring to the temple of Mentuhotep Nebhepetra, but is the sign of the royal storehouse.

276–82. Pottery

SOURCES: Tomb cards 655–56

276. *Zirs*

Fragments of several *zirs* were found, some of which are visible on photo L 13–14:1277, at the mouth of shaft 45/16 (see pl. 47c). One is described on the tomb cards as "bottom of a large wide bellied, wide-mouthed *tafl* ware stone jar (*zir*) of common type. Hard pinkish buff ware." These are clearly marl clay C, wide-mouthed storage jars.[180]

277. Jar

A jar of coarse, hard red ware (marl clay C), with black on the break. The rough and uneven surface is without slip.

278. Jar (or Bottle?)

A plain jar of fairly fine, medium soft reddish brown ware (Nile clay B2?). The bottom is slightly charred.

279. Jar (or Bottle?)

A jar of fine, soft brown ware (Nile clay B1?), with red coating on the exterior and the mouth.

280. Cup

A cup of fine, soft brown ware (Nile clay B1), with red slip on the interior. The cup is badly charred and was possibly used as a lamp.

281. Cup

A plain cup of fine, soft brown ware (Nile clay B1). The rim is charred in spots and was possibly used as a lamp.

282. Saucer (Model Plate?)

A dull brown model plate of Nile clay B2(?).

The Model Pottery

(by Dorothea Arnold)

MODEL POTS FROM THE NORTHEAST FOUNDATION DEPOSIT OF PYRAMID 9

(fig. 16)

SOURCES: For the foundation deposit see pp. 38–39
BIBLIOGRAPHY: *BMMA* 10 (Feb. 1915), supp., 6

All the pots are of Nile clay B2, except where noted. The surfaces are plain and the workmanship is rather careless. All the vessels are flat based, with more or less irregular base planes.

283. Plate
MMA [14.3.196]; OIM 27531

Dimensions: H. 1.8 cm; maximum Diam. 9.1 cm

284. Plate
MMA [14.3.203]; OIM 27538

Dimensions: H. 2 cm; maximum Diam. 10 cm

285. Plate
MMA [14.3.197]; OIM 27532

A plate of Nile clay B1.

Dimensions: H. 1.85 cm; maximum Diam. 8.9 cm

[179] H. E. Winlock, *The Slain Soldiers of Neb-Hepet-Re Mentu-Hotpe*, Publications of The Metropolitan Museum of Art Egyptian Expedition 16 (New York, 1945), 26, pls. 14–15.
[180] Arnold, *Senwosret I*, 112, fig. 55b; 114, fig. 59; 134, fig. 74, no. 51.

286. Conical Bowl
MMA [14.3.206]; OIM 27541

Dimensions: H. 2.75 cm; maximum Diam. 8.5 cm

287. Conical Bowl
MMA [14.3.201]; OIM 27536

Dimensions: H. 2.5 cm; maximum Diam. 7.6 cm

288. Conical Bowl
MMA [14.3.207]; OIM 27542

Dimensions: H. without knob 2.80 cm; maximum Diam. 9.10 cm

289. Conical Bowl
MMA [14.3.194]; OIM 27529

Dimensions: H. 2.90 cm; maximum Diam. 8.25 cm

290. Conical Bowl
MMA [14.3.204]; OIM 27539

Dimensions: H. 2.80 cm; maximum Diam. 7.10 cm

291. Conical Bowl
MMA [14.3.195]; OIM 27530

Dimensions: H. 2.70 cm; maximum Diam. 7.80 cm

292. Conical Bowl
MMA [14.3.205]; OIM 27540

Dimensions: H. 2.70 cm; maximum Diam. 7 cm

293. Conical Bowl
MMA [14.3.199]; OIM 27534

Dimensions: H. 2.80 cm; maximum Diam. 6.70 cm

294. Conical Bowl
MMA [14.3.202]; OIM 27537

Dimensions: H. 2.75 cm; maximum Diam. 7.10 cm

295. Conical Bowl
MMA [14.3.200]; OIM 27535

Dimensions: H. 2.70 cm; maximum Diam. 7.90 cm

296. Conical Cup
MMA [14.3.198]; OIM 27533

Dimensions: H. 2.90 cm; maximum Diam. 7.70 cm

297. Conical Cup
MMA [14.3.193]; OIM 27528

Dimensions: H. 3.20 cm; maximum Diam. 7.80 cm

298. Conical Cup
MMA [14.3.192]; OIM 27527

A conical cup of Nile clay B1.

Dimensions: H. 3.40 cm; maximum Diam. 7.80 cm

299. Conical Cup
MMA [14.3.209]; OIM 27544

Dimensions: H. 3.45 cm; maximum Diam. 7.80 cm

300. Rounded Cup
MMA [14.3.190]; OIM 27525

Dimensions: H. without knob 5.35 cm; maximum Diam. 7.60 cm

301. Tureen with Round Rim
MMA [14.3.191]; OIM 27526

Dimensions: H. 5.10 cm; maximum Diam. 7.80 cm

302. Shouldered Bottle
MMA [14.3.182]; OIM 27517

Dimensions: H. 9.60 cm; maximum Diam. 6.9 cm

303. Shouldered Bottle
MMA [14.3.181]; OIM 27516

A shouldered bottle of Nile clay B1.

Dimensions: H. 10.25 cm; maximum Diam. 7.30 cm

304. Broad Bottle
MMA [14.3.208]; OIM 27543

Dimensions: H. 10.10 cm; maximum Diam. 8.30 cm

305. Globular Bottle
MMA [14.3.183]; OIM 27518

Dimensions: H. 8.70 cm; maximum Diam. 7 cm

306. Broad Bottle
MMA [14.3.189]; OIM 27524

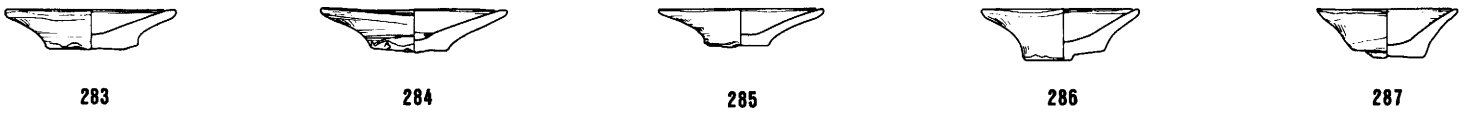
Dimensions: H. 10.20 cm; maximum Diam. 7.75 cm

307. Broad Bottle
MMA [14.3.184]; OIM 27519

Dimensions: H. 10.10 cm; maximum Diam. 8.90 cm

308. Broad Bottle
MMA [14.3.188]; OIM 27523

Dimensions: H. 10.9 cm; maximum Diam. 8.70 cm



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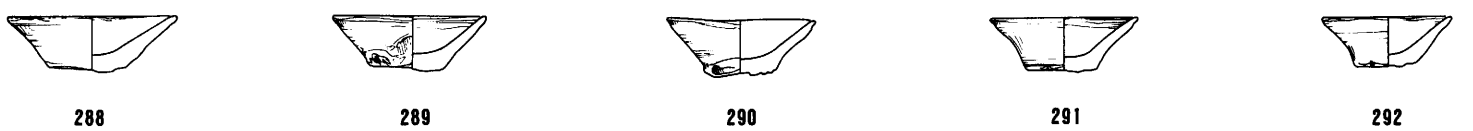

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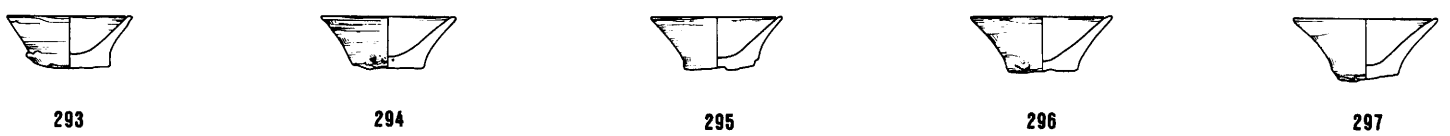

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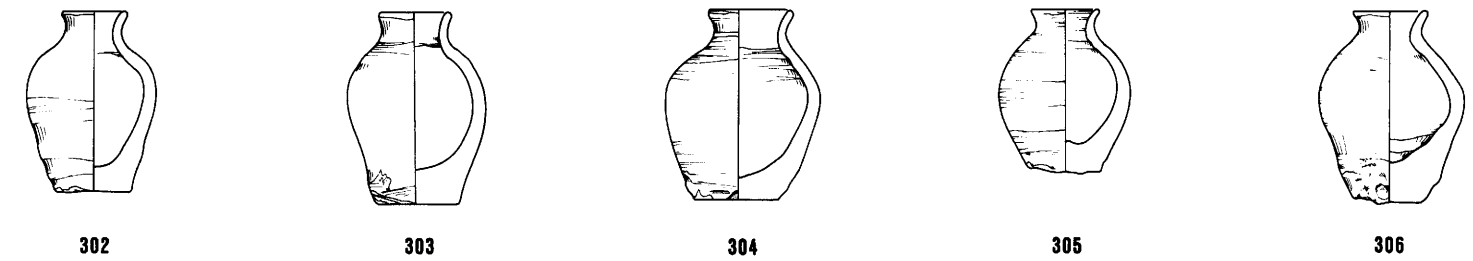
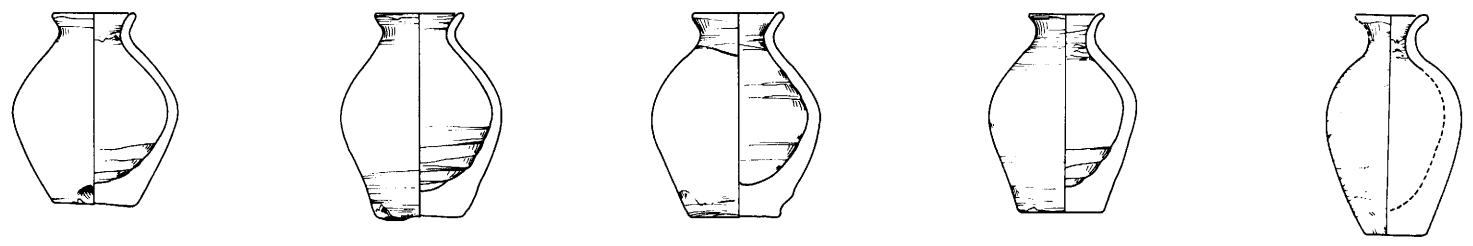
298 299 300 301



302 303 304 305 306



307 308 309 310 311

Fig. 16. Pottery from the northeast foundation deposit of pyramid 9. Scale 1:4.

309. Broad Bottle
MMA [14.3.180]; OIM 27515

Dimensions: H. 10.90 cm; maximum Diam. 8.90 cm

310. Broad-Shouldered Bottle
MMA [14.3.179]; OIM 27514

A broad-shouldered bottle of Nile clay B1.

Dimensions: H. 10.60 cm; maximum Diam. 7.90 cm

311. Shouldered Bottle with Everted Rim
MMA [14.3.185]; OIM 27520

Dimensions: H. 11.80 cm; maximum Diam. 7.25 cm

312. Fragmentary Broad Bottle (not illustrated)
MMA [14.3.186]; OIM 27521

Dimensions: H. 9.70 cm; maximum Diam. 8.70 cm

313. Fragmentary Globular Bottle (not illustrated)
MMA [14.3.187]; OIM 27522

Dimensions: H. 10 cm; maximum Diam. 7 cm

MODEL POTS FROM THE SOUTHEAST FOUNDATION DEPOSIT OF PYRAMID 9

(fig. 17)

SOURCES: For the foundation deposit see pp. 38–39
BIBLIOGRAPHY: *BMMA* 10 (Feb. 1915), supp., 6

All the pots are of Nile clay B2, except where noted. The surfaces are plain and the workmanship is rather careless. All the vessels are flat based, with more or less irregular base planes.

314. Plate
MMA [14.3.227]; OIM 27559

Dimensions: H. 1.90 cm; maximum Diam. 8 cm

315. Plate
MMA [14.3.228]; OIM 27560

Dimensions: H. 2.30 cm; maximum Diam. 8.80 cm

316. Conical Bowl
MMA [14.3.242]; OIM 27575

Dimensions: H. 2.60 cm; maximum Diam. 8.50 cm

317. Conical Bowl
MMA [14.3.233]; OIM 27565

Dimensions: H. 2.50 cm; maximum Diam. 8.30 cm

318. Conical Bowl
MMA [14.3.245]; OIM 27578

Dimensions: H. 2.80 cm; maximum Diam. 7.80 cm

319. Conical Bowl
MMA [14.3.234]; OIM 27566

Dimensions: H. 7.50 cm; maximum Diam. 7.80 cm

320. Conical Bowl
MMA [14.3.226]; OIM 27558

A conical bowl of Nile clay B1 with the rim set off by a groove.

Dimensions: H. 3.10 cm; maximum Diam. 7.70 cm

321. Conical Bowl
MMA [14.3.243]; OIM 27576

Dimensions: H. 2.85 cm; maximum Diam. 9 cm

322. Conical Bowl (not illustrated)
MMA [14.3.232]; OIM 27564

Dimensions: H. 2.80 cm

323. Conical Cup
MMA [14.3.244]; OIM 27577

A conical cup of Nile clay B1.

Dimensions: H. without knob 3 cm; maximum Diam. 7.80 cm

324. Conical Cup
MMA [14.3.239]; OIM 27572

Dimensions: H. 3 cm; maximum Diam. 8.30 cm

325. Conical Cup
MMA [14.3.241]; OIM 27574

Dimensions: H. 3.50 cm; maximum Diam. 7.70 cm

326. Conical Cup
MMA [14.3.240]; OIM 27573

Dimensions: H. 3.10 cm; maximum Diam. 7.80 cm

327. Conical Cup
MMA [14.3.236]; OIM 27569

A conical cup of Nile clay B1.

Dimensions: H. 3.10 cm; maximum Diam. 8 cm

328. Conical Cup
MMA [14.3.235]; OIM 27568

Dimensions: H. 3.2 cm; maximum Diam. 7.2 cm

329. Conical Cup
MMA [14.3.231]; OIM 27563

Dimensions: H. 3.25 cm; maximum Diam. 7.75 cm

330. Conical Cup
MMA [14.3.238]; OIM 27571

Dimensions: H. without knob 3.2 cm; maximum Diam. 7.7 cm

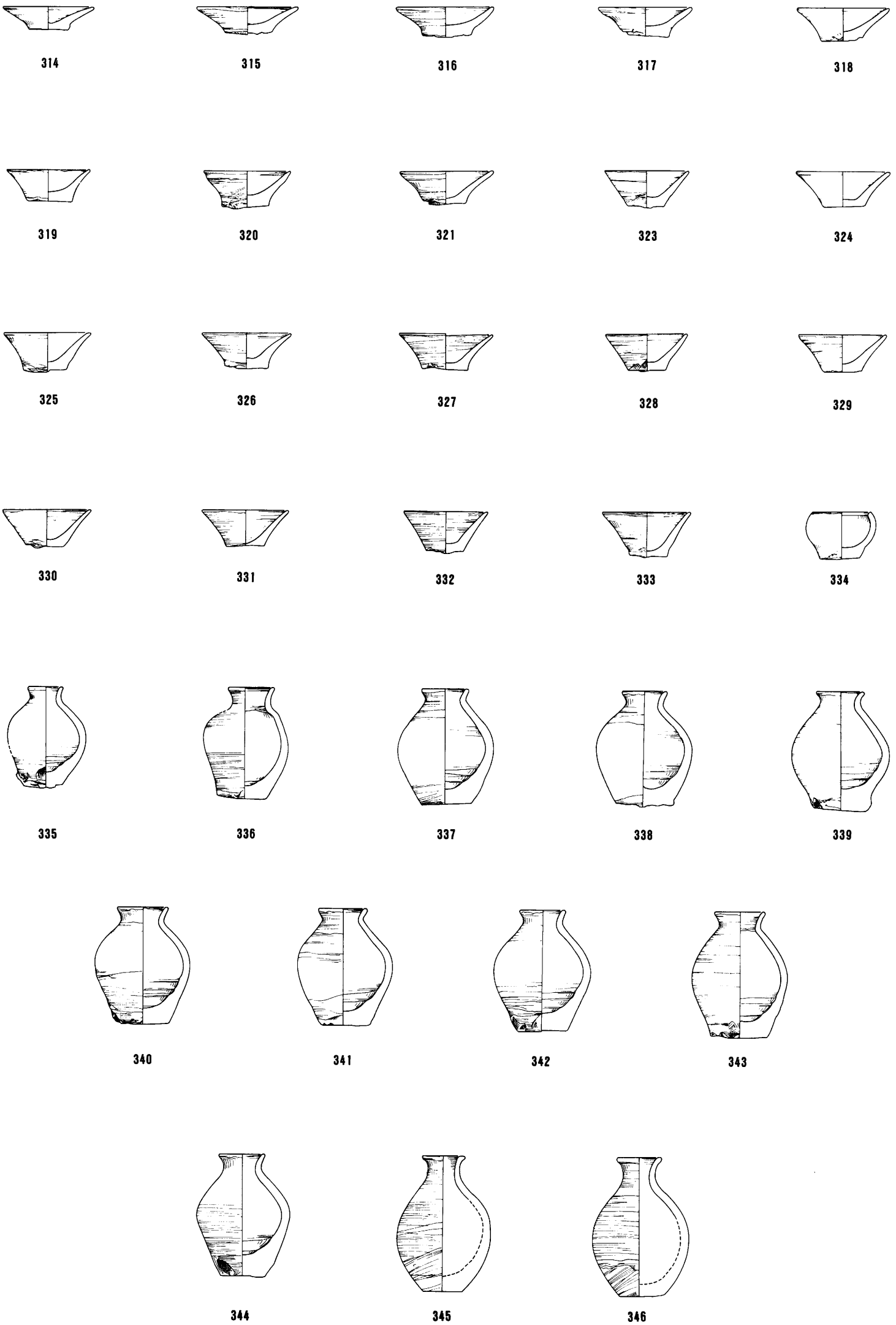


Fig. 17. Pottery from the southeast foundation deposit of pyramid 9. Scale 1:4.

331. Conical Cup
MMA [14.3.230]; OIM 27562

Dimensions: H. 3.10 cm; maximum Diam. 7.70 cm

332. Conical Cup
MMA [14.3.224]; OIM 27556

A conical cup of Nile clay B1.

Dimensions: H. without knob 3.50 cm; maximum Diam. 7.40 cm

333. Conical Cup
MMA [14.3.225]; OIM 27557

A conical cup of Nile clay B1; distorted.

Dimensions: H. 3.90 cm; maximum Diam. 7.70 cm

334. Rounded Cup
MMA [14.3.229]; OIM 27561

Dimensions: H. 4.10 cm; maximum Diam. 6.10 cm

335. Broad Bottle
MMA [14.3.237]; OIM 27570

Dimensions: H. 8.9 cm; maximum Diam. 6.9 cm

336. Shouldered Bottle
MMA [14.3.221]; OIM 27553

A shouldered bottle of Nile clay B1.

Dimensions: H. 9.60 cm; maximum Diam. 7.50 cm

337. Broad Bottle
MMA [14.3.213]; OIM 27545

Dimensions: H. 10 cm; maximum Diam. 8.40 cm

338. Broad Bottle
MMA [14.3.222]; OIM 27554

Dimensions: H. 10.10 cm; maximum Diam. 8.30 cm

339. Broad Bottle
MMA [14.3.215]; OIM 27547

Dimensions: H. 10.40 cm; maximum Diam. 8.50 cm

340. Broad Bottle
MMA [14.3.219]; OIM 27551

Dimensions: H. 10.20 cm; maximum Diam. 8.30 cm

341. Broad Bottle
MMA [14.3.217]; OIM 27549

Dimensions: H. 10.25 cm; maximum Diam. 8.30 cm

342. Broad Bottle
MMA [14.3.216]; OIM 27548

Dimensions: H. 10.60 cm; maximum Diam. 8.50 cm

343. Broad Bottle
MMA [14.3.223]; OIM 27555

Dimensions: H. 11 cm; maximum Diam. 8.30 cm

344. Broad Bottle
MMA [14.3.220]; OIM 27552

A broad bottle of Nile clay B1.

Dimensions: H. 10.50 cm; maximum Diam. 8.20 cm

345. Broad Bottle
MMA [14.3.214]; OIM 27546

The neck is somewhat higher than those of the other broad bottles.

Dimensions: H. 11.90 cm; maximum Diam. 8.20 cm

346. Broad Bottle
MMA [14.3.218]; OIM 27550

The neck is somewhat higher than those of the other broad bottles.

Dimensions: H. 12.20 cm; maximum Diam. 8.40 cm

Occurrences of Vessel Types in the Northeast and Southeast Deposits

Type of Pot	*Northeast Deposit*	*Southeast Deposit*
Plates	3	2
Conical Bowls	9	7
Conical Cups	5	11
Rounded Cups	1	1
Tureens	1	–
Bottles	12	12
Total Number of Vessels	31	33

DATE OF THE MODEL POTS FROM THE NORTHEAST AND SOUTHEAST FOUNDATION DEPOSITS OF PYRAMID 9

The difference between the shapes of the pots from the northeast and southeast foundation deposits of pyramid 9 and the shapes from the foundation deposits of the pyramid of Senwosret I[181] is so distinct that considerable time must have elapsed between the manufacture of the pots from these two areas. A survey among extant deposit pottery shows that the pyramid 9 vessels are closest in shape to those from the monuments surrounding the pyramid of Senwosret II at Illahun.[182] The

[181] Arnold, *Senwosret I*, 106–9.
[182] Petrie, *Lahun* II, 8, 10, pls. 56–58.

following list of vessels from the deposits of the so-called Queen's Pyramid and from one of the mastabas at Illahun can be compared with the list of model pots from the pyramid 9 deposits (see above):

Occurrences of Vessel Types at Illahun ("Queen's" Pyramid and a Mastaba)

Type of Pot	*Queen's Pyramid*	*Mastaba*
Plates[183]	5	1
Conical Bowls[184]	1	1
Conical Cups[185]	2	10
Rounded Cups	–	–
Tureens	–	–
Bottles[186]	13	13
Unspecified Vessels	2	–
Non-model Medium-Sized Plates[187]	2	–
Total Number of Vessels	25	25

Based on the pottery vessels found in the northeast and southeast foundation deposits, pyramid 9 can be dated to approximately the reign of Senwosret II.[188] A date in the reign of Amenemhat II is possible.[189]

MODEL POTS FOUND SOUTH OF PYRAMID 8 (1984–85 EXCAVATION)

(fig. 18)

During the 1984–85 season, twenty-seven pots were found south of pyramid 8, near the findspot of the seated statues of Senwosret I.[190] The pots were placed in a hoardlike assemblage and were surrounded by fragments of limestone temple relief, including pieces with well-preserved blue paint from a star-covered ceiling. The context seems to indicate a modern arrangement, and the group may be a random assemblage of model pots found in the area by either the French or Metropolitan Museum excavators. However, a slight possibility remains that the pots were put in place at the same time as the statues, in which case they could be used to date the deposition of the sculptures.

There is a considerable difference between the shapes of this group of model pots as compared with those from pyramid 9, and with those from the pyramid of Senwosret I. Close parallels to the statue cache model pots were found at Haraga[191] and Hawara;[192] these vessels date late in or after the reign of Amenemhat III. A late Twelfth Dynasty date is, therefore, indicated for the model pots found south of pyramid 8.

Unless otherwise noted, the following vessels are all flat based and of Nile clay B2. All surfaces are plain and the manufacture is fairly careless. The 84/_ numbers refer to the excavation's pottery register.

347. Bowl 84/203

Dimensions: H. 1.90 cm; maximum Diam. 5.30 cm

348. Bowl 84/214

Dimensions: H. 2.15 cm; maximum Diam. 5.70 cm

349. Bowl 84/217

Dimensions: H. 2.20 cm; maximum Diam. 6.15 cm

350. Bowl 84/220

Dimensions: H. 2.40 cm; maximum Diam. 6 cm

351. Bowl 84/196

Dimensions: H. 2.30 cm; maximum Diam. 6.25 cm

352. Bowl 84/197

Dimensions: H. 2.35 cm; maximum Diam. 7.30 cm

353. Bowl 84/200

Dimensions: H. 2.85 cm; maximum Diam. 6.75 cm

354. Bowl 84/219

Dimensions: H. 2.90 cm; maximum Diam. 6.80 cm

355. Bowl 84/195

Dimensions: H. 2.50 cm; maximum Diam. 7.50 cm

356. Bowl 84/216

Dimensions: H. 3.20 cm; maximum Diam. 7.25 cm

[183] Types 2A, 2A3 and 5Y: Reginald Engelbach, *Harageh*, British School of Archaeology in Egypt and Egyptian Research Account, Twentieth Year, 1914, 28 (London, 1923), pl. 34; Engelbach, *Riqqeh and Memphis* VI, pl. 28; Petrie, *Lahun* II, pl. 56. Occurrences of these types in the Illahun deposits are according to Petrie, *Lahun* II, 8, 10.

[184] Type 5H: Petrie, *Lahun* II, pl. 56.

[185] Types 5L, 5L3, 5M: Petrie, *Lahun* II, 10.

[186] Types 36C, 36C2, 36C3, 36C5, 59Y6: Petrie, *Lahun* II, pls. 56–57. These types are generally similar to the types found in the pyramid 9 deposits at Lisht. The Illahun deposits also contain bottles of types 38A3, 48Z, 59V3 (Petrie, *Lahun* II, pls. 56–57), 59S2, and 59V (Engelbach, *Riqqeh and Memphis* VI, pl. 31) that do not appear in the pyramid 9 deposits. Two types among these are remarkably close to types of the time of Senwosret I at Lisht: The pointed bottle 38A3 from the mastaba deposit at Illahun is close to the pointed bottles found in the deposits of the pyramid of Senwosret I (see n. 181), and the shouldered bottle type 59V from the Illahun Queen's Pyramid deposit is close to bottles from the "Brick Chamber" at Lisht (Arnold, *Senwosret I*, 132, fig. 72, nos. 2–3).

[187] Types 2E5 and 2G12: Petrie, *Lahun* II, pl. 56.

[188] It is interesting to note that the pottery from the deposits in the so-called *Hebsed*-chapel at Illahun (Petrie, *Lahun* II, 19) is different from the model pots of pyramid 9 and of the Queen's Pyramid and mastaba at Illahun because of the occurrence of types 67B4, 67B5, 67B7, 68T2, 68T3, 68T4 (Petrie, *Lahun* II, pls. 57–58).

[189] The deposit at Lisht most similar to the pyramid 9 deposits was found inside the mastaba complex of Imhotep near the main shaft. The Imhotep deposit probably dates to the reign of Amenemhat II (see Dorothea Arnold, *The South Cemeteries of Lisht: The Mastaba of Imhotep*, forthcoming).

[190] For the statues see here p. 37 and plan VI and Arnold, *Senwosret I*, 56, pl. 82.

[191] Reginald Engelbach, *Harageh*, British School of Archaeology in Egypt and Egyptian Research Account, Twentieth Year, 1914, 28 (London, 1923), pls. 38–39; types 56H (for cat. 365), 56R and 56T (for cats. 368–69), 58H5 (for cat. 367), 59C (for cat. 373).

[192] W. M. Flinders Petrie, G. A. Wainwright, and E. Mackay, *The Labyrinth, Gerzeh and Mazghuneh*, British School of Archaeology in Egypt and Egyptian Research Account, Eighteenth Year, 1912, 21 (London, 1912), pl. 33; types 48 (for cat. 367), 49 (for cat. 370), 50 (for cat. 371), 53 (for cat. 373).



347 348 349 350 351



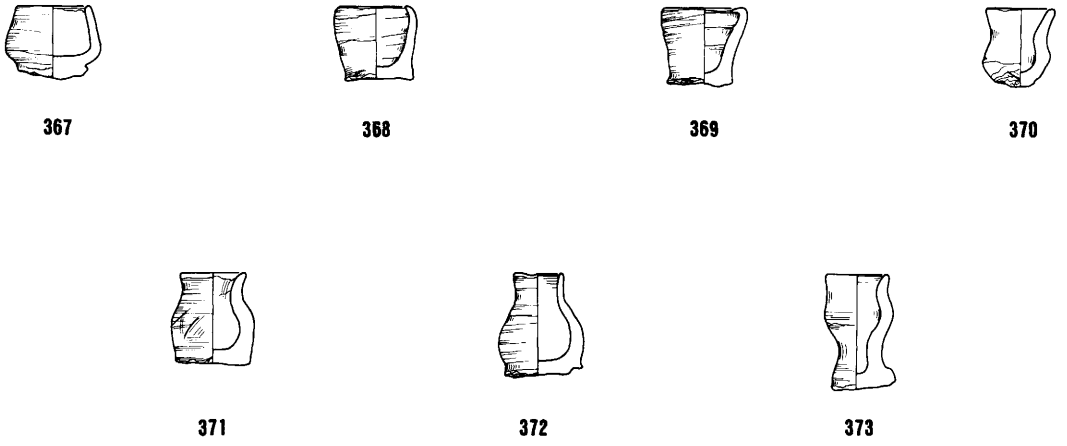
352 353 354 355 356



357 358 359 360 361



362 363 364 365 366



367 368 369 370

371 372 373

Fig. 18. Model pots found south of pyramid 8. Scale 1:4.

357. Bowl 84/218

Dimensions: H. 3.20 cm; maximum Diam. 7.40 cm

358. Bowl 84/215

A bowl of Nile clay B1.

Dimensions: H. 2.30 cm; maximum Diam. 6.90 cm

359. Cup 84/198

Dimensions: H. 3.10 cm; maximum Diam. 5.50 cm

360. Cup 84/199

Dimensions: H. 4.10 cm; maximum Diam. 5.10 cm

361. Cup 84/201

Dimensions: H. 4.50 cm; maximum Diam. 5.30 cm

362. Rounded Cup 84/202

Dimensions: H. 3.6 cm; maximum Diam. 4.9 cm

363. Rounded Cup 84/204

Dimensions: H. 2.70 cm; maximum Diam. 6.55 cm

364. Rounded Cup 84/205

Dimensions: H. 3.20 cm; maximum Diam. 6.55 cm

365. Tureen 84/206

Dimensions: H. 3.80 cm; maximum Diam. 5.40 cm

366. Tureen 84/207

Dimensions: H. 3.75 cm; maximum Diam. 3.50 cm

367. Tureen 84/208

Dimensions: H. 3.80 cm; maximum Diam. 5.10 cm

368. Tureen 84/209

Dimensions: H. 3.90 cm; maximum Diam. 4.40 cm

369. Tureen 84/210

Dimensions: H. 4 cm; maximum Diam. 4.65 cm

370. Long-Necked Jar 84/211

Dimensions: H. 4.10 cm; maximum Diam. 3.60 cm

371. Bottle 84/212

Dimensions: H. 4.80 cm; maximum Diam. 4.40 cm

372. Bottle 84/213

Dimensions: H. 5.40 cm; maximum Diam. 4.60 cm

373. Bottle 84/221

Dimensions: H. 6.10 cm; maximum Diam. 3.70 cm

CHAPTER VI

Construction Methods and Technical Details

Since I have dealt elsewhere with the general subject of construction methods,[193] only those points that can be further elaborated based on the excavation of the pyramid complex of Senwosret I will be discussed here.

Slideways and Construction Ramps

(pls. 101–9)

Thanks mainly to the original and recent Expedition's large-scale excavations around the pyramid of Senwosret I, remains of about one dozen transport roads and construction ramps have been uncovered, probably the greatest concentration of such features ever found in Egypt. Several areas have been studied.

SOUTH OF THE CAUSEWAY

(pls. 102–3a–d)

SOURCES: Material from 1984–88 excavations
BIBLIOGRAPHY: Arnold, *Building in Egypt*, 86–87, fig. 3.38

Near the mouth of a tomb shaft, timber was visible in 1984. Subsequent excavation of the area, which was enlarged in 1988, resulted in the discovery of an 11 m wide transport road, 14 m of which was cleared. The road ran northeast to southwest, apparently beginning at the gently rising depression of the causeway and leading to a storage or stone-dressing area outside the southeast corner of the outer enclosure of the pyramid complex. Neither the north nor the south end of the road was found, so that there is reason to assume that more sections of the road might still exist. The area was badly disturbed, probably during the Thirteenth Dynasty, when shaft tombs were added; one Thirteenth Dynasty tomb was discovered in the center of the excavated area, another to the northwest.

The road consisted of layers of limestone chip and gypsum over the *gebel*; boat timbers had been embedded into the *gebel* like crossties every 30–40 cm, producing a railroadlike effect. Two beams were used, since the available timbers were too short to span the road, and their ends overlapped in the center. The beams were then completely covered by the surface of the road. The sequence of layers from bottom to top was:

a) A reddish *gebel* conglomerate of dense sand with an uneven and irregular surface.

b) Boat timbers set into prepared grooves in the *gebel* surface.

c) A whitish gypsum and chip mixture that completely covered the timbers. The solid surface, dirty from mud, was probably achieved by frequent wetting.

d) A looser fill of chip and broken brick 60 cm above the *gebel*. The surface of the layer was not clearly preserved, but was mixed with material from the covering and levelling of the road after the end of the construction work.

e) Further layers of debris, including one of sherds (Arnold, *Senwosret I*, 124).

About forty beams[194] were found in states of preservation varying from nearly perfect to badly damaged and nearly destroyed by insects. Before the construction of the above-mentioned shafts, there would have been twice as many beams. Over half of the beams were still in good enough condition to be drawn in detail and are the subject of the appendix on boat construction by Cheryl Haldane (see pp. 102–12). Their lengths vary between 1.50 and 2.70 m, the average being 1.80 m long.

The arrangement of the beams suggests the junction of two roads (see pl. 102). No beams overlaid each other. The surfaces of the best-preserved beams do not show any evidence that traffic passed directly over them.

Two beams were removed to the expedition house, and the rest were reburied in position.

ALONG THE EAST WALL OF PYRAMID 3

(pls. 104a–b, 105)

SOURCES: Sketch on AM 2682 (scale 1:200)
Photos L 33–34:328–33

In 1933–34, two parallel brick walls were discovered in the area between pyramids 2 and 3, closer to the west wall of pyramid 2. The walls were each about 1.40 m thick and ran about 37 m from north-northwest to south-southeast. About 3.50 m separated the two walls, making the whole structure 6.50 m wide.

The walls were built on the desert surface, and were later levelled and covered with the fill of the court. There can be no doubt that they are part of the foundations of a construction ramp that lead from the south area up to the pyramid. Since the foot of the ramp seems to have been only 51 m from the foot of the pyramid, and assuming an operable inclination of 10–15 percent, the ramp would only have reached a height of 12–18 m at the casing of the pyramid. Since the ramp does not point to the center of the pyramid, one has to assume that it only provided access to a temporary construction platform or core step.

Part of a similar, third wall, unfortunately broken up by drain shaft C (see p. 45, no. 69), was discovered 3 m west of the ramp. Since this wall is not parallel to the ramp, it would have joined

[193] Arnold, *Amenemhet III*, 73–84; Arnold, *Building in Egypt*.

[194] In 1985, two specimens were identified by the Center for Wood Anatomy Research, Madison, Wisconsin as "probably a species of acacia."

the western edge of the ramp near the foot of the pyramid. This wall was also erected on the desert surface and was demolished during the levelling of the court, meaning it could only have been part of the ramp, probably added when a greater height had to be reached. A corresponding wall in the east has not been recorded, but traces might have been obscured when the enclosure of pyramid 2, deposit pit 2, or a group of beehive-vaulted cellars (silos) were constructed in that area.

SLIDEWAY IN THE OCSW

(pls. 104c–d, 105)

SOURCES: Photos 6 LN:57, 59–60

Because the slideway was not drawn on a plan, its location is uncertain. Photos indicate that the slideway must lie outside the southwest corner of the inner enclosure wall in the southwest part of the outer court. It is also certain that the slideway runs south-north along the east side of the foundations of a stone construction, either the south end of the west wall of the inner court or, more preferably, the west wall of pyramid 3.

Three of the six shafts visible on the photos cut through the slideway, meaning that only the beams between the shafts were preserved. On the photos, four well-preserved timbers are seen in the northern section and eight well-preserved timbers lie in the southern section. Only photo 6 LN:57 shows a closer view of one of the half-buried timbers.

The slideway certainly was used to transport material either for the inner court and enclosure wall, for pyramid 4, or for both, from the southwest to the pyramid site. It would have bypassed the main pyramid.

SLIDEWAY SOUTHEAST OF PYRAMID 4

Since we have reason to believe that the remains of a slideway southeast of pyramid 4 is part of the better-preserved slideway found along the west wall of the pyramid of Senwosret I, it is dealt with in the following section.

SLIDEWAY ALONG THE WEST INNER ENCLOSURE WALL

(pls. 105, 107)

SOURCES: Plan AM 3223 (scale 1:50)
Photos L 31–32:101–6
BIBLIOGRAPHY: Arnold, *Building in Egypt*, 86–88, fig. 3.39

In 1931–32, an interesting part of a slideway was excavated along the western side of the western inner enclosure wall of Senwosret I, near the center of this wall. We recleaned that area, but found only the remains of the cavities left by the timber reinforcement; the timber itself had completely disappeared, except in the area immediately north of drain E, where a few beams that had not yet been touched by the original excavation were still in position. We observed more remains of this transport road further to the south, near the southeast corner of pyramid 4. This timber had been badly damaged by insects.

The area between drains E and F is significant because here the slideway seems to be built over the remains of a sloping brick ramp that had been directed from west to east towards the center of the king's pyramid. Unfortunately, the original Expedition did not realize the importance of the find and neither carried out a careful search for these remains nor produced an adequate drawing. The only information we have is found on a few tantalizing photos and a sketchy general plan. The 5 m wide slideway was strengthened with pieces of boat timber with overlapping ends, which were placed at short intervals. The spaces between the timbers were filled with builders' debris and then surfaced with mortar. This slideway is parallel to the inner enclosure wall and may have been used for the transport of its blocks.

At two points the slideway intersects with the remains of walls six bricks wide. The lowest courses of the walls were laid horizontally on the desert(?) surface, while the second layers sloped upwards about 6 degrees in the direction of the pyramid.[195] The above-mentioned photos indicate that these walls were constructed on a level lower than that of the slideway and were demolished when the slideway was built. From this evidence it is clear that the brick walls must have belonged to an earlier building phase and were certainly part of a huge building ramp.

Parts of a ramp were found farther to the west (see below), but the southern outer edge of that ramp does not match the remains under discussion here. One has to assume that the traces in the west are part of a smaller and therefore older ramp. The remains to the east are parts of a later, much wider building phase of the same ramp, necessary in order to reach the highest sections of the pyramid. Since the enlargement seems to have been carried out only near the foot of the pyramid, the foundations probably supported a short, wide, rather steep ramp in the form of a staircase.

Unfortunately, the whole area is now covered by huge mounds of debris, which prevented us from reexcavating the site. The area could have revealed important information on the location and construction of the ramps used to build the pyramid.

SLIDEWAY AND RAMP IN THE OCW1

(pls. 105–6)

SOURCES: Lisht Journal I, 142–44
Plan AM 2696 (scale 1:100)
Details of boat timber AM 2701–4 (scale 1:5)
Photos 6 LN:83–87; 7 LN:35–37; L 32–33:250
BIBLIOGRAPHY: Arnold, *Building in Egypt*, 87, fig. 3.41

In 1923–24, near the center of the outer court west, parts of a slideway were discovered that had been constructed using the same methods as those described above. The slideway was covered by huge dumps, and in 1987 we were only able to cut a narrow north-south trench through the mound.

The main feature of the ramp is a side retaining wall, which is one brick thick and has inclined lower beds.[196] Altogether, at least twelve such inclined courses can be counted. As the wall is only one brick wide it certainly was not freestanding, but instead served as the side retaining wall of a ramp of softer

[195] Angle measured from the photo.
[196] On photo 6 LN:86 a slope of 7 degrees can be measured.

material. On the old photos, it appears that the ramp stood north of the wall and that our wall was its southern limit. However, our own excavation revealed that the same filling material was used south of the wall, so that we cannot be positive that we uncovered either the southern retaining wall of such a ramp or a skeleton wall from inside the fill of the ramp.

The ramp was erected on a 10–15 cm thick bed of white limestone chip placed on top of the *gebel* surface; broken bricks and mud (soil) formed a solid mass, probably with the help of water. The surface that was visible in 1923–24 was not the original surface of the ramp itself, but the level created after the demolition of the ramp and the levelling of the outer court. The existing wall does not match any of the walls preserved further to the east (see p. 93), but was certainly a part of this ramp system. Irregular holes dug into the "ramp" were probably made by the French expedition.

Separated from this ramp by a levelling wall running east-west were the remains of a slideway. The slideway also ran west-east, but its eastern end and destination are unknown. The most interesting feature of this slideway was about thirteen well-preserved pieces of boat timber, including three pieces of the boat frame (formerly considered to be part of a so-called rocker, see below). The beams were laid in trenches and sunk into a 30 cm thick fill of broken bricks and limestone chip; they were then surrounded by yellow sand. The surface above the beams was very smooth and gray with limestone dust. The Lisht Journal mentions that "the slideway was covered by a paving whose surface averages 30 cm above it. This is the final paving of the outer court laid to cover even with the water table (or footing) of the limestone enclosure wall." From the results of our excavation, we might suggest that the surface layer was part of the slideway.

SLIDEWAY OUTSIDE THE WESTERN OUTER ENCLOSURE WALL

(pl. 108a)

SOURCES: Tomb card 1152
Photos L 31–32:8, 12 (position)

In December 1931, an excavation was conducted outside the outer western enclosure wall in the area between the middle axis of the pyramid precinct and the southern limit of the precinct of pyramid 5. Unfortunately, the exact location of the excavation was not noted and the area is now covered by dumps.

A slideway, which ran west-east against the outer court wall, consisted of the usual limestone chip/mortar stratum into which the beams (about a dozen can be counted on the photo) were embedded.

To the south of the slideway, a 6 m (north-south) by 9 m (east-west) area contained a 35 cm thick stratum of limestone chips, possibly the debris from the final dressing of blocks used either for the inner enclosure wall or the pyramid(s). The southern end of the stratum of limestone was covered by a corresponding stratum of broken bricks and brick dust, which may be debris from the construction of the outer enclosure wall. The stratum was levelled off to the same plane as that inside the court.

SLIDEWAY NEAR THE EAST END OF THE NORTHERN INNER ENCLOSURE WALL

(pl. 108b–c)

SOURCES: Lisht Diary, Nov. 6–8, 1923
Photos 6 LN:34–37

In November 1923, a slideway was found that approached the east end of the northern inner enclosure wall from the north. One decayed and five complete beams are visible on the photos, though the surrounding fill of the slideway had disappeared. The slideway seems to end at the foundation slabs of the inner court; its extension to the north has not been determined.

SINGLE BEAM NORTH OF THE CAUSEWAY

SOURCES: Photos L 13–14:1020, 1289–90

During the 1913–14 season, a single beam that had been moved—perhaps not far—from its original position was found in the area of the northern causeway widening.[197] It might have originally belonged to a slideway that approached the pyramid area from a gully that was later filled with earth and stone chip. The photo shows that the beam was found covered by the fill, and that it was at the same level as a whitish stratum that could be part of the slideway. However, the area was greatly disturbed by either robbers or excavators.

BUILDING RAMP IN THE "SOUTH *KHOR*"

(pl. 109)

SOURCES: Lisht Diary, Mar. 19 to Apr. 2, 1918
Tomb card 1084a
Plan and section AM 2746 (scale 1:100)
Photos 18 L:2–7
BIBLIOGRAPHY: Arnold, *Building in Egypt*, 87, 90–91, figs. 3.42–.43

Looking for a new dumping area, the Metropolitan Museum cleaned a *khor* south of the mastabas of south area A–D. Starting at the top of the mound and working down, they discovered the remains of a transport ramp that led from the quarries in the south to the desert plateau. Unfortunately, this ramp was not included in the general map of the area and was later buried under huge mounds of debris that altered the landscape so much that it is no longer possible to determine the location of the ramp from the old photos. From the description on tomb card 1084a, one learns that the ramp ran along the east side of the second *khor* over from the "Windmill Hill." The location on plan VI was reconstructed from these clues.

The ramp consisted of two 86 cm thick walls, which were 2.15 m apart and built partially on *gebel* and partially on *radim* from a brick construction that had fallen over the edge of the desert plateau. The walls were carefully built with many layers of bricks set edgewise; the exterior faces of the walls were more carefully finished than the interior. Since the excavators had no

[197] Arnold, *Senwosret I*, pls. 9b, 80.

idea of the importance of the ramp, they removed its fill without noting it in their records, though the surface and the wooden beams that might have been built into the fill had certainly been destroyed before the excavation. As far as one can judge from the irregular contour of the walls, the ramp probably had an inclination of 8 degrees. Originally, the wall was probably at least 60 m long, but the upper and lower ends had been destroyed, so that only 40 m were preserved.

Halfway up the *khor* on either side of the ramp, two round brick towers were found, each about 1.70 m in diameter. They were solid brick constructions, described by the excavators "as if foundations for columns." No drawings were made or close-up photos taken, so that it is difficult to decide if the towers are standing on the same level as the ramp walls, though their surface seems to have been more or less flush with the ramp surface.

There is no doubt that these towers were the foundations for some kind of structures, probably of wood, which were used to pull heavy loads up the ramp. Since they are in the middle of the ramp, one would expect a similar arrangement at the top of the desert plateau for the final section of the work. The fact that the pulling operation had to be done in two parts might indicate that the length of the ramp made it too difficult to pull objects up in one maneuver. It is highly regrettable that this unique example of ancient Egyptian technology has been so poorly studied and that its location is now unknown.[198]

RAMP(?) NORTH OF PYRAMID 9

(pl. 56a)

SOURCES: 1989 excavation

In 1989, during the search for the entrance of pyramid 9, the area north of the pyramid was excavated. A row of only seventeen bricks (brick size 10 x 17–18 x 34 cm) was found, sloping down 24 cm from west to east over a distance of about 5 m. The bricks served as a lining within a fill of broken bricks (below) and limestone chip (on top), which was covered by a solid surface of *tafl* and mud. A high accumulation of debris north of the bricks prevented us from determining the northern end of the structure. In the northeast, we were able to follow the solid surface for about 6 m, but did not find the end. The only explanation for the considerable slope of the bricks is that they were part of an inclined transport ramp, which would not have reached the main pyramid, but an area further north of it. The road surface did not show signs of heavy traffic. Pottery found beside and on top of the bricks dates to the reign of Senwosret III or Amenemhat III (see p. 40), though the ramp is of course older.

Dressing Stations for Stone Cutting

In addition to transport roads, several dressing stations used for cutting stone have been discovered around the pyramid of Senwosret I. The areas were marked by accumulations of limestone chip and granite dust, mixed with flakes of stone tools and dolerite balls. Some of these areas were not real working stations, but rather just mounds of debris brought from nearby dressing areas. The actual limits of any of the dressing stations and their dumps have never been ascertained, and they might have extended much further than is indicated by the few, and relatively small, excavated areas.

Pieces of reed straw are regularly found in the debris left by the stone cutters and may be the remains of primitive sun shelters made of poles supporting a roof of reed mats. The mats might also have served to protect the edges of the blocks during their handling.

Seven such locales were either recorded by the original Expedition or uncovered in recent years.

WEST OF THE WESTERN OUTER ENCLOSURE WALL

SOURCES: Tomb card 1152
Photos L 31–32:8, 12

To the south of the slideway outside the western outer enclosure wall (pl. 108a), a 35 cm thick stratum of limestone chip and limestone dust covered an area 6 m north-south and at least 9 m east-west. Tomb card 1152 describes this as an area, "where the large blocks were given a final (or semi-final) dressing before being taken to the limestone enclosure wall (perhaps also to the pyramid itself)."

WEST OF THE NORTHWEST CORNER OF THE OUTER ENCLOSURE WALL

SOURCES: Photos L 31–32:98–100, 167, 213

At an unknown distance from the northwestern corner of the outer enclosure wall, a so-called dressing station was cleaned in 1931–32. The surface, still visible today, consisted of a flat mound of white limestone debris. An irregularly rounded hole in this mound was filled with limestone chip. More white limestone mounds, still visible on the desert surface west of the western enclosure wall, seem to indicate that the whole area might have been a large stone cutters' workshop and a storage area. Blocks dragged up from local quarries through the wadi southwest of the pyramid complex were probably brought here.

WEST OF THE GRAND MASTABA DU NORD

SOURCES: Photos L 31–32:167, 213 (French trenches visible)
1989 excavation[199]

During the 1989 season, a large area to the west of the secondary tomb of the Grand Mastaba du Nord was tested. Here the desert surface had been covered by a 20–50 cm thick stratum of granite dust, mixed with flakes of stone tools. It is clear that the granite blocks, intended to line the burial crypt and entrance corridor, and the huge blocks that plugged the entrance of the main

[198] A similar installation was observed in the Greek quarries of Pentelikon, see Roland Martin, *Manuel d'architecture greque I: Matériaux et techniques* (Paris, 1965), 167, fig. 66.

[199] For details see Christian Hölzl, *The South Cemeteries of Lisht: Private Tombs*, forthcoming.

pyramid were dressed and prepared in this area—the entrance cut to which the stone would have been delivered is just 75 m to the southwest. That the dressing and transport installations extended as far as the outer enclosure wall was indicated by seven diorite mauls found 1 m north of the outer enclosure wall along the axis of the pyramid (photo L 32–33:12).

These observations lead to the conclusion that the granite material came from the northeastern wadis, tributaries of the main wadi that separates the two royal pyramids. The quays used for landing and unloading the transport ships from Aswan must have been in the area west of the modern town of Lisht, where the garbage of Lisht is now dumped. Which of the numerous wadi branches were used to pull the granite blocks up to the dressing and storage areas is not known.

NORTHEAST AREA OF THE OCN1

SOURCES: Lisht Journal I, 111–12
Photos L 33–34:397–98, 432–34

According to the Lisht Journal, when the shaft of drain G was cleared the fill was composed of, "debris from stone dressing. Fragments of large dolerite mauls with an occasional complete one; 2 large pieces of granite (used for smoothing tools?), one with the surface very much reddened; quantities of hard sandstones, (quartzite?), some of which, however showed very smooth surfaces; blue black dust from the dressing of black granite with dolerite; gritty white dust from the dressing of limestone with sandstone(?) . . . " This combination of stone indicates that stations for dressing granite and limestone must have stood close to the northeastern area of the outer court, perhaps further to the northeast, where the French only undertook preliminary testing.

EAST END OF THE NORTHERN ENCLOSURE WALL

SOURCES: 1989 excavation

In 1989, a small section about 25 m from the northeast corner of the northern enclosure wall was excavated. The foundations of a brick wall rested on a thick layer of broken limestone, presumably from the dressing of limestone blocks. The foundation trench dug for the wall cut into a layer of granite dust and chip from stone tools, again an indication that granite, as well as limestone, was worked in that area (see also p. 17, sec. B).

NORTH OF PYRAMID 9

(pl. 56a)

SOURCES: 1989 excavation

During the search for the entrance to pyramid 9 (see pp. 39–40), an accumulation of granite dust mixed with masses of hard stone chip was found south of shaft 48/10. The total size of this area of debris is unknown.

SOUTH OF THE MASTABA OF IMHOTEP

SOURCES: 1987–89 excavations[200]

During the 1987–89 seasons, the debris hills south of the mastaba of Imhotep between the wavy walls and the shafts were studied, revealing a layer of debris left by stone cutters or sculptors. The stratum consisted mainly of granite dust, flakes of stone tools (flint, dolerite, granite), straw, and a few small, crude, unfinished limestone objects made either by students or unskilled workers. The debris had been moved from a nearby area, perhaps from the site of the Imhotep mastaba, where sculptors worked on statues and other temple equipment before the mastaba was built.

Joining of the Building Blocks

(pls. 110–12)

As is to be expected in Middle Kingdom buildings, most of the structurally important blocks in the pyramids and tombs of the Lisht South cemetery were joined by wooden dovetail cramps.[201] Generally the cramps connected the blocks lengthwise, that is in the direction of the wall; only such structurally important elements such as foundation or roofing slabs were also joined in other directions (see p. 38).

Most of these cramp connections can only be recognized from the mortises cut into the top surfaces of the blocks, though some cramps have been found, either still in position or loose in the debris. The measurements of the mortises or cramps suggest that roughly three different cramp sizes were used—about 31–35 cm, 38–42 cm, and 50–56 cm long. The casing blocks of the pyramid of Senwosret I show that all three sizes could appear randomly in the same building, leading to the conclusion that the cramp slots were cut exactly to the size of the individual cramp and not to a standard size. Since the cramps had to fit tightly, they were embedded in and covered with plaster mixed with limestone grit. Red ochre in the plaster gave it a pink color,[202] though it is not clear if this color was produced intentionally or caused only by the composition of the plaster.

For the buildings of the royal funerary complex, the use of cramps could be established in the following elements:

a) All casing blocks of the pyramid of Senwosret I.[203]

[200] For details see Dorothea Arnold, *The South Cemeteries of Lisht: The Mastaba of Imhotep*, forthcoming.

[201] Arnold, *Building in Egypt*, 124–28, figs. 4.26–.29, 4.40; Dieter Arnold, *Der Tempel des Königs Mentuhotep von Deir el-Bahari I: Architektur und Deutung* (Mainz, 1974), pl. 32; Dieter Arnold, *The Temple of Mentuhotep at Deir el-Bahari*, from the notes of Herbert Winlock, Publications of The Metropolitan Museum of Art Egyptian Expedition 21 (New York, 1979), pl. 20a; Dieter and Dorothea Arnold, *Der Tempel Qasr el-Sagha* (Mainz, 1979), 17, pls. 7d, 11c, 24; Arnold, *Amenemhet III*, 12, 37, 80–81, fig. 38, pl. 2, faltplan 2; Pierre Lacau and Henri Chevrier, *Une Chapelle de Sésostris Ier a Karnak* (Cairo, 1969), pls. 4, 8.

[202] The pinkish color was already observed at the pyramid of Amenemhat III (see Arnold, *Amenemhet III*, 81).

[203] See pls. 111–12b; Arnold, *Senwosret I*, pls. 93, 95b; Arnold, *Building in Egypt*, fig. 4.26.

b) The foundation and casing stones of the subsidiary pyramids.[204]

c) The cornerstones of the funerary temple and some additional blocks thought to be under tension.[205]

d) Most, but not all, of the causeway blocks.[206]

e) Most, but not all, of the wall blocks of the entrance chapel.[207]

f) Some foundation and many wall blocks of the inner enclosure wall.[208]

g) Some foundation and wall blocks of the enclosure walls of the subsidiary pyramids.[209]

As noted, all the casing blocks of the main pyramid seem to have had cramps, allowing us to estimate that 12,000 wooden cramps had to be produced.[210] In spite of the large number, each cramp was carefully incised with a cartouche of the king. Both of Senwosret's names occur, and the remaining cramps suggest that the different names may have been placed on alternating cramps. The original Metropolitan Museum Expedition observed such an alternation between the fourth and fifth joints of the first course at the west end of the south side. We found another example between the second and third joints of the first course directly west of the niche above the pyramid entrance. However, on top of the seventh course on the west side of the pyramid, two cartouches of Kheperkara adjoined each other.

No reliable examination of the wood has been undertaken, but available information suggests that different kinds of wood were used, including tamarisk, sycamore, cypress, pine, and cedar.

An unusual flint cramp was discovered in the limestone casing of the underground chamber of pyramid 3 (fig. 5, p. 28),[211] embedded in a mortise 6 x 16 cm wide and 9 cm deep. Stone cramps are known from ancient Egypt, but they are rare.[212]

In Middle Kingdom architecture, stone blocks were usually connected with vertical joints and joints perpendicular to the front face of the block. Occasionally they are connected with oblique joints, but none of these have thus far been observed at Lisht.

An interesting example of joining casing blocks is provided by a block from an unidentified pyramid (fig. 3, p. 21), which was found in the area of the southeast outer court.[213] This block shows mortises and projecting tenons on both of the side faces and on the upper and lower faces that secured it to the next blocks. In addition, the block had mortises for dovetail cramps for the side joints.[214] While mortise-and-tenon connections to upper and lower blocks are well known from the cornerstones of pyramids from the Fourth Dynasty on,[215] no lateral bonding of this kind was ever noted. In this case the lateral bonding was probably only used to fix the blocks in the corner areas.

There are numerous traces of saw marks on the limestone casing blocks of the pyramid,[216] especially along the front edge of the vertical joints. The sawing was carried out in order to fit the blocks closely together.

Levelling Walls

SOURCES: Plans AM 2682 (scale 1:200), 2694 (scale 1:100), 2705 (scale 1:200), 2718 (scale 1:200)
Photos (examples) L 31–32:13–14, 38, 41–42, 70–71, 89; L 32–33:114–16; L 33–34:194–96, 226, 328–33

During the excavation of the outer court, the original Expedition discovered several brick walls only one or two courses high and one-half brick thick near the ancient floor level below the later destruction debris. They are always oriented exactly as the walls of the pyramid complex and its structures and form a kind of grid of rectangles 6–7 m wide with irregular lengths. Some of the walls had foundations consisting of bricks set as headers; a single row of bricks set as stretchers, never higher than one course, was laid on these wider foundations.

The original Expedition suggested that these walls were built to ensure that the court fill and surface would be level. The tops of the walls were carefully levelled in order to make them flush with the planned level of the court, and the space between the walls filled with sand and debris from building activities. By stretching a cord from the top of one wall to the next, the consistent height of the fill could be ensured. I know of no other example of ancient Egyptian use of this simple, but effective, levelling method.

Good examples of this technique were found at the following places:

a) East of pyramid 1 (plan I).

b) Between pyramids 2 and 3 (plan II).

c) In front of the southwest corner of the enclosure of pyramid 3 (plan II).

d) South and east of pyramid 4 (fig. 8, p. 32).

e) Between pyramids 4 and 5 (plan III, pls. 30, 106a–b).

f) Around the northeast corner of the enclosure of pyramid 5 (plan III).

g) South of pyramids 6 and 7 (plan IV).

The Organization of the Construction Area

(pl. 101)

The discovery of the remains of transport roads, construction ramps, and dressing stations, combined with the probable locations of quarries, landing quays, and access wadis, permit us to partially reconstruct the organization of the construction site around the pyramid of Senwosret I. According to the origin of the material being transported, one can theorize about the following general access directions.

Considerable quantities of granite, shipped from Aswan and unloaded at the foot of the pyramid plateau, were used during the first years of the construction of the pyramid's underground apartments. The granite blocks must then have been pulled up

[204] See pl. 112c.
[205] Arnold, *Senwosret I*, pls. 82, 86.
[206] Arnold, *Senwosret I*, pls. 76–77.
[207] Arnold, *Senwosret I*, pls. 100–2.
[208] Arnold, *Senwosret I*, pls. 29d–e, 88.
[209] See plans II, IV (pyramids 2, 6, 7).
[210] Calculation based on the total number of casing blocks (12,000), each with an average thickness of 1 m and an average volume of 1 cubic meter.
[211] Lisht Journal I, 175.
[212] Arnold, *Building in Egypt*, 127.
[213] The angle of inclination is only 43 degrees as opposed to the usual 63 degrees of the secondary pyramids and the 49 degrees of the main pyramid (see also Arnold, *Building in Egypt*, 130, fig. 4.40).
[214] According to drawings on AM 2680–81 (scale 1:10; see p. 21 and fig. 3).
[215] Arnold, *Building in Egypt*, 131–32, figs. 4.45–.47.
[216] Arnold, *Building in Egypt*, 266–67, figs. 6.22–.23.

List of Cramps

No.	*Pl.*	*Sources*	*Position*	*L.*	*W. end*	*W. middle*	*Th.*	*Cartouche*	*Material*	*Remarks*
				(measurements in centimeters)						
1.	111c, 1	L 31–32:111, 297 (no. 1)	Inner enclosure wall, top of lowest course, between second and third stones south of center	42	8.5	4.2	4	Uninscribed	Tamarisk	Plaster, in certain places red ochre MMA [32.1.96]
2.	111c, 2	L 31–32:112, 297 (no. 2)	Inner enclosure wall, top of lowest course, between third and fourth stones south of center	41	8	4	2–3.5	Uninscribed	Tamarisk	Plaster that had red ochre MMA [32.1.97]
3.	110, 3	Tomb card 140	Inner enclosure wall, west	41.7	8–9	4.8	4	Uninscribed	?	
4.	110, 4	Tomb card 141	Inner enclosure wall	42.8	8–8.5	4.5	3.5	Uninscribed	?	
5.	110, 5	Tomb card 142; L 31–32:108–9, 241	Pyramid of Senwosret I, south side, top of lowest course, third and fourth blocks from southwest cornerstone	57.8	16	7.7	6.5	Senwosret	Cedar	Set in plaster
6.	110, 6 111c, 6	Tomb card 143; L 31–32:110, 297 (no. 3)	Pyramid of Senwosret I, south side, top of lowest course, fourth and fifth blocks from southwest cornerstone	40.5	10	5	5.5	Kheperkara	Pine	Set in white mortar. Hayes, *Scepter* I, 290, fig. 192 (right) MMA 32.1.95
7.	–	L 31–32:241	Pyramid 4	38	10	5.9	?	Kheperkara	?	Small cramp MMA 32.1.94
8.	–	L 33–34:202	Pyramid 7, north side, foundation of casing	?	?	?	?	Senwosret	?	Badly preserved
9.	111c, 9(?)	L 31–32:297 (no. 4)?	*Radim*, south side	36	7	3.75	?	Kheperkara	Cypress	Fragment; cartouche originally drawn in heavy black outline; pink plaster MMA [32.1.99]?
10.	110, 10	Tomb card 184	*Radim*, south side	?	12	?	?	Kheperkara	Cypress	Fragment
11.	–	–	*Radim*, west side	36	7.5	3.8	3.8	Rotted away	Cedar	Plaster with red ochre
12.	110, 12	Tomb card 187	*Radim*, slump of west side	36.5	10	3.5	3.5	Senwosret	Cedar	Plaster with red ochre
13.	–	Tomb card 577	Pyramid 4	36	10, 10.7	5.3	4	Kheperkara	Sycamore	Lumps of red ochre adhering to and filling the carved signs
14.	110, 14 111c, 14	Tomb card 186; L 31–32:297 (no. 5)	*Radim*, slump of west side	42	9	5.2	3	Kheperkara	Cedar	Signs orginally drawn in black ink with a course pen and filled with red ochre. Reused wood from a coffin, etc. Plaster with red ochre. Jd'E 58846

No.	Pl.	Sources	Position	L. (measurements in centimeters)	W. end	W. middle	Th.	Cartouche	Material	Remarks
15.	110, 15 111c, 15	Tomb card 185; L 31–32:297 (no. 7)	*Radim*, slump of west side	18 preserved	11.5	5.8	4	Kheperkara	Cedar	"Break very clean, as if snapped by the sudden displacement of the blocks." MMA [32.1.100]
16.	110, 16 111c, 16	Tomb card 185; L 31–32:297 (no. 6)	*Radim*, slump of west side	36	11	6	4	Small incised square mark 	Very straight grained coniferous wood	Hayes, *Scepter* I, 290, fig. 192 (left) MMA [32.1.98]
17.	–	Tomb card 188	*Radim*, slump of west side	36	7.5	3.75	3.75	Senwosret	Cedar	Surface rotted away
18.	–	–	Found by French expedition, "Grand mur de pierre, chapelle funéraire et aux abords de cellui-ci."	?	?	?	?	Uninscribed	?	*Licht*, fig. 64
19.	–	–	Same as number 18	?	?	?	?	Senwosret	?	*Licht*, fig. 65, shows half of cramp
20.	–	–	Same as number 18	?	?	?	?	Kheperkara	?	*Licht*, fig. 66 Jd'E 31050
21.	111a	L 87:173, 203	Pyramid of Senwosret I, top of first course, between first and second blocks, west of entrance	55–56	10	5	7.2–7.7	Kheperkara	?	
22.	111a, 112b	L 87:166, 203	Pyramid of Senwosret I, top of first course, between second and third blocks, west of entrance	49	10	5.5	5.7	Senwosret	?	
23.	–	L 87:137, 165	Pyramid of Senwosret I, top of first course, between second and third blocks, east of entrance	50.5	11.5	5	?	Kheperkara	Dark, very smooth cedar?	Half rotten; left in position
24.	111b, 112a	L 87:16, 18–19	Pyramid of Senwosret I, top of seventh course, west side	32	7.5	4.2	?	Kheperkara	Local, sycamore?	Left in position
25.	111b, 112a	L 87:19, 22–23, 262	Pyramid of Senwosret I, top of seventh course, west side	31.5	8.8	5.5	?	Kheperkara	Local, sycamore?	Left in position
26.–33.	– –	L 87:43–44, 230, 262	Pyramid 9, foundations of east and south sides of casing	35–42	?	?	?	Uninscribed	Local, sycamore?	Cemented in cramp slots; left in position

through one of the numerous wadis northeast of the pyramid, since remains of rough granite working stations were only found north of the king's pyramid. These wadis run either from the main wadi separating the two pyramids or between the small hills immediately southwest of the modern village of Lisht. The latter route seems preferable, because the desert surface is more solid there and not as sandy as the large wadis farther to the west, although no search has been made for the actual access ramps or quay. The blocks were then dressed in those locations indicated by the widespread granite dust found north of the pyramid entrance and near the northern outer enclosure wall, and subsequently stored north of the pyramid entrance. In the same area, the huge granite plugs awaited the final closure of the pyramid. One may assume that the blocks were lined up and numbered according to the sequence in which they were to be lowered into the narrow passage (see pl. 103e).

Evidence of granite working was also found in drain hole G of the king's pyramid, north of pyramid 9 near shaft 48/10 (see pp. 39–40), and south of the Imhotep mastaba. The composition of the debris in these sites seems to indicate the production of fine works such as sculpture, altars, and false doors, though it seems odd that this activity would have produced so many chips.

Tura limestone was used in great quantities for the casing of the pyramids and the visible parts of temple walls. Enormous quantities of limestone chip can be observed throughout the area east and northeast of the pyramid. Since there are traces of transport roads from the east side of the pyramid complex (see p. 92) apparently coming up the wadi later used for the causeway, I would assume that Tura limestone was unloaded and pulled up over this route.

One would also assume that the large quantity of bricks used for preliminary and final enclosure walls, levelling walls, and other features was carried up either from the east or the northeast. The large amounts of broken bricks that were spread over the desert surface in those areas during the construction period indicate that some of the bricks must have been stored in and distributed from these locations.

Local limestone was mined in the quarries around the southeast, south, and southwest sides of the pyramid plateau. Remains of limestone quarries can still be seen in the cliffs above the modern Sheikh tombs (the so-called Windmill Hill). One could hypothesize a direct and steep access ramp rising up from the wadi in the southeast, which was later used for the causeway of the Mentuhotep tomb. Another possible transport road lies on the south side of the plateau, where a brick ramp (see pp. 94–95) was found. For the large limestone quarry area situated farther to the southwest, where the ancient quarries may have been destroyed by intensive modern quarrying, a wide and smoothly sloping wadi leads from the southwest to the west side of the pyramid plateau, providing an ideal access route for local limestone. Several mounds of chip, which had not been flattened when the construction site was cleaned, provide evidence that limestone was dressed in that area. Finally, also from the west, tens of thousands of basket loads of sand would have been brought in order to mix the mortar and fill the foundation trenches.

Thus far, no remains of brick buildings connected with the construction of the pyramid complex have been found. Buildings used for the administration of the site, for storing tools and materials, and for workshops of specialized craftsmen must have existed near the construction area, probably east of the pyramid and perhaps south of the causeway or in the northeast near the mastaba of Senwosret-ankh. The camp or settlement for the workmen may have been along the slopes of the huge wadi separating the pyramids, where ancient potsherds indicate extensive human presence. A settlement for the workmen might also have existed somewhere along the eastern foot of the pyramid plateau, where water could be easily obtained.

One conclusion that can be drawn from the complex arrangement of the work area is that the pyramid was beset on all sides by roads, ramps, dressing stations, and storage areas. It would have been practically impossible to construct a large tomb during those first twenty years of the reign of Senwosret I, when the main construction work was carried out. One might further ask if similar conditions around the secondary pyramids also prevented tomb construction. The dating of the tombs surrounding pyramids to the reign of the builder of a main pyramid should, in some instances, be reconsidered.[217]

The Planning and Proportions of the Pyramid Complex of Senwosret I

(fig. 19; pl. 113; plan VI)

Previous discussion of the ground plan of the mortuary temple of Senwosret I[218] suggested that the pyramid complex was carefully planned and calculated and that the architects apparently made use of a system of one cubit grid squares. Excavations at the southeast corner of the outer enclosure wall further revealed that before the outer enclosure of the complex was completed, at least two earlier walls with different north-south measurements had been begun (pp. 15–16). Such forerunners have not been observed at any other part of the site, and from the evidence at the southeast corner alone it is not possible to understand the original intentions of the architects, although changes in building plans are common in Egyptian architecture, and such changes also occur, for example, at the *Ka*-pyramid of Senwosret I.[219]

During phase A, the overall length of the eastern outer enclosure wall would have been 505 c, while the later phase B was drastically reduced to only 290 c. An outer enclosure wall with the length of phase B would have created an outer court only 15 c wide, far too small to accommodate secondary pyramids or even tomb shafts. During phase B, no secondary pyramids could have been planned in the southern court. Perhaps a gallery tomb oriented north-south was started in the northern part of the court (pp. 41–42, no. 7), which would at that time already have had the final phase C width.

In the southeast, the final cornerstone of the enclosure wall was laid in phase C, at a distance of 220 c from the axis of the pyramid complex (therefore an overall width of 440 c), creating an outer court of 90 c and accommodating a 5 c outer enclosure wall. At the center of the planning system was the 200 x 200 c quadrangle of the pyramid, surrounded by the 20 c wide inner court and 5 c wide stone enclosure wall, forming an inner

[217] See Wolfgang Helck, "Wirtschaftliche Bemerkungen zum privaten Grabbesitz im Alten Reich," *MDAIK* 14 (1956): 63–75; and Mark Lehner, "The Development of the Giza Necropolis: The Khufu Project," *MDAIK* 41 (1985): 109–43.

[218] Arnold, *Senwosret I*, 56–57.

[219] Arnold, *Senwosret I*, 72–74.

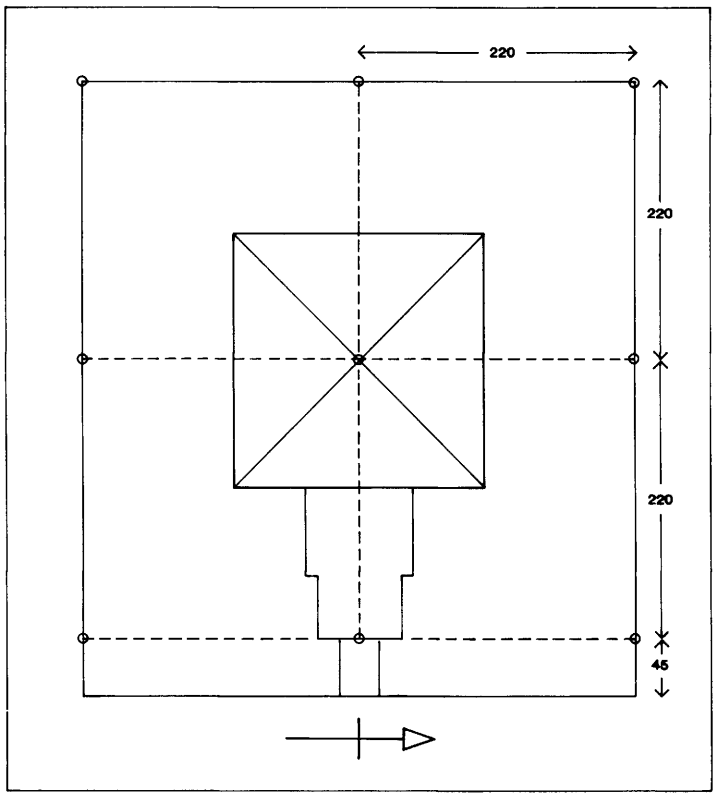


Fig. 19. The basic layout of the pyramid complex of Senwosret I (see also pl. 113).

enclosure of 250 x 250 c. Since it was not possible to accommodate the offering temple in the narrow space of 25 c (including the 5 c thickness of the wall), the eastern section of the inner court was enlarged 45 c to accommodate a 70 c (including the 5 c thickness of the wall) temple. The inner enclosure therefore measures 250 x 295 c. This irregularity reappears in the east-west dimension of the outer court:

N–S 95 + 250 + 95 = 440 c.
E–W 95 + 295 + 95 = 485 c.

Study of the layouts of the pyramid of Senwosret III and the two pyramids of Amenemhat III[220] has shown the importance of the dimensions of the central cross formed by the two axes of the entire complex with the middle of the pyramid at its center. In these other three Twelfth Dynasty examples, this cross produced four squares with a side length of 180 c (Senwosret III and Amenemhat III at Dahshur) and 150 c (Amenemhat III at Hawara). For the pyramid of Senwosret I these squares have a side length of 220 c. On the east side, as noted above, the outer enclosure is 45 c further to the east. The importance of the 220 c square is demonstrated in the east where their boundary coincides with the front of the mortuary temple, excluding the *Pr-wrw* (which is responsible for those additional 45 c). Since these 220 c squares only appear in the final construction phase of the pyramid complex, we may assume that this principle only developed during its construction. As is often the case in Egyptian building, the plans were not finalized before actual work started, but instead construction and design occurred simultaneously, causing considerable alterations during the building process.

There was no strict system for the placement of the secondary pyramids. Even their number seems to be random, with three on the south side, two on the west side, and two on the north side. Two more pyramids were built in front of the eastern side of the northeast corner of the inner court. We can only suppose that the architects purposely avoided the corner areas of the outer court and, in four cases, used the foot line of the king's pyramid for the orientation of the secondary pyramids: the west side of pyramid 3 corresponds to the west side of the main pyramid, the north side of pyramid 5 to the north side of the main pyramid, the west side of pyramid 6 to the west side of the main pyramid, and the north sides of pyramids 8 and 9 to the north side of the main pyramid. Pyramids 2/3, 4/5, 6/7, and 8/9 form units in so far as their foot lines are aligned. Only pyramid 1 differs in both size and location from the other eight; its location is unrelated to any other structure, perhaps because this pyramid was the first one built, so that the final plan of the overall pyramid complex had not yet been formed. Pyramid 1 may have been begun during phase B of the outer enclosure wall, with the original intention that the pyramid would have been excluded from the outer court.

An Additional Observation on the Blocking System of the Pyramid of Senwosret I

(pl. 103e)

In the *Pyramid of Senwosret I*, it was mentioned that the sloping corridor of the main pyramid was blocked by sliding down a series of six or seven granite plugs.[221] During the 1989 season I found the fragment of the end face of one of these plugs clearly incised with strokes suggesting the number 7 or 8. The fragment was among the other granite pieces that our workmen excavated in the entrance cut and collected east of the pyramid entrance. These fragments certainly belonged to those produced by Maspero's workmen in 1883, when they forced their way into the corridor.[222]

The number on the fragment suggests that our original calculation of six to seven plugs should be changed to seven or eight plugs. The number also shows that the plugs were not lowered randomly, but that each one had a number. Since the innermost plug was smashed by Maspero's workmen, our number 7 or 8 could well have belonged to it. In this case the plugs would have been lowered in the reversed order 8–7–6, etc. Our number could also have belonged to the uppermost plug, suggesting a lowering of the stones in numerical order, although the plug had been damaged before Maspero's work and one would not expect a fragment of this block among the debris from his excavation. The question could be answered if the uppermost existing plug is removed and a number found either at the lower end of this plug (the upper end of the uppermost plug was smashed, probably by ancient robbers, and the chance that a number on this upper face would have survived unharmed is small) or on the upper end of the second plug, which is also still in position.

[220] Arnold, *Amenemhet III*, 88–90.
[221] Arnold, *Senwosret I*, 69.
[222] Arnold, *Senwosret I*, 69.

The Lisht Timbers: A Report on Their Significance

by Cheryl Haldane

GLOSSARY

Butt joint: The joining by abutting of the ends of two timbers.

Central plank: In ancient Egyptian hull construction, the central plank was thicker and stronger than others in the hull. It is analogous in function to a keel.

Floor timber: A framing member that was centered over the keel or central plank and whose arms spanned both sides of the bottom of the hull.

Frame: An assembly of transverse timbers that supported hull planking.

Keelson: An internal keel, mounted on top of floor timbers and above the keel or central plank, that provided additional longitudinal strength to the hull.

Lashing: The use of rope or woven strips to connect timbers.

Mortise-and-tenon joint: A joint between two timbers in which a tenon was inserted into aligned, corresponding mortises in the timbers.

Sapwood: The outer part of a tree trunk that contains the living cells in the growing tree. Usually there is a distinct difference in color between the sapwood and heartwood (inner part) of a tree.

Scarf: A type of joint formed by notching or angling two timbers so that they interlocked to form a continuous piece.

Seam: The longitudinal line or joint between two planks.

Shell-first construction: A method of hull construction in which a planking shell was established before frames were erected.

Side pegs: Wooden pegs with a rectangular or square section, inserted into mortises beside tenons in order to lock them in place.

Skeleton-first construction: A method of hull construction in which frames were erected on a keel before planking was put on.

Strake: A continuous line of planks extending from bow to stern.

Introduction[223]

Forty timbers found during recent Metropolitan Museum of Art excavations at Lisht, and more than fifty others from earlier Metropolitan Museum excavations, have been identified as parts of a vessel or vessels, broken apart and used as foundations for roadways and ramps around the Middle Kingdom pyramid of Senwosret I. A frame was included among the timbers found during 1914 excavations, and a model boat from the mastaba of Imhotep was excavated that same season and is included in the evidence considered here. The recording of the timbers, frame, and model boat permits nautical archaeologists, who study all aspects of ancient watercraft and human exploitation of bodies of water, to evaluate hull construction and shipbuilding technology of the early Middle Kingdom. Until about 1000 A.D., shipwrights used shell-first building techniques, which relied upon plank form rather than frame shape to determine a vessel's appearance. Planks were carved to shape, with as much as 70 percent of a rough timber wasted, and fitted together one board at a time from the keel or center plank up the sides of the hull. Edge fastenings, whether mortise-and-tenon joints or a form of sewing or lashing, created a strong internal framework, and frames were inserted into the finished or partially finished shell to provide support for it. Modern methods of ship construction can be traced back to the medieval period, when shipwrights began to use the keel as the ship's backbone and erected frames before planks were added. Planks on such skeleton-first hulls are pulled into shape, rather than carved, and are much thinner than those on shell-first vessels.

Egyptian shipwrights began building shell-first wooden boats at least five thousand years ago. Foreign and massive materials used in the construction of Early Dynastic Period royal tombs show us that the ancient Egyptians had an efficient system of water transport. This contribution focuses on ancient Egyptian hull construction through a brief description of physical remains of vessels, discusses the Lisht timbers in detail, and provides illustrations and a catalogue of some of the Lisht timbers.

The Lisht timbers belonged to one or more sturdy, riverine freight vessels. Because working boats were built to withstand the strain of heavy cargoes, they offer a chance to speculate about how the ancient Egyptians may have dealt with problems of stress in seafaring vessels. Such hulls had to be capable of absorbing the great stress of sea journeys, and it is likely that they shared many features with riverine freighters responsible for transporting thousands of kilograms of stone and foodstuffs the length of Egypt and beyond. Representations of riverine and seagoing vessels of ancient Egypt exist, but we do not know how such vessels were built. Although the timbers from Lisht are disassembled, they offer a unique opportunity to study construction methods.

The Lisht material is particularly valuable since Egyptology has focused attention on ceremonial procedures and records associated with burial, and it is almost entirely through this filter that we are offered a glimpse of daily life. Because life in Egypt centered on the Nile, boats played a crucial role in the

[223] Acknowledgements: The author is grateful to Dieter Arnold of The Metropolitan Museum of Art for the opportunity to study the Lisht timbers and to Shawki Nakhla of the Egyptian Antiquities Organization for the chance to record hull remains from the Mataria vessel. Museum staff of The Carnegie Museum of Natural History, Pittsburgh, The Field Museum of Chicago, and The Egyptian Museum, Cairo provided generous access and assistance in the study of Dahshur boats in their collections. Warm thanks are also offered to Elie Rogers and the National Geographic Society for providing me with records of the nondestructive evaluation of the second Cheops boat pit.

transport of food, raw materials, administrators, and royal persons. Reliefs such as those from the causeway of Unas depicting the transport of granite columns from Aswan to Saqqara by freight vessels are rare.[224] Most vessels shown in reliefs are pleasure or ceremonial types, but we are also blessed with a number of boatbuilding scenes painted and carved on tomb walls.[225]

Autobiographies carved in tombs also provide clues to the construction and use of ancient vessels; for example, during the Sixth Dynasty, Weni described his voyages to bring architectural elements for the royal pyramid complex and mentioned how many and what kind of boats he took.[226]

Hatshepsut's great temple at Deir el-Bahri provides illustrated descriptions of the transport of her two great obelisks; the construction of these vessels has been a center of controversy for many years.[227] The recent analysis of problems in transporting the Colossi of Memnon points out the advantages of looking at construction techniques in solving such problems.[228]

Other clues can be gleaned from administrative records. Records of the dockyard workshop of Senwosret I,[229] another royal dockyard in the New Kingdom,[230] and Janssen's interpretation of Ramesside words and prices for ship's parts[231] offer opportunities to investigate both the construction of watercraft and their position within Egyptian culture.

Representations, written descriptions, and even graves attest to some of the features of these ancient boats, but the physical remains of Egyptian vessels provide us with the best opportunity to evaluate hull construction. Eight ancient vessels are available for study: the two Cheops hulls of the Fourth Dynasty that were built, disassembled, and buried in stone pits beside the pyramid of Cheops at Giza,[232] timbers at Lisht from what appear to be freight boats of the early Twelfth Dynasty (ca. 1950 B.C.),[233] four (of six) ceremonial vessels of Senwosret III (ca. 1840 B.C.) found at Dahshur,[234] and the scant remains of a Hellenistic period boat from Mataria, a Cairo suburb.

One of the Cheops hulls (Cheops I) has been excavated and reconstructed;[235] the other (Cheops II) is known solely from photographs taken during a nondestructive investigation of its sealed pit.[236] Both vessels are built on a massive scale and made of imported wood, probably cedar. The smallest hull plank in the 42 m long Cheops I vessel is more than 7 m long and 10 cm thick. These two hulls are unique, not only for their great age and size, but also for their manner of construction. Small mortise-and-tenon joints and rope lashing at strategic points held the planks together until more rope was laced across the inside of the hull, sewing the planks together.

There are many different types of sewn vessels throughout the world, but unlike the Cheops hulls, their lines of sewing follow plank seams. The Cheops hulls are held together primarily by rope threaded through V-shaped lashing mortises across the inner hull, perpendicular to plank seams. Although we do not know why the Egyptians built the hulls this way, it seems probable that ease of dismantling played a role. It is also possible that cross-hull lashing may be related to construction techniques used to build papyrus rafts from bundles of reeds lashed together across the width of the raft.

In the excavated Cheops I hull, we can see the application of established principles in boatbuilding. Shipwrights determined a center line, and built up the sides of the hull symmetrically with intricately shaped planks joined with 10 cm long tenons and lashed together with 5000 m of rope. The hull is graceful, and majestically proclaims the skill of its designers, shipbuilders of about 2500 B.C.

About 1950 B.C., one or more sturdily constructed vessels were broken up to provide timbers for road and construction ramp foundations at the Middle Kingdom pyramid of Senwosret I. The Lisht timbers, carved of local wood, demonstrate a previously unknown manner of hull construction using plaited lashing rather than sewing, intricate scarfing of timbers, and deep mortise-and-tenon joints. A large frame, designed as an integral part of the hull, was also found at Lisht and provides us with more information about the nature of these robust watercraft.

With the Dahshur boats of about 1850 B.C., we return to a ceremonial type of vessel. Four of six 10 m long boats, excavated in 1894, are available for study today.[237] Built of cedar planks and held together by mortise-and-tenon joints, these hulls retain only vestiges of lashing and some ambiguous dovetail fastenings that may not be ancient (see p. 104). Nonetheless, they clearly remain within Egyptian boatbuilding traditions shown in both earlier hull remains and representations.

The same boatbuilding traditions are evident in a Greco-Roman hull discovered during 1987 sewer pipe excavations in Mataria, a Cairo suburb. Sections of the hull were preserved, although conservation and recording techniques have obscured vital features. But it is clear that a new phase of boatbuilding had entered Egypt. The hull was built along traditional rivercraft lines, using planks of local wood carved in shapes that may be traced back to the Cheops hull, but a dramatic change in fastening methods occurred. Mortise-and-tenon joints were locked in place with pegs through the plank thickness, a method Pharaonic shipwrights had avoided almost entirely.

[224] G. Goyon, "Les navires de transport de la chaussée monumentale d'Ounas," *BIFAO* 69 (1971): 11–41.

[225] For examples see D. Kessler, "Zur Bedeutung der Szenen des täglichen Lebens in den Privatgräbern (I): Die Szenen des Schiffsbaues und der Schiffahrt," *ZÄS* 114 (1987): 59–88; G. Steindorff, *Das Grab des Ti* (Leipzig, 1913), pls. 119–20.

[226] Lichtheim, *Ancient Egyptian Literature* I, 21–22.

[227] See, for example, G. A. Ballard, "The Egyptian Obelisk Lighter," *Mariner's Mirror* 27 (1947): 290–306; and C. V. Solver, "Egyptian Obelisk Ships," *Mariner's Mirror* 33 (1947): 39–43.

[228] J. V. Wehausen, A. Mansour, M. C. Ximenes, and F. Stross, "The Colossi of Memnon and Egyptian Barges," *International Journal of Nautical Archaeology* 17 (1988): 295–310.

[229] W. K. Simpson, *Papyrus Reisner II: Accounts of the Dockyard Workshop at This in the Reign of Sesostris I* (Boston, 1965).

[230] S.R.K. Glanville, "Records of a Royal Dockyard of the Time of Tuthmosis III: Papyrus British Museum 10056," Part I, *ZÄS* 66 (1931): 105–21; Part II, *ZÄS* 68 (1932): 7–41.

[231] J. Janssen, *Commodity Prices from the Ramessid Period* (Leiden, 1975).

[232] P. Lipke, *The Royal Ship of Cheops*, British Archaeological Reports International Series no. 225 (Oxford, 1984); A. M. Abubakr and A. Y. Mustafa, "The Funerary Boat of Khufu," *Beiträge zur ägyptischen Bauforschung und Altertumskunde* 12 (1971): 1–16; M. Z. Nour, Z. Iskander, M. S. Osman, and A. Y. Moustafa, *The Cheops Boats* (Cairo, 1960).

[233] C. Haldane, "Boat Timbers from El-Lisht: A New Method of Ancient Egyptian Hull Construction, Preliminary Report," *Mariner's Mirror* 74 (1988): 141–52.

[234] De Morgan, *Dahchour* I, 81–83; C. Haldane, "A Fourth Boat from Dashur," *AJA* 88 (1984): 389; C. Haldane, "The Dashur Boats," (M. A. thesis, Texas A&M University, 1984); D. Patch and C. Haldane, *The Pharaoh's Boat at The Carnegie* (Pittsburgh, 1990).

[235] See n. 232.

[236] F. El-Baz, "Finding a Pharaoh's Funeral Bark," *National Geographic* 173 (1988): 513–33; P. Miller, "Riddle of the Pyramid Boats," *National Geographic* 173 (1988): 534–50.

[237] See n. 234.

The Lisht Timbers

Between 1908 and 1934, the Egyptian Expedition of The Metropolitan Museum of Art uncovered about fifty timbers buried in the sands surrounding the pyramid of Senwosret I (pls. 106–8). Arnold's excavations south of the causeway on the eastern side of the pyramid and west of the pyramid revealed about forty timbers in varying states of preservation, now reburied on site (pls. 102–3). The total number of timbers excavated at Lisht South is at least ninety; fifteen of these timbers form the basis for the discussion of timber and vessel features.

Buried beneath a layer of plaster and limestone chip, the timbers had been used as foundations for a system of roadways and ramps in the pyramid complex. In addition to the causeway area on the eastern side of the pyramid, timbers are recorded from the west side of pyramid 3, along the inner western enclosure wall of the pyramid, and inside and outside the outer court west and north of the pyramid. Timbers of similar shape have been recorded at other pyramids and described as quarry roads or construction ramps.[238] At least two photographs taken at Lahun show timbers of similar shape and size to those at Lisht.[239] In most cases, three of the four timber faces bear cuttings for fastenings. The uncut face was uppermost in every case at Lisht, indicating careful placement of timbers. But while the general shapes of adjacent timbers seem to fit together, fastening patterns for the causeway timbers prove that the timbers were not so arranged when they were in use.

TIMBER CHARACTERISTICS

The condition of the timbers varied from extremely poor to very good. Timber surfaces were generally soft and slightly eroded, and some checking was present; some timbers were heavily eroded, however, and had large damaged sections with cracks or breaks. The timbers range in length from 1.50–2.60 m, with a fragmentary unlabelled piece only 1.01 m long. Width ranges, on average, from 16–20 cm, but may be as much as 40 cm or as little as 12 cm. Timbers are from 9–15 cm thick, and have a sturdy, squat appearance in cross section.

When the ancient shipwrights carved these planks from lengths of tamarisk (*Tamarix* sp.) or acacia (*Acacia* sp.), woods locally available, they cut the timbers to avoid incorporating large knots, a potential source of structural weakness. Several of the timbers bear traces of large knots and the techniques used to remove them while retaining as much of the timber as possible. In all cases, an economy of wood use is evident, particularly if timber ends are examined. Grain patterns that suggest large knots beginning just at the ends of timbers are common. Samples of wooden fastenings and timbers suggest that the same wood was used for both.

FASTENINGS

At least two types of fastenings can be seen in these timbers. Mortise-and-tenon joints are found in regular, but not identical, patterns in the edges of timbers. Mortises commonly measure 9–9.5 cm wide, 1–1.5 cm thick, and 12 cm deep. In addition, there are partial mortises cut into timber ends that measure 5 cm wide and 5 cm deep. Similar partial mortises are present in timber ends from all other ancient Egyptian hulls. No partial mortises in the Lisht timbers retain tenons, but many tenons remain in standard mortises. Most of them fit so closely in the widths of mortises that removal is difficult. Removable tenons share the same basic shape: tapering from a broken end about 6.5 cm wide at the timber edge to a bevelled tip about 4.5 cm wide (fig. 20). The well-preserved bevel is about 6.5 mm long on each side of the tenon. All recorded tenons, originally 20–28 cm long, are broken at or near the timber edge; their preserved lengths range from 10.5–14 cm (pl. 116d).

Many tenons do not completely fill the mortise width. In many cases, spaces about 1 cm on a side can be seen (fig. 20). Other mortises preserve not only the tenon, but a wooden peg or pegs, which are about 1 cm square, parallel to the tenon's edge. Mortises with empty spaces of similar dimensions probably once held pegs as well. Pegs are found placed on either side of the tenon or on only one side. When the pegs are on only one side, all mortises on the plank edge have the pegs inserted on the same side. Pegs probably served to wedge tenons firmly in place, achieving the same result as that sought by Mediterranean style shipbuilders, who secured tenons by driving pegs perpendicularly through planks and tenons.

The Lisht timbers were also lashed together. Lashing mortises 6.5–9 cm wide, 5 cm deep, and slightly more than 1 cm thick are present on one face and both edges of most of the recorded timbers. Mortises meet at a 90 degree angle (fig. 21) between a wide face and an edge, but never pass through both wide faces. Lashing mortises tend to be slightly wider on the timber face than on its edge, possibly because the tension of the lashing material caused wear on mortise edges. The placement of these fastenings at strategic scarfs and near timber ends is very similar to lashing patterns on the excavated Cheops hull and to the pattern of dovetail fastenings on the Dahshur vessels.[240]

More than half of the lashing mortises retain a flat, plaited strip woven from about fifteen strands (fig. 21). Willeke Wendrich has tentatively identified the material as a grass, probably *halfa*. As shown in plate 116a–c, lashing strips were deliberately cut apart at timber edges.

SCARFS

All of the timbers, except timber C, have scarf cuts on their edges. Scarfs help to maintain the integrity of the planking shell, and the positioning of each scarf is determined by the characteristics and shape of adjacent planks. Lisht timbers usually have scarfs on both edges. Scarf cuts on the same edge of a timber angle towards each other, and if an edge has only one cut, it is angled away from the nearby end. Scarf cuts exhibit a remarkable consistency in their angles. Most cuts were made at angles of 120 degrees and are 2.2–2.5 cm deep. Other cuts vary only a few degrees in angle, except those found on timbers 5 and 7, where the cuts vary from 100–115 degrees.

The scarf cuts were sawn, as shown by saw marks both on

[238] Arnold, *Building in Egypt*, 79–98.

[239] Petrie, *Lahun* II (London, 1923), pl. XVa–c; Arnold, *Building in Egypt*, fig. 3.44.

[240] My study of the dovetail fastenings on the Dahshur boats suggests that these fastenings may not be original. It is possible that Dahshur planks were once lashed together; continued research into this question will be published when it is completed.

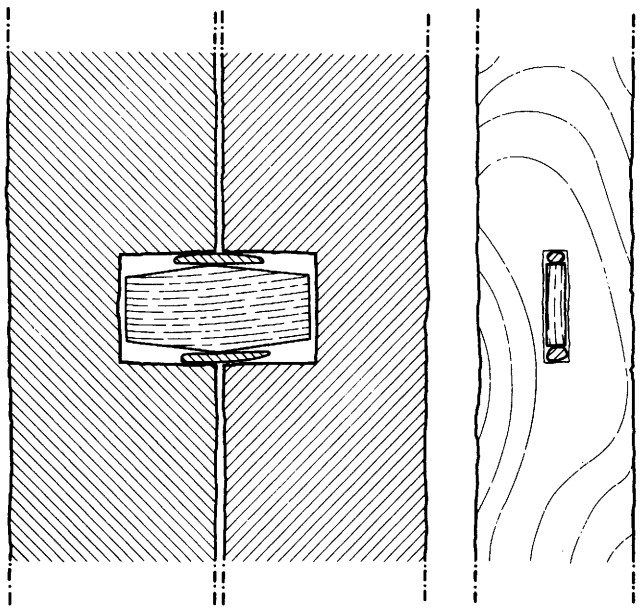


Fig. 20. Schematic plan and section through mortise-and-tenon joint between two timbers.

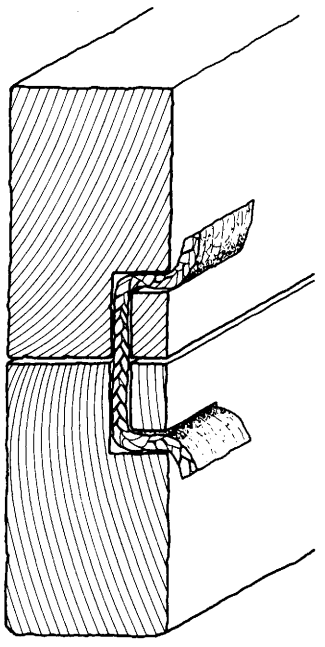


Fig. 21. Schematic section through lashing mortises.

the face and at the base of cuts. Saw marks across scarf faces are very faint and 1 mm apart; those at scarf bases are vertical and 2–4 mm deep.

Mortise-and-tenon joints pass through many scarfs, and a few also include lashing mortises (see pls. 118–19, 121–32). Scarfs were placed to avoid knots.

CONSTRUCTION ERRORS AND REPAIRS

Several mortises, including examples of both lashing and mortise-and-tenon joints, were placed incorrectly during construction processes. In one case, a mortise was begun, but abandoned when the chiseler ran into a knot. Pairs of mortises, virtually atop one another but with only one mortise actually used as a fastening, suggest miscalculations of mortise placement.

The only evidence of repair occurs on timber 9, where a trapezoidal peg was used to lock a tenon in place. The peg (2.8 x 2 x 1.8 cm) fits snugly in a mortise cut only 3 cm (to its center) from the plank edge. The peg passes through the inner face of the plank and into the tenon, but it does not pass through the tenon into the outer planking face. This repair may have occurred at any time in the vessel's history, from its construction to just prior to its disassembly, but the repair was probably prompted by a loosening of the tenon within the joint, possibly as a result of wear.

TOOL MARKS

Reconstructing the tool assemblage used to build a hull is possible by studying the tool marks remaining on the timbers. Despite damage caused by erosion and insects, the Lisht timbers provide good evidence for several types of tools. Chisel, axe or adze, and saw marks predominate.

Mortises in plank edges were cut by chisels with blades about 2 cm long and shafts about 6 mm wide. In several cases, the mortise cutter "leaned back" on the chisel handle as one side of the mortise was cut, probably when the chisel was used to pry out the wood from within the mortise. These lean-backs occur on many of the timbers, appearing as small depressions 6 mm wide on one end of the mortise. When it was possible to observe several mortises with this feature on the same plank, each member of the group had the lean-back on the same end of the mortise, supporting the idea that a mortise cutter worked along the plank edge in a single direction. Mortises on plank edges in the Dahshur boat in the Carnegie Museum of Natural History also have a 6 mm wide lean-back.

Timbers 8 and 9 bear deep hatch marks on their edges. The marks are up to 6 mm deep, and resemble marks made by axe or adze blades. Minimum blade length is provided by a single mark 5 cm long. Similar deep blade marks are present on the edges of some of the Carnegie Dahshur boat planks. The marks on both the Lisht and Dahshur planks have no discernible connection to plank shaping.

Saw marks make up the largest set of recorded marks on Lisht timbers, which is interesting since most scholars who study ships consider the adze to be the principal shaping tool of ancient Egyptian shipwrights. Saw cuts are present on faces and at the bases of scarfs, on timber ends and wide faces, and on timbers 9 and B at large knots.

The series of cuts on timbers 9 and B demonstrate some of the shaping methods used by the ancient shipwrights and reinforce the impression of frugal wood use. Several deep saw cuts made with a blade held perpendicular to the plank edge can be seen on either side of the knot's center. The entire area of the knot is also covered with saw marks made by a blade held parallel to the plank face, suggesting that shipwrights cut vertically into a branch stub to remove sections of it before the plank face was evened out with a saw blade held parallel to it.

The ends of three tenons on timber 5 bear saw marks. One tenon is cleanly sawn off 2.5 cm from the plank edge, but the other two are only partially sawn through, then broken on the edge towards face B (pl. 125). I interpret these tool marks and

break indications as the result of breaking timbers apart. In this case, tenons appear to have been partially sawn through from the inside of the planking surface with a blade, after which the timber was pulled away from the outside of the hull.

The other recorded tool mark was a score line which probably marked a butt joint in timbers above an edge of timber 5.

THE FRAME

Description: During the 1914 excavations, the Lisht frame was found with a group of timbers beyond the outer court on the west side of the pyramid complex (pls. 106, 115c, 133). The following description of the frame is derived from photographs and drawings provided to me by Dieter Arnold from the Egyptian Department archives. The frame is in the Egyptian Museum, Cairo (Jd'E 60271).

The frame is built of three timbers: two upper timbers, each about 1 m long, fastened to a 2.40 m long curved floor timber by mortise-and-tenon joints and lashing. Mortise dimensions are similar to those from Lisht planks recorded by the author.

The floor timber measured about 12 cm molded (vertical dimension) and 22 cm sided (horizontal dimension). Twelve slightly triangular notches are present on its outer face and measure, on average, 10 cm deep and 5 cm wide at the base. Three cylindrical holes 8 cm deep and 6 cm in diameter are present in the outer face. One is located directly in the center of the floor timber; the other two are about 80 cm away on either side of the central hole. No other recorded information is available for this feature of the frame.

The upper timbers are about 15 cm molded and 20 cm sided near the inboard ends. Outboard ends are notched like the lower face of the floor timber and continue its curvature for 40 cm on one side and about 25 cm on the other. A gap of 50 cm separates the inboard ends of the timbers; this opening corresponds to a 1 cm deep notch on the inner face of the floor timber.

These three timbers are fastened together with a complex system of mortise-and-tenon joints, lashings, and mortises that pass through the thickness of the timbers. Each of the upper timbers has one three-way lashing joint (see B–B on pl. 133). Lashing mortises and mortise-and-tenon joints are present in the upper edge of the upper timbers. The lower faces of the upper timbers are joined to the floor timber by both lashing and mortise-and-tenon joints, providing a complex and secure frame assembly.

Analysis: The complete frame found in the 1914 excavations at Lisht is one of the site's most extraordinary finds from a ship scholar's point of view. The excavated Cheops vessel had sixteen frames for its 42 m length, but the frames do not seem to have been designed to lend structural integrity to the hull. The Dahshur hulls had no frames, but relied on beams laid across the hull and through planking edges to tie the vessels together. Photographs of the much later Mataria vessel show faint impressions of frames, but none remained within the hull. The earliest recorded frames in the entire Mediterranean outside Egypt postdate the Pharaonic period, so the Lisht frame is important not only for what it reveals about Egyptian boatbuilding technology, but for what it can suggest about the level of technology available to Bronze Age shipwrights throughout the eastern Mediterranean.

While the frame provides new evidence for techniques used to reinforce working vessels, it also exhibits features whose purpose can be only partially ascertained. The mortises that pass completely through the thickness of each piece of the frame provide no clue as to their function, but it is possible that they held tenons or lashing that bound the frame to others of similar construction. Lashing mortises and mortise-and-tenon joints on the upper edges of the upper timbers suggest that these timbers were once attached to others, perhaps deck beams or other reinforcing lateral hull members.

Three-way lashing mortises near the squared ends of the upper timbers are similar to three-way mortises in a timber from Tarkhan dating to the First Dynasty.[241] The Tarkhan timber is curved at one end and square at the other, and it resembles the upper timbers of the Lisht frame. Two three-way lashing mortises are present in the Tarkhan example, and the only other fastenings are two L-shaped mortises in the curved end. Timbers from Tarkhan are evaluated in a recent work by S. Vinson.[242]

Other features of the frame whose function can only be guessed at include notches and cylindrical holes on the lower face of the floor timber and the broad recessed area on its upper face, which corresponds to the gap between the upper timbers. If the notches parallel those on single-piece frames from the Cheops vessel, they would have been located over plank seams. Notches in the Cheops frames seem designed to fit over battens that covered plank seams; no traces of battens remain on Lisht planks. The purpose of the cylindrical holes cannot be known with certainty, but their form and location suggest that they may once have been filled by pegs that connected the frame to the hull. The broad and recessed area on the upper face of the same timber probably was designed to receive a longitudinal strengthening timber such as the shelf and stringer system that supported the deck beams of the Cheops vessel. Such stringers, located so near the bottom of the hull, would function as keelsons in addition to creating a lower center of gravity for the vessel.

THE MODEL BOAT FROM THE MASTABA OF IMHOTEP

Description: The Egyptian Expedition of the Metropolitan Museum discovered a pair of boat models outside the southern enclosure wall of the mastaba of Imhotep in 1914. The larger of the models measured 2.75 m, and was carved from a solid piece of wood with an added finial, also of wood; traces of red paint remained on the gunwale. The model was in excellent condition and is now in the Metropolitan Museum.[243]

The smaller model, constructed of planking, was uncovered, left unexcavated because of its poor condition, and reburied (pl. 117a–b). In 1986 the boat model was reexcavated, recorded, and subsequently reburied.[244] The reason for the extremely poor condition of this 1.95 m long model was apparent: no wood used in the model was thicker than 1 cm. Tentative measurements of maximum dimensions suggest that it reached a

[241] W. M. F. Petrie, G. A. Wainwright, and A. H. Gardiner, *Tarkhan I and Memphis V* (London, 1913), pl. IX.

[242] S. Vinson, "Boats of Egypt Before the Old Kingdom," (M.A. thesis, Texas A&M University, 1987), 39–81.

[243] *BMMA* 10 (1915), supp., 10–11, fig. 7; MMA 14.3.23.

[244] For the archaeological context of the find see Dorothea Arnold, *The South Cemeteries of Lisht: The Mastaba of Imhotep*, forthcoming.

width of 40.7 cm with a depth of a least 11 cm. The central plank was 12 cm wide; other planks were about 7–10 cm at their widest point. The wood remaining is severely checked, and shrinkage is evident from seams, scarf lines, and joints preserved only in the natural molds of mud, plaster, and paint that remain in the boat pit. In many cases, 1 cm separates plank seams and 2–3 cm separate butt joints.

The planks of the model were connected with mortise-and-tenon joints. Several tenons were visible, and measured approximately 4 cm wide and 6 cm long. No mortises could be seen.

In its burial site, the model tilts slightly towards the south. The upper strake and its plaster on the southern side have completely disappeared. The eastern end of the boat is better preserved than the western end; the lower end of the finial at the eastern end is well preserved. The upper part of this finial may be present as well, but it is certain that at least a cast of it remains in the mud brick above it.

Paint fragments visible in the sand are green on the lower hull with red and blue stripes present on what seems to be the gunwale. Other details of decoration are obscured by plaster and wood from the model.

Analysis: The boat model from Lisht is the first known example of an ancient Egyptian boat model built plank by plank and joined with mortise-and-tenon joints. In many ways, the boat model recalls the Dahshur boats discovered outside the pyramid enclosure of Senwosret III.[245] The planking plan for the model and for the Dahshur boats in the Carnegie Museum of Natural History, Pittsburgh and the Field Museum of Natural History, Chicago are strikingly similar. The number of strakes on either side of a central strake, which is thicker than those around it, is the same for both the Lisht model and the Dahshur boats. The number of planks within strakes also coincides. In addition, plank shapes, and the apparent hull shape of the model boat from Lisht, are virtually identical to those shown by the Dahshur hulls.

PLANKS

Analysis: The timbers from Lisht represent planks from one or more vessels. The timbers are identified as hull members primarily on the basis of their shape and curvature and secondarily on the basis of the fastening techniques and patterns used. In addition, the presence of a frame supports the idea that these timbers came from watercraft.

Comparison of the Lisht timbers with the Dahshur and Cheops vessels shows similarities in plank shape, fastening patterns, tool usage, and scarfing techniques. Of particular interest is the avoidance in the Dahshur and Cheops hulls of mortises which pass completely through the thickness of planks, a trait shared by the Lisht material. This common trait enables uncut faces of planks to be designated as the outer faces.

As seen in the Cheops and possibly in the Dahshur vessels, lashing is present in strategic locations; as in the Dahshur hulls, deep mortise-and-tenon joints are the main method of fastening the planks. The presence of both lashing and deep mortise-and-tenon joints on the Lisht planks, which are as thick or thicker than those from the Cheops and Dahshur boats, suggests a more sturdily constructed vessel than any of these examples. Mortise-and-tenon joints in the Lisht timbers are twice as deep as those in the Cheops ship, which relied primarily on lashing for strength, but are the same depth as those in the Dahshur boats, which did not have lashings. The Dahshur hulls and the Lisht timbers both made use of a technique of joining plank ends that relied on partial mortises: the ends of two abutting planks each received half of the mortise while the adjacent plank held the tenon in a complete mortise.

The discovery of square or rectangular pegs placed on either side of tenons in the edges of Lisht timbers provides an explanation for a previously perplexing problem in ancient Egyptian hull construction. Because the Cheops vessels were disassembled and the Dahshur hulls had been taken apart and reassembled with modern tenons, it had not been possible to study tenons in place. No pegs perpendicular to tenons have been recorded from ancient Egyptian hulls, with the exception of the repair to timber 9 (pl. 129), though carpenters frequently used this type of fastening on other objects. Sarcophagi, furniture, and a sledge found with the Dahshur boats all have perpendicularly pegged mortise-and-tenon joints. Even the cabin on the Cheops vessel used such pegs. In other words, the Egyptians seem to have avoided pegging mortise-and-tenon joints *perpendicularly*, in the well-known manner evidenced by the hulls of many Greek and Roman ships, if such joints would be below the waterline of a hull. Wachsmann has pointed out that a representation in the late Nineteenth Dynasty tomb of Qaha at Deir el-Medina depicts the construction of a hull with pegs passing through plank thicknesses.[246] These pegs, the first examples of their kind, probably fastened frames to the planking shell and do not represent tenon pegs.

Lashing material in the Lisht timbers differs noticeably from that used in the Cheops ship. Rope was used to lash planks together on the Cheops ship; the rope measured 1, 1.5, and 2 cm thick at the time of excavation. The plaited strip of twisted grass fibers used to fasten the Lisht timbers together would have caused less wear to mortise edges by spreading forces along its width.

Despite the temptation to assume that all of the Lisht timbers originated from a single vessel, none of the recorded timbers seem to fit together; planking shapes can be matched to suggest the appearance of the planked shell, but it is not possible to reconstruct a single vessel from the Lisht material. Consistency in mortise size, patterning, and scarf angles and dimensions would also support the supposition that all of the timbers are from a single hull. However, these features are similar enough to those used in the Fourth Dynasty Cheops hulls and the Dahshur boats of the later Middle Kingdom to suggest that shipbuilding tradition may be the source of consistency. Further study is required before deciding this issue. Other areas of continued research include exploring whether there are any regular indications of wear on one edge of lashing mortises, which can be used to define timber orientation, and whether the angle of plank edges can be used to reconstruct the position of planks within the hull.

Conclusions

The planks, frame, and model boat from Lisht offer new perspectives on ancient Egyptian shipbuilding techniques. The hull

[245] See n. 234.

[246] S. Wachsmann, "Seagoing Ships and Seamanship in the Late Bronze Age Levant," (Ph.D. diss., Hebrew University, Jerusalem, 1989), 199.

planking demonstrates a previously unrecorded manner of hull construction using plaited lashing, intricate scarfing of timbers, and deep mortise-and-tenon joints secured by pegs within the joint itself. Each of these features is present in some form on either the Cheops or Dahshur vessels, but their combination is unique and offers insight into a controversial passage in Herodotus (2.96.1–2) describing ancient Egyptian shipbuilding.[247] The passage has been interpreted as saying that the Egyptians caulked the seams of their vessels from inside with papyrus. No trace of caulking has been found in any ancient Egyptian hull, however, and we have no other evidence for the practice. When the passage is evaluated from both lexicographical and ship construction viewpoints, it is clear that Herodotus was describing plank seams bound or fastened from inside with papyrus, a practice which corresponds to evidence of construction techniques provided by the Lisht timbers.

In addition to providing ship scholars with a new form of construction, the Lisht timbers are the first remains of what was probably a working boat to be studied. Both the Cheops and the Dahshur hulls are from ceremonial contexts, and may reflect different construction practices. Because the Lisht planks are so sturdy and fastened together so securely, it is likely that they once belonged to a freight vessel. The technology used to combat strain and stress caused by the transport of great weights may be similar to that used in the construction of seagoing vessels, another point of contention among ship scholars. At the very least, studying the Lisht timbers informs us further about what was possible for ancient Egyptian shipwrights.

The frame found at Lisht is another unique find. Frames on the Cheops ship are single timbers, notched to pass over battens covering planking seams, but with no top timbers or other fastenings indicated. The heavy construction and rigid fastening of the Lisht frame provides evidence in support of the hypothesis that these timbers belonged to a working freight vessel. Because the Lisht frame contains mortises which pass through its sides, I believe that it may have been attached to similar frames on either side. Alternatively, these mortises may have held lashing which was wrapped around the frame, but this idea finds no support in any known details of ancient Egyptian hull construction. Mortise-and-tenon joints and lashing mortises on the upper surface of the upper frame components strongly suggest that another timber may have been fastened to the uppermost surface of the frame.

The broad recessed area on the upper face of the floor timber suggests that it once held a longitudinal timber at least 50 cm wide and 30 cm high. This hypothetical timber could have served as a keelson, supported deck beams, or may have served as the internal support for a steering post or mast.

The planked model boat from Lisht is valuable to ship scholars not only for its unusual method of construction, but because it is practically a 1:5 scale model of either the Carnegie or Field Museum Dahshur boats. The small size of the two Lisht models, buried near the mastaba of a high priest, shows that the six 10 m long cedar boats of Senwosret III were indeed a kingly display of wealth and power, a point questioned by some who refer to the Dahshur hulls as "wretched."[248]

As more finds of ancient hull remains are recorded and studied, our knowledge of Egyptian shipbuilding technology will increase. Ships and boats were some of the most complex and highly engineered machines of the ancient world, and understanding both the technological level and philosophical principles that limited and guided shipwrights contributes to our understanding of the culture in which they lived. The study of the Lisht timbers, frame, and boat model is a continuing one, designed to explore not only technological, but economic and cultural aspects of shipbuilding in ancient Egypt.

Catalogue of the Lisht Timbers

ABBREVIATIONS

LR	Length remaining
MaxW	Maximum width
MinW	Minimum width
MaxTh	Maximum thickness
MinTh	Minimum thickness

Timber A (pl. 118)

The timber is in good condition, but the ends are eroded and there are several large cracks along the grain. Few knots are in the body, but grain patterns suggest that large knots were probably present just past the timber ends. One end has part of a knot 30 cm in diameter.

Dimensions: LR 232 cm; MaxW 23.5 cm; MinW 18.5 cm; MaxTh 13.5 cm; MinTh 11.5 cm
Fastenings: Lashing mortises are present on face A and edges C and D; mortise-and-tenon joints are present on edges C and D. Fragments of plaited lashing remain in two mortises (edge D). Thirteen mortises retain tenon fragments.

All tenons are broken off on their lower edges. One which was removed measured 11.5 cm long, 4.5 cm wide at its beveled tip, and 6.2 cm wide at its broadest point.

Several mortises with tenons also contain pegs about 1.5 cm square on either side of the tenons. Other mortises without preserved pegs have spaces of this dimension preserved on each side of the tenon.
Scarfs: The scarf on edge C is 165 cm long; the scarf on edge D is 72 cm long. The scarf ends are cut at 120 degrees and the maximum preserved depth is 2.2 cm. Several of the scarf cuts are covered with a very thin layer of a black substance.
Tool Marks: Adze or chisel blade marks are found at the base of scarf cuts. Chisel marks (2 mm deep, 2 cm long, and about 1–1.5 cm apart) are in the crudely cut lashing mortise D on edge C.
Marking: A single-line graffito is present on face A between lashing mortises C and D. The line describes a full curve, and the ink or paint used closely resembles that used to mark mortise placements on the Dahshur boat in the Carnegie Museum of Natural History.

Timber B (pls. 115a, 119)

Timber B is well preserved, except at the ends, which suffered heavy erosion. The shape of timber follows the grain; small knots are present.

[247] The passage reads, "They bind in the seams from within with papyrus," (see C. Haldane and C. W. Shelmerdine, "Herodotus 2.96.1–2 Again," *Classical Quarterly* 40: 535–39).
[248] B. Landström, *Ships of the Pharaohs* (New York, 1970), 90–93.

Dimensions: LR 215 cm; MaxW 26 cm; MinW 22 cm; MaxTh 13 cm; MinTh 12 cm
Fastenings: There are no lashing mortises. Twenty mortise-and-tenon joints, mostly paired, are present. Fifteen tenon fragments are preserved.
Scarfs: On edge C there are two scarf cuts with depths of 2.5 cm at angles of 117 and 120 degrees.
Tool Marks: Mortise 6 (edge C) has a step cut 6 mm wide in one edge, with a 6 mm wide lean-back on the chisel.

Face A has an interesting set of three parallel lines placed at 92, 100, and 107 cm from the left end. These lines are about 4 mm wide and 2 mm deep; they appear to have been made by a saw held perpendicular to the timber face, perhaps to cut off a branch stub whose knot remains between 92 and 100 cm from the left end. Other saw marks spaced 1 mm apart were made by a saw held parallel to the timber and are present on the timber face from 85 to 115 cm from its left end.

Timber C (pl. 120)

Timber C is fairly heavily eroded and damaged by insects, with several areas eroded within knots; edge preservation is poor. Unlike other timbers from the site, this timber is relatively straight. It has no fastenings, scarfs, or tool marks.

Dimensions: LR 245 cm; MaxW 25 cm; MinW 22 cm; MaxTh 18 cm; MinTh 17 cm

Timber 1 (pl. 121)

The timber is in fair to poor condition. Several areas with large knots have suffered erosion. Half of the left end of edge C has split away, as has most of the 50 cm of the left end of face B. The shape follows the grain, and its design owes much to the presence of a knot more than 20 cm in diameter (see edge D). The ends are not clearly defined due to erosion and breakage; it is possible that the timber continued on one or both ends.

Dimensions: LR 200 cm; MaxW 39.5 cm; MinW 17 cm; MaxTh 15 cm; MinTh 11.5 cm
Fastenings: There are no lashing mortises. Eleven mortise-and-tenon joints, one of which is paired, remain; tenon fragments are preserved in three mortises. There is also an unusually wide rectangular mortise 9 cm deep on the sloping portion of edge C.
Scarfs: This timber has a complex and unusual arrangement of sawed scarf cuts. Scarfs are numbered from left to right.

1. A sawed cut 2 cm deep, which extends over half of edge C; there are clear saw marks about 3 mm deep at the base of the cut.

2. A box 7.5 cm deep on one side with a rising flat leading to a straight rise of 11 cm on the other side.

3. An eroded area that may have been a simple step scarf.

4. An angled cut 9 cm long with a slight step up on the opposite side.

The lower edges of sides A and B are not scarfed; erosion of a knot makes the drawings appear to indicate a scarf.

The scarfing of this timber is complicated, and some of the cuts, particularly scarf 2, may have served functions other than joining plank edges together. The boxy appearance of scarf 2 is reminiscent of notches cut in Dahshur boat hulls to receive beam ends; it may also be the remains of an ancient repair.
Tool marks: Scarf cuts include saw cuts 2–4 mm deep at their bases. Mortises 7 and 10 on edge C have depressions 6 mm wide at one end, where the mortise cutter leaned on his chisel handle.

Timber 2 (pl. 122)

Timber 2 is in very good condition, with only small areas of slight erosion. The grain runs along the shape of the piece; only small knots are present in the center of the timber, but indications of very large knots begin to appear at the ends.

Dimensions: LR 182 cm; MaxW 29.5 cm; MinW 18 cm; MaxTh 17 cm; MinTh 15 cm
Fastenings: Five lashing mortises are present on face A and edges C and D; one of these seems to be an ancient correction of mortise placement. Lashing mortise C, located 3.5 cm from edge D on face A, is in the common position for lashing mortises. Mortise E, 7.5 cm from the edge, meets mortise C inside the plank (see discussion p. 105).

Seventeen mortise-and-tenon joints are present, fourteen of which are paired. Partial mortises are present in each end. Tenon fragments remain in twelve mortises, and most of these mortises show evidence of degraded square pegs on either side of the tenon.

The tenon from mortise 11 was removed. Tenon dimensions were: LR 14.3 cm; W. remaining at wide edge 6.2 cm; W. at tip 7 cm; Th. 1 cm. The tip of the tenon is a sharply pointed bevel made with a chisel blade 2.2 cm wide.

Mortise 9 is noteworthy for its location at the peak between scarfs on edge C.

Scarfs: Edge C retains a long scarf broken by a peak in plank shape; edge D has a shorter scarf in the middle of the plank. The four scarf cuts are sawn at angles of 118 to 124 degrees with depths of 2–4 cm.
Tool Marks: Tenon 11 bears chisel blade marks 2.2 cm wide. Other faces do not retain original surface due to erosion and attempts to coat the surface with polyvinyl acetate.

Timber 3 (pl. 123)

A fairly well preserved timber, with one very solid end retaining grain patterns indicative of sapwood. There is, however, a great deal of checking on the edges of face B, and the scarf area is crushed (see tool marks below). The pointed end of face B suffers from dry rot as does face A. A large section of the "blade" end of face A has suffered surface damage. There are many small knots throughout the piece, with a heavy concentration at the tip, which has suffered enough erosion on its edges to make fastenings difficult to locate.

Dimensions: LR 268 cm; MaxW 35 cm; MinW 14 cm; MaxTh 18 cm; MinTh 16 cm
Fastenings: There are three lashing mortises on face A and edges C and D. Lashing remains are also found in mortise C.

Twenty mortise-and-tenon joints and one partial joint, in the squared end, are preserved. Mortises in this timber are narrower than usual; most are 8–9 mm, as opposed to the typical mortise thickness of 1.4–1.7 cm. They are also somewhat longer, 10–12 cm rather than 8–10 cm. Tenons remain in fifteen mortises.

The tenon from mortise 4 was removed and examined. Its tip had curled inward upon itself due to the force with which it had been inserted.
Scarfs: Three scarf cuts at angles of 120 degrees are present. A cut 2.5 cm deep on edge D is located near the squared end. Edge C has a short scarf only 1.5 cm deep (probably eroded); the large sawn cut measures 20.5 cm in length.
Tool marks: Saw marks 2–4 mm deep are located at the base of the large scarf on edge C. Mortises 12 and B have a 6 mm wide

lean-back on the right end of the mortise.

The "blade" of face B is somewhat crushed. A rope impression, 1.5 cm wide and 14 cm long with strands 2 mm wide, crosses the crushed area, indicating that the timber was damaged in antiquity.

Timber 4 (pl. 124)

Timber 4 is much eroded and broken; the thickness varies greatly throughout, with one end quite eroded and curved and the other scarcely present. Poor condition of the timber prevented examination of face A.

Dimensions: LR 237 cm; MaxW 26.5 cm; MinW undetermined; MaxTh 14 cm; MinTh 6 cm
Fastenings: There are no lashing mortises. Of the eleven mortise-and-tenon joints, only mortise 4 has a tenon remaining. This mortise is 8 cm wide and 1.5 cm thick. The tenon within it is a rectangular block with no taper; it is 1.2 cm thick throughout.
Scarfs: One scarf cut, 1.5 cm deep and cut at a 120 degree angle, is present on edge C. No other cuts are clearly visible.

Timber 5 (pl. 125)

Timber 5 is in fair to poor condition. The timber is broken within a very large knot visible on edge C near mortises 10 and 11, and a section about 4 cm wide and 47 cm long is missing from the squared end. There is good surface preservation in the central area, probably due to the presence of a knot. The shape follows the grain.

Dimensions: LR 186 cm; MaxW 21.5 cm; MinW 1.5 cm (tip); MaxTh 9 cm; MinTh 8 cm
Fastenings: Three lashing mortises are found on face A and on edges C and D; lashing remains are preserved in mortises A and C. Lashing mortise B is probable, but its location on edge C cannot be precisely determined.

Fourteen mortise-and-tenon joints are present, including a shallow pair of mortises on edge D at the pointed tip, and a very narrow mortise (9) located at a knot on edge D. Erosion has caused mortises 3 and 7 to appear to pass through the timber, but they did not originally do so. Mortise 11 was placed much closer to the edge (2 cm) than usual, probably to avoid the large knot.

Tenons remain in nine mortises and degraded peg remains can be seen in mortises 3, 5, 7, and 14. Most mortises on this timber are 9–12 cm thick, with many under 1 cm thick. Average mortise thickness for other timbers is 1.5 cm. Peg spaces are also slightly smaller on this timber; 1.5 cm square is typical for other pieces, but pegs from this timber fill spaces 1 cm square.
Scarfs: There are two scarf cuts, one 2.5 cm deep near the squared end on edge D at a 110 degree angle, the other, with only 1.5 cm remaining, at an angle of 112 degrees near the tip on edge C.
Tool marks: Surface erosion obscures most of the original surface, but faint saw marks are present at the central knot area on face B.

Tenons 8, 14, and 15 all bear saw marks. Tenon 8 is cleanly sawn off 2.5 cm from the plank edge, but tenons 14 and 15 are only partially sawn through, then broken on the edge towards face B. I interpret these tool marks and break indications to result from the ancient means of breaking timbers apart. In this case, tenons appear to have been partially sawn through with a blade from the inside of the planking surface, then the timber was pulled away from the outside of the hull.

A score mark 4 mm deep is located on edge C between mortises 7 and 10.

Timber 6 (pls. 115a, 126)

The timber is in good condition, but it is split along face A, which is also checked in the area between mortises 1–2 and 5–6. Small knots remain; the timber is fairly straight grained.

This piece has substantial areas of dry rot, indicated by a dark color with white patches, and minute checking along edges C and D.

Dimensions: LR 166 cm; MaxW 21.5 cm; MinW 17.5 cm; MaxTh 14 cm; MinTh 12.5 cm
Fastenings: Three lashing mortises are on face A and edges C and D. Lashing remains in mortise A are covered with white plaster from the roadway; lashing remains also fill mortise C.

There are sixteen mortise-and-tenon joints, all of which are paired and have tenons remaining. Indications of side pegs were found on both sides of mortises in spaces 1 cm square on edge C; edge D mortises have single pegs, which are always on the same side. Side pegs in mortises on edge D are rectangular and measure 2.1 x 9 cm. Most mortises are only 1 cm thick.

Mortises 1 and 2 are partial mortises in the timber end.
Scarfs: There are three scarf cuts of 120 degrees, which are 2–3 cm deep. Edge C has two cuts angled toward each other; edge D has one cut near lashing mortise C.

Timber 7 (pl. 127)

An unusually shaped piece with small- to medium-sized knots. The surfaces are fairly good although checked and slightly eroded near the edges. There is a break on face A, beginning at the edge of the large knot that runs diagonally from between mortises 1 and 4 on edge D to near mortise 8 on edge C; the knot has also caused a great deal of distortion of nearby wood. A section about 40 cm long is split away from face B at edge C.

Sapwood is present on the squared end, slightly above the center towards edge C, and also at a deep scarf cut on edge D, where it is in the corner of the piece.

Dimensions: LR 158 cm; MaxW 25 cm; MinW 8 cm at tip; MaxTh 14.5 cm; MinTh 11.5 cm
Fastenings: Two lashing mortises, both with lashings, remain on face A and edges C and D.

There are ten mortise-and-tenon joints, eight with tenons remaining; none are paired. Mortise 9 runs diagonally through the timber tip.
Scarfs: Edge C has a single scarf, cut at an angle of 100 degrees, which is 2.5 cm deep. Edge D has a scarf cut at an angle of 115 degrees, which is 2 cm deep at mortise 5, and a 7 cm deep cut at an angle of 110 degrees between mortises 7 and B.

Timber 8 (pl. 128)

The timber is in fair to poor condition. A few areas of original surface remain, but timber ends have suffered heavy damage in the form of deep cracks. Much of the timber end near mortise 16 is split away, and some areas are so eroded that it is impossible to determine mortise placement. The piece is cut along the curving grain, and a few medium-sized knots are present.

Dimensions: LR 179 cm; MaxW 21.6 cm; MinW 15.2 cm; MaxTh 15 cm; MinTh 11 cm
Fastenings: Four lashing mortises are present: A and D near timber ends on face A and edge C; B and C within the scarf in the central part of the timber on face A and edge D. Mortise D lacks lashing remains; its placement on edge C is also uncertain.

The remains of sixteen mortise-and-tenon joints, including partial mortise 1 in one end of the timber, can be seen on plank edges. Tenons remain in 3, 5, 9, 11, 12, 14, and 16. Side pegs are present beside tenons 3 and 9; spaces for side pegs can be seen in mortises 11 and 12.
Scarfs: Edge D has two scarf cuts, one of which is very eroded, angled toward each other at 120 degrees. The well-preserved cut between mortises 6 and 8 measures 2.4 cm in length. Edge C bears a single scarf cut at mortise 15, which retains no original dimensions due to damage and erosion.
Tool Marks: The only recorded tool marks for timber 8 are present near the center of edge D, where deep hatch marks up to 5 cm long and 6 mm deep cross the grain of the timber. One end of mortise 8 bears traces of the handle of the chisel used to cut it; a lean-back 6 mm wide is present.

Timber 9 (pl. 129)

Although the timber has good structural integrity, nearly the entire surface of face B is eroded. Only the edges and ends retain the original surface. The selection of timber shape coincides beautifully with the grain pattern. One end of the timber has a bladelike tip; the other comes to a point.

Although few knots are present in the timber, one very large knot near mortises 1 and A on edge D gave the ancient shipwrights some difficulty (see tool marks below).

Dimensions: LR 191 cm; MaxW 24 cm; MinW 6 cm at tip; MaxTh 11 cm; MinTh 10 cm
Fastenings: There are six lashing mortises with well-preserved lashing remains, especially in mortise A, which is filled. Erosion of edge D and face B have caused lashing mortise D to appear to exit on face B, though it originally was cut very near edge C.

The timber has ten mortise-and-tenon joints. In edge D, mortises 3, 6, and 10 have both tenon and side peg remains while mortises 1 and 8 have tenon remains. Mortises 2 and 7 on edge C contain tenon remains and have spaces for side pegs.

Mortise measurements on edge D are smaller than usual, but this is because the surface is so heavily eroded that only part of the mortise's depth has been preserved.
Scarfs: Four scarf cuts are recorded for this timber. Edge D has a single 120 degree angle cut 2.2 cm deep between lashing mortise A and mortise 1. Edge C has three cuts, all at 120 degrees, one of which is severely eroded (between lashing mortise C and mortise 9).

The scarf at mortise 4 is 2.4 cm deep; the scarf between mortises 9 and F is 4 cm deep.
Repair: Timber 9 includes an interesting repair on face A at mortise 8. A trapezoidal peg (2.8 x 2 x 1.8 cm) fits snugly in a mortise cut 3 cm (to its center) from edge D. The peg passes through face A and into tenon 8, but it does not pass through the tenon.
Tool Marks: Eroded surfaces do not preserve tool marks well, but several saw marks 3 mm deep are present at the base of the scarf cut on edge C between mortises 9 and F.

Saw marks are also present at the large knot on face B near mortises 1 and A. Several deep saw cuts made with a blade held perpendicular to the plank edge can be seen on either side of the knot's center. The entire area of the knot is also covered with saw marks made by a blade held parallel to the plank face, suggesting that shipwrights cut vertically into a branch stub to remove sections of it before the plank face was evened out with a saw blade held parallel to it.

A series of deep hatch marks (4–7 mm), probably made by an axe, is present between mortises 3 and 6 on edge D. The marks do not seem to be related to timber shaping. Similar unexplained deep hatch marks were recorded on the edges of some planks from the Dahshur boat in the Carnegie Museum of Natural History.

Mortises 1 and 6 on edge D retain marks made when the mortise cutter leaned back on the chisel as the cuts were made. Both lean-backs are on the end of the mortise closest to the pointed end of the timber.

Like adjacent timber 8, timber 9 has several deep scratches perpendicular to plank edges on face B, which was found facing up.

Timber 10 (pl. 130)

Timber 10 is in fair to poor condition. One end of the timber has suffered major damage and is heavily eroded. Few knots are present, and the grain runs along the length of the piece.

Dimensions: LR 176 cm; MaxW 19.8 cm; MinW 15 cm (at end); MaxTh 9.8 cm; MinTh 8.5 cm
Fastenings: Three lashing mortises are present, all with bits of lashing remaining. The location of mortise C on edge D may be inaccurate as only the corner of the L-shaped cut remains in a heavily eroded depression.

Twelve mortise-and-tenon joints remain, including partial mortise 12 (6 cm wide and 1 cm thick) in the eroded end of the timber. Tenon fragments are present in mortises 6 and 9 on edge D and in mortises 7 and 8 on edge C. Mortise 6 has a single side peg; the other three tenons have pegs on each side. Mortises 1 and 10 are unusually wide at 9.25 cm; most of the other mortises are 7.5–8 cm wide.
Scarfs: Edge D has scarf cuts at angles of 120 degrees at either end of the piece. Near mortise 11, the cut is 2.5 cm deep; at the opposite end, the heavily eroded cut is 7.5 mm deep. Edge C has a scarf cut at mortise 8 that is 3.5 cm deep and at an angle of 115 degrees; the cut near mortise 4 is 5 cm deep and at an angle of 120 degrees.

Timber 20 (pls. 115b, 131)

Most surfaces of this timber are in poor condition, but several areas near knots are fairly well preserved. Timber ends are eroded and cracked, and the body of the timber is heavily eroded on face B and along edge C. Despite the timber's rather unusual shape, it was cut to take advantage of the strength offered by following the grain lines.

Dimensions: LR 180 cm; MaxW 28.8 cm; MinW 14 cm; MaxTh 13.3 cm; MinTh 11.2 cm
Fastenings: Four lashing mortises are present; all but mortise A retain lashing material. Mortises A and D pass through scarfs on edge D and into face A; mortises B and C are located at scarfs on edge C and exit into face A.

Twelve, or possibly thirteen, mortise-and-tenon joints, including partial mortise 1 at one end of the timber, are present in the edges of timber 20. The eroded and cracked surfaces sometimes make it difficult to determine mortise dimensions

and locations. The mortise marked with a question mark could not be definitively plotted because of the degree of cracking in the area. Tenons remain in mortises 2, 3, 5, 6, and 7; only a side peg remains in mortise 9. Side pegs are also found beside tenons in mortises 3 and 5.

Scarfs: Edge C has two scarf cuts near lashing mortises B and C. The cuts face toward each other near the timber's center; the one near mortise C is almost nonexistent. The cut at mortise B was made to produce a 120 degree angle; the scarf face is 2.2 cm long. Edge D also has two cuts at 120 degrees, one at each end of the timber, but rather than being in a straight line, the sweep of the timber between cuts rises to a sharp peak. The scarf at mortise A is 2 cm long; that at mortise D has been eroded to only 1.6 cm long.

Tool marks: Despite the poor condition of much of the timber's surface, several areas with a number of small to medium knots have preserved the original surface of the timber. Three of these areas preserved saw marks made by a blade held parallel to the plank surface. Marks are 1 mm apart and very shallow.

Unlabelled Timber (pl. 132)

This timber was found outside the outer enclosure wall west of the pyramid of Senwosret I in an area where a construction ramp might have been located. It is in fair to poor condition, but a 30 cm wide section of plaster, tinged pink from wood pigments, preserved the original surface.

Dimensions: LR 101 cm; MaxW 17.5 cm; MinW 12 cm; MaxTh 15 cm; MinTh 12 cm (eroded)

Fastenings: Three lashing mortises are on face A and edge C; only mortise A is of the typical 7.5–8.5 cm length. Mortises B and C measure 3 cm wide and 2.5 cm thick. Vertically aligned, the mortises are 6.5 cm deep and are cut diagonally into the plank so that they meet in a "V." Similar lashing mortises have been recorded on the Cheops hull on the outer planking surface, though these mortises appear on what is probably the inner surface.

There are seven mortise-and-tenon joints, including partial mortise 7 (5 cm wide and 5 cm deep), in the squared end of the timber.

The Frame (pls. 106, 115c, 133)
Jd'E 60271

The frame is constructed of three separate timbers joined by both lashing and mortise-and-tenon joints. Timbers B and C rest on the curved floor timber, whose lower face bears a series of uneven notches. Their ends do not abut, but instead are separated by a 50 cm gap that corresponds to a broad recessed area on the upper face of the floor timber. The outboard end of one of the timbers was broken off before it was excavated. When discovered, the Lisht frame was in excellent condition.

Dimensions: LR 289 cm
MaxW: 22.5 cm (lower timber); 22.7, 21 cm (upper timbers)
MinW: 7.5 cm (lower timber at end); 15 cm (upper timbers)
Th. of all timbers 12 cm

Fastenings: Four or possibly five kinds of fastenings are present on the frame. Six mortises (3,5,8–11) pass completely through the frame, three in the floor timber and one each in the upper timbers. Cylindrical holes on the lower face of the floor timber may have once received pegs, but there is no evidence for or against this supposition. Mortise-and-tenon joints and L-shaped lashing mortises are present, and each of the upper timbers retains a single three-way set of lashing mortises (2 and 6; see B–B on pl. 133).

Fastening patterns are regular. Lashing fastening 4 at the squared end of timber B and lashing 7 near the pointed end of timber C are on one face of the frame; the other contains lashing mortise 24 near the squared end of timber C and lashing mortise 20 near the curved end of timber B. This arrangement provides a complex interlocking system that joins the timbers without weakening frame structure.

The lower faces of timbers B and C are also joined to the upper face of floor timber A by tenons in mortises 19, 21–23, 25, and 26. The fastening pattern on the upper face of timber A is an alternating one of tenons (T) and lashing (L): T-L-T-L-T, the recessed area, then T-L-T-L-T again.

Both lashing mortises and mortise-and-tenon joints can be seen on the upper faces of timbers B and C. No mortises are present in the squared ends of B or C.

The Model Boat from the Mastaba of Imhotep (pl. 117a–b)

The boat model was in poor condition when excavated in 1914 and again in 1986 when it was recorded. The wood is fragmentary and has undergone severe shrinkage and checking, but a natural mold of the boat and its planking pattern existed in the surrounding earth.

This boat model was constructed of individual planks held together by mortise-and-tenon joints. Four strakes rose on either side of a thicker central plank, and boat ends were capped by papyriform finials.

The wood, tentatively identified as tamarisk, had been coated with plaster before it was painted, and fragments of these materials remain. The lower part of the hull was painted green and the gunwale retained red and blue stripes.

Dimensions: LR 195 cm; MaxW ca. 40 cm; D. 11 cm

Fastenings: Tenons 4 cm wide and 6–8 cm long held the plank edges together. The original thickness was probably close to the maximum remaining plank thickness of only 1 cm. No mortises were preserved, and no trace of lashing was visible.

Scarfs: The four strakes above the central plank are shaped and scarfed like those in the Dahshur boats.

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OBJECTS IN MUSEUM COLLECTIONS

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58846	Wooden cramp	98
60271	Boat frame	106, 112
62629	Wooden leopard head	80, n. 170
63864	Faience statuette group	61–62
63865	Faience frog statuette	62
63868	Papyrus mat	72
63869	Mouth of a "blue paste" hippopotamus	61
63873	"Blue paste" jar stopper	61
63944ab	Fragment of a false door stela	24
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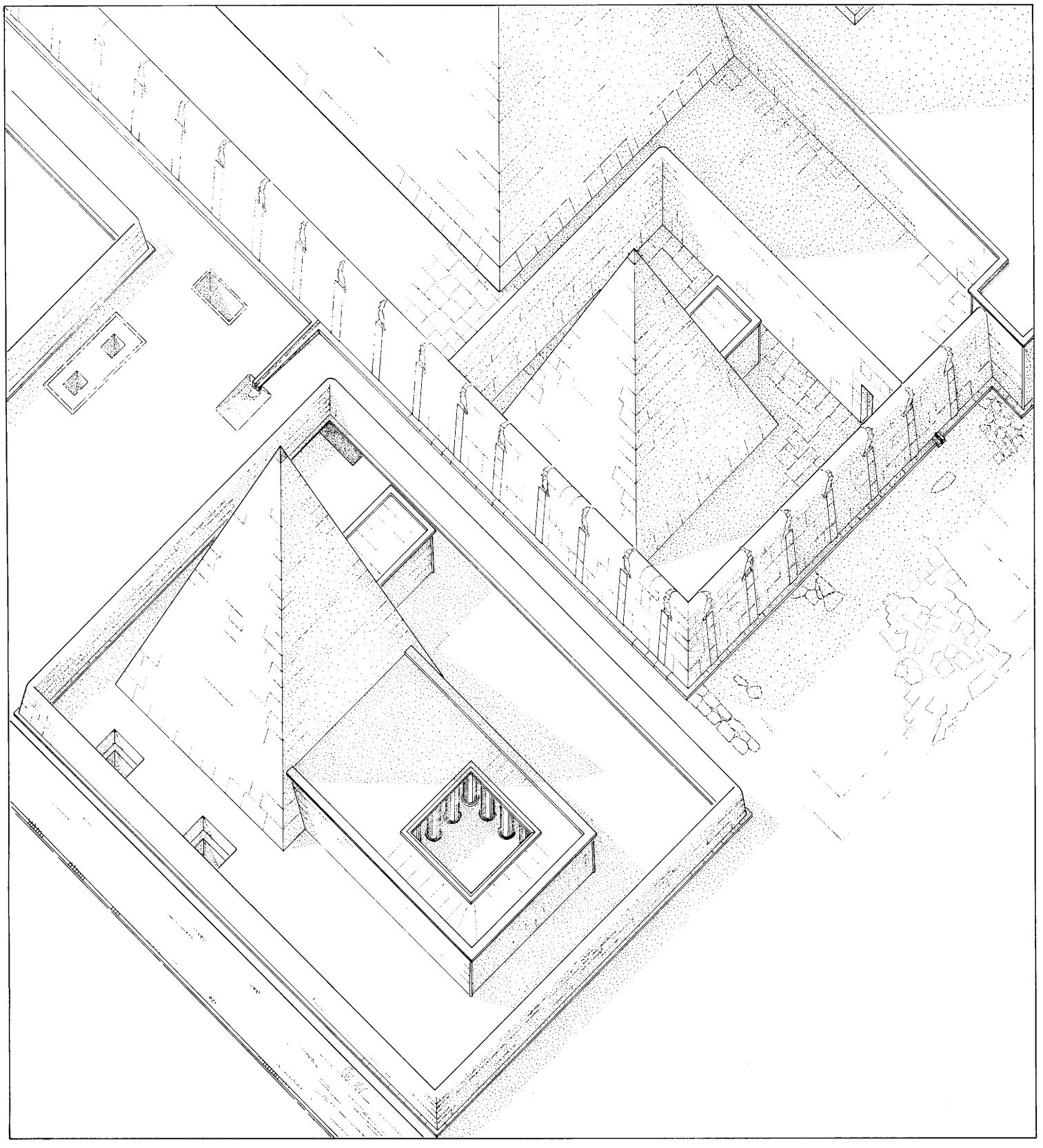
PLATES 1 – 133



Pl. 1. Axonometric reconstruction of pyramid 1 and the *Ka*-pyramid of Senwosret I.

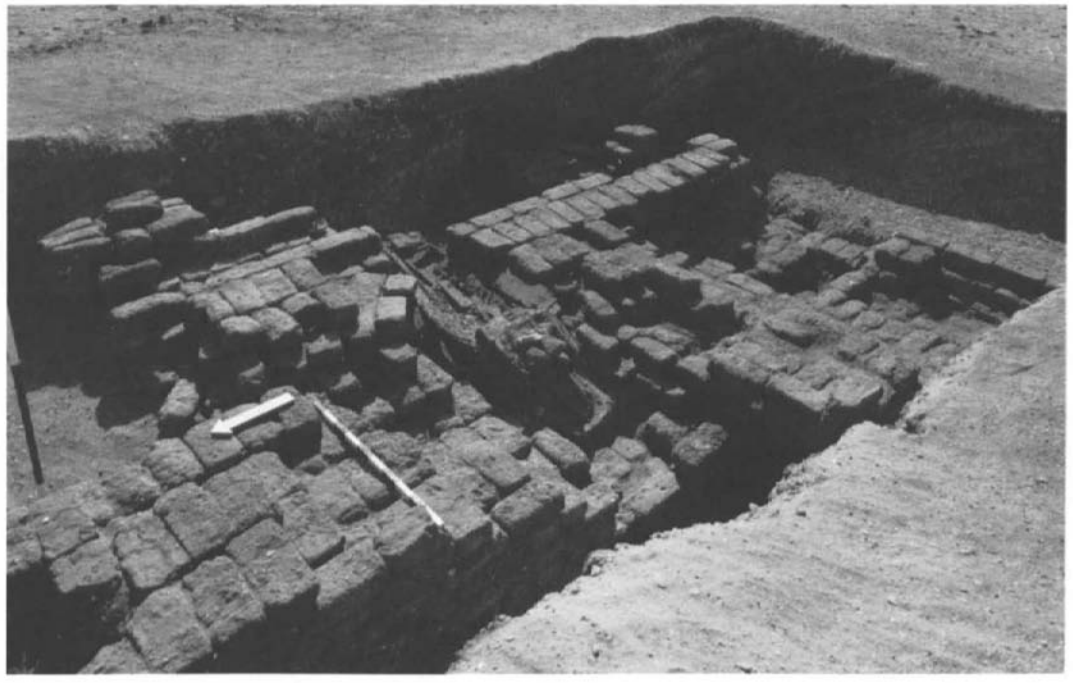


Pl. 2a. Outer enclosure wall in front of pyramid 9 as preserved in 1913–14.

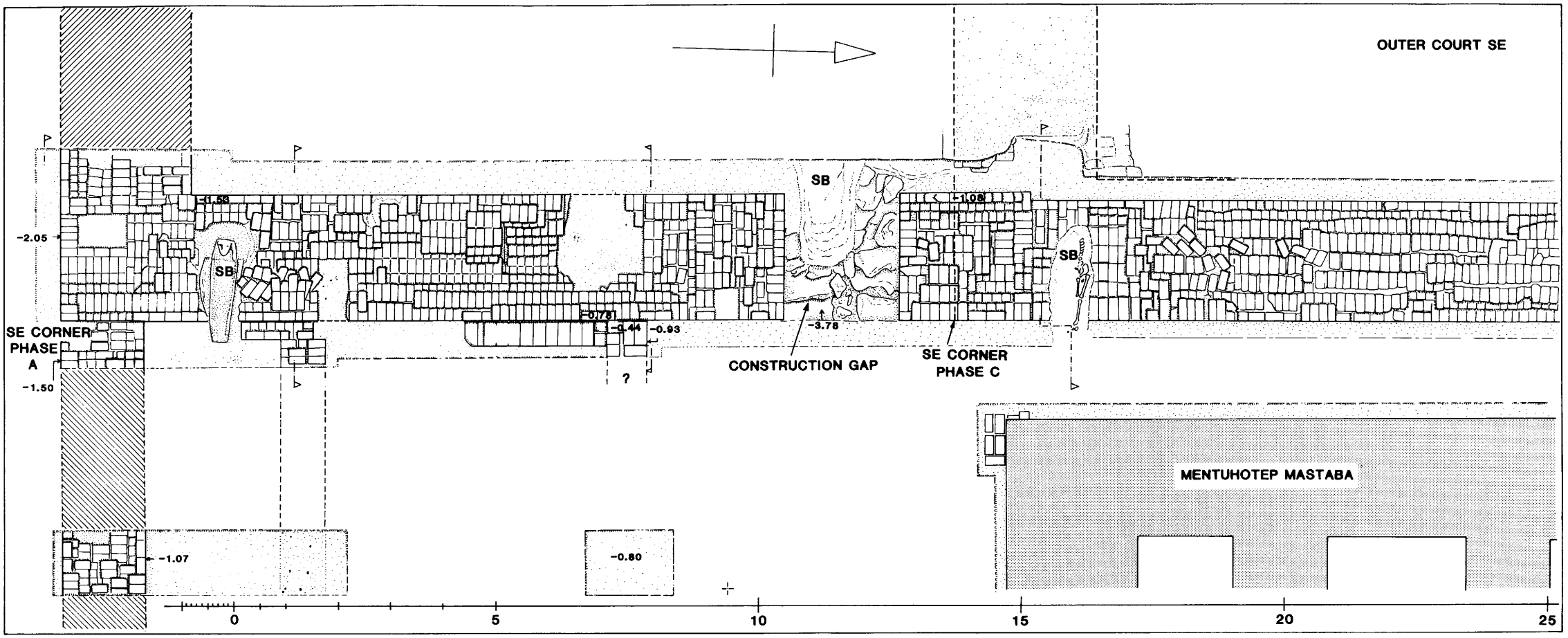


Pl. 2b. Construction gap in phase A of the outer enclosure wall (see pl. 3).

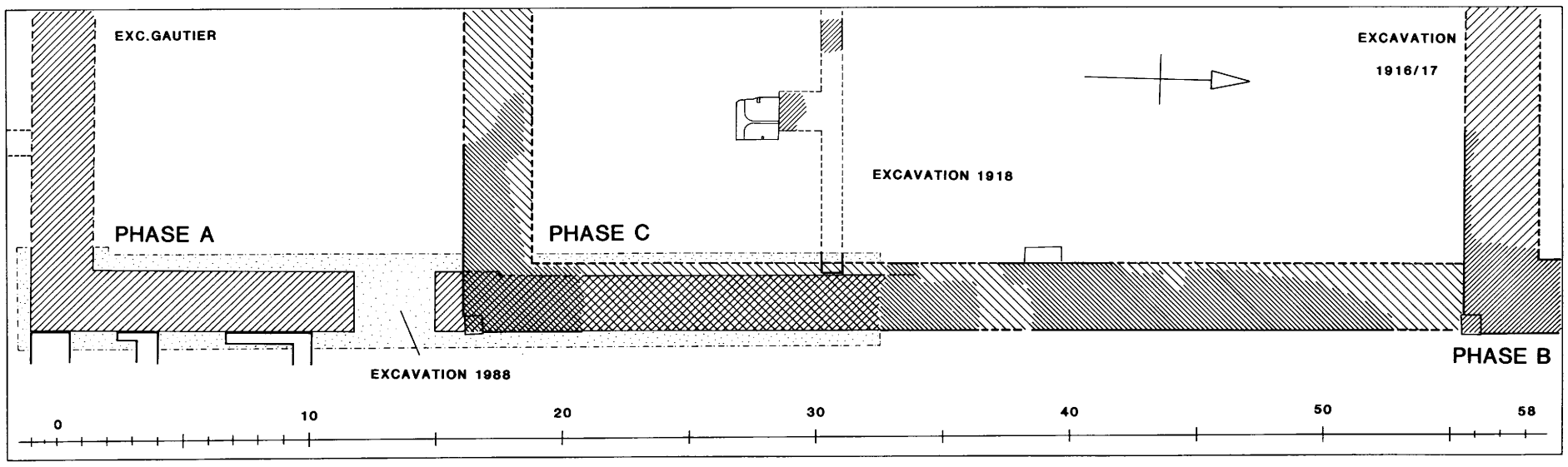




Pl. 2c–d. South end of phase A of the outer enclosure wall, with brick walls adjoining from the east.

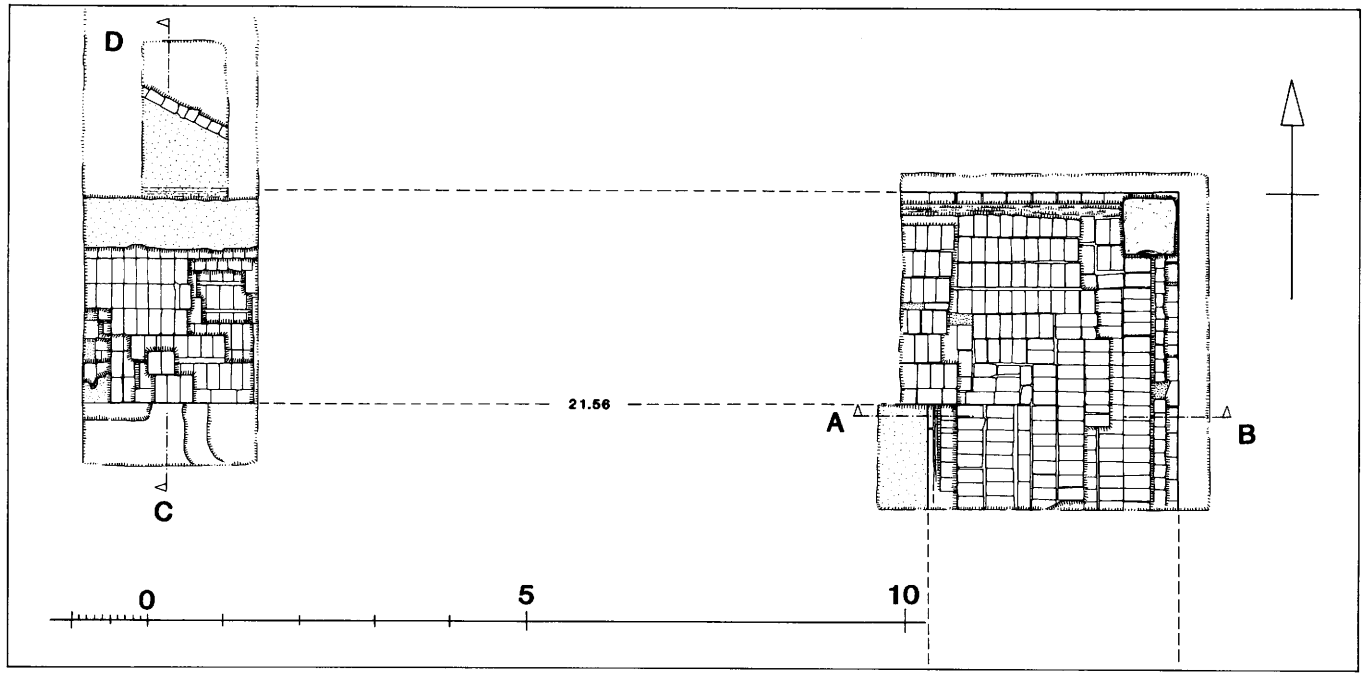


Pl. 3a. Plan of the southeast corner of the outer enclosure wall. Scale 1:100.

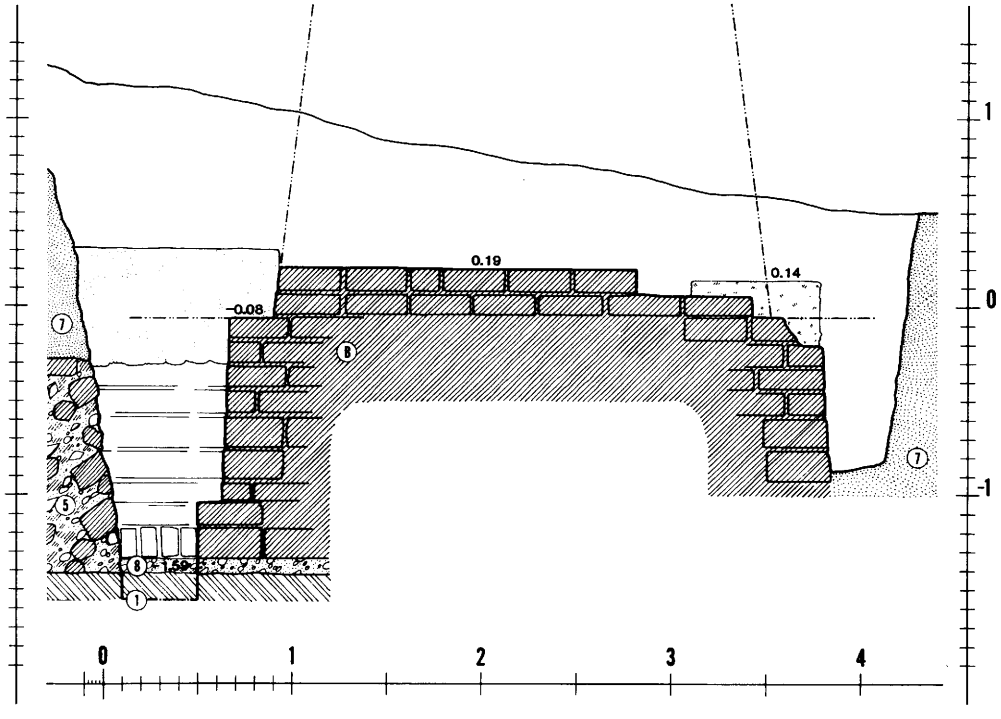


Pl. 3b. Schematic plan of the southeast corner of the outer enclosure wall indicating construction phases A–C. Scale 1:250.

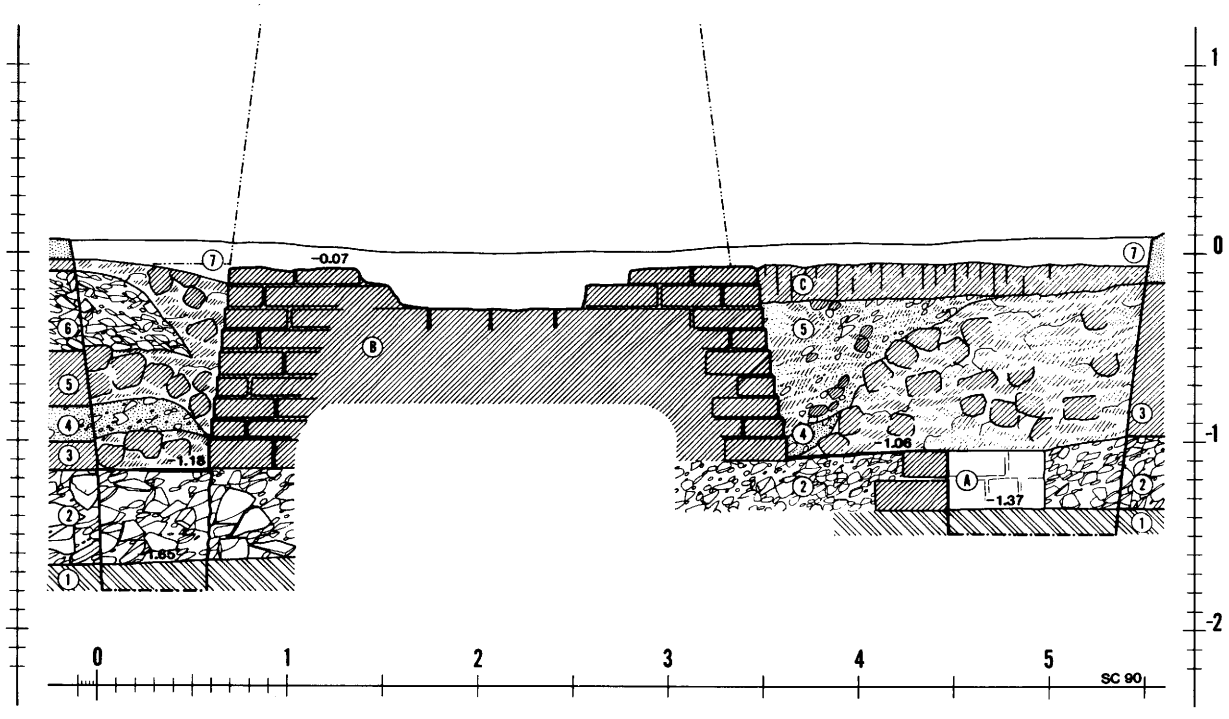
PLATE 3



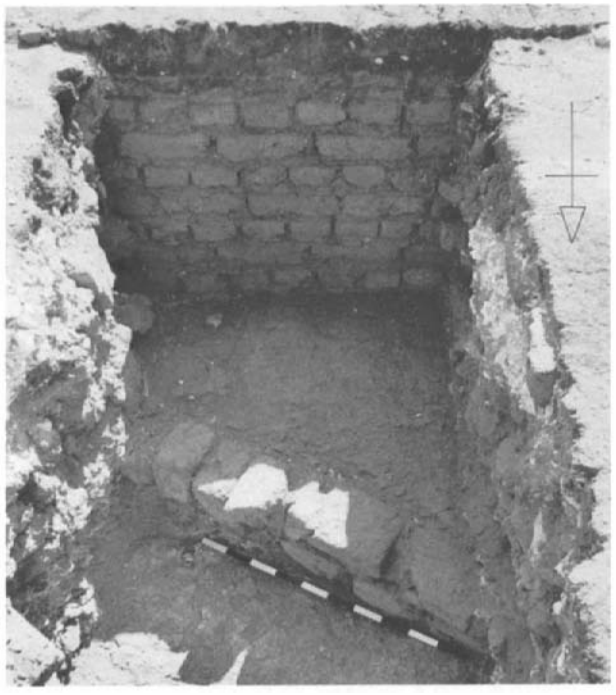
Pl. 4a. Plan of the northeast corner of the outer enclosure wall. Scale 1:100.



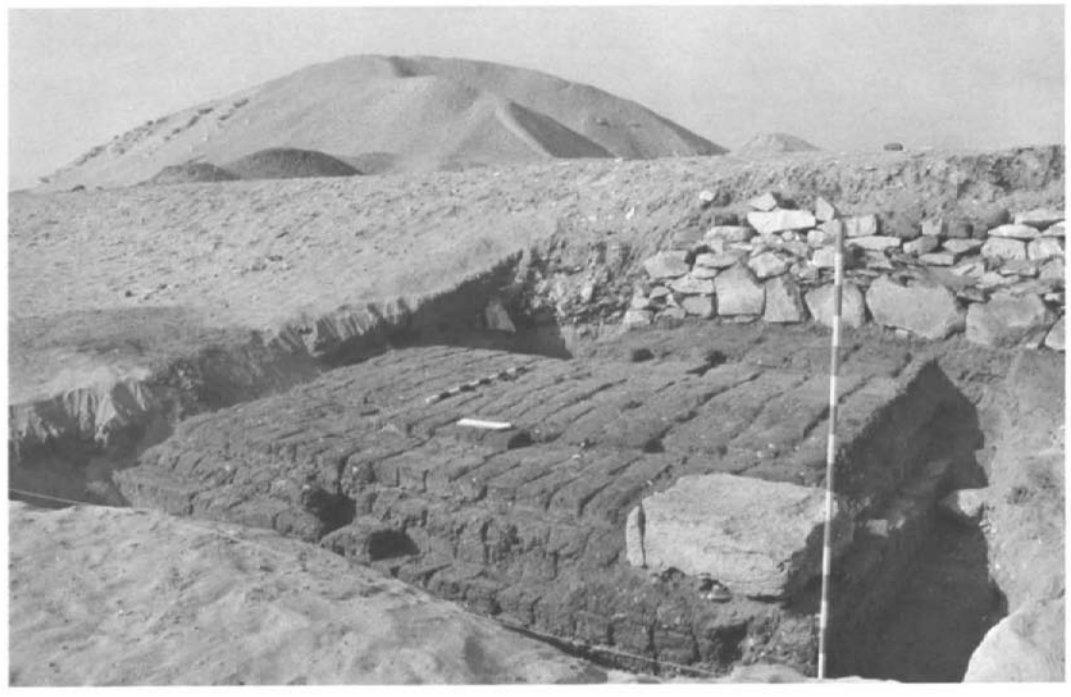
Pl. 4b. Section A–B through the outer enclosure wall, seen from south at the northeast corner: *1.* bedrock; *2.* limestone chip; *3.* large broken bricks; *4.* granite dust; *5.* broken brick and chip; *6.* limestone chip; *7.* desert sand; *8.* small chips and mud; *B.* eastern enclosure wall. Scale 1:40.



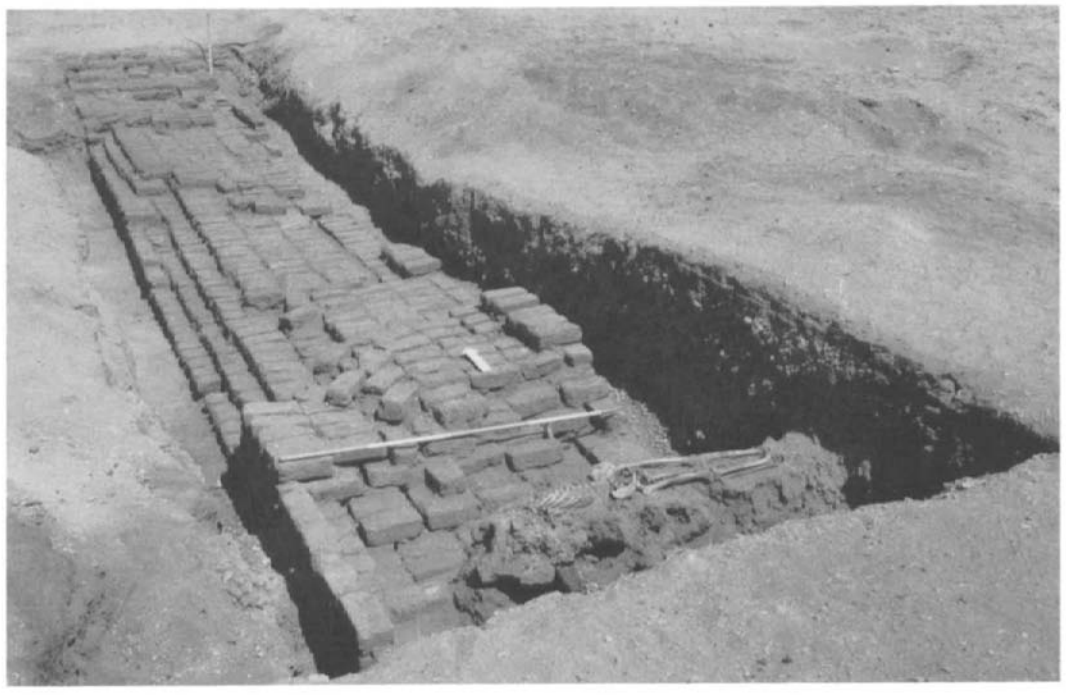
Pl. 4c. Section C–D through the outer enclosure wall north, seen from east (see pl. 5a): A. older wall; B. northern enclosure wall; C. later addition. See pl. 4b for numbers of layers. Scale 1:40.



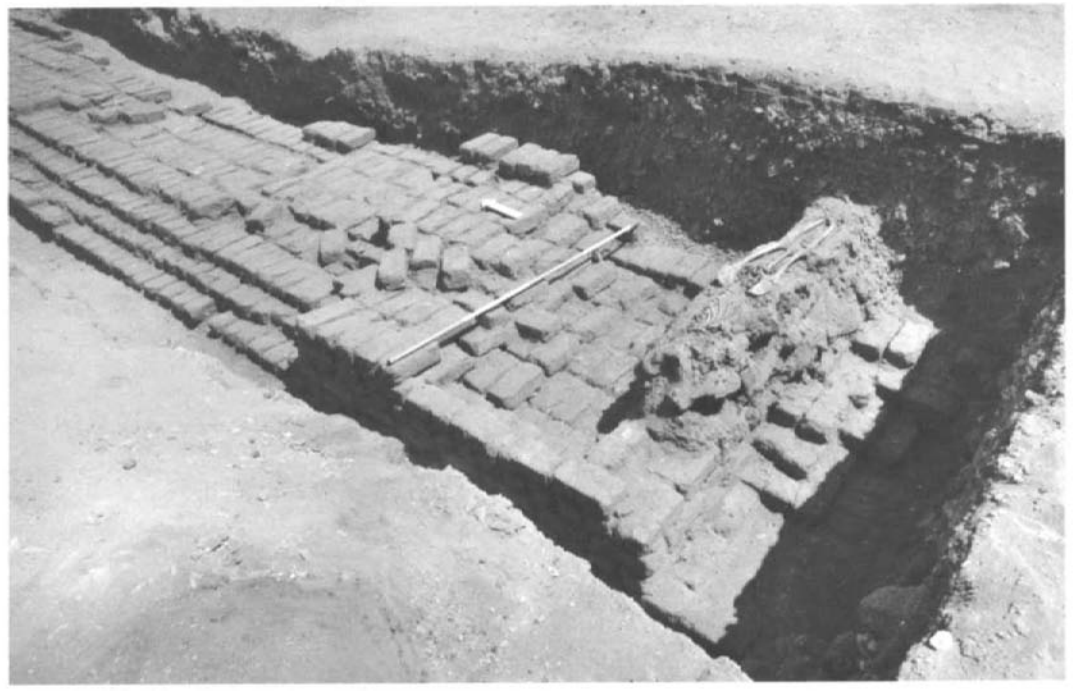
Pl. 5a. Older brick construction under the north side of the outer enclosure wall (see pl. 4a, c).



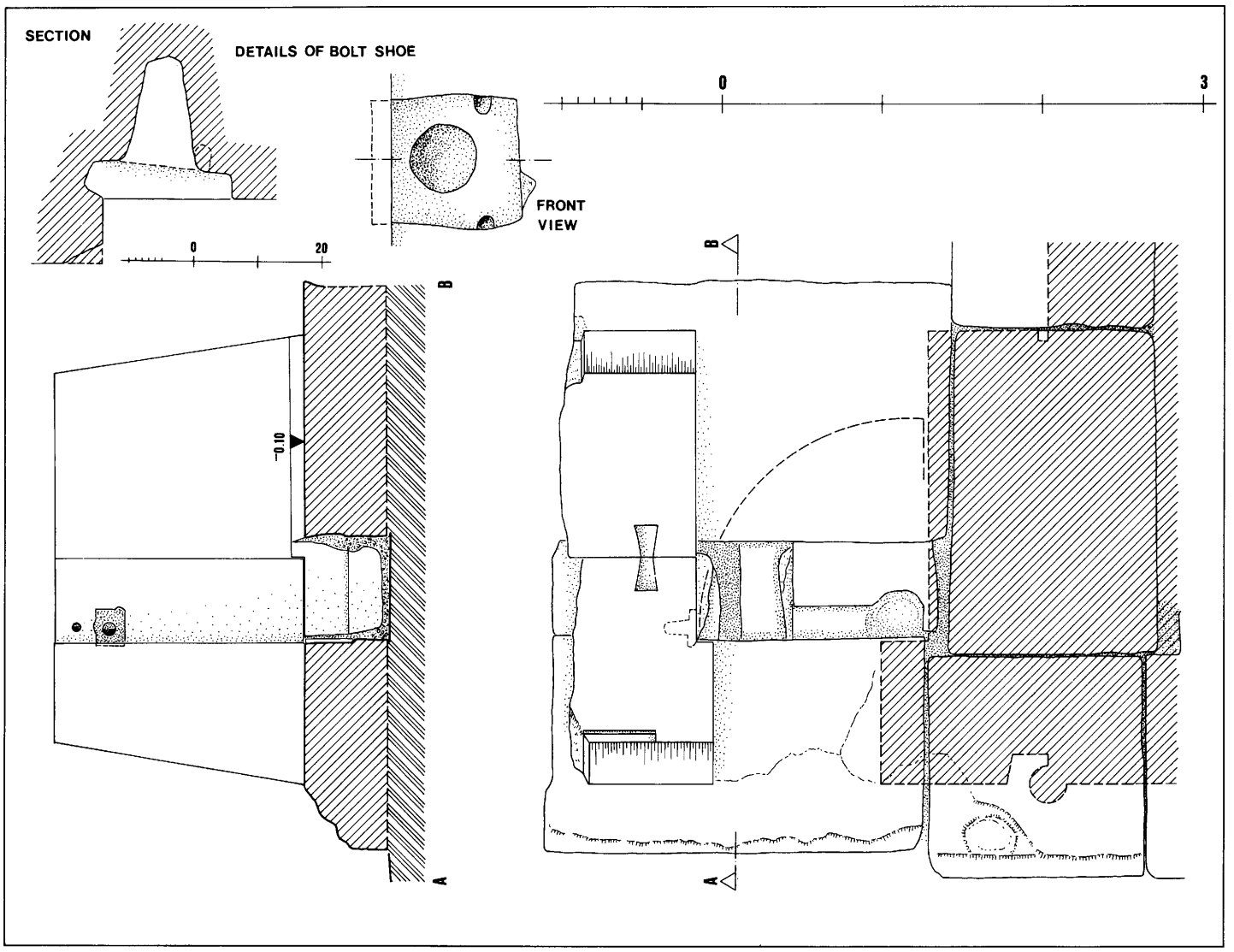
Pl. 5b. The northeast corner of the outer enclosure wall.



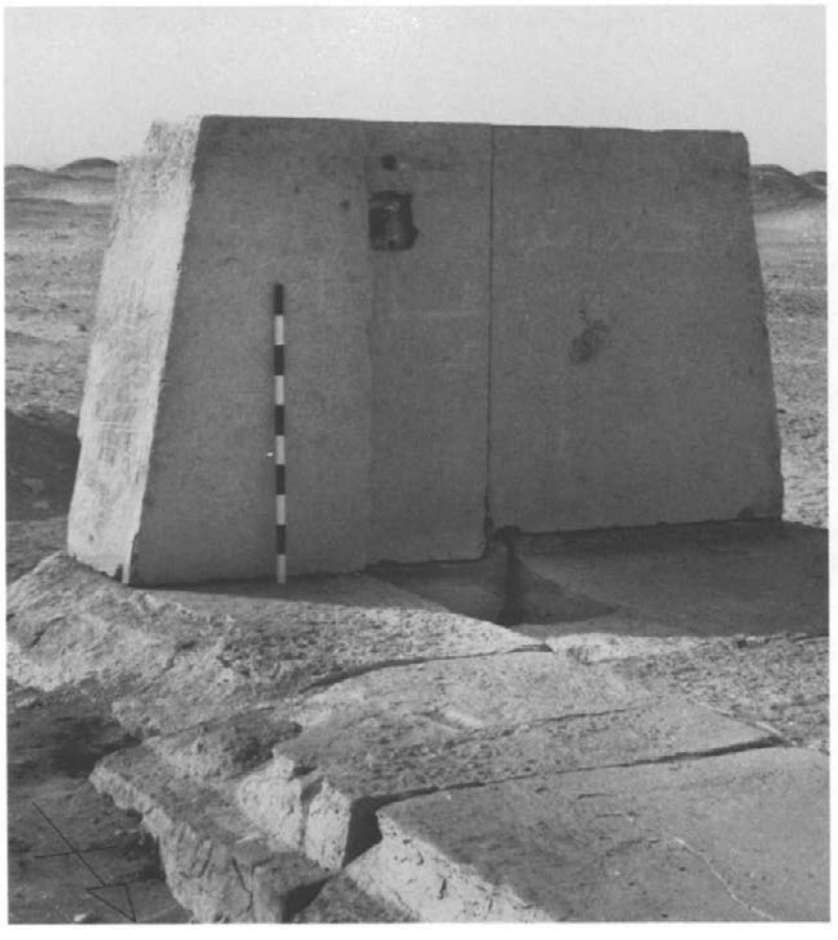
Pl. 5c. West side of the phase A outer enclosure wall (later covered by phase C).



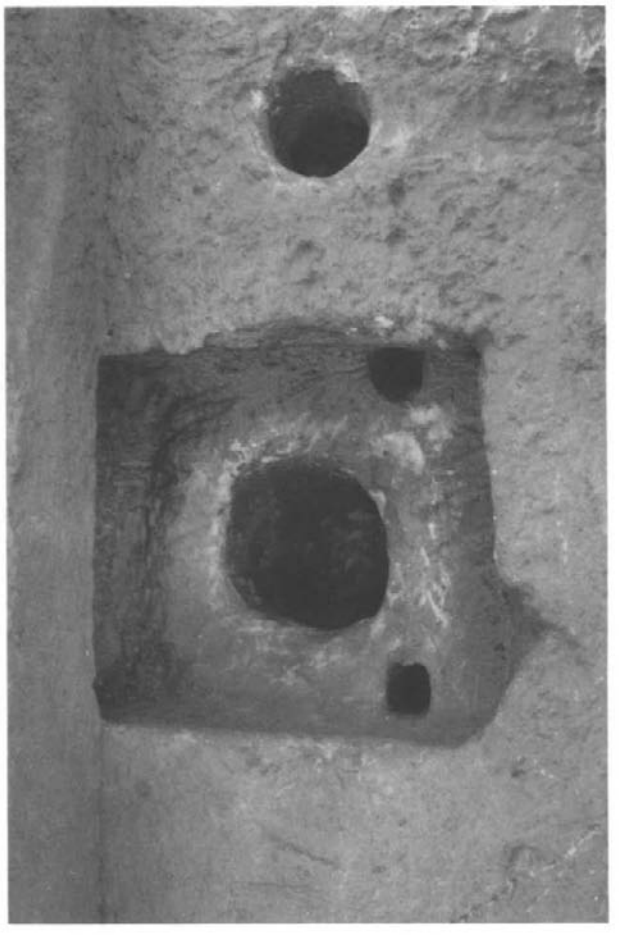
Pl. 5d. West side of the phase A outer enclosure wall, with a Roman surface burial.



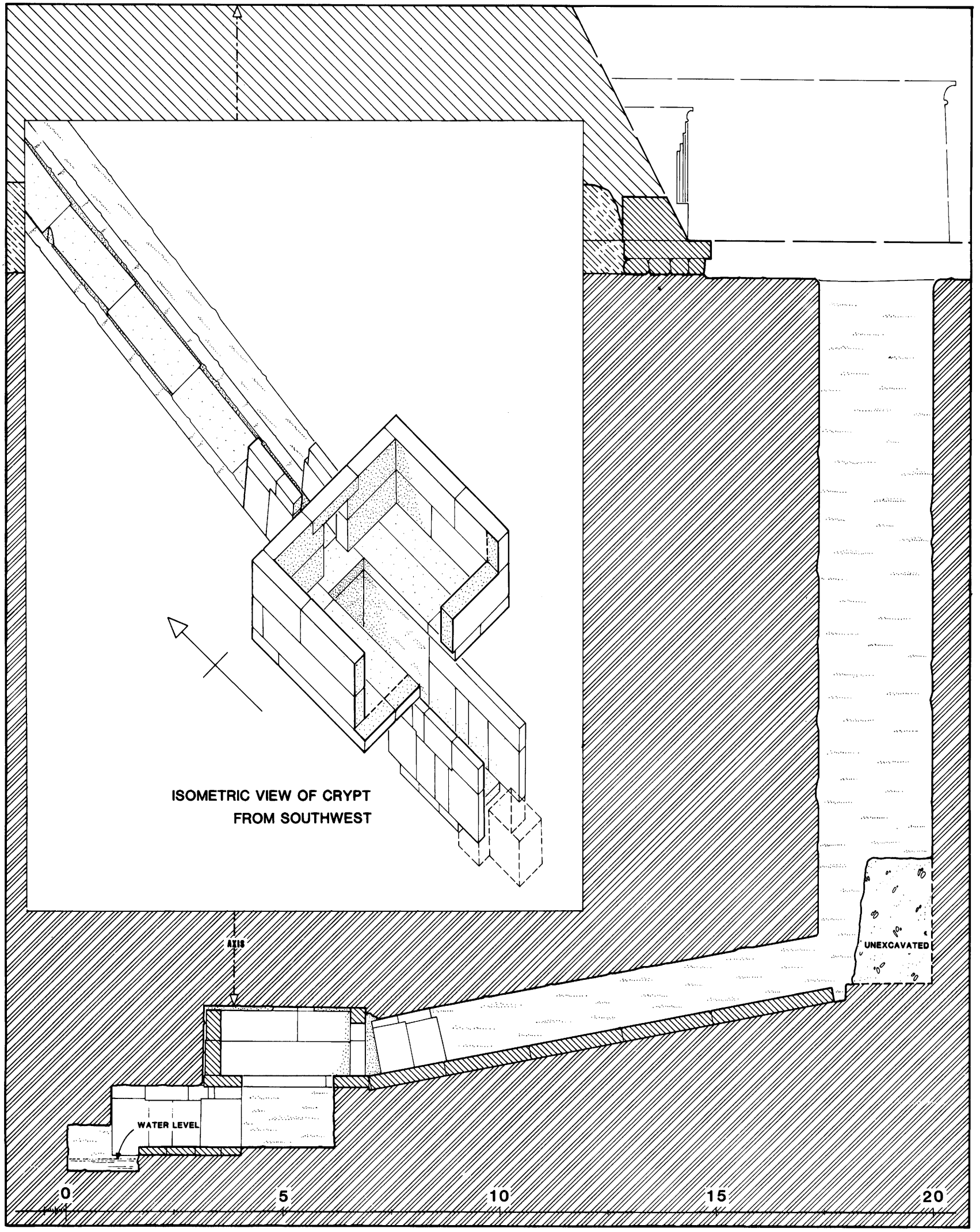
Pl. 6a. Plan and elevation of the southern gate in the outer enclosure wall. Scale 1:40.



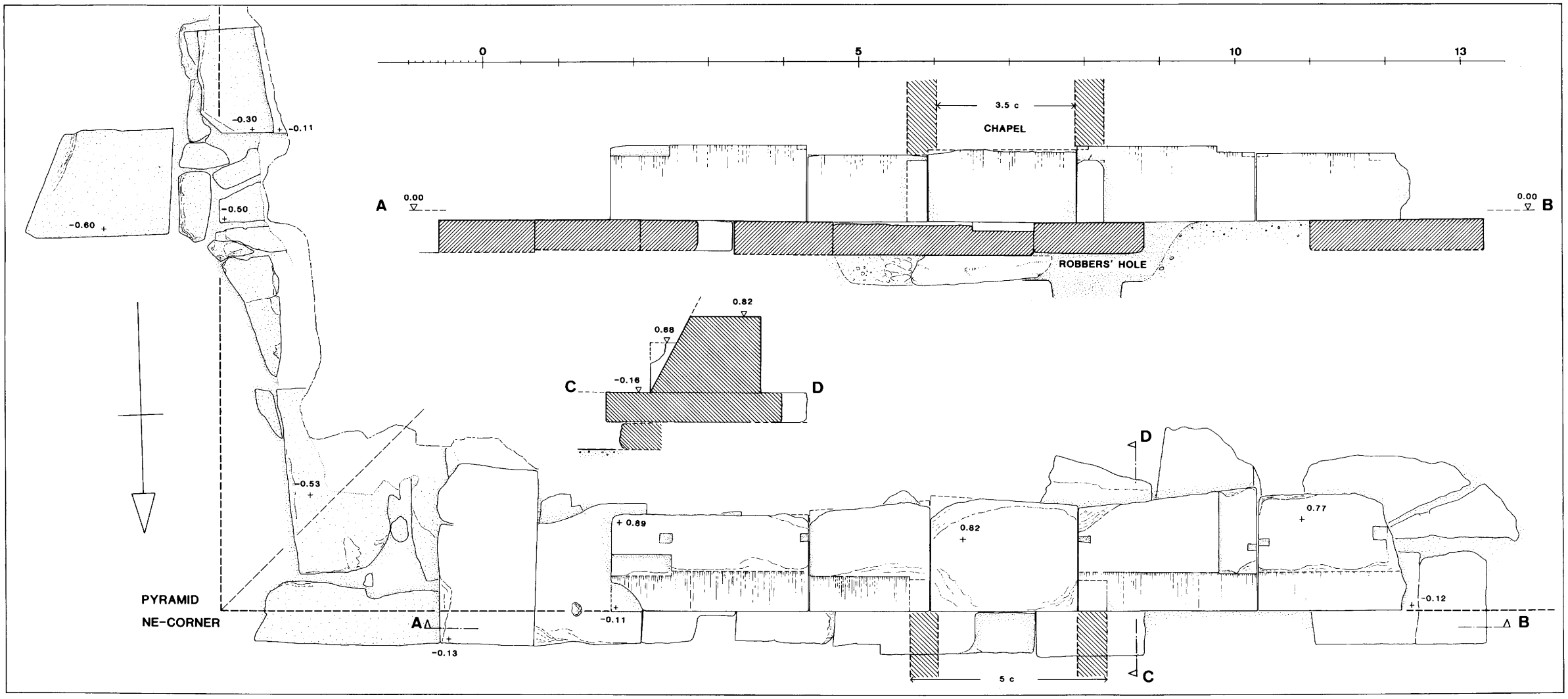
Pl. 6b. The preserved lower part of the jamb (frame) and reveal (thickness) of the southern gate of the outer enclosure wall, seen from the northeast.



Pl. 6c. The socket for the locking device in the southern gate of the outer enclosure wall (see fig. 2).



Pl. 7. South–north section through pyramid 1, seen from east to west, and isometric view of the crypt from the southwest. Scale 1:100.



Pl. 8a. Elevation and plan of the north side of pyramid I.



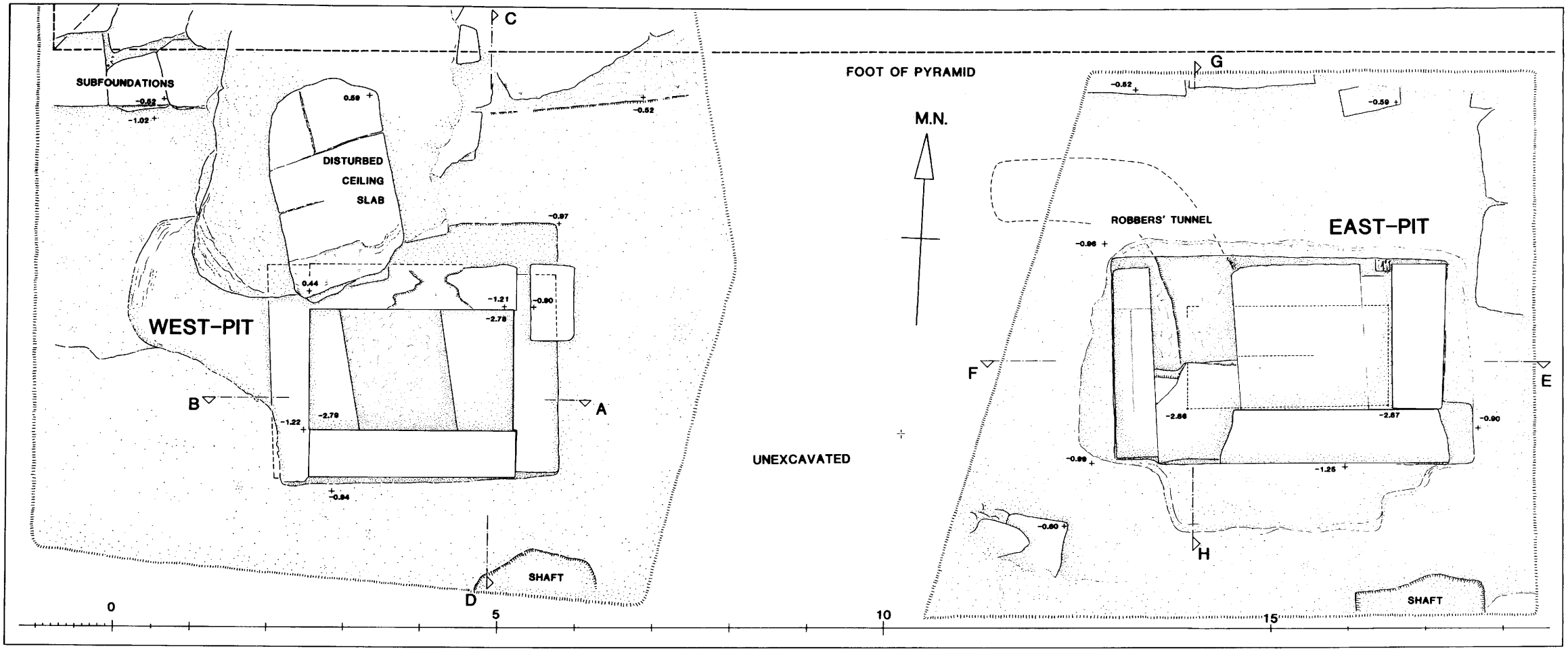
Pl. 8b. Remains of the casing blocks at the north side of pyramid I, with step for the false door.



Pl. 8c. Step for the false door of the entrance chapel in the casing at the north side of pyramid I.



Pl. 8d. Side view of the same casing blocks.



Pl. 9a. Plan of the two stone-cased pits south of pyramid 1.

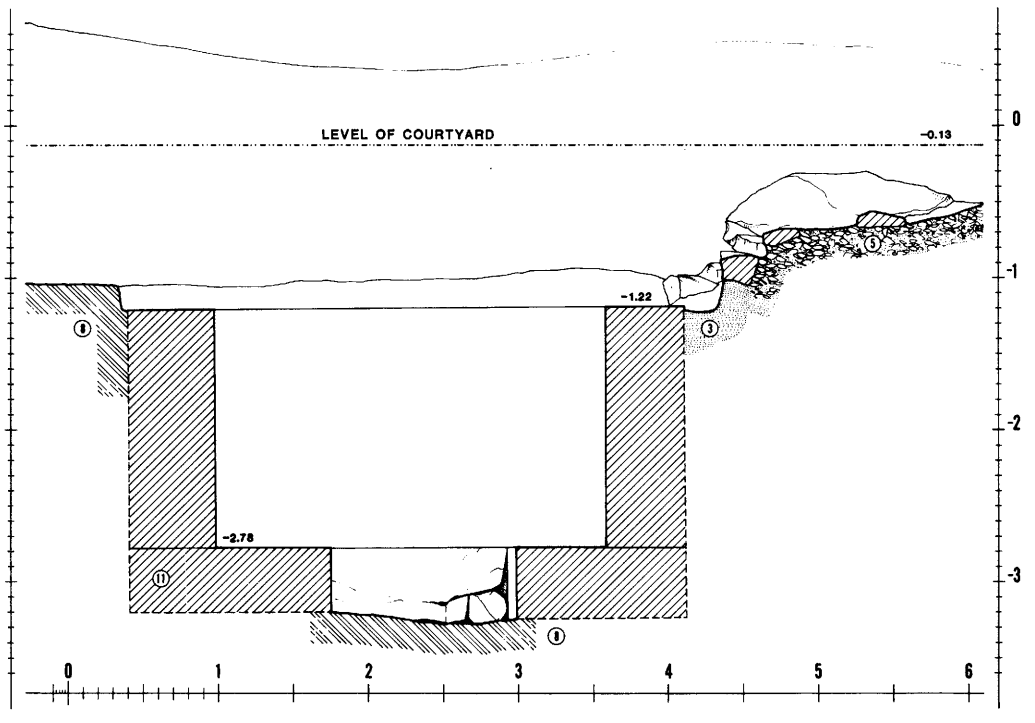


Pl. 9b. Western stone-cased pit south of pyramid 1.

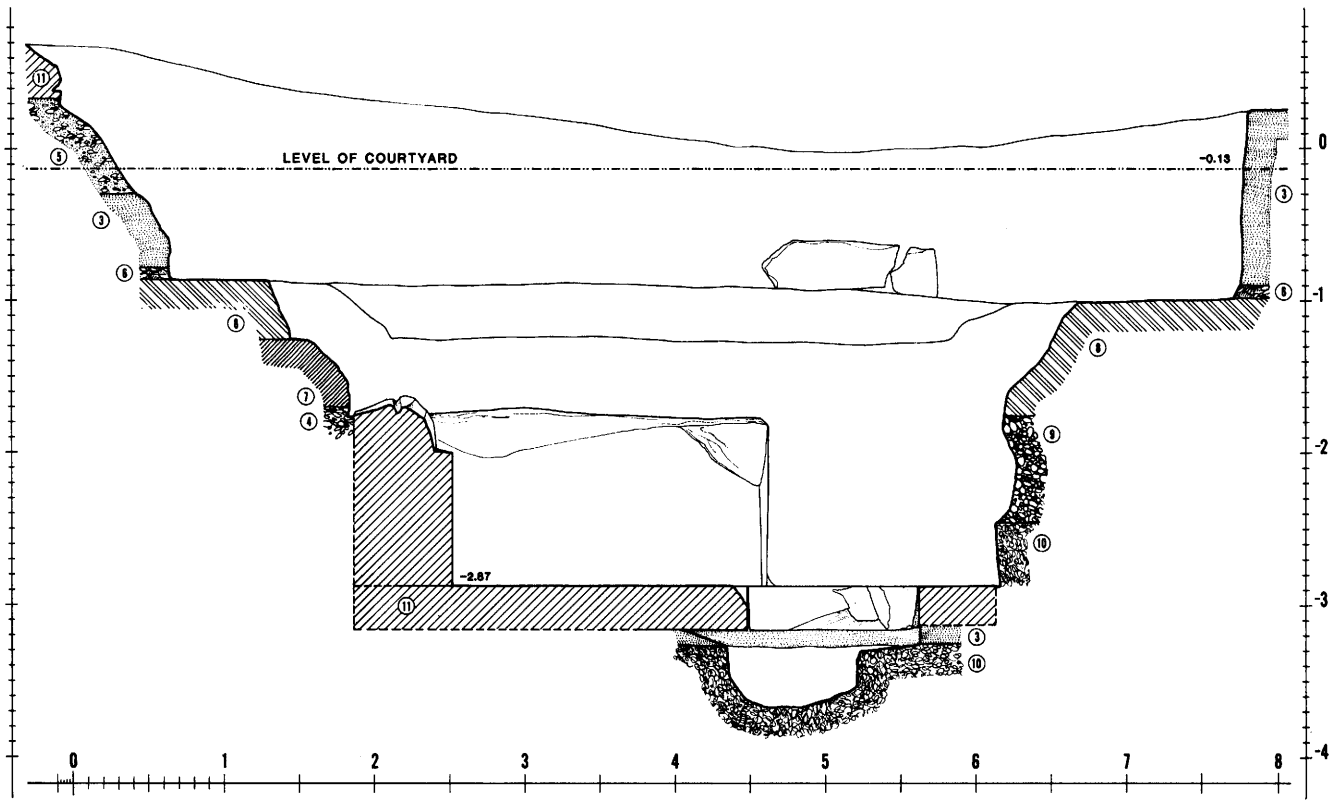


Pl. 9c. Remains of the eastern stone-cased pit south of pyramid 1.

PLATE 10

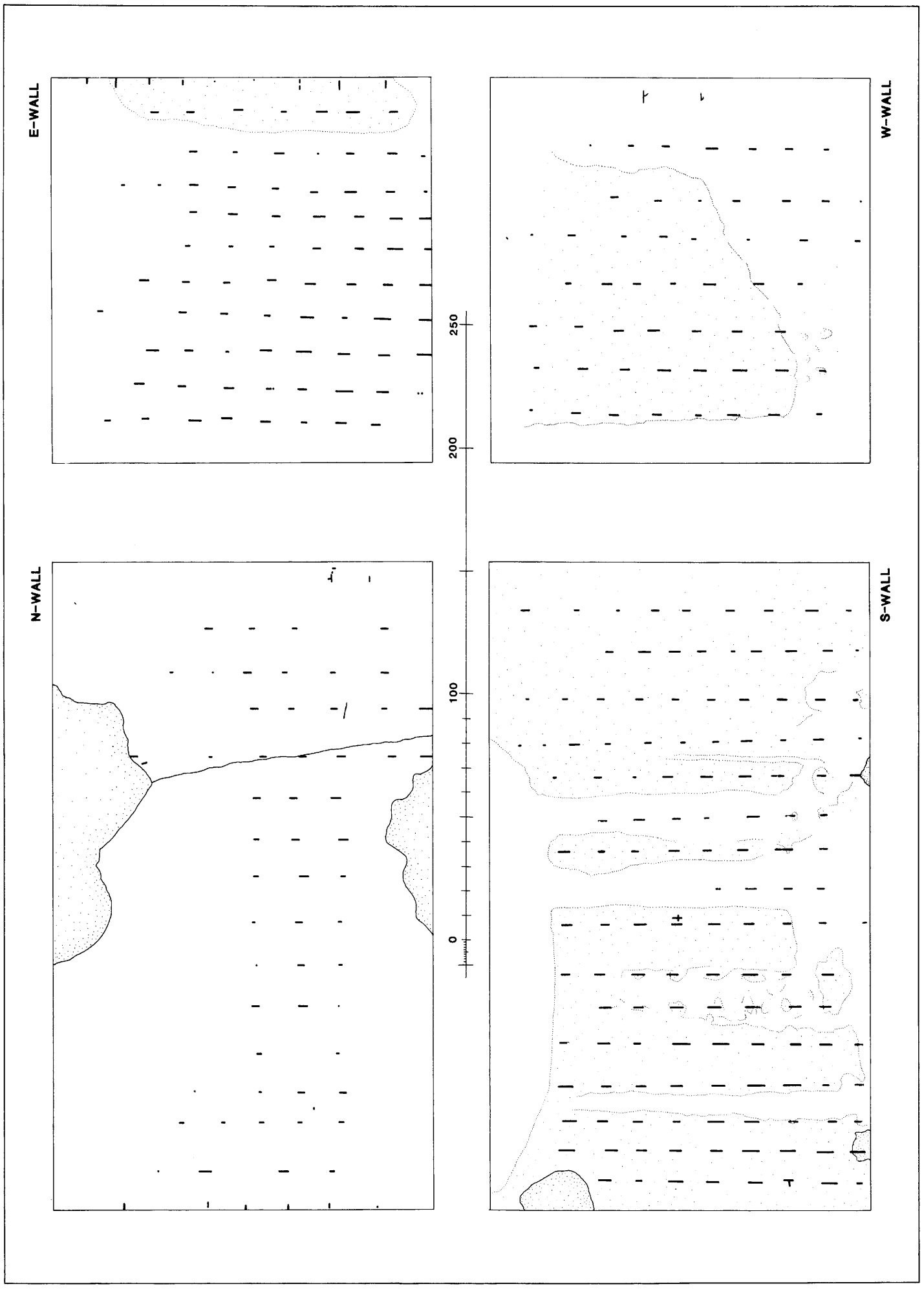


Pl. 10. Sections through the western stone-cased pit south of pyramid 1:
above, west-east section seen from north to south;
below, north-south section seen from west to east;
1. backing stone pavement; *2.* subfoundations; *2a.* backing stone of roof;
3. sand; *4.* limestone chip; *5.* sand and chip; *6.* chip and mud; *7.* mud;
8. conglomerate; *9.* stones and gravel; *10. tafl*; *11.* foundation of pits.
Scale 1:50.

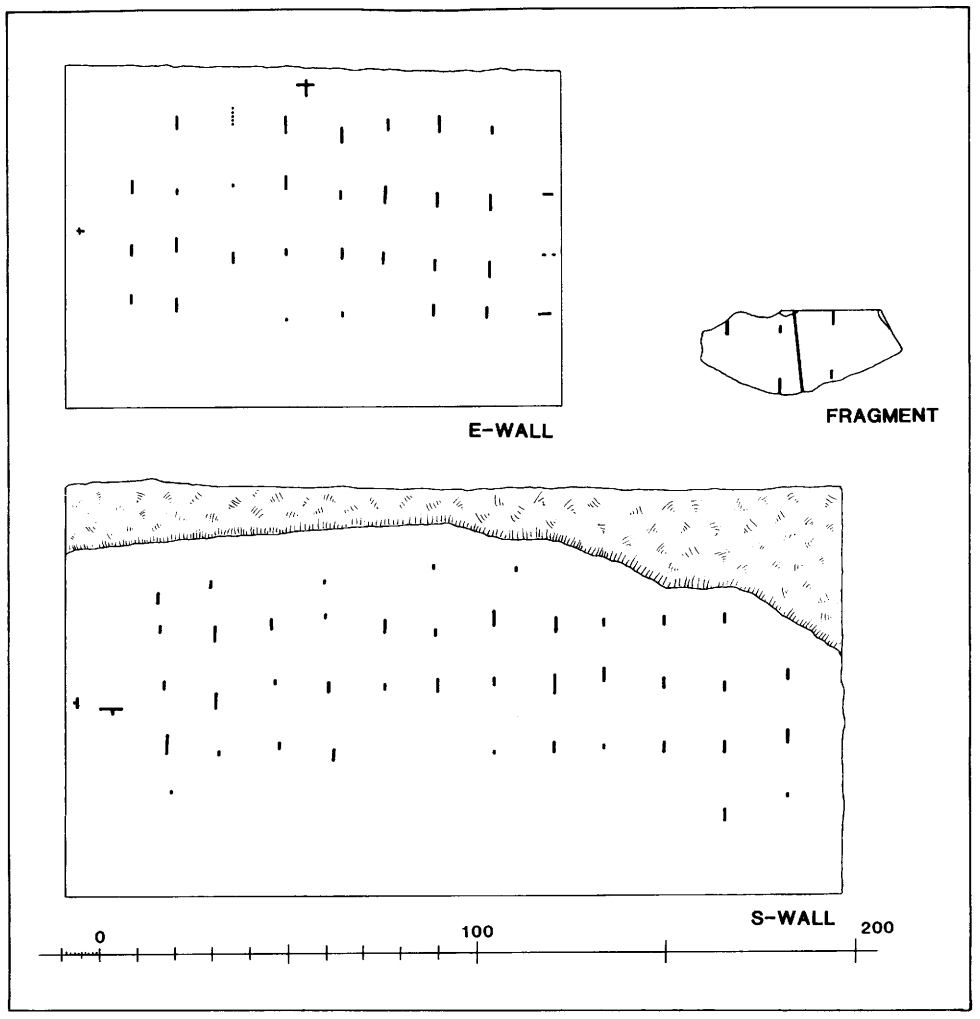


Pl. 11. Sections through the eastern stone-cased pit south of pyramid 1: *above*, east-west section seen from north to south; *below*, north-south section seen from west to east. See pl. 10 for numbers of layers. Scale 1:50.

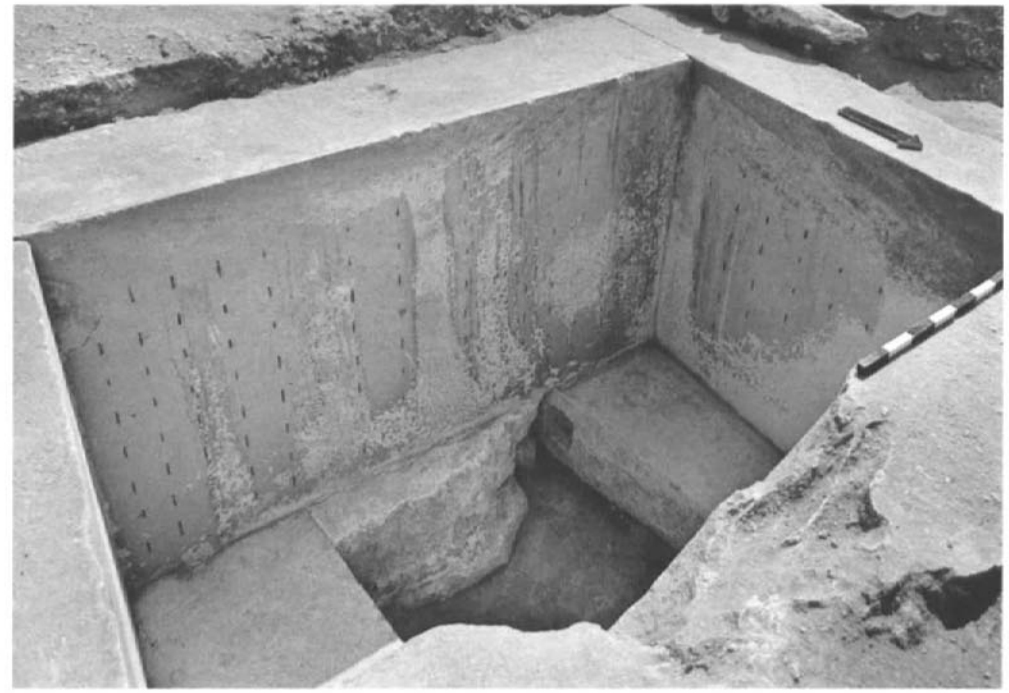
PLATE 12



Pl. 12. Black brush marks on the walls of the western stone-cased pit south of pyramid 1. Scale 1:20.



Pl. 13a. Black brush marks on the remaining walls of the eastern stone-cased pit south of pyramid 1. Scale 1:20.



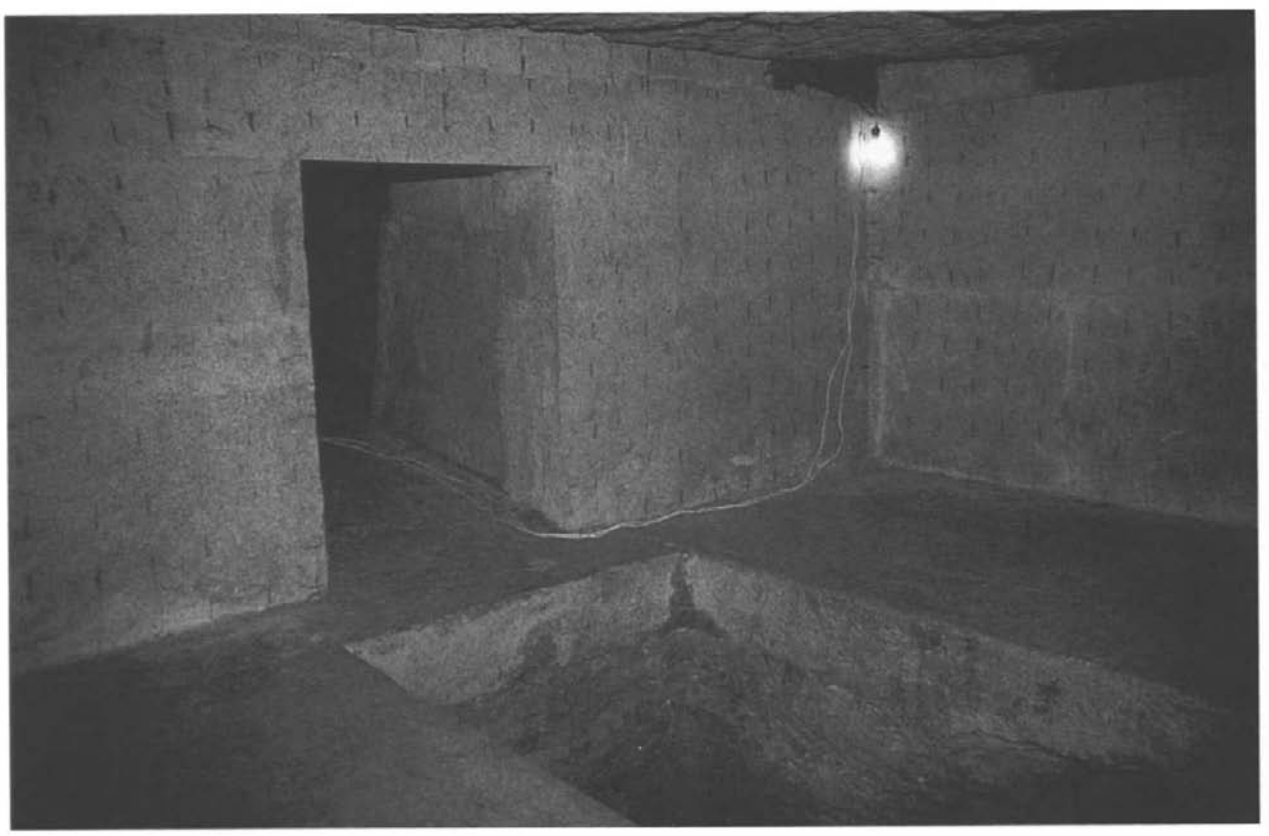


Pl. 13b–c. Black brush marks on the walls of the western stone-cased pit south of pyramid 1.

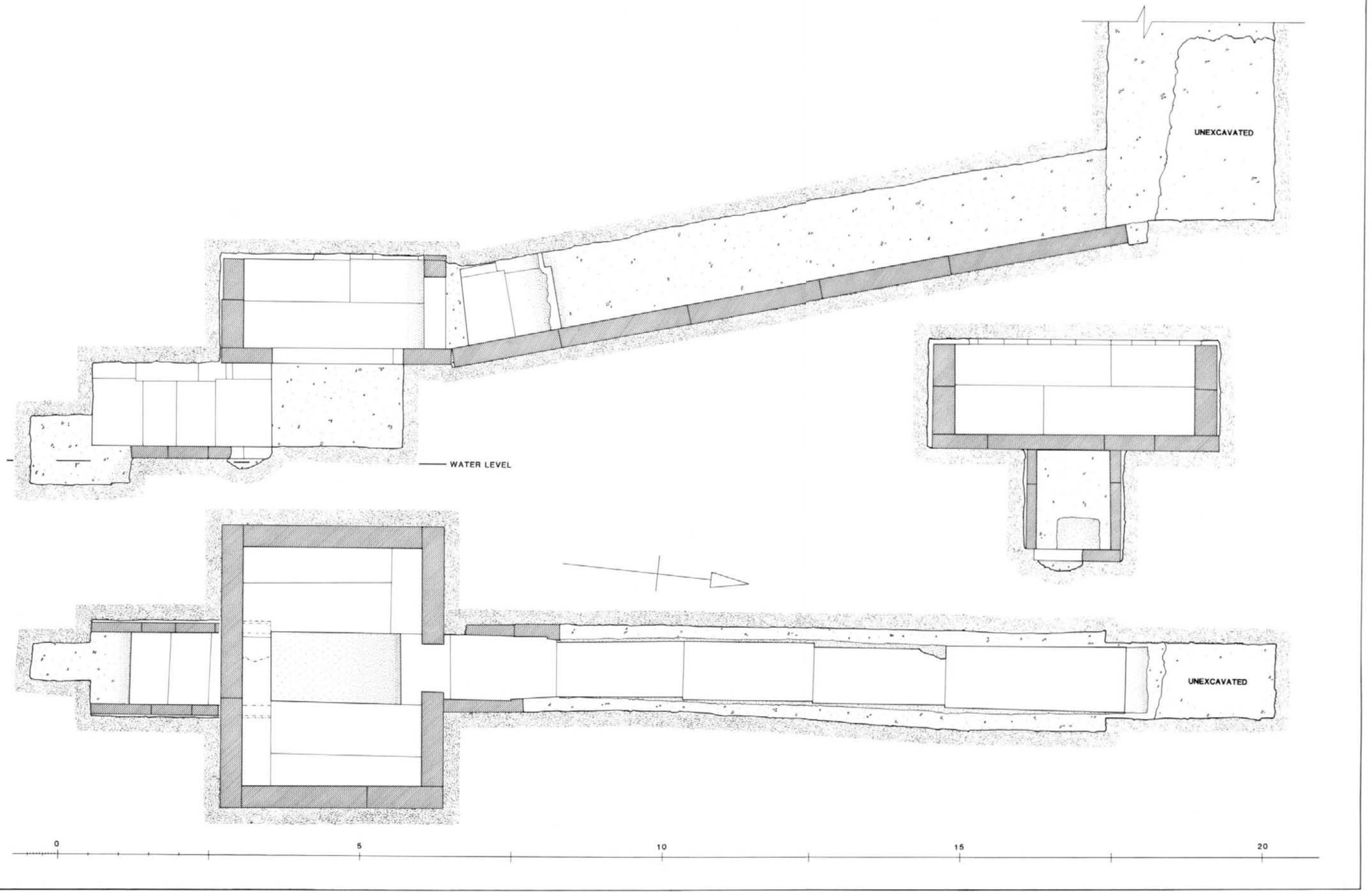
PLATE 14



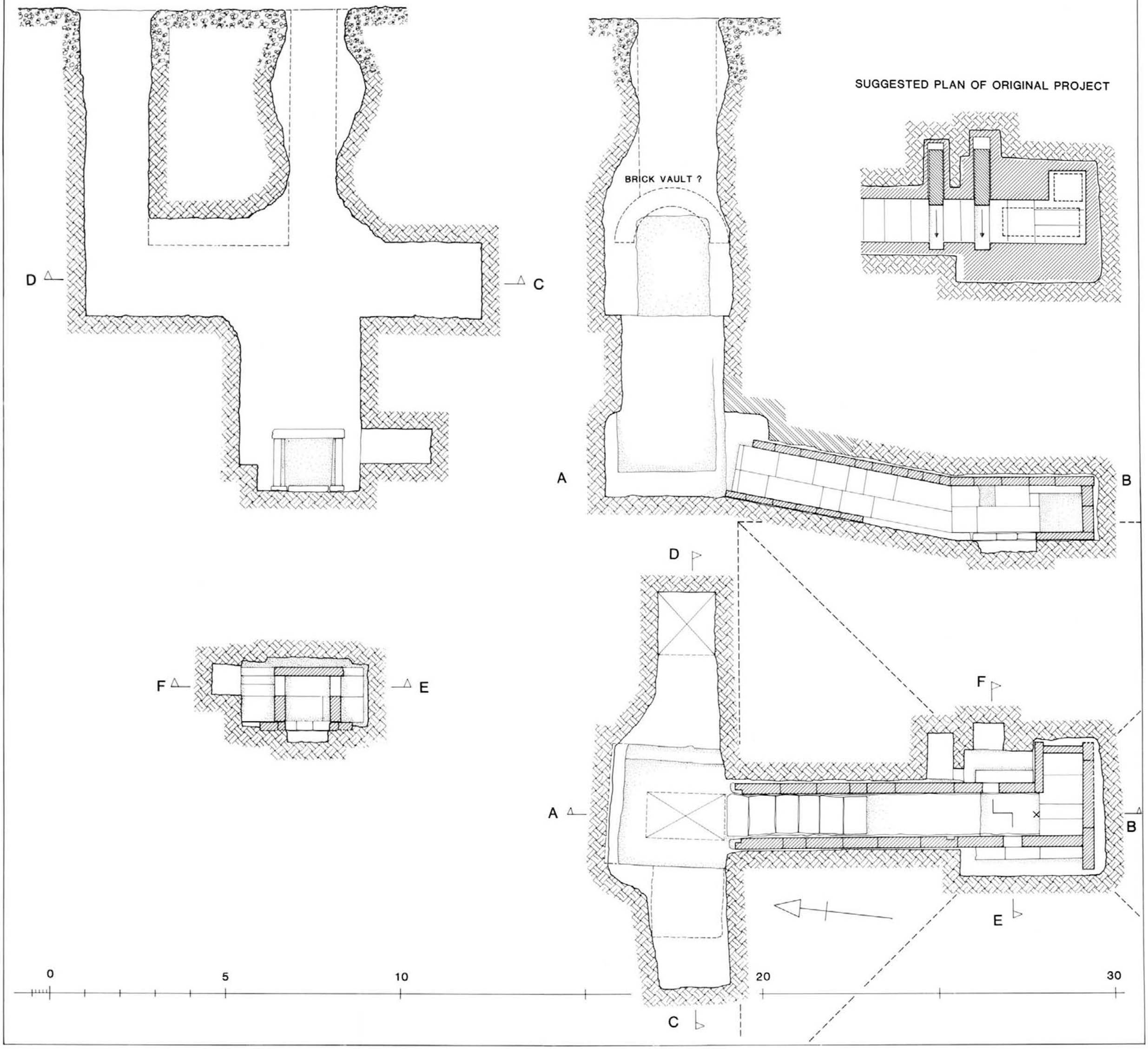
Pl. 14a. The remains of pyramid I seen from the northwest after the 1906 excavations.



Pl. 14b. The crypt of pyramid I with the entrance and the sarcophagus pit.



Pl. 15. Plan and sections of the entrance corridor and burial crypt of pyramid 1.



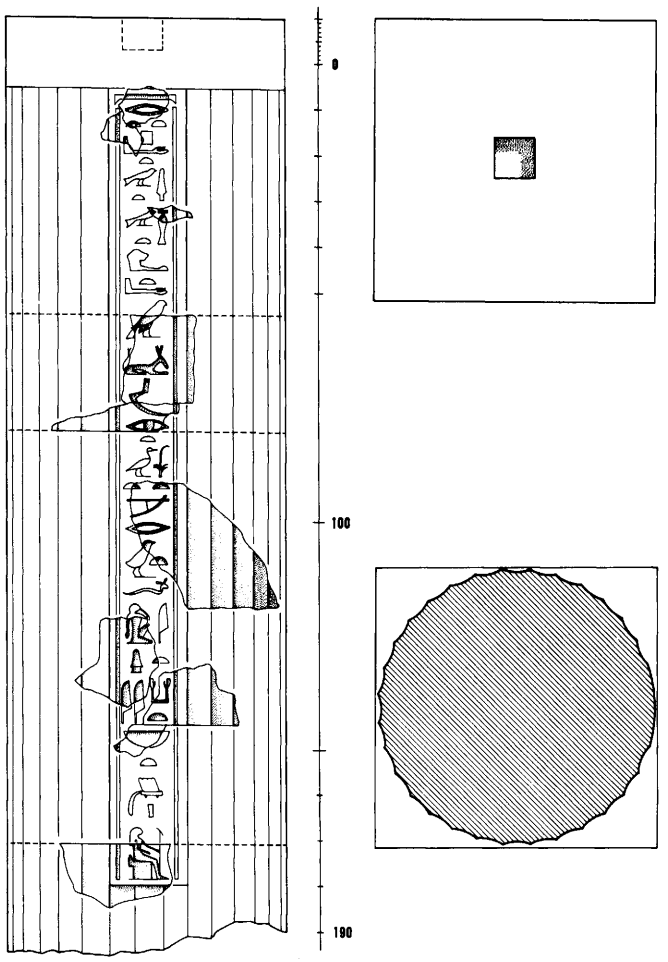
Pl. 16. Plans and sections of the underground apartments of pyramid 2. Scale 1:100.



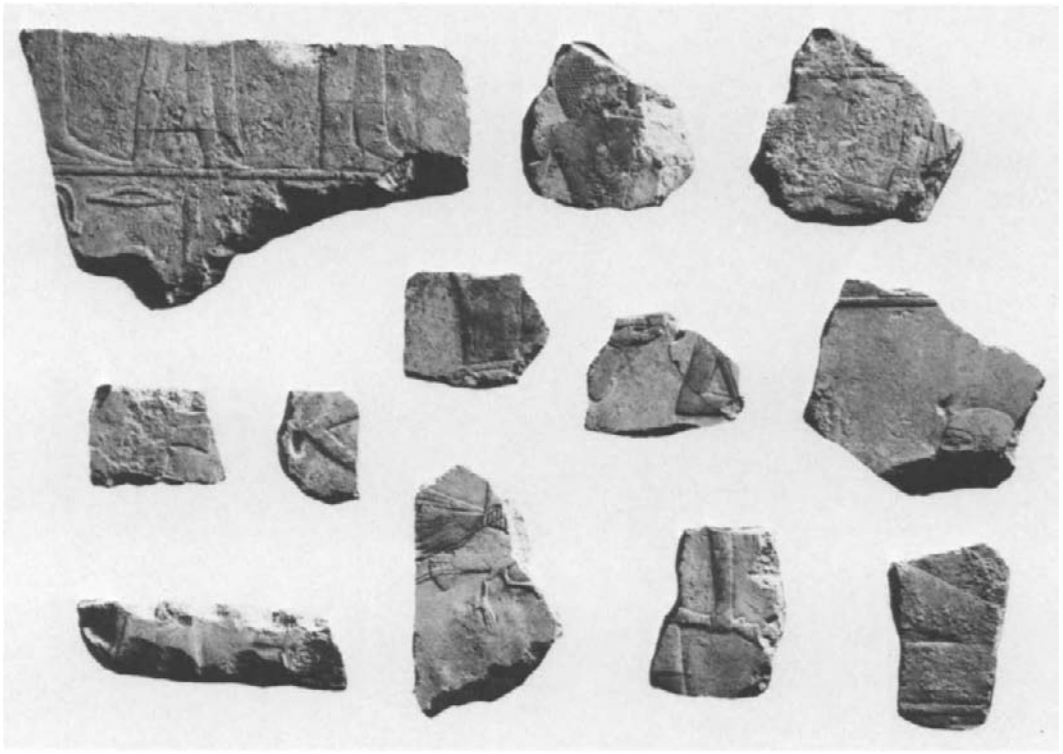
Pl. 17a. The two slabs sealing the passage into the crypt of pyramid 2, with the robbers' hole in the top slab.



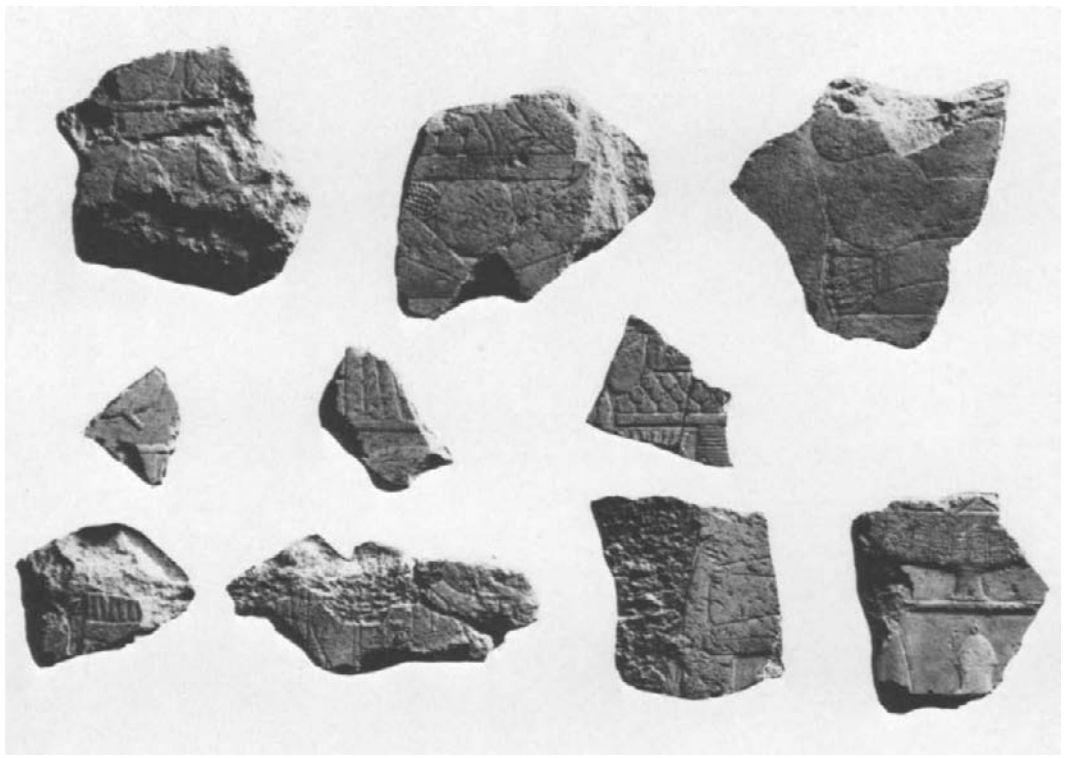
Pl. 17b. Looking down the passage into the crypt of pyramid 2.



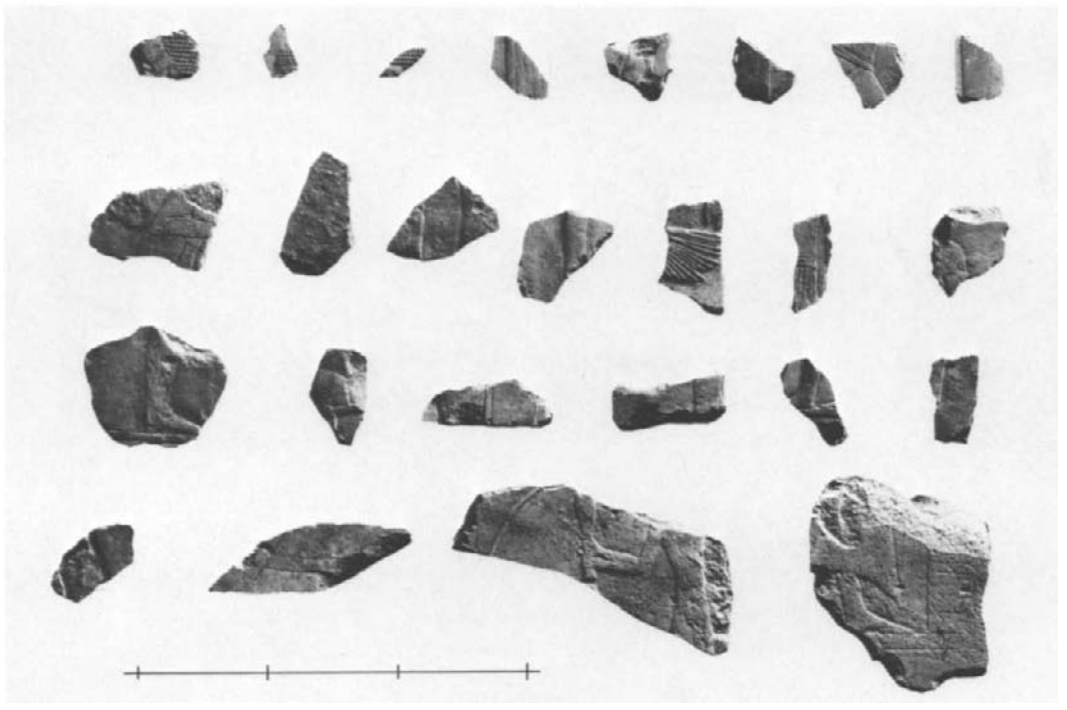
Pl. 17c. Channeled "proto-doric" column from the mortuary chapel of pyramid 2, with section and top view of the abacus (see pl. 19a).



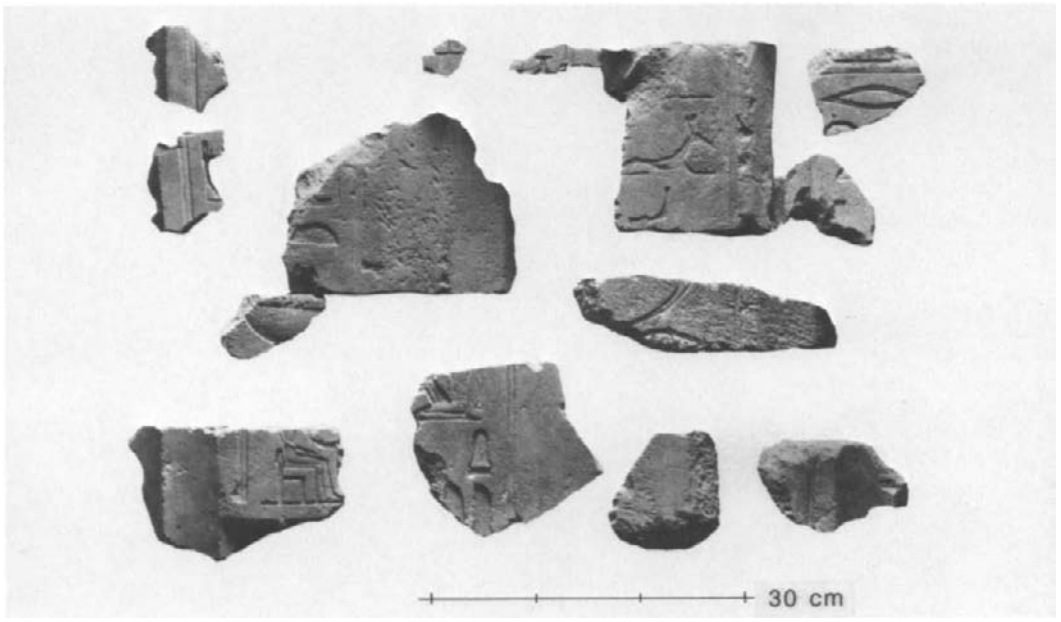
Pl. 18a. Fragments from the mortuary chapel of pyramid 2 depicting dancing girls and offering bearers.



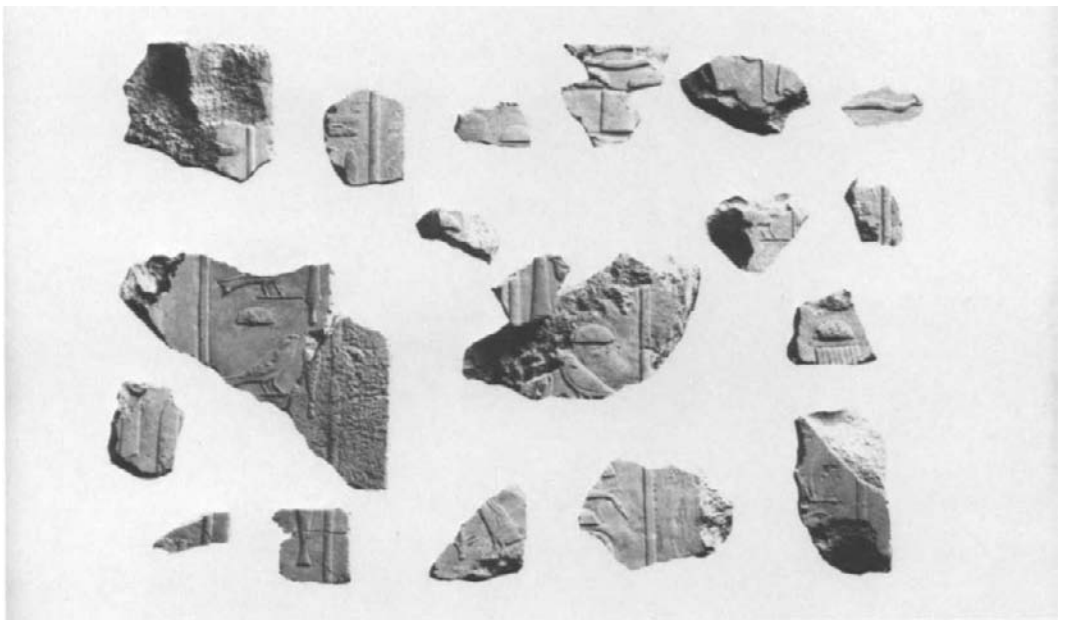
Pl. 18b. Fragments from the mortuary chapel of pyramid 2 depicting offerings.



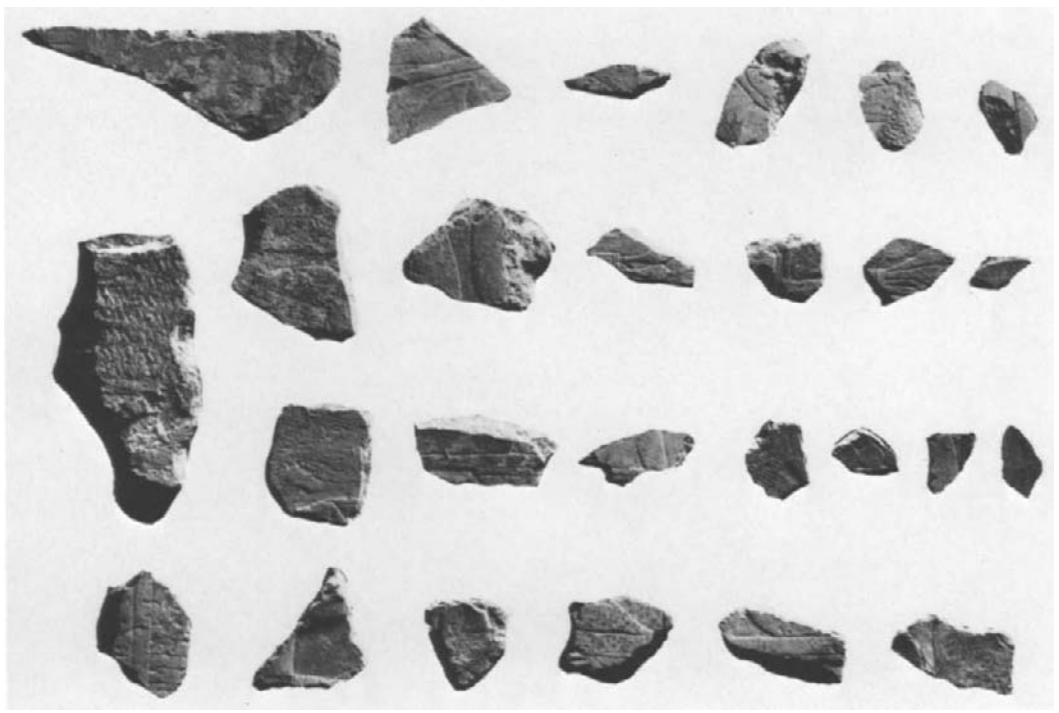
Pl. 18c. Fragments from the mortuary chapel of pyramid 2 depicting offering bearers, priests, and dancers(?). Scale for 18a–c ca. 30 cm.



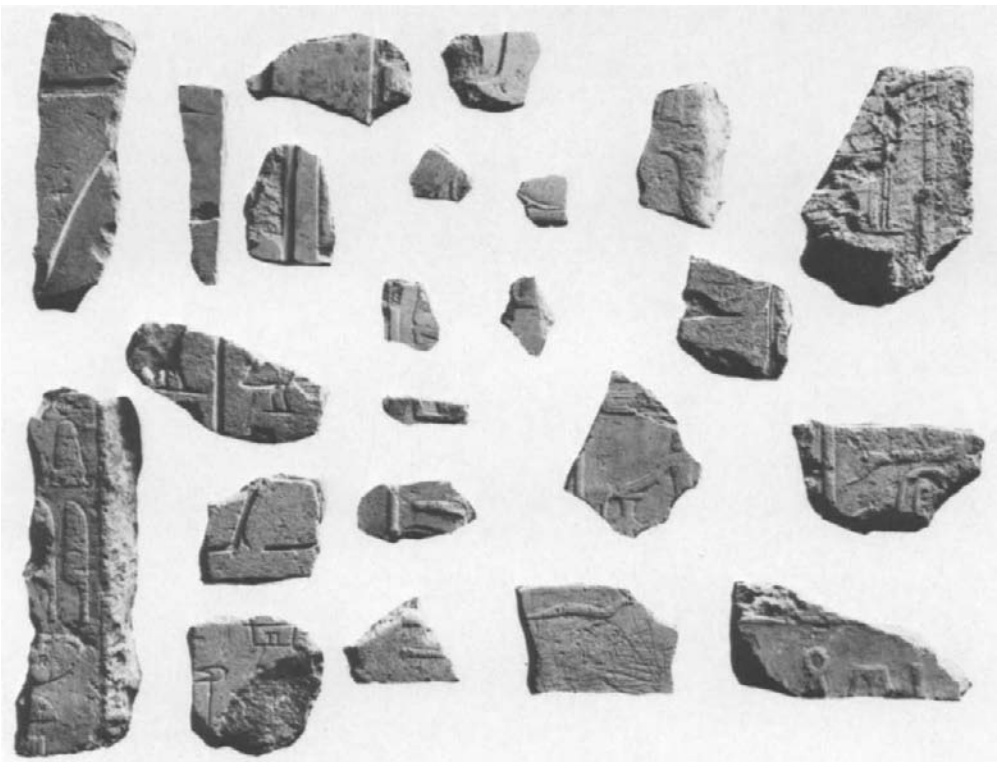
Pl. 19a. Fragments of inscribed columns from the mortuary chapel of pyramid 2 (see pl. 17c).



Pl. 19b. Inscribed fragments from the interior of the mortuary chapel of pyramid 2 (see pl. 21).

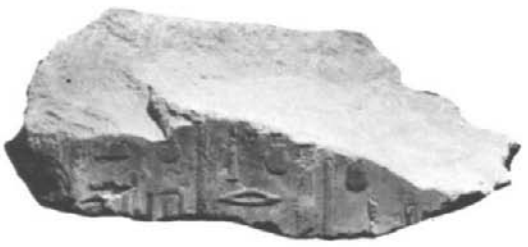


Pl. 19c. Fragments from the mortuary chapel of pyramid 2 depicting offerings and varia.



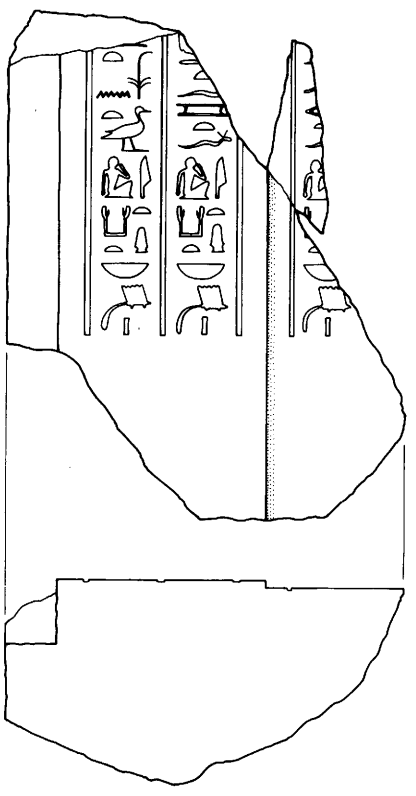
Pl. 20a. Inscribed fragments from the exterior and interior of the mortuary chapel of pyramid 2.



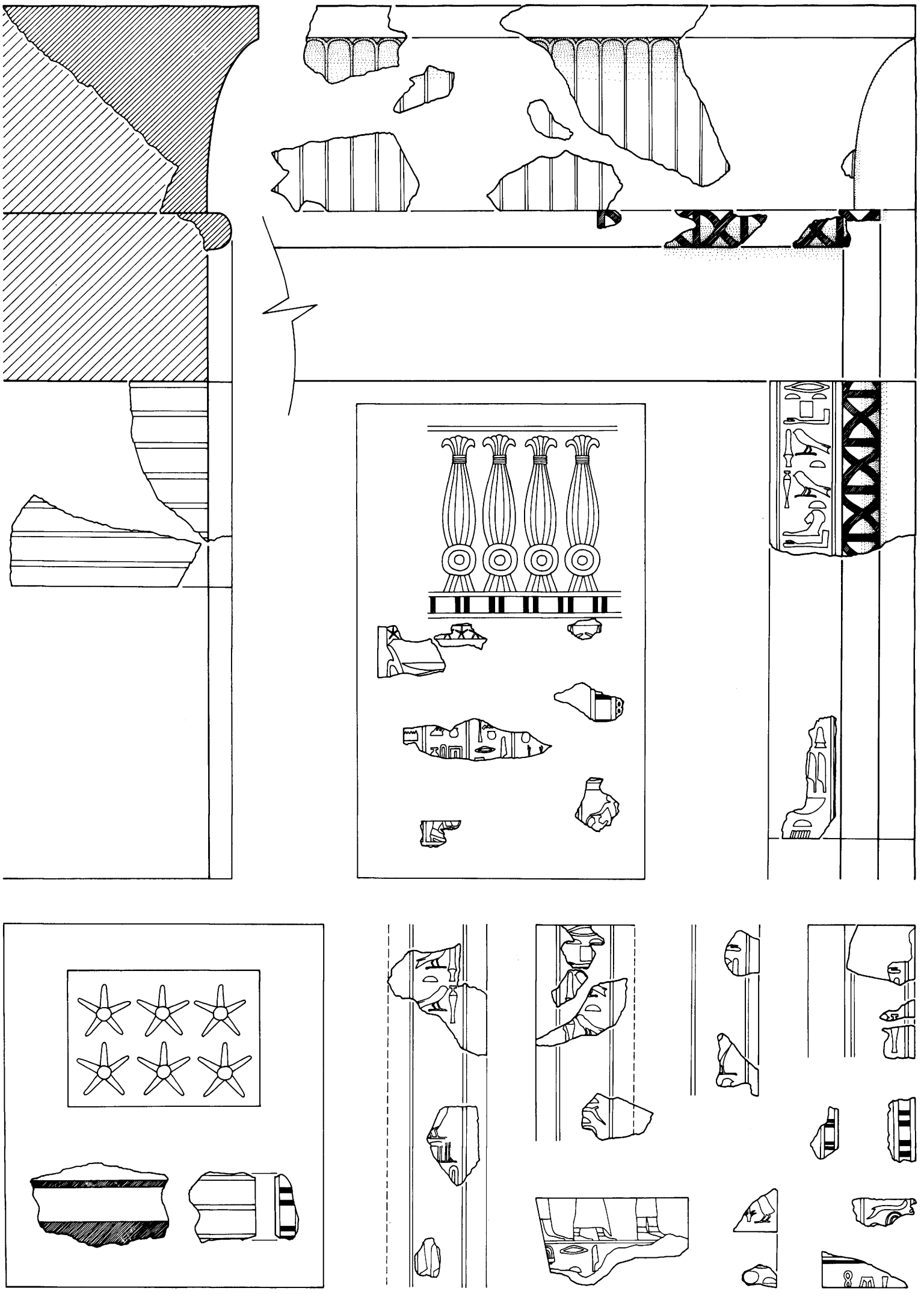


Pl. 20b–c. Inscribed fragments from the inner shrine of the mortuary chapel of pyramid 2 (see pl. 21).





Pl. 20d. Fragments of the false door of the inner shrine from the mortuary chapel of pyramid 2 (see pl. 21).



Pl. 21. Parts of the inner shrine of the mortuary chapel of pyramid 2. Scale 1:10.



Pl. 22a. The area of pyramid 2 during the 1933–34 excavations, with the south field mastabas in the background. Seen from the north.



Pl. 22b. The area between pyramids 2 and 3, with remains of beehive-vaulted cellars and a construction ramp.



Pl. 22c. Pyramid 2 and its western enclosure wall, seen from the southwest. In the lower right corner, remains of a construction ramp are visible.



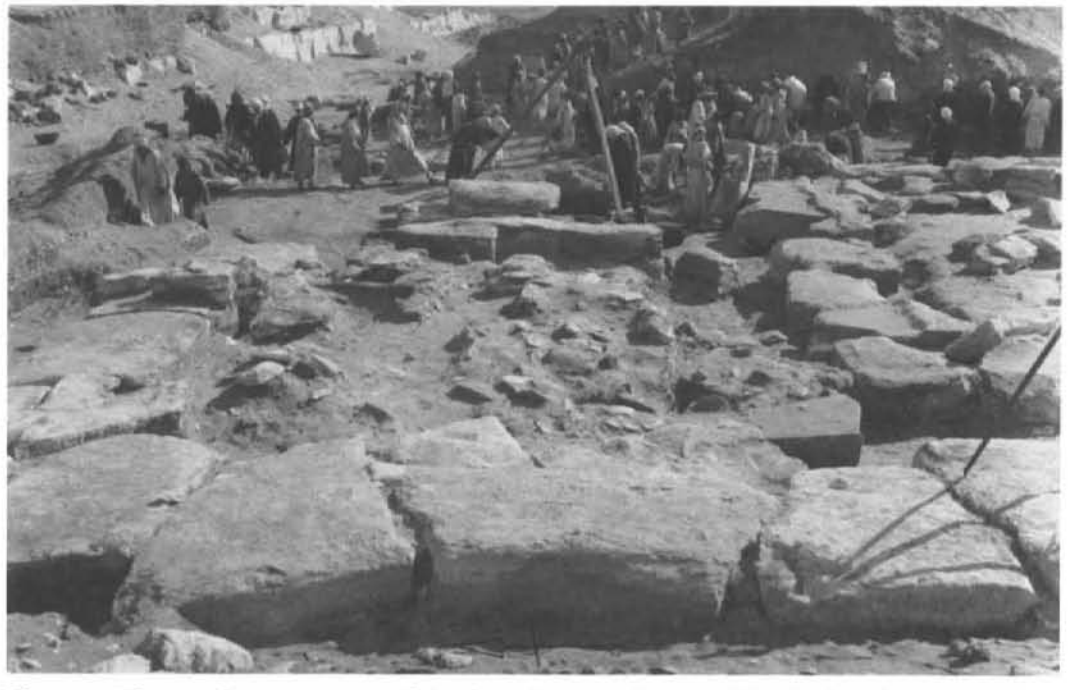
Pl. 22d. Remains of the western enclosure wall of pyramid 2 with beehive-vaulted cellars and, under the meter scale, a reused coping block.



Pl. 23a. Remains of pyramid 3 seen from the northeast during the 1933–34 excavation of the main shaft.



Pl. 23b. The southwest corner of the foundations of pyramid 3 during the 1933–34 excavation.

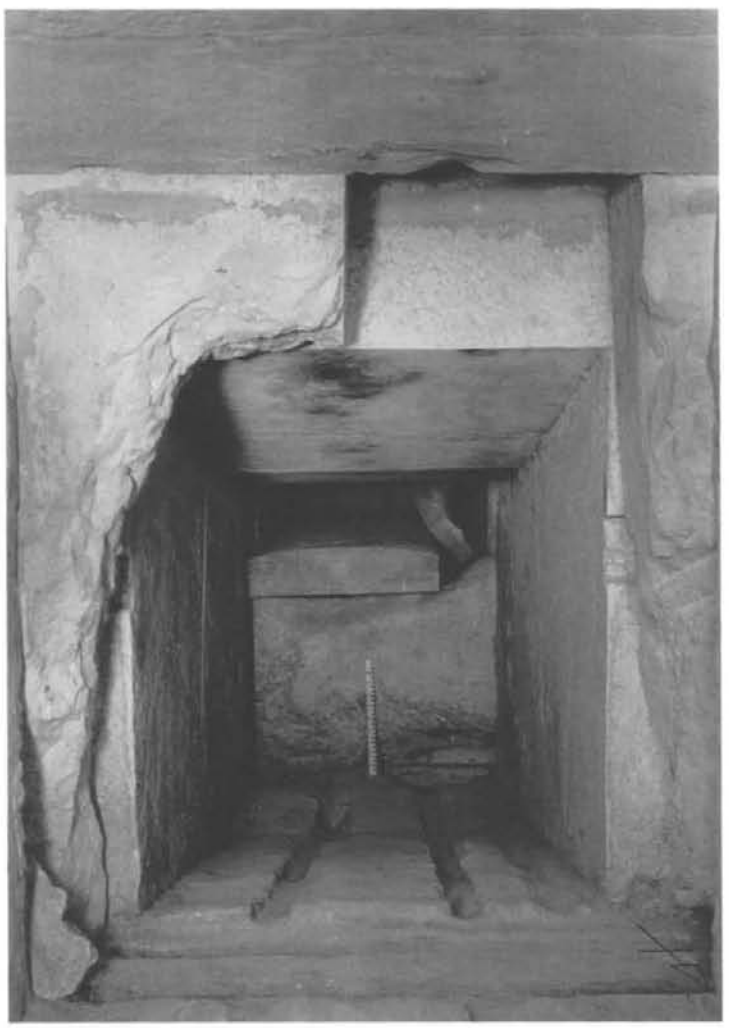


Pl. 23c. The northwest corner of the foundations of pyramid 3 during the 1933–34 excavation.

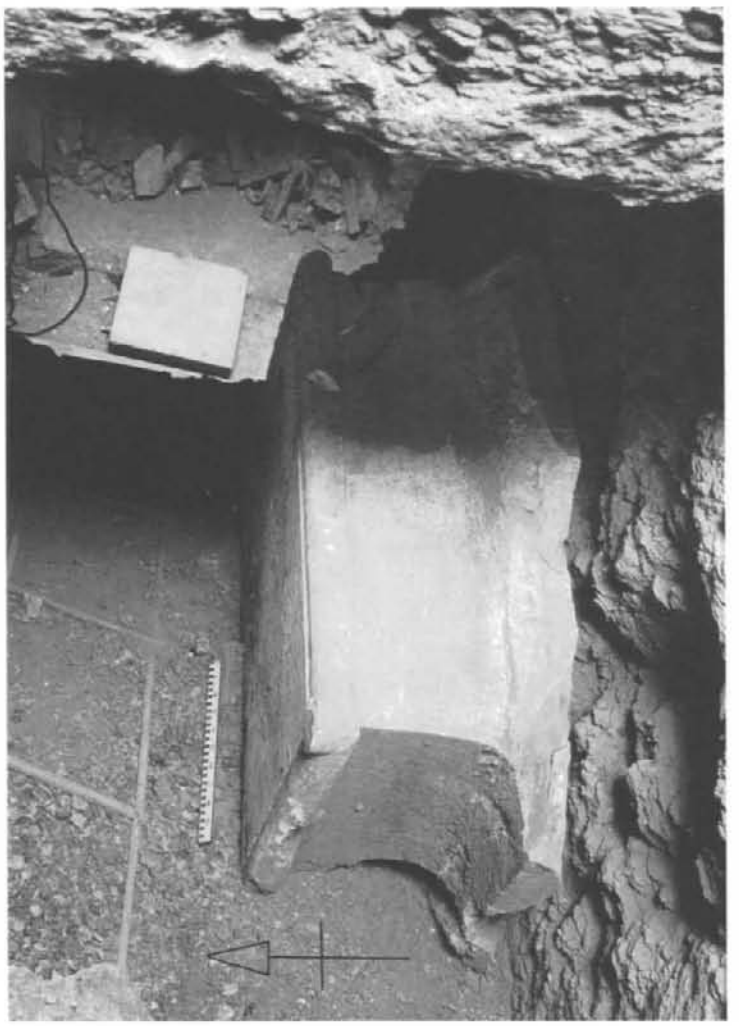


Pl. 23d. Clearance of the foundations of pyramid 3 seen from the east during the 1933–34 season.

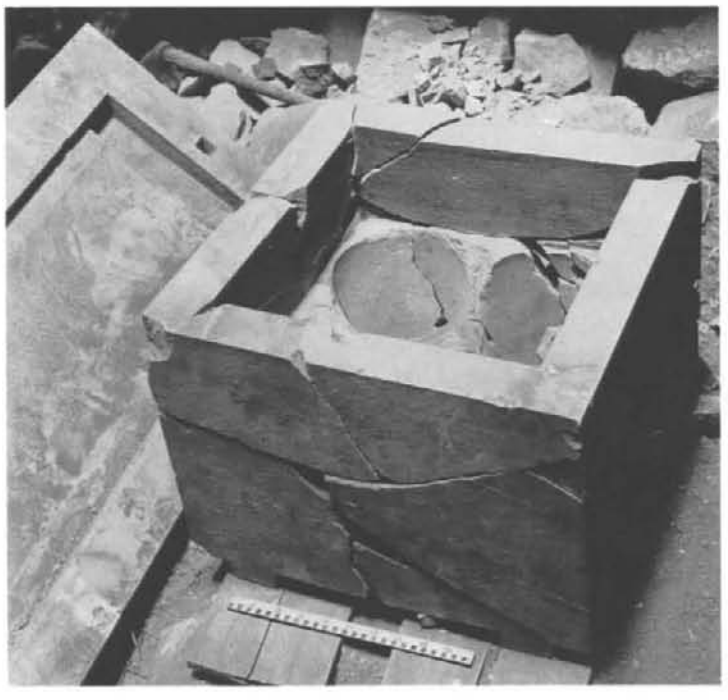
PLATE 24



Pl. 24a. View down the passage into the crypt of pyramid 3, with the sarcophagus behind the blocking.

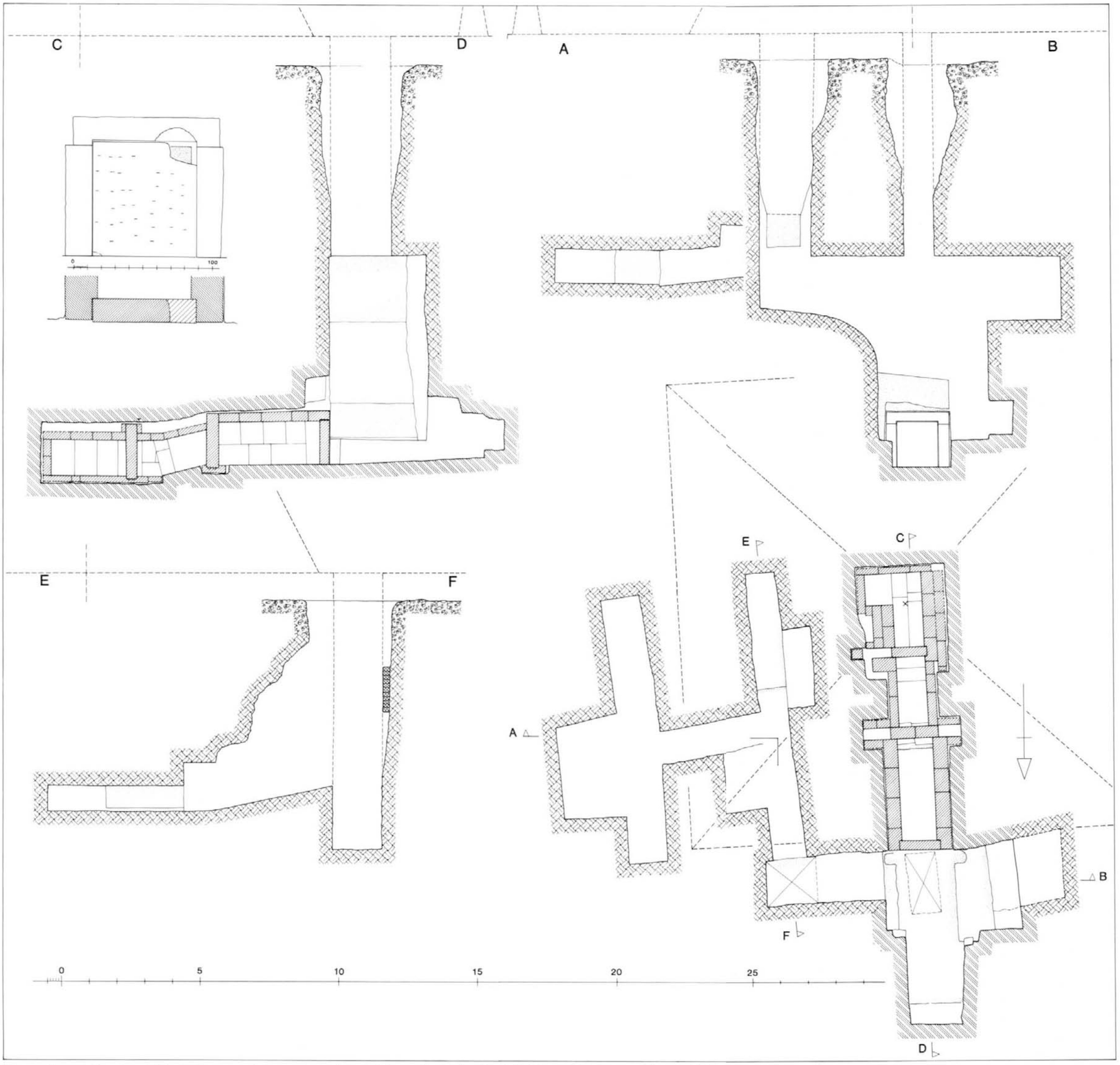


Pl. 24b. The cavetto block in the connecting corridor between the main and secondary shafts of pyramid 3.

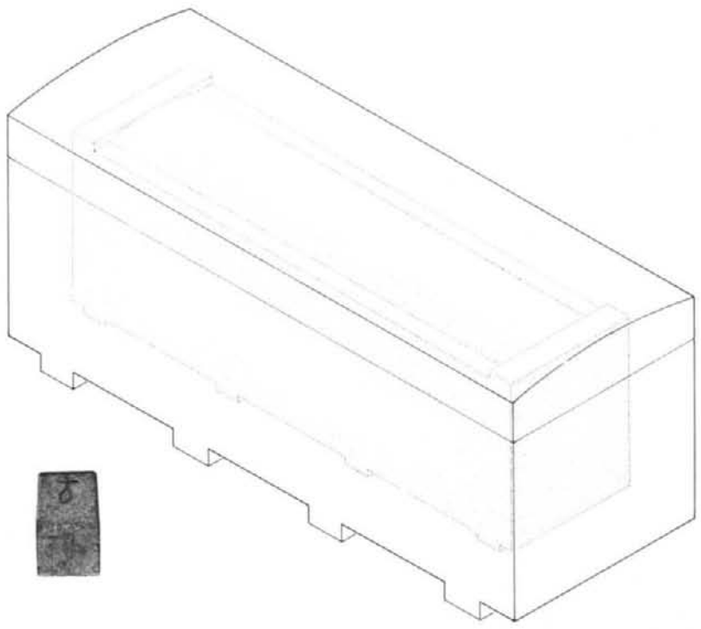


Pl. 24c–d. The ruined canopic chest and the sarcophagus lid spread on the bottom of the main shaft of pyramid 3.



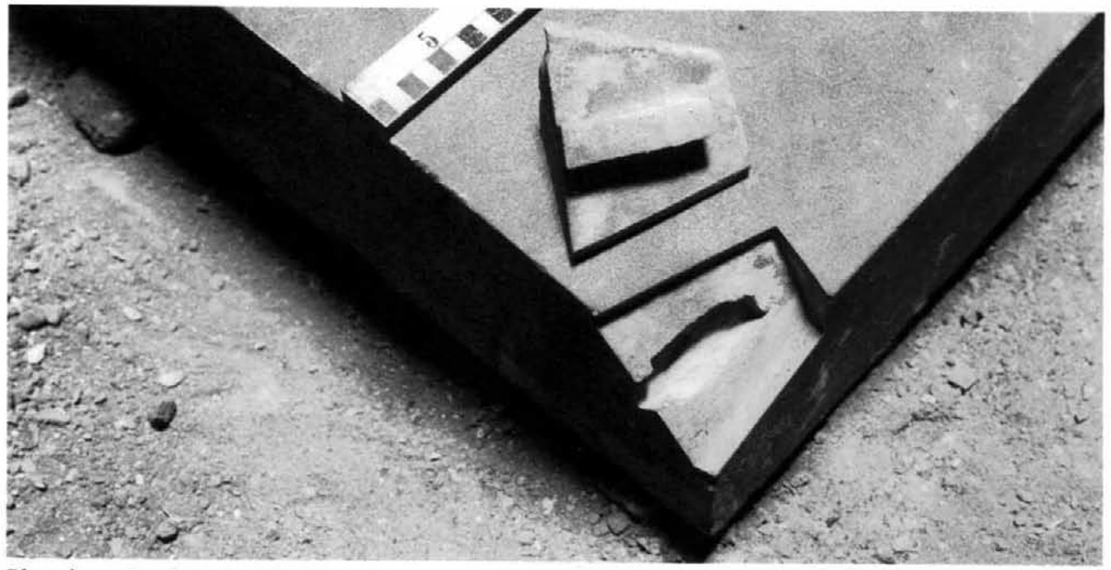


Pl. 25. Plan and sections of the underground apartments of pyramid 3, and a detail of the blocking of the first corridor (top left).

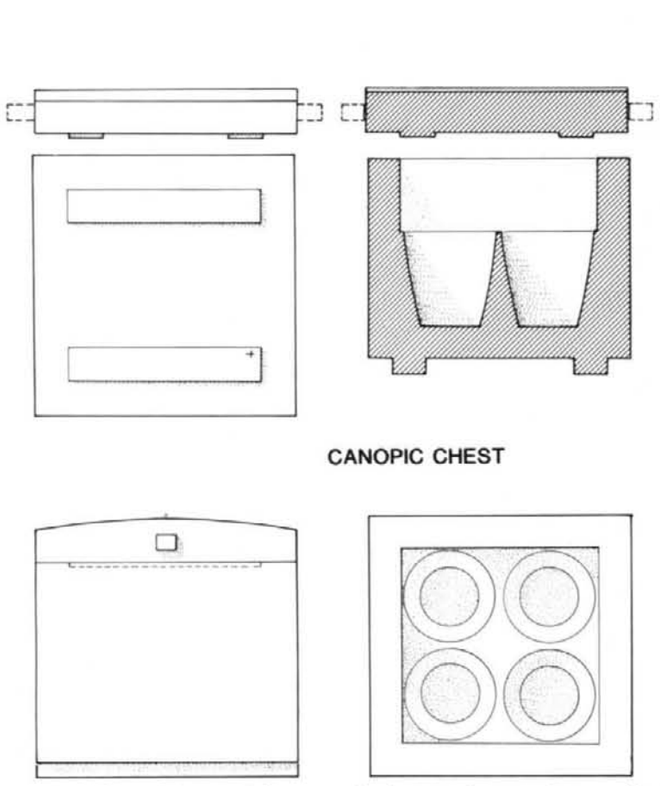


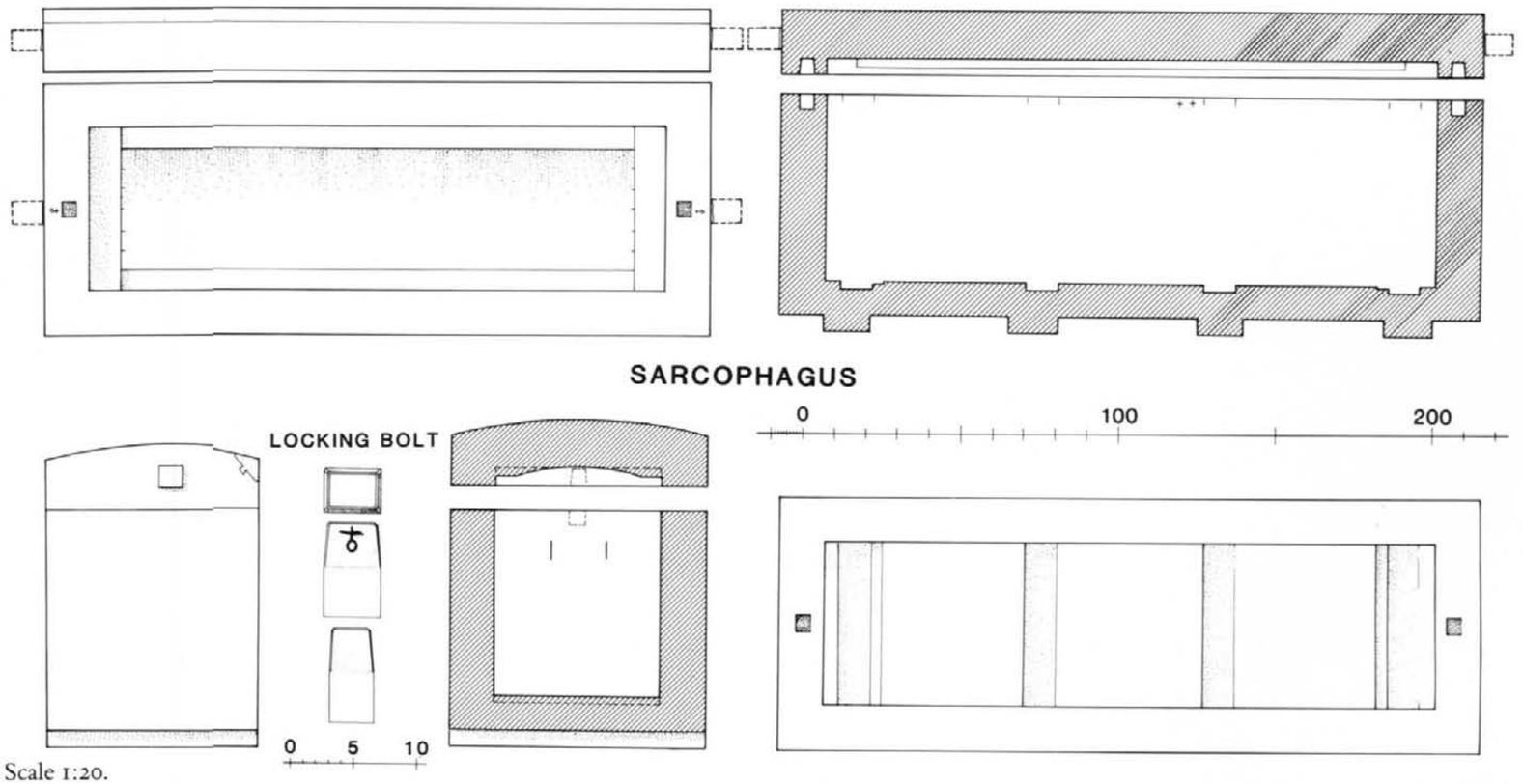
Pl. 26a. Axonometric view of the sarcophagus of pyramid 3 showing its interior shape. Inset: Locking bolt.



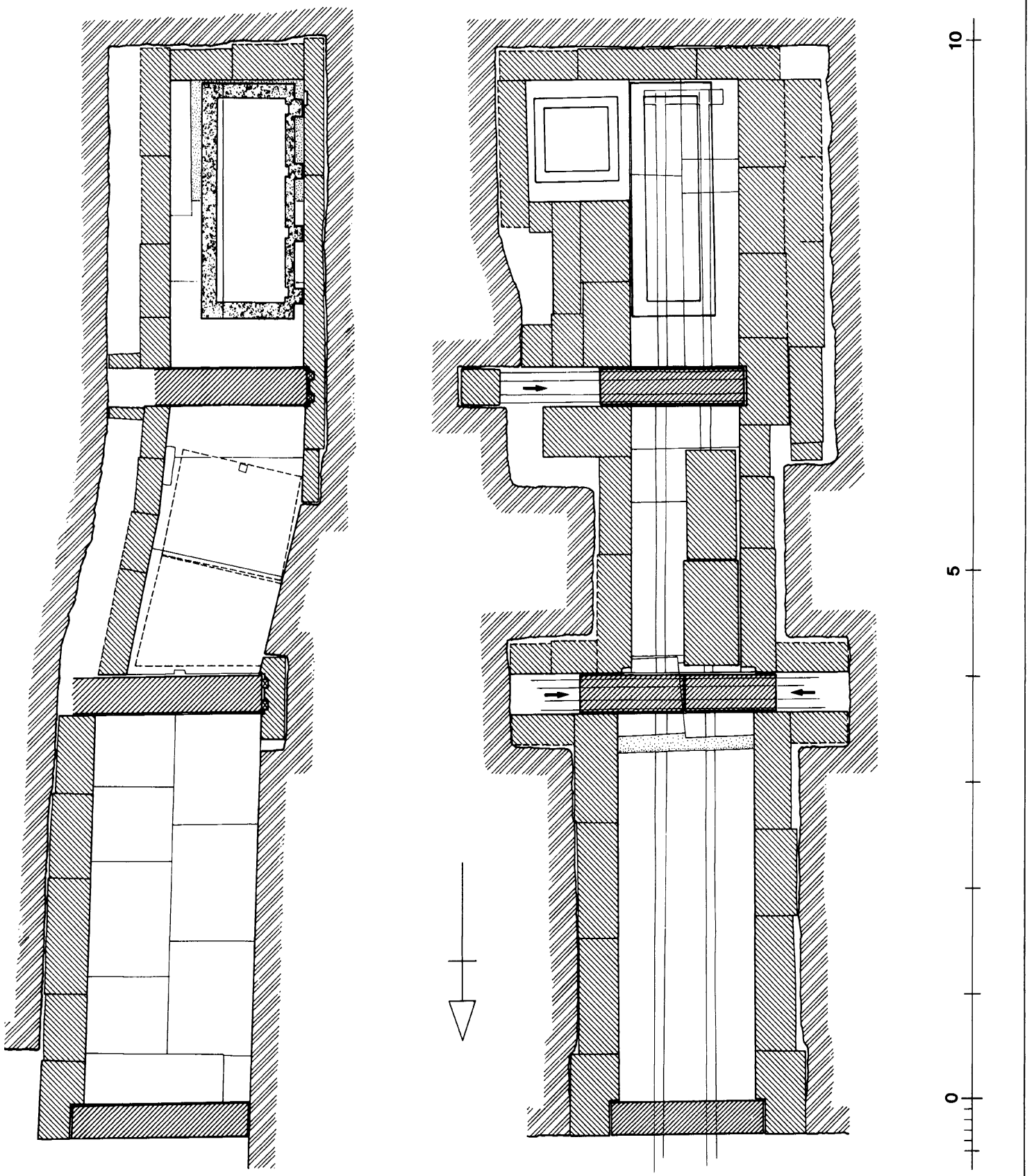


Pl. 26b–c. Patch in the lid of the sarcophagus of pyramid 3.

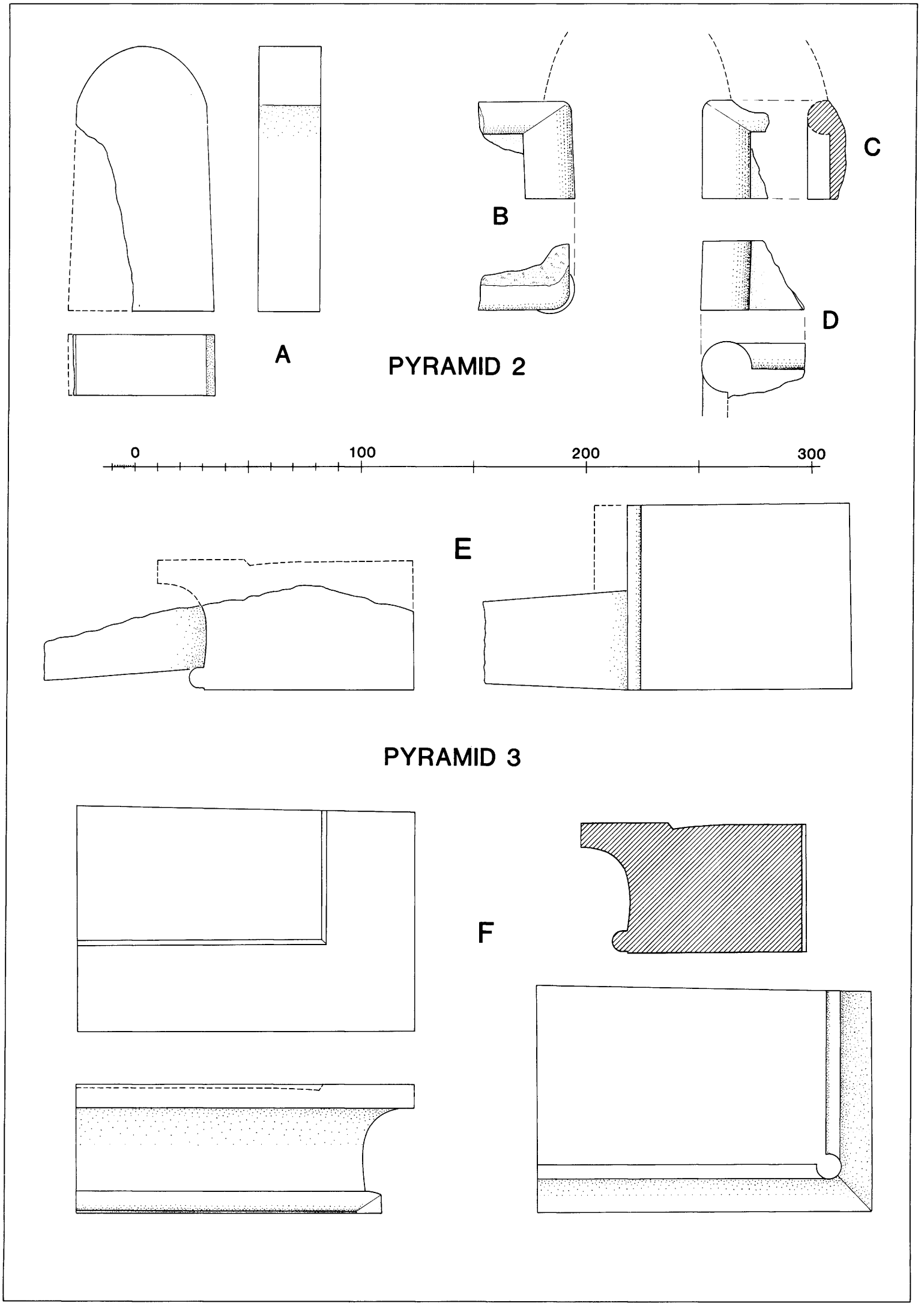




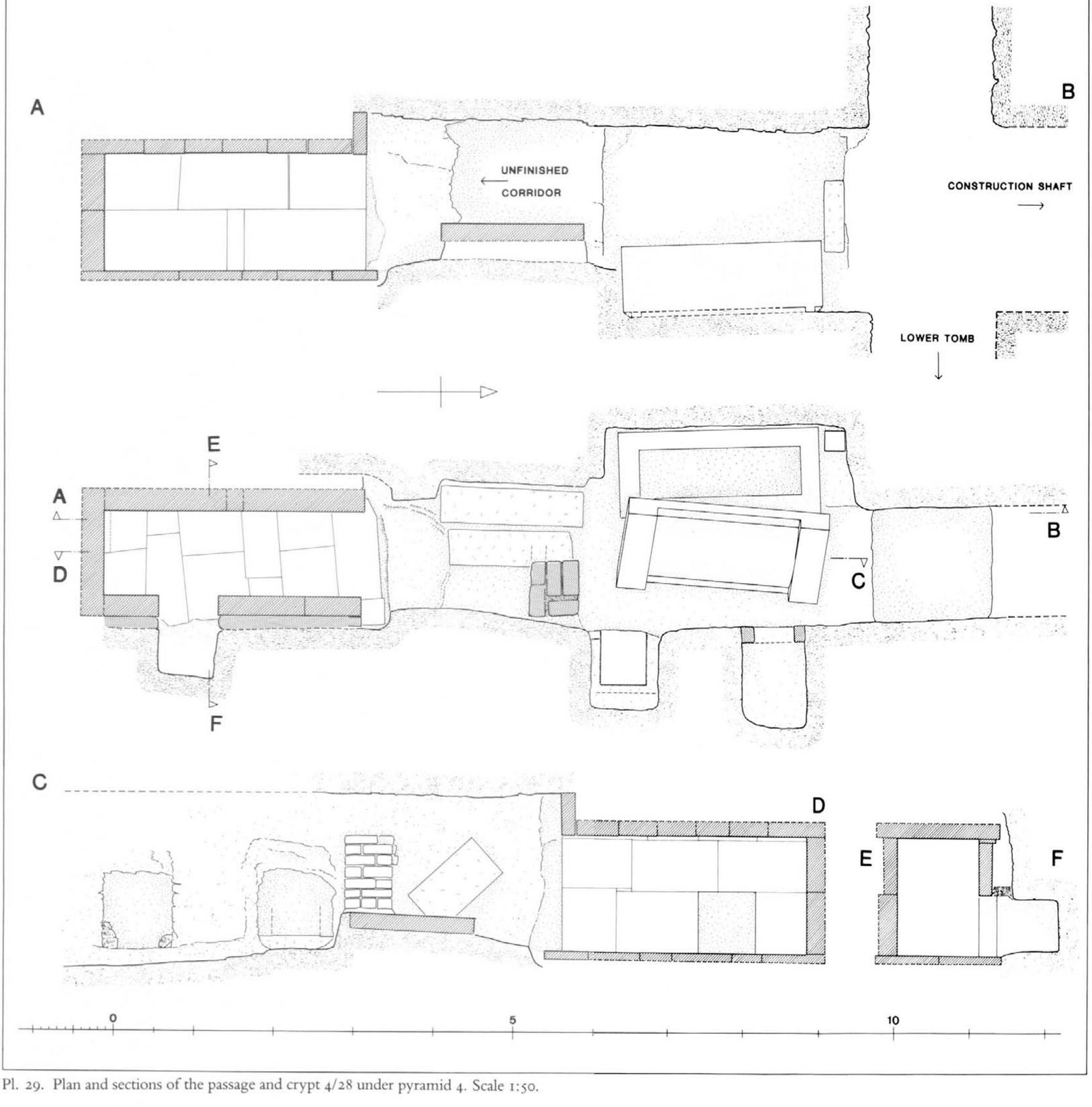
Pl. 26d–e. Views of the canopic chest and sarcophagus of pyramid 3. Scale 1:20.



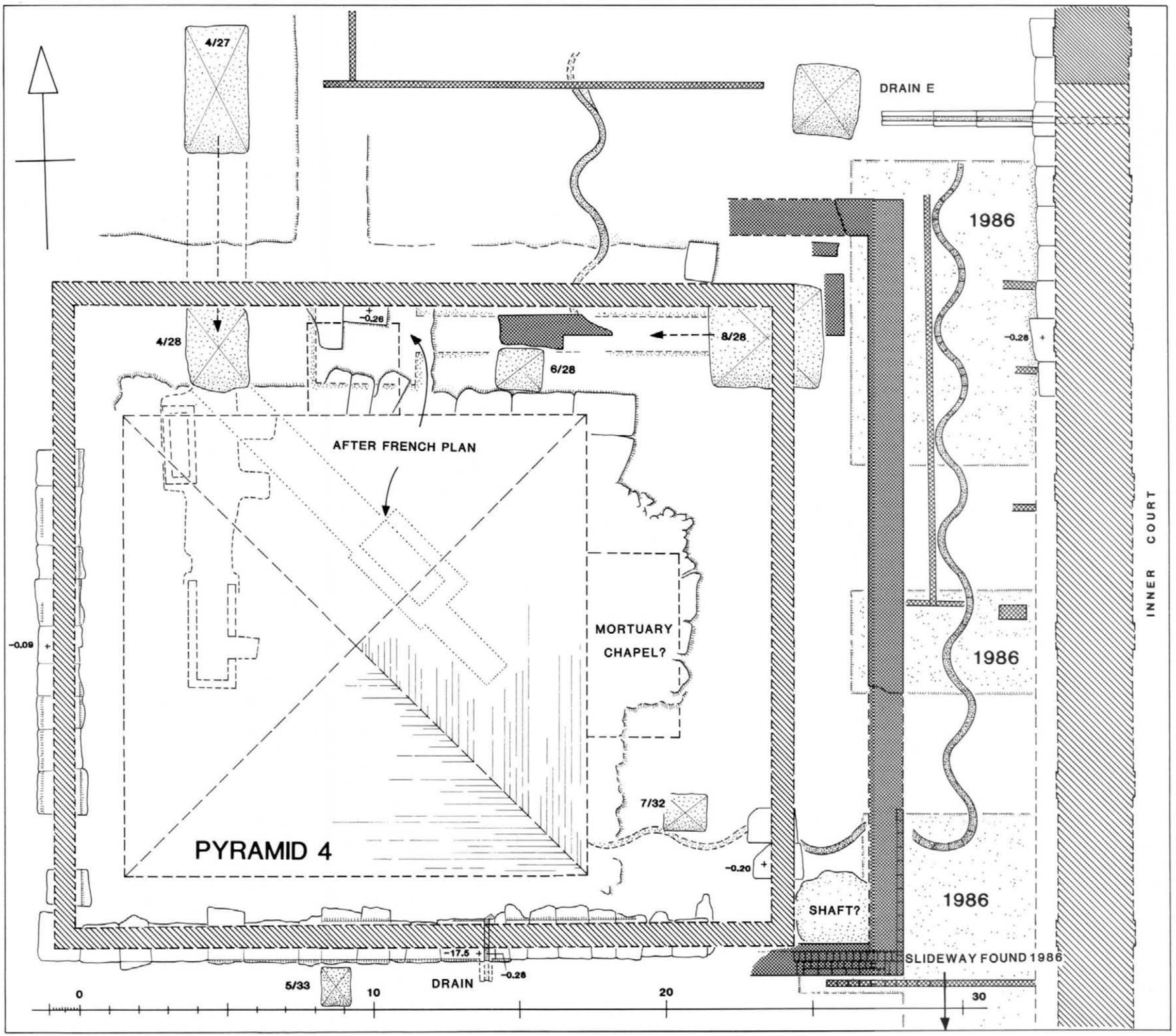
Pl. 27. Plan and section of the passage and crypt of pyramid 3. Scale 1:50.



Pl. 28. Fragments from pyramid 2: *A.* reused coping stone from the enclosure wall; *B–D.* corner cavetto and torus fragments of the mortuary chapel.
Fragments from the mortuary chapel of pyramid 3: *E.* roof block with cavetto and drain (side view and view from below); *F.* corner roof block with cavetto (top view, section, view from below). Scale 1:20.



Pl. 29. Plan and sections of the passage and crypt 4/28 under pyramid 4. Scale 1:50.



Pl. 30. Plan of the pyramid 4 complex.





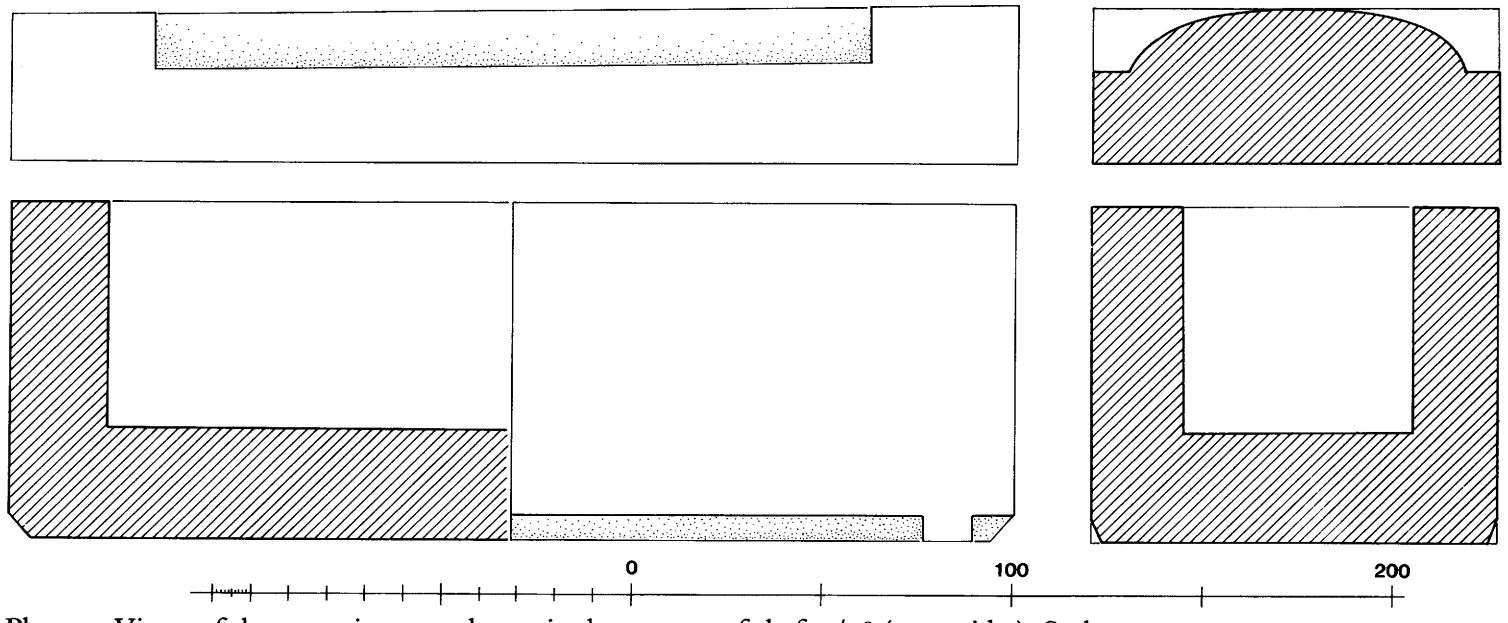
Pl. 31a–b. Area of pyramid 4 during and after the 1932–33 excavation.



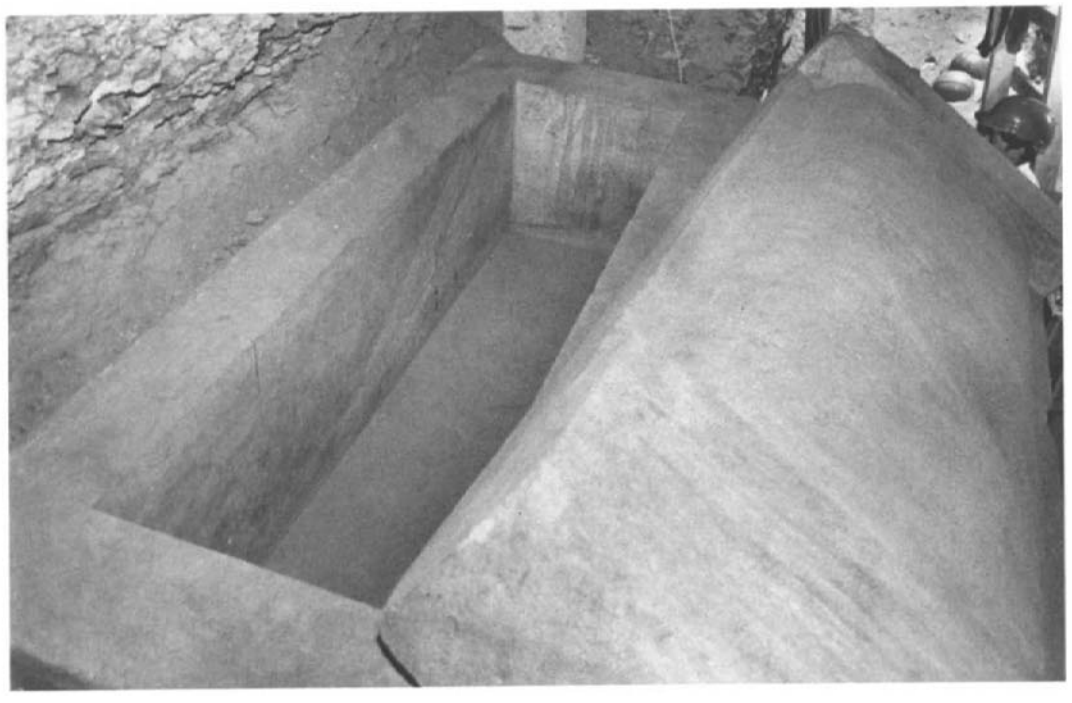
Pl. 31c. Drain in the southern enclosure wall of pyramid 4.



Pl. 31d. Brick walls east of the enclosure of pyramid 4 (see fig. 8) and the mouth of shaft 8/28.



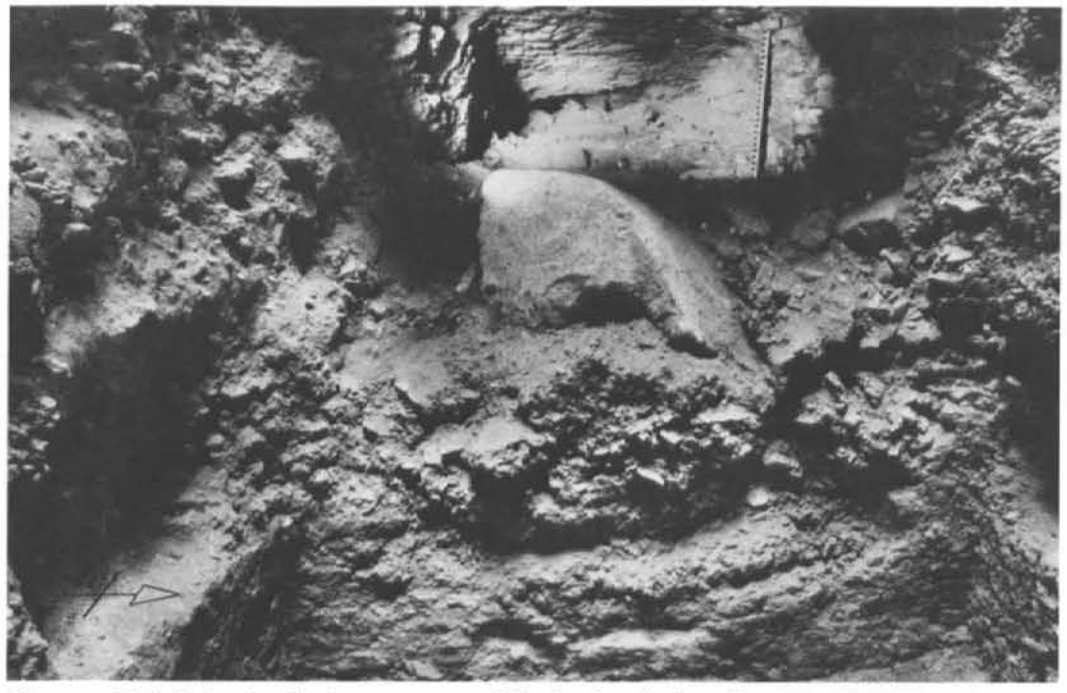
Pl. 32a. Views of the quartzite sarcophagus in the passage of shaft 4/28 (pyramid 4). Scale 1:20.



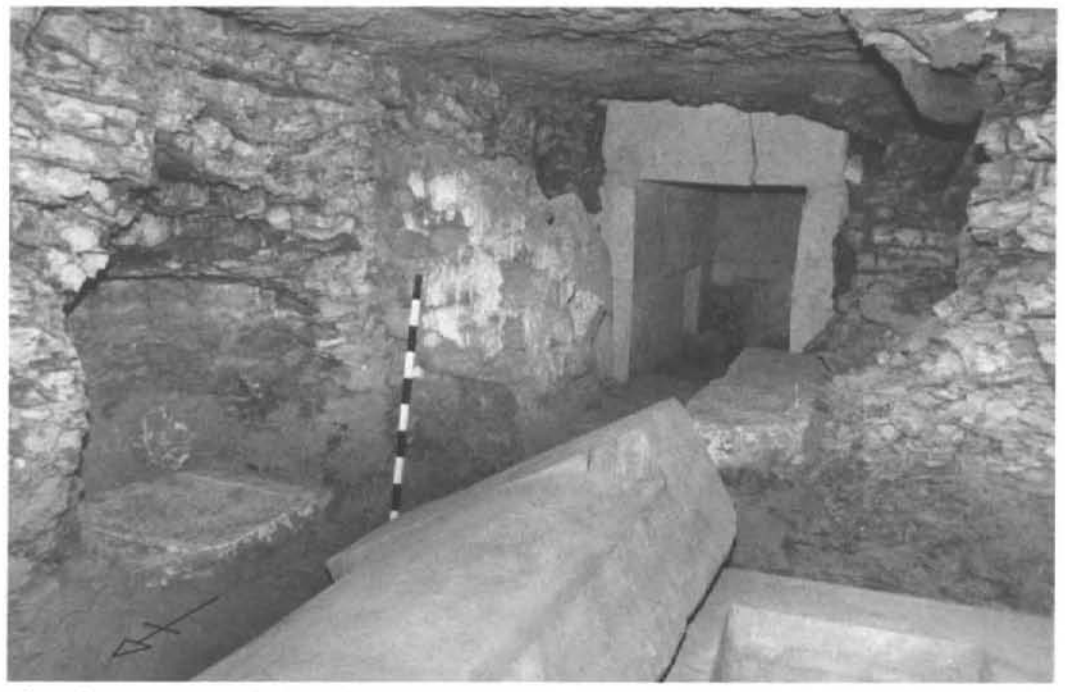
Pl. 32b. The quartzite sarcophagus in the passage of shaft 4/28 (pyramid 4), as found in 1986.



Pl. 32c. Surface, with tool marks, of the unfinished lid of the quartzite sarcophagus in pyramid 4.



Pl. 33a. Debris in the sloping passage of shaft 8/28 during the 1931–32 excavation.



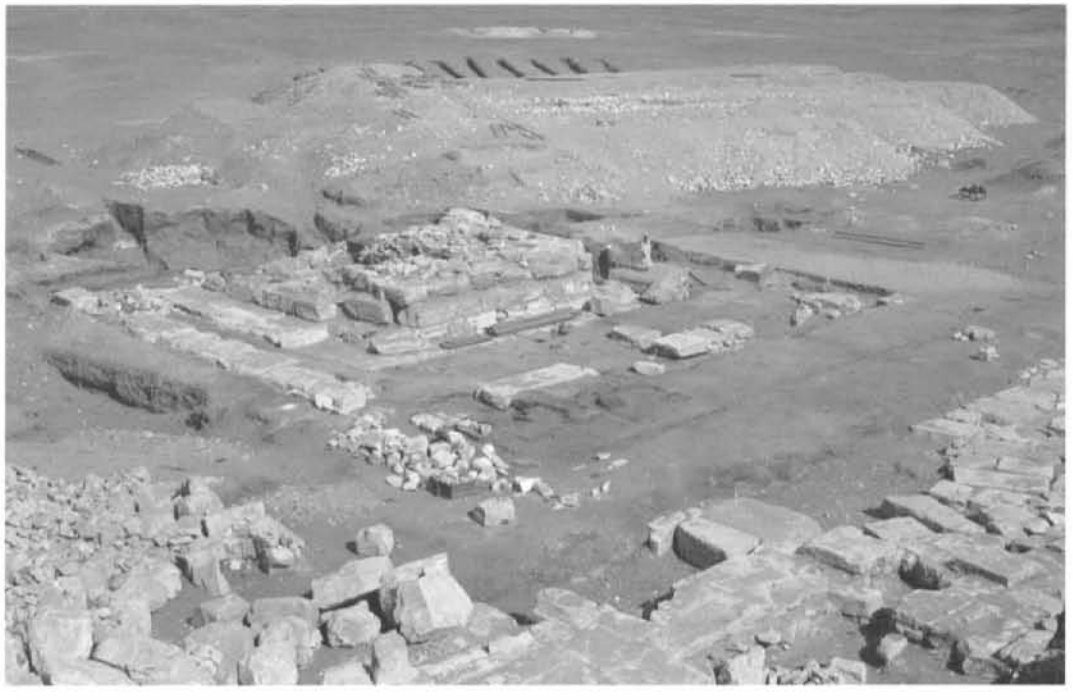
Pl. 33b. Passage and chamber of shaft 4/28.



Pl. 33c. Passage and chamber of shaft 4/28, with the entrance into the damaged corridor.



Pl. 33d. Canopic niche with a plastered *tafl* surface in the chamber of shaft 4/28.



Pl. 34a. The area of pyramid 5 after the 1931–32 excavation. Stone dressing stations are seen in the background.



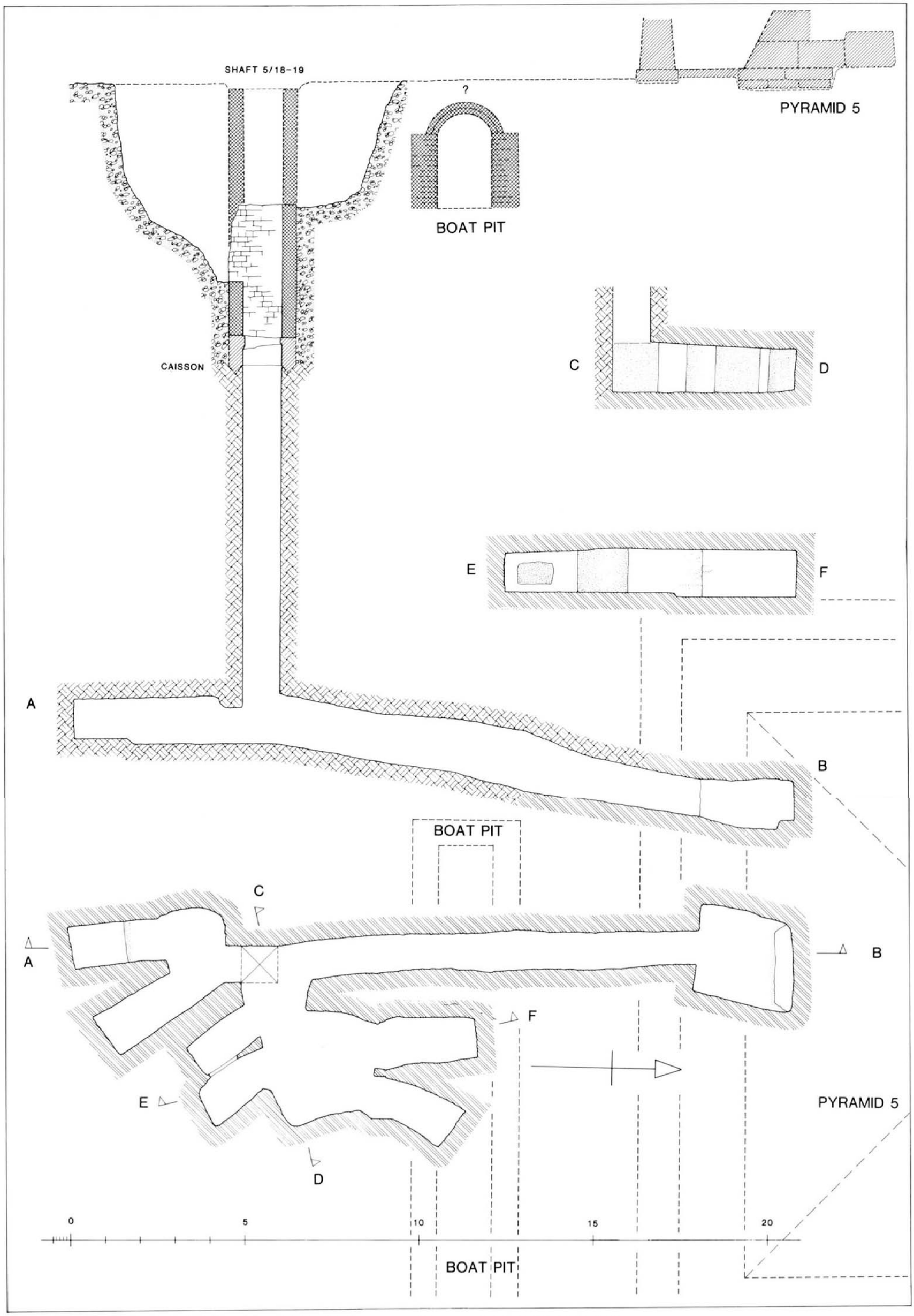
Pl. 34b. The southwest corner of the foundations of pyramid 5.



Pl. 34c. The south side of pyramid 5.

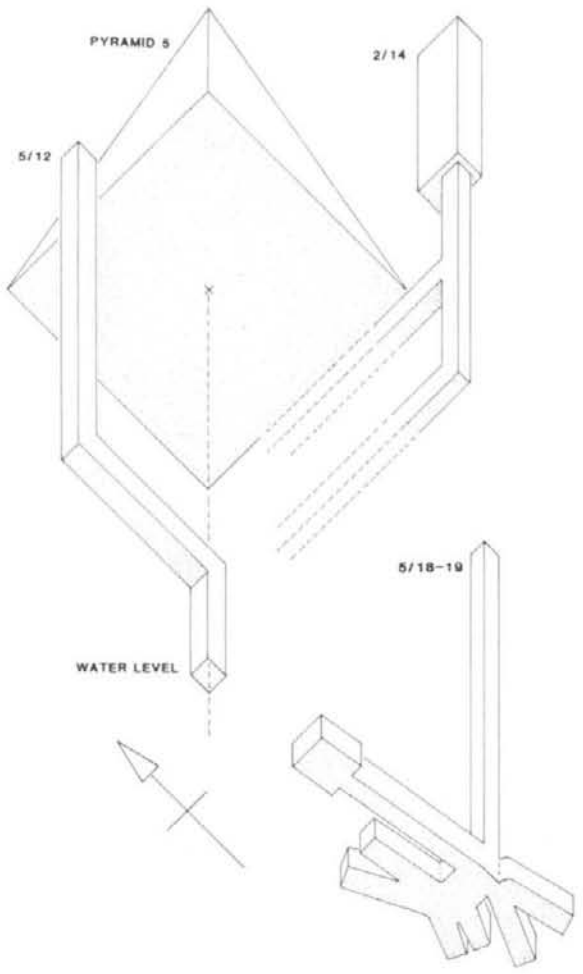


Pl. 34d. The northwest corner of pyramid 5, with the "pyramid crater" shaft 2/14.



Pl. 35. Plan and sections of shaft 5/18–19 (pyramid 5), with the presumed location of the boat pit. Scale 1:100.

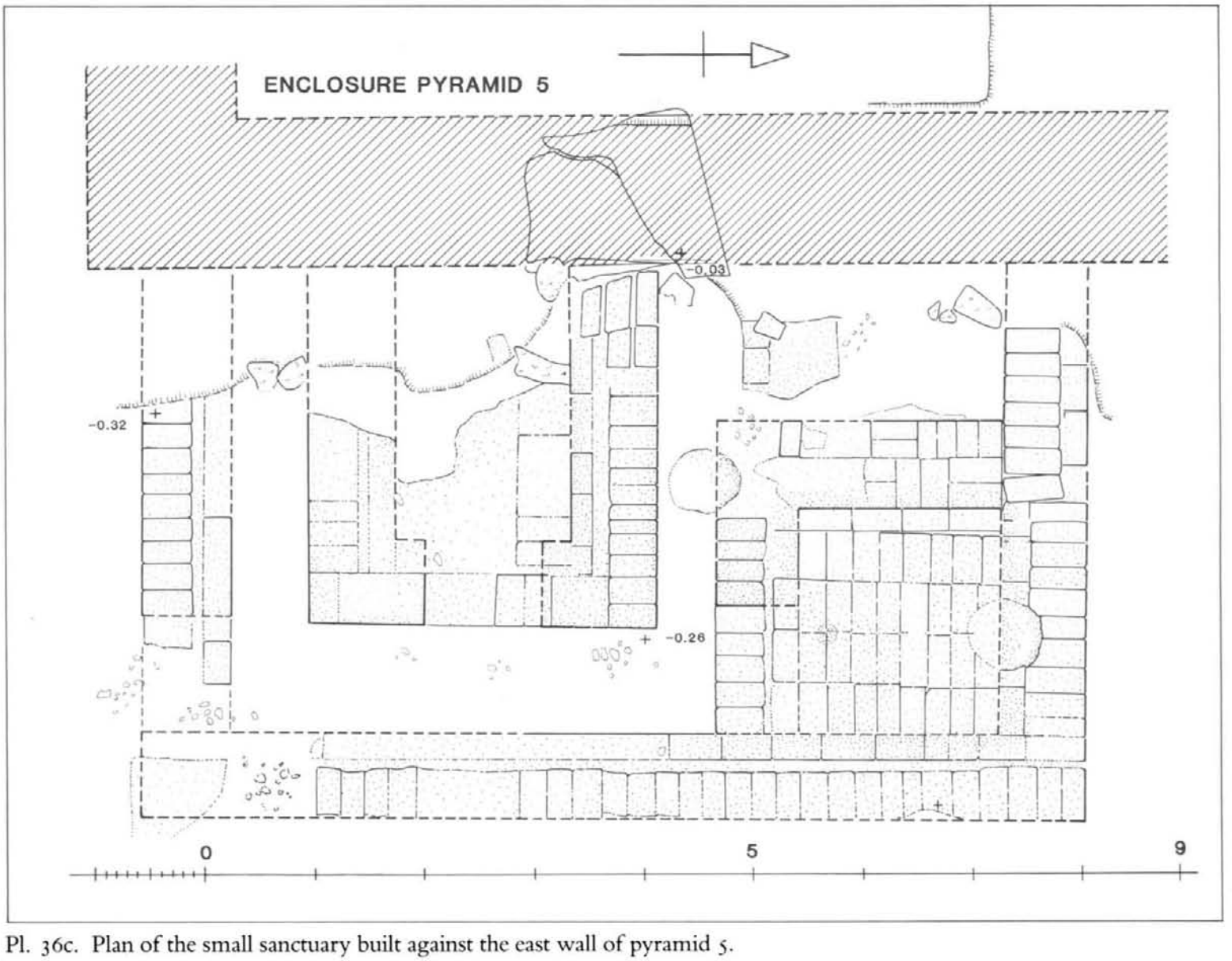
PLATE 36



Pl. 36a. Axonometric view of the shaft systems around and under pyramid 5, seen from below.



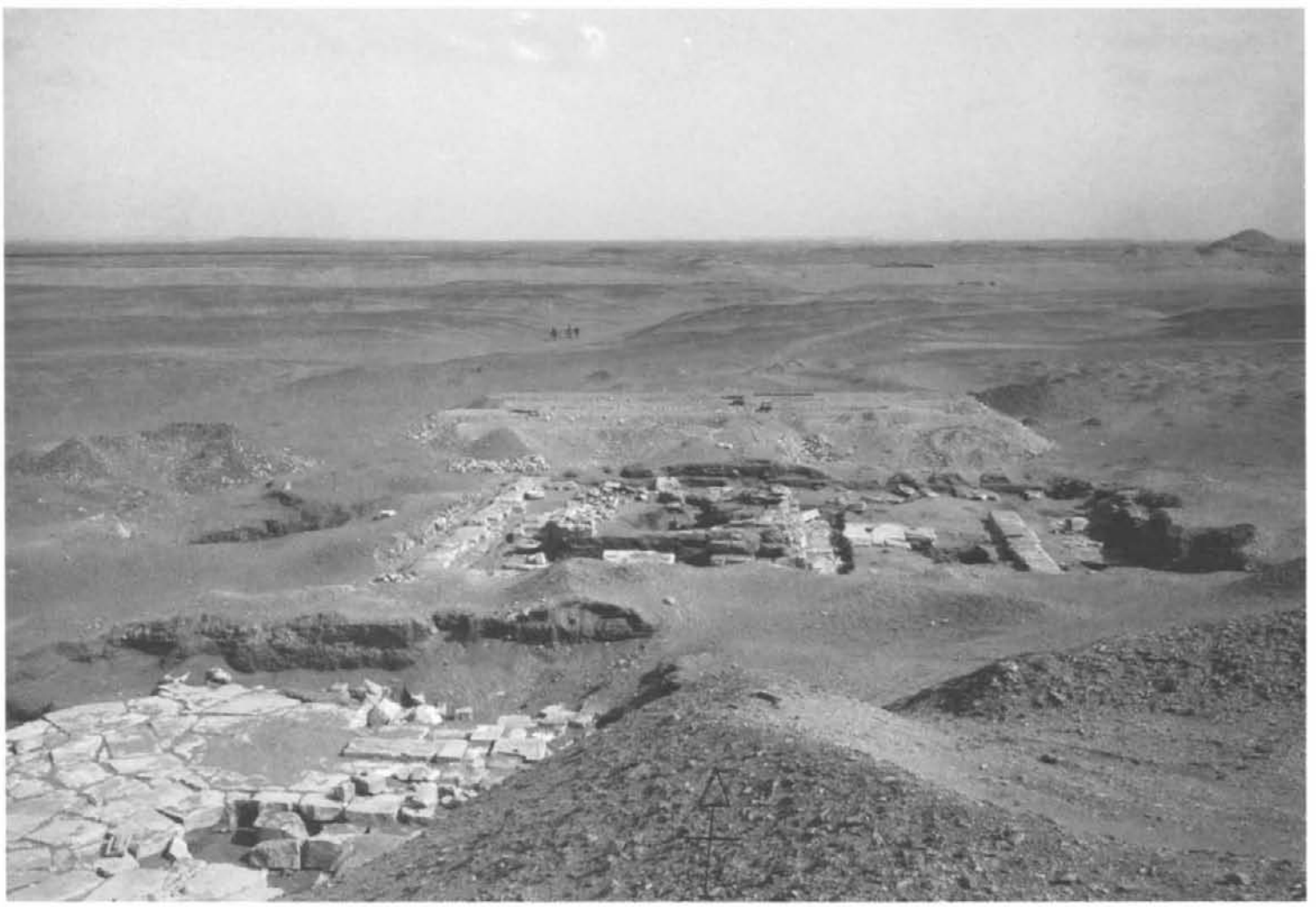
Pl. 36b. Excavation of shaft 2/14 using the caisson method during the 1931–32 season.



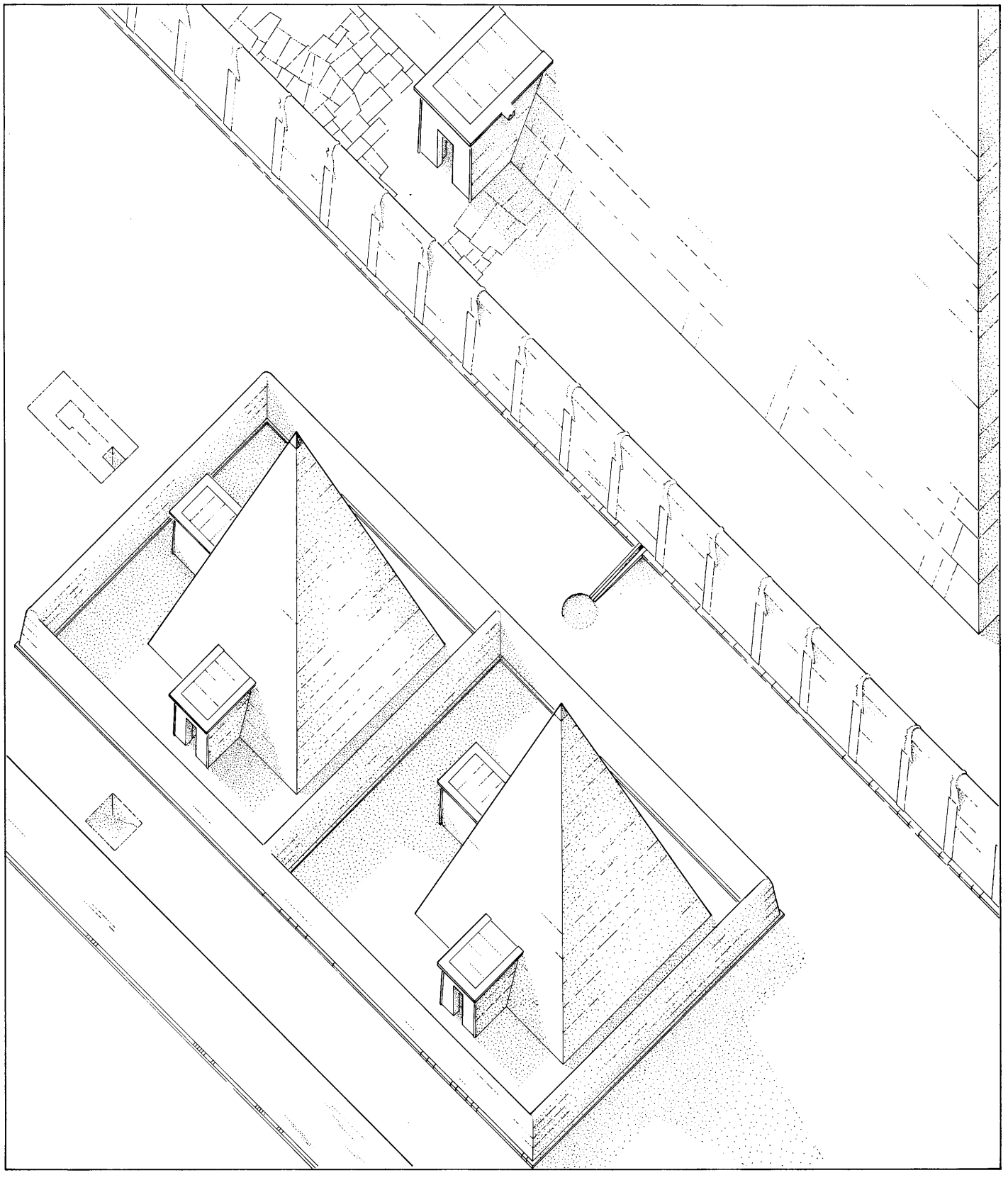
Pl. 36c. Plan of the small sanctuary built against the east wall of pyramid 5.



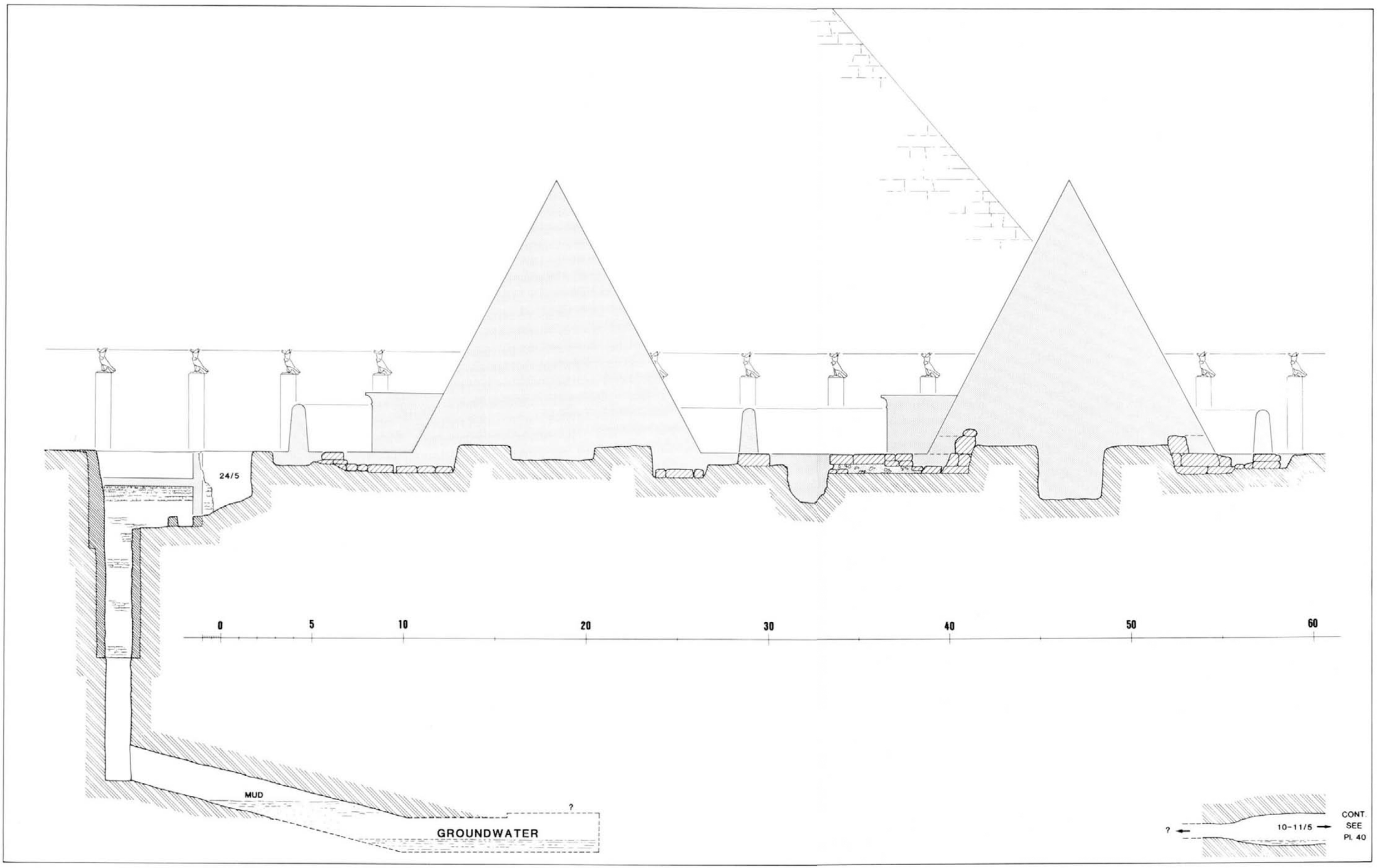
Pl. 37a. Pyramid 5 seen from the east with remains of the brick sanctuary to the left and levelling walls to the right.



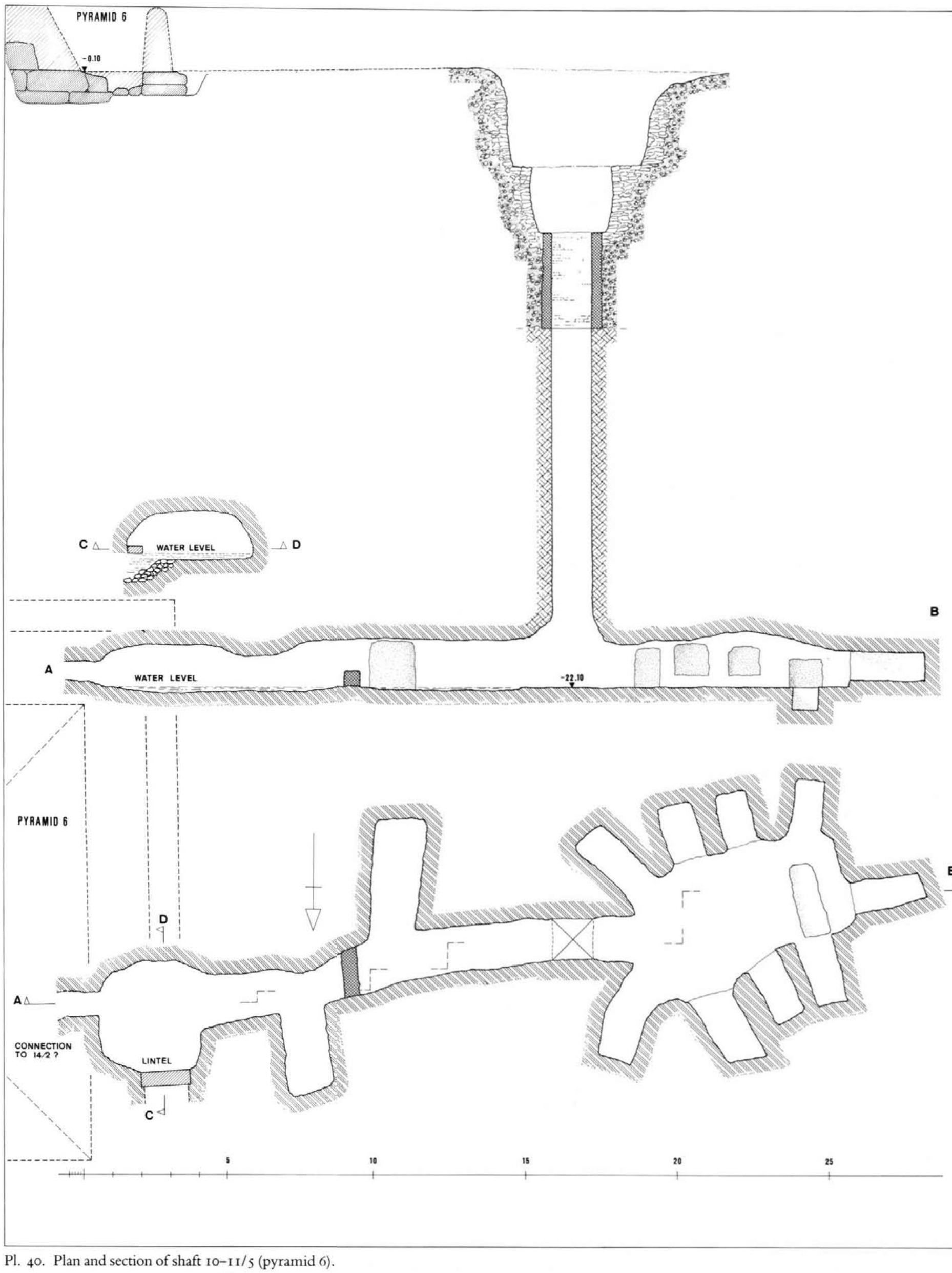
Pl. 37b. Pyramid 6 seen from the south.



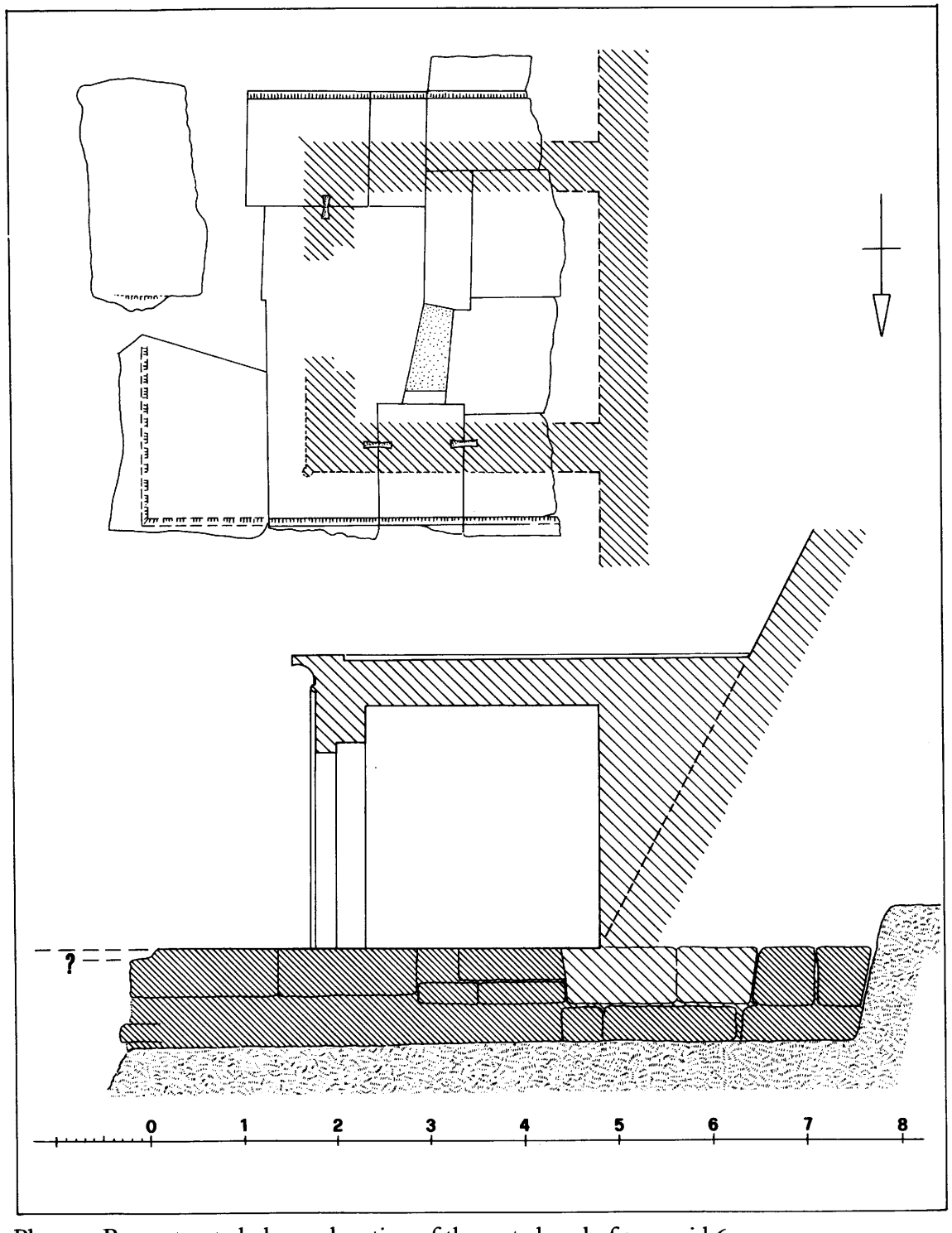
Pl. 38. Isometric view of pyramid 6 (right) and pyramid 7 (left) with the pyramid of Senwosret I in the background.



Pl. 39. East-west section through pyramids 7 and 6, seen from north to south. Scale 1:200.



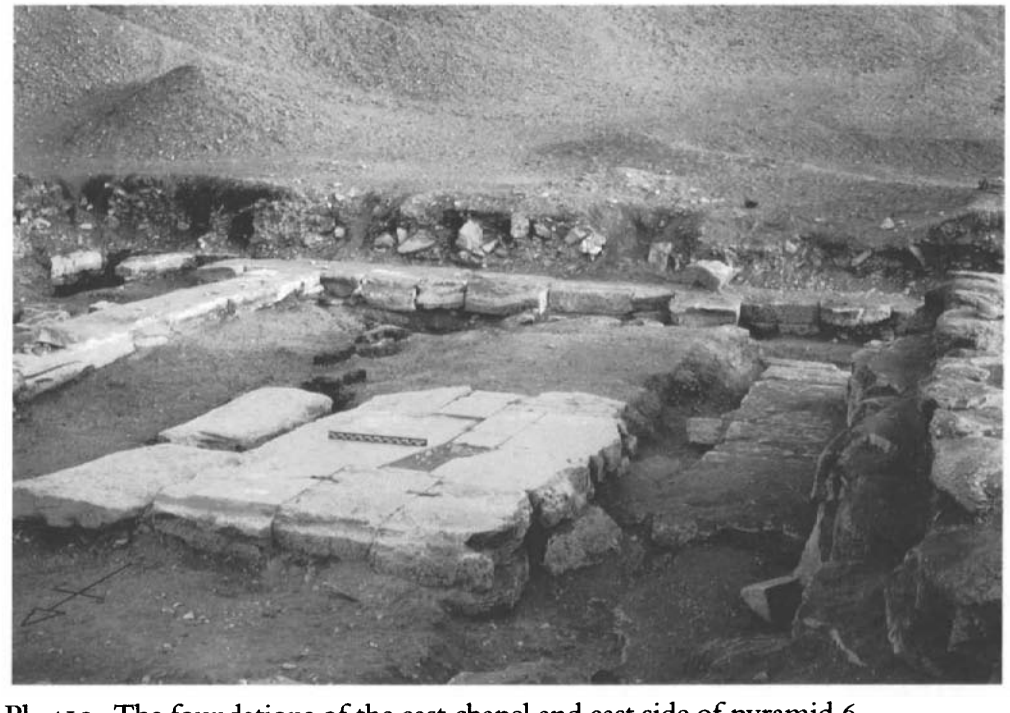
Pl. 40. Plan and section of shaft 10–11/5 (pyramid 6).



Pl. 41a. Reconstructed plan and section of the east chapel of pyramid 6.



Pl. 41b. The foundations of the east chapel of pyramid 6.



Pl. 41c. The foundations of the east chapel and east side of pyramid 6.



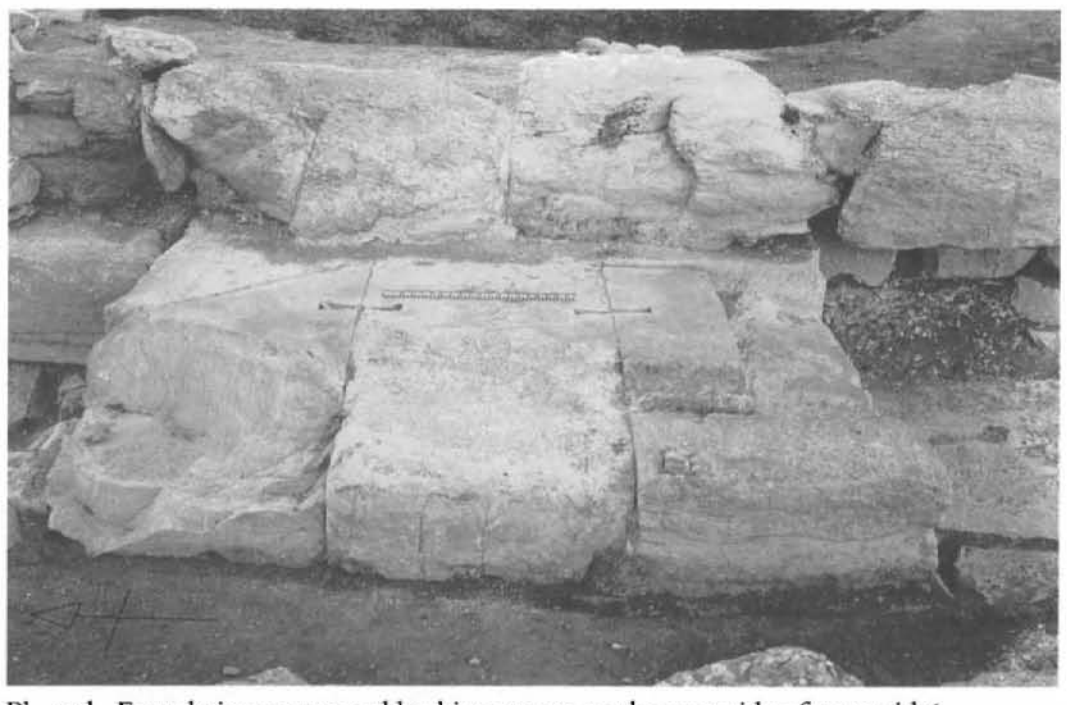
Pl. 42a. Foundations of the southern enclosure wall of pyramid 6 in the foreground, with shaft 14/8 to the right.



Pl. 42b. Foundations of the enclosure wall of pyramid 6, seen from the east. Pyramid 5 is in the background to the left.



Pl. 42c. Foundations at the northwest corner of pyramid 6.



Pl. 42d. Foundation stones and backing stones on the west side of pyramid 6.



Pl. 43a. Northeast corner of the enclosure wall of pyramid 7.



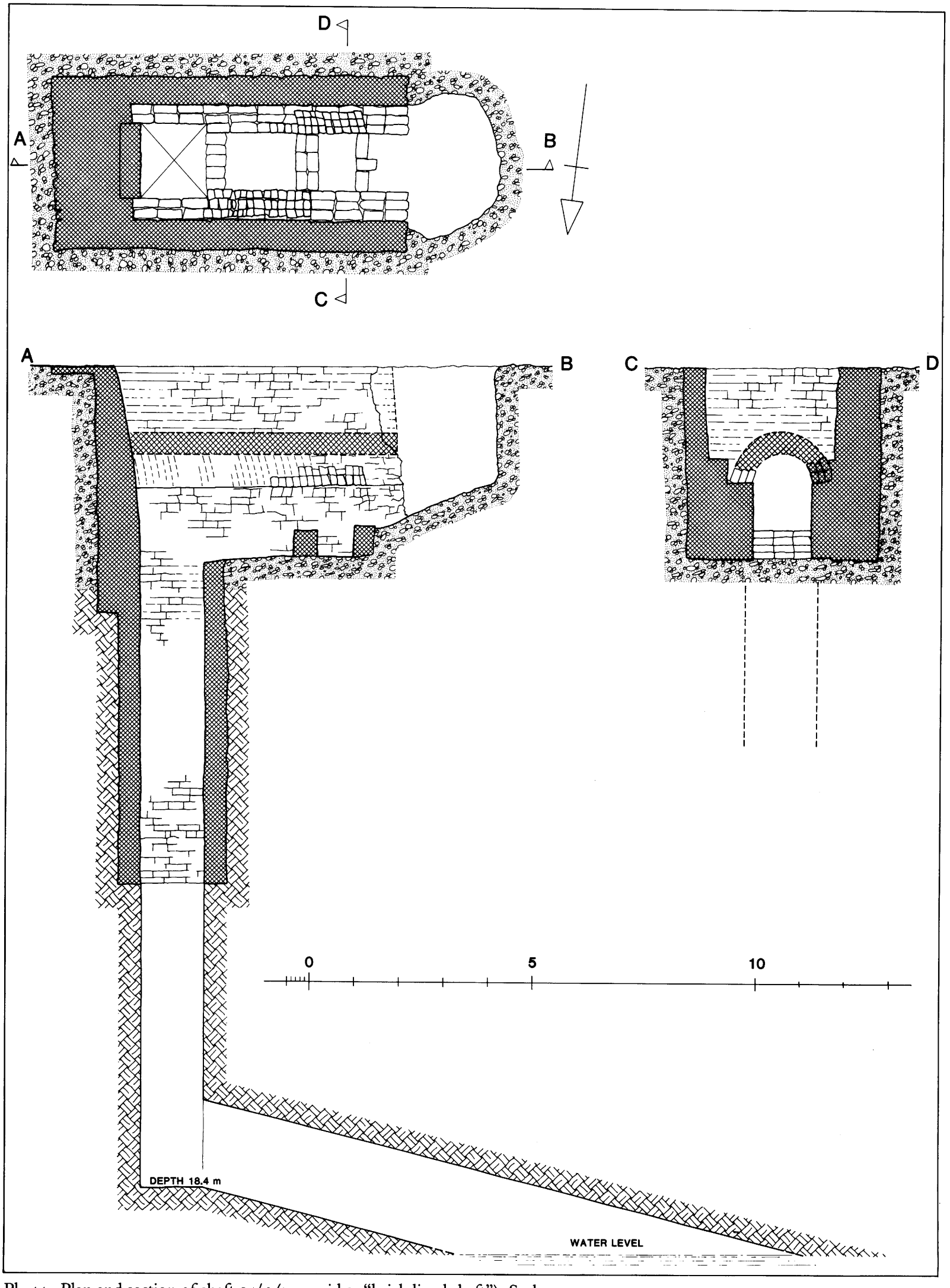
Pl. 43b. Area north of the pyramid of Senwosret I, with pyramid 7 in the center, left.



Pl. 43c. Foundations of the north side of pyramid 7.



Pl. 43d. Northeast corner of pyramid 7, with remains of a casing block.



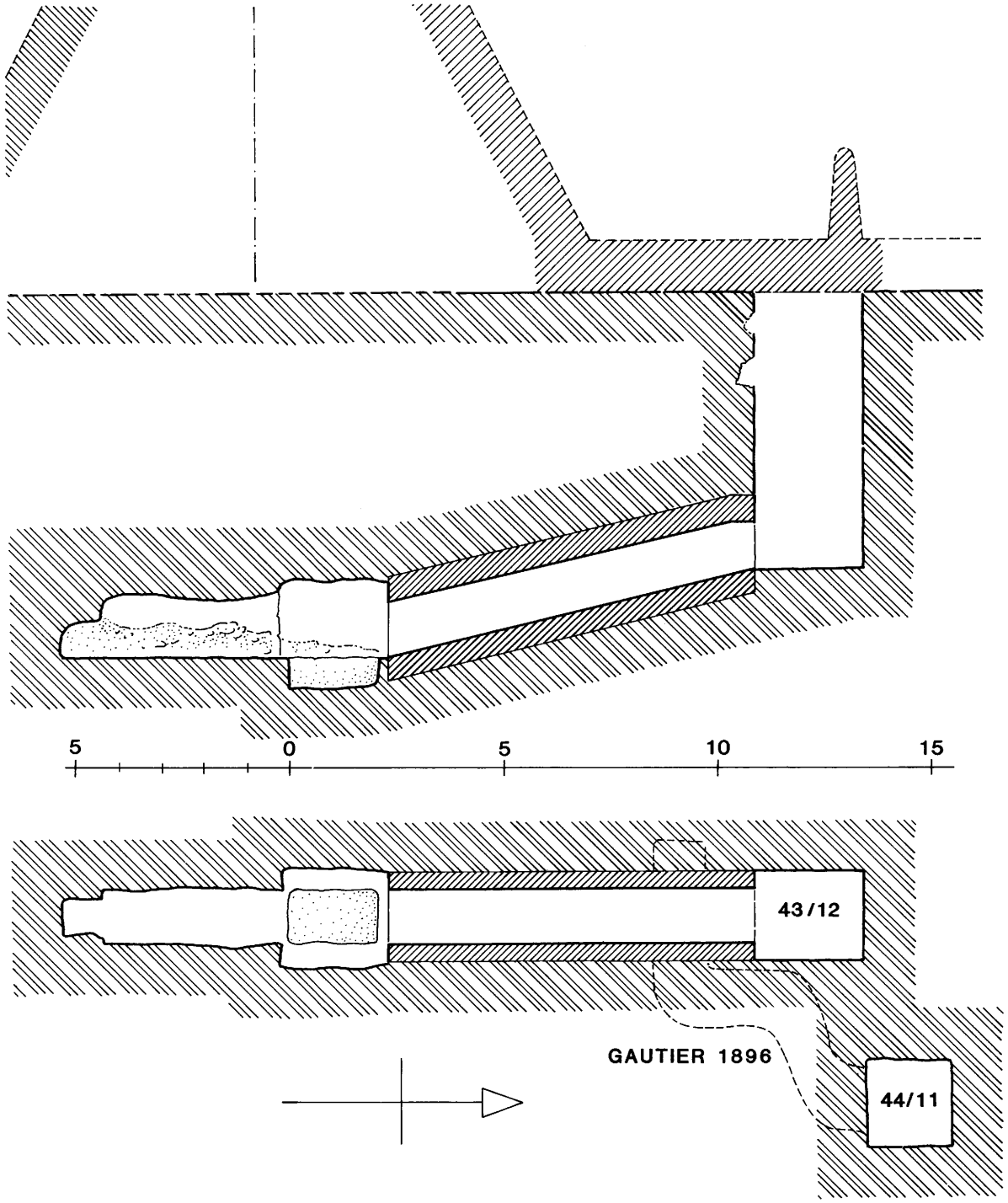
Pl. 44. Plan and section of shaft 24/5 (pyramid 7; "brick lined shaft"). Scale 1:100.



Pl. 45a. Pyramid 8 and shaft 43/12 seen from the north.



Pl. 45b. Pyramid 8 seen from the west.



Pl. 46a. Plan and section of the crypt of pyramid 8 according to Gautier's 1896 survey.



Pl. 46b. Pyramid 8 seen from the northeast during the 1913–14 season.



Pl. 46c. Remains of pyramid 8 seen from the west during the 1987 season (see pl. 45).





Pl. 47a–b. Area of pyramid 9 seen from the northwest during the 1913–14 season.



Pl. 47c. Southwest corner of pyramid 9, with shaft 45/16 and pottery probably originating from the shaft.



Pl. 47d. Area between pyramids 8 and 9 seen from the north during the 1913–14 season.

PLATE 48



Pl. 48a. Southeast corner of pyramid 9 with deposit pit.

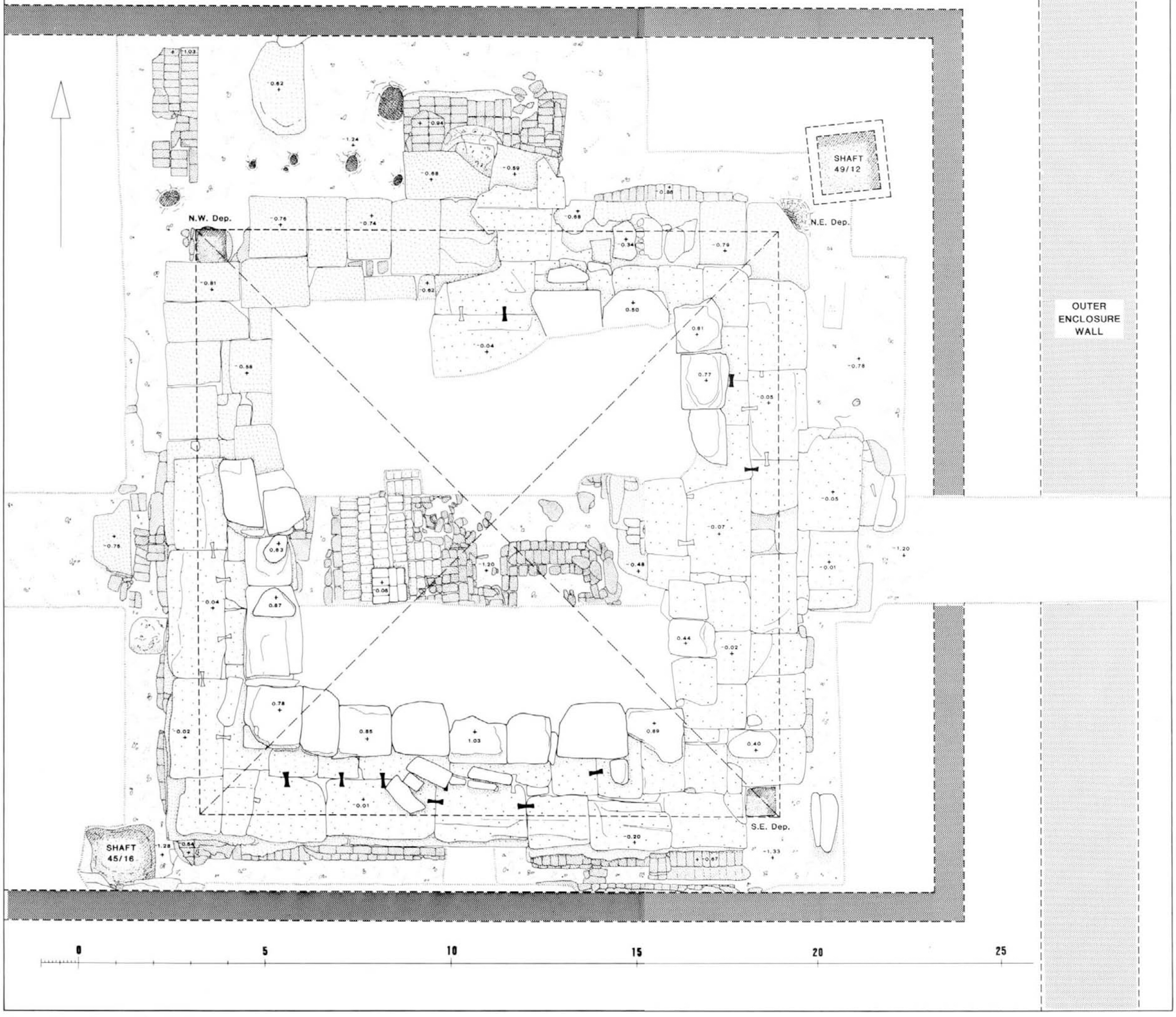


Pl. 48b. Northeast corner of pyramid 9 with shaft 49/12 and the break into the deposit pit.

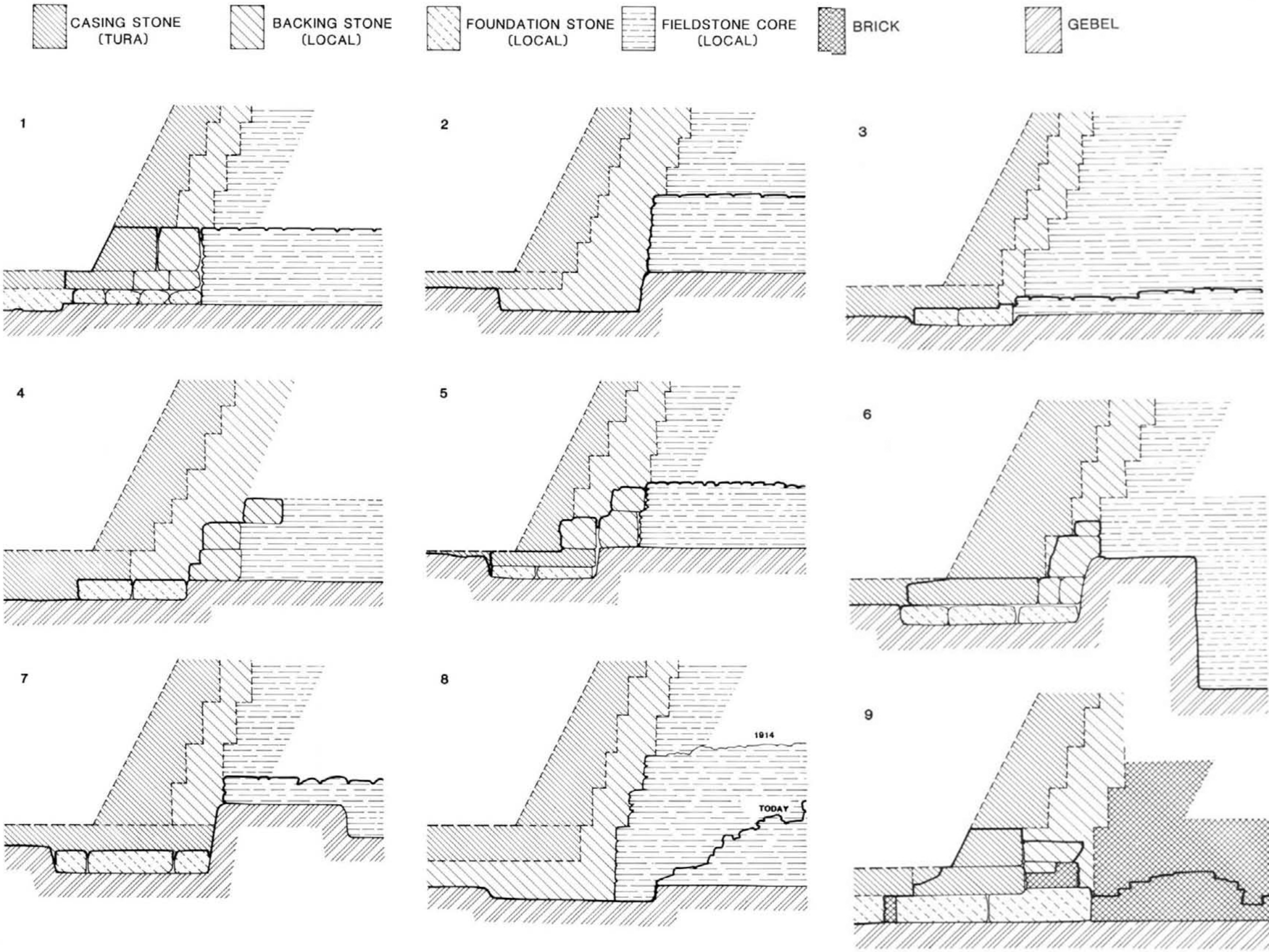




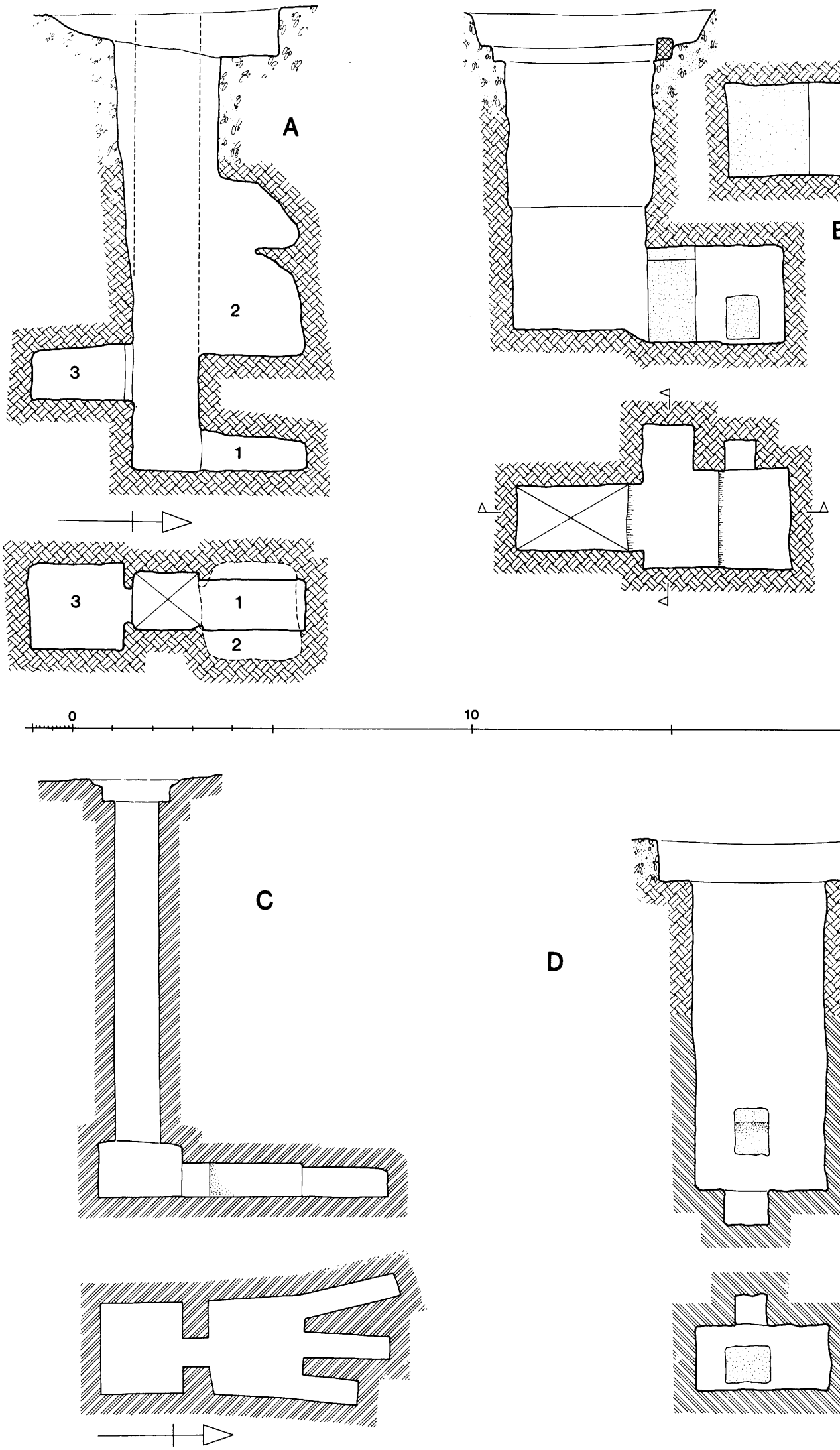
Pl. 48c–d. Two phases of the excavation of the southeast deposit of pyramid 9.



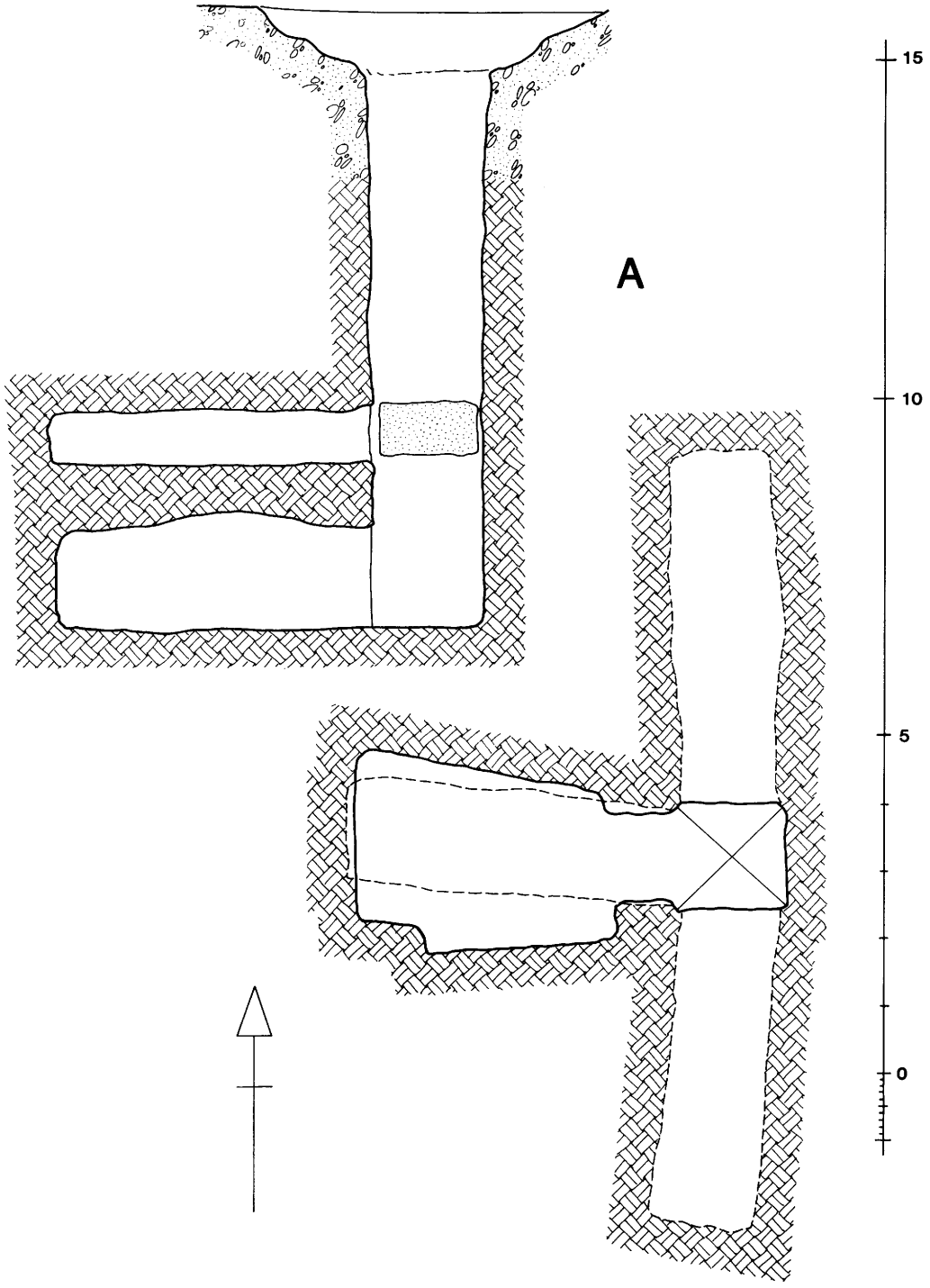
Pl. 49. Plan of pyramid 9. Scale 1:100.

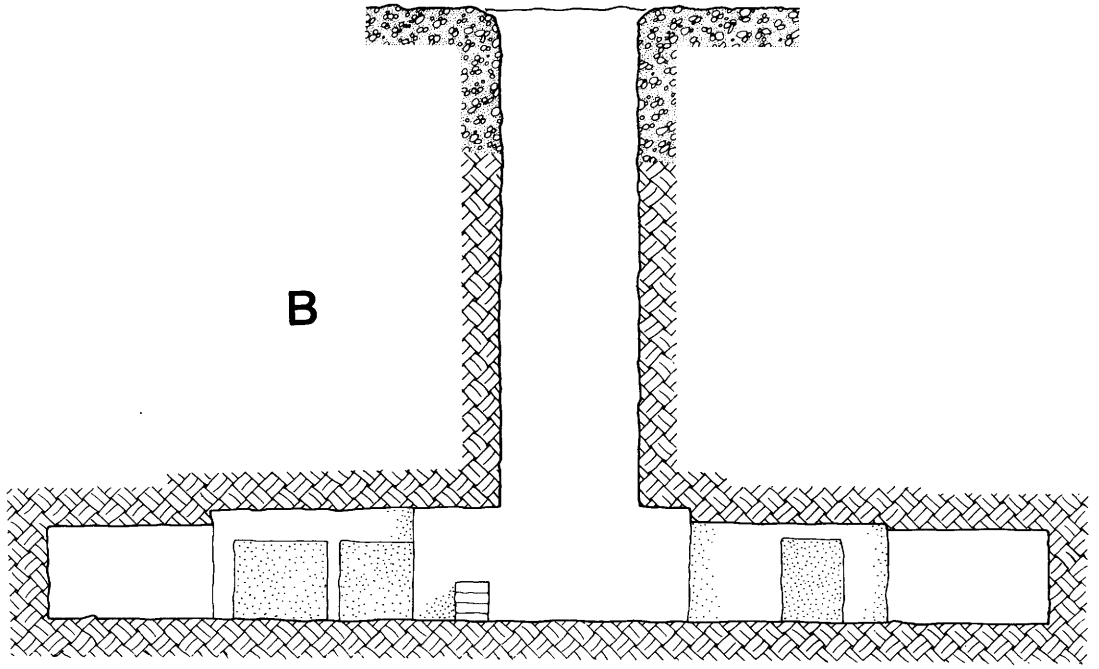


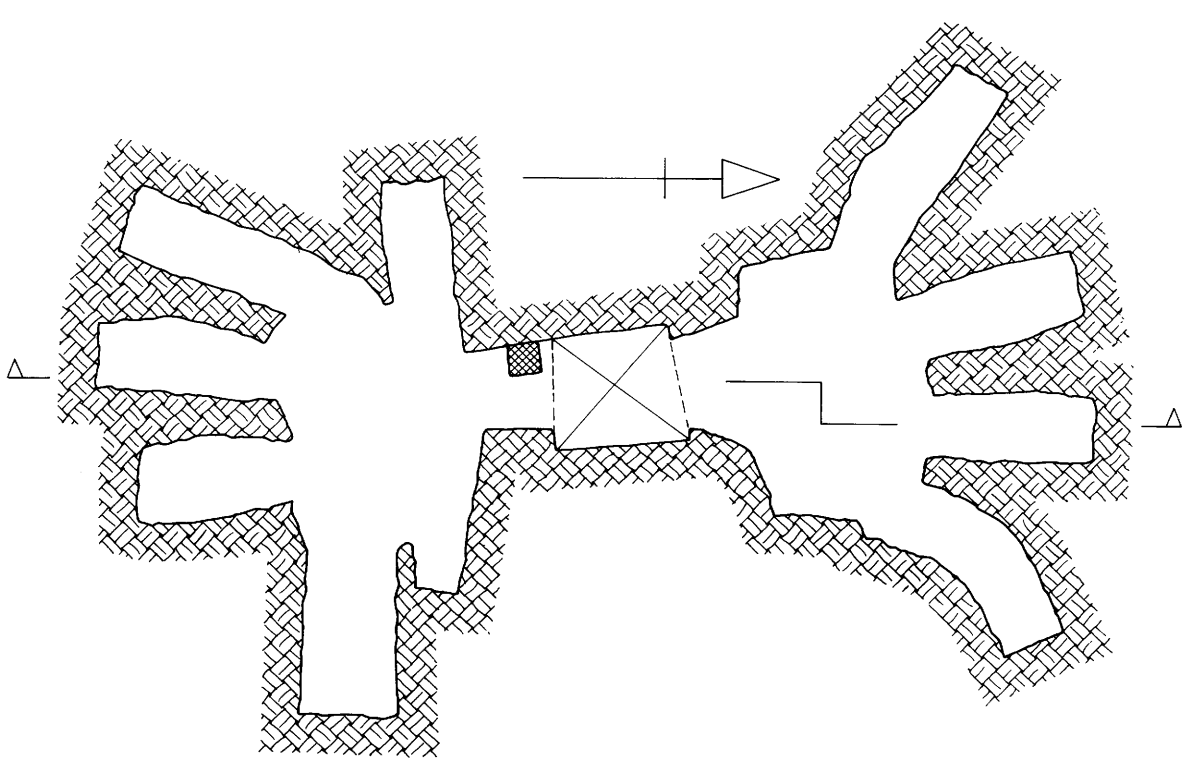
Pl. 50. Schematic sections showing construction of all secondary pyramids.



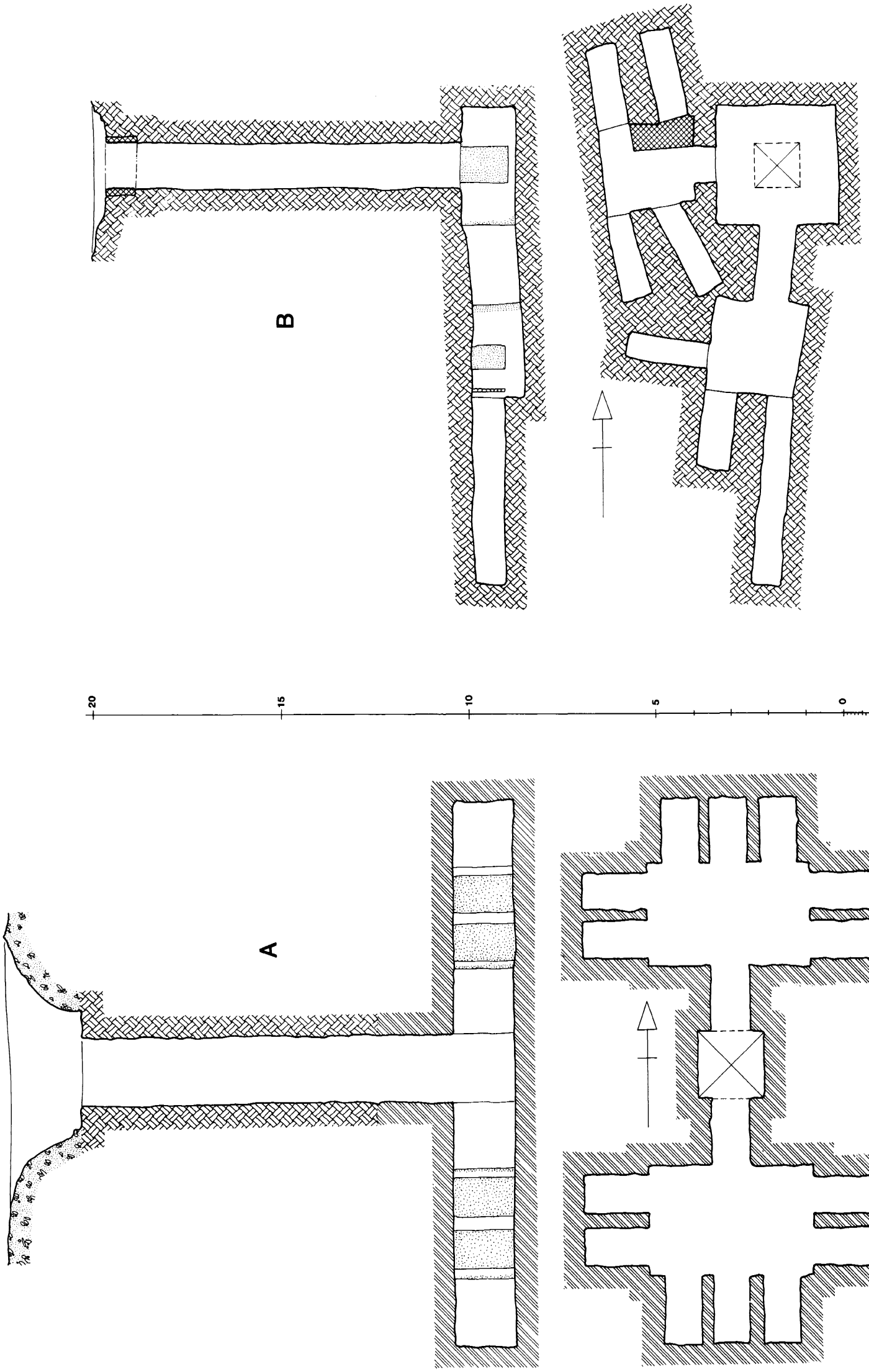
Pl. 51. Plans and sections of shafts in the outer court: *A*. shaft 2/36; *B*. unidentified shaft (no. 5010, tomb card 342); *C*. shaft 45/45N; *D*. unidentified shaft (no. 5009, tomb card 339).



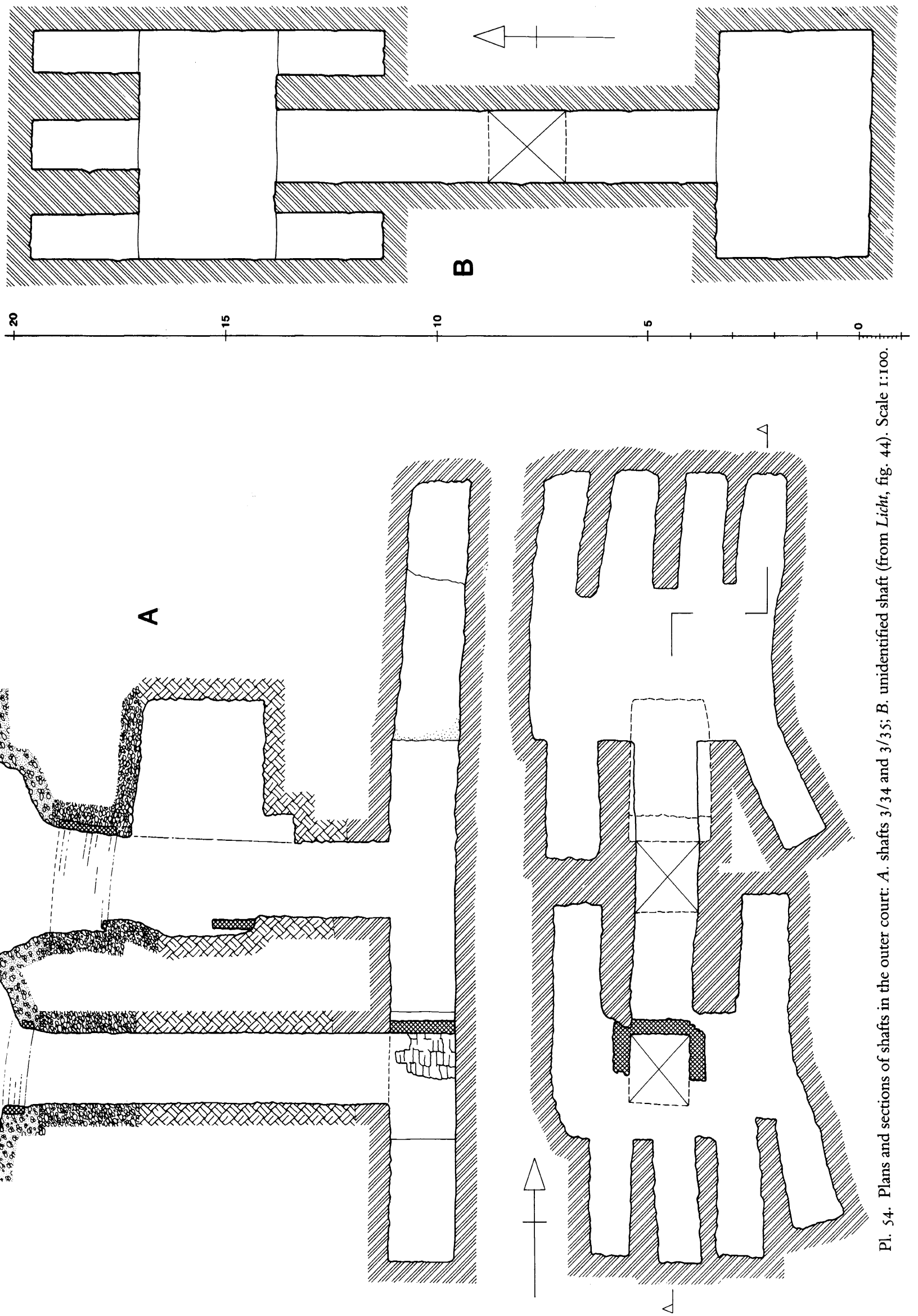




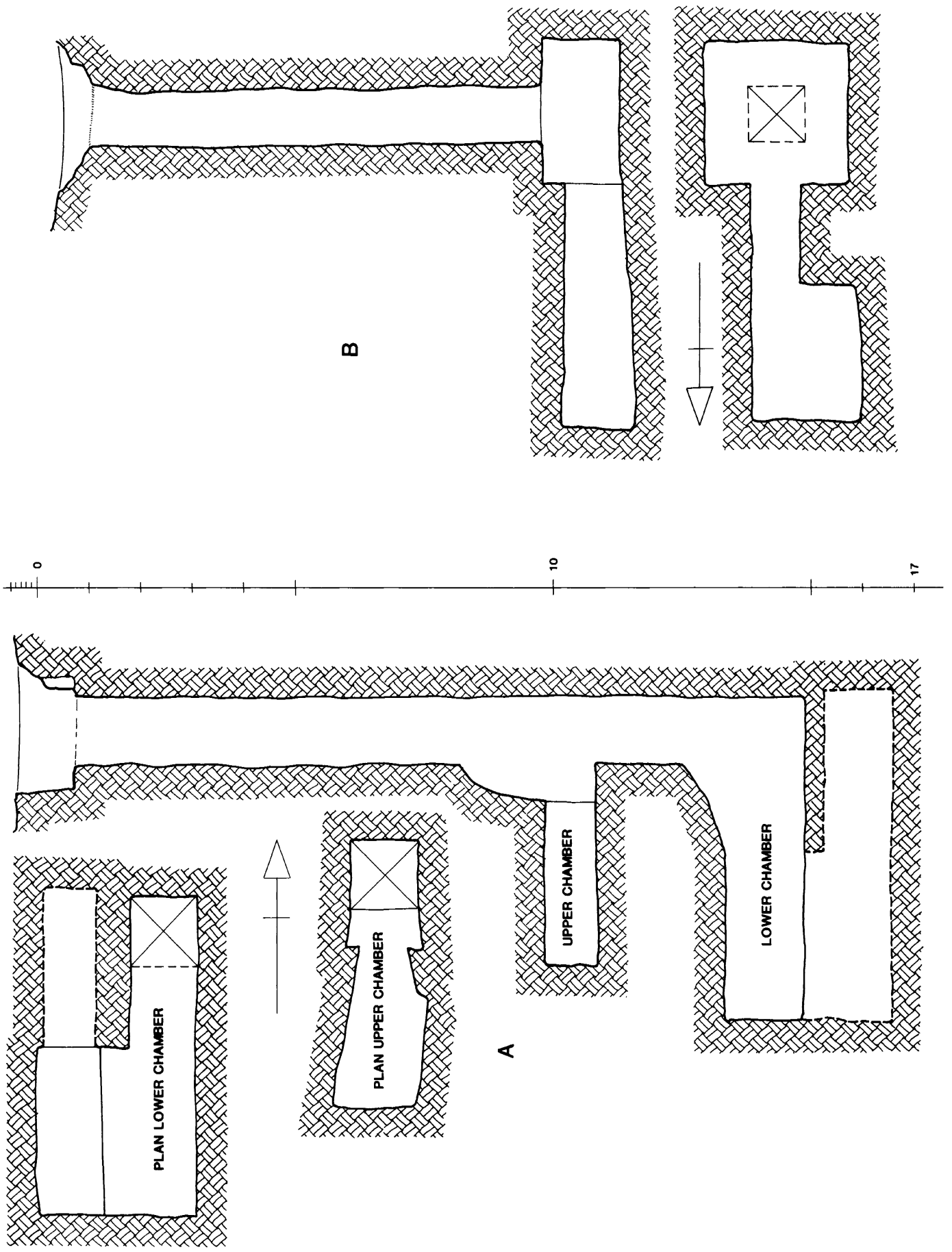
Pl. 52. Plans and sections of shafts in the outer court: *A*. unidentified shaft ("OCS2 pit 1," tomb card 423); *B*. shaft 19/41. Scale 1:100.



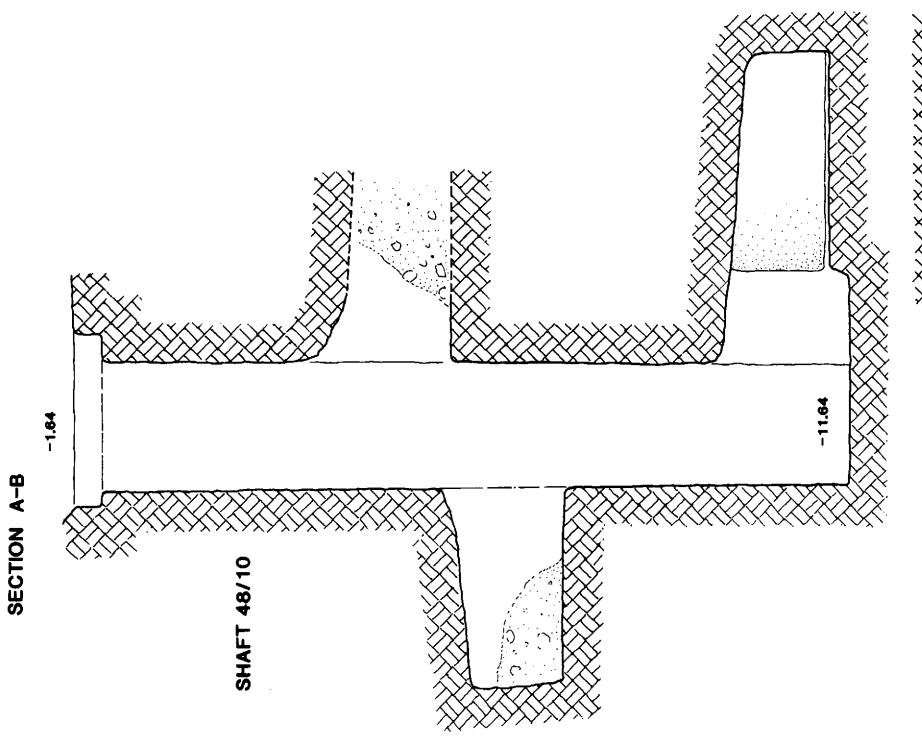
Pl. 53. Plans and sections of shafts in the outer court: *A*. unidentified shaft (from *Licht*, fig. 45); *B*. shaft 43/46.



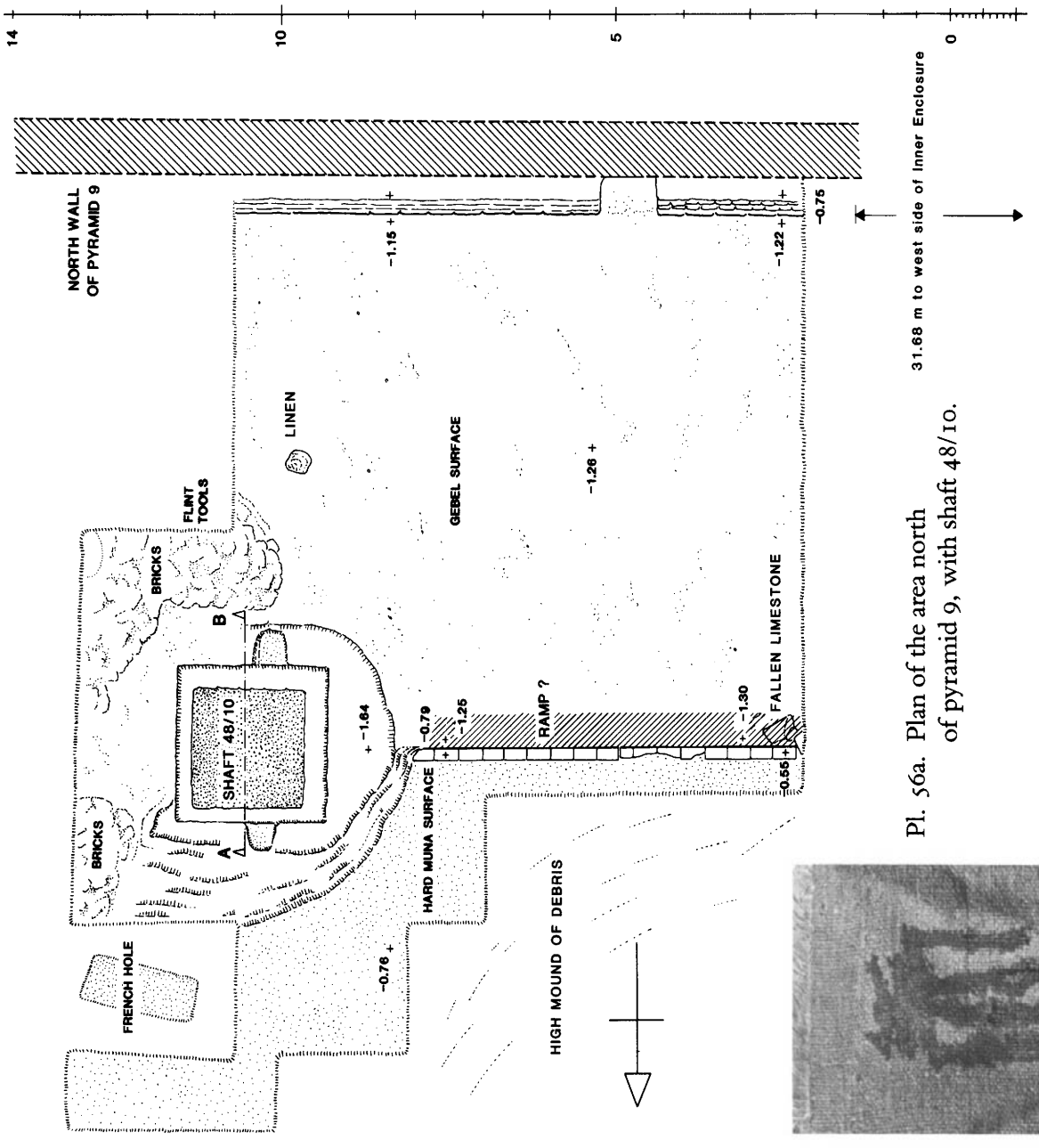
Pl. 54. Plans and sections of shafts in the outer court: *A*. shafts 3/34 and 3/35; *B*. unidentified shaft (from *Licht*, fig. 44). Scale 1:100.



Pl. 55. Plans and sections of shafts in the outer court: *A*. shaft 46/45; *B*. shaft 45/45. Scale 1:100.



Pl. 56b. Plan and section of shaft 48/10. Scale 1:100.



Pl. 56a. Plan of the area north of pyramid 9, with shaft 48/10.



Pl. 56c. Mark on the linen bundle (cat. 275) found near shaft 48/10.



Pl. 56d. Linen bundle (cat. 275) found near shaft 48/10.



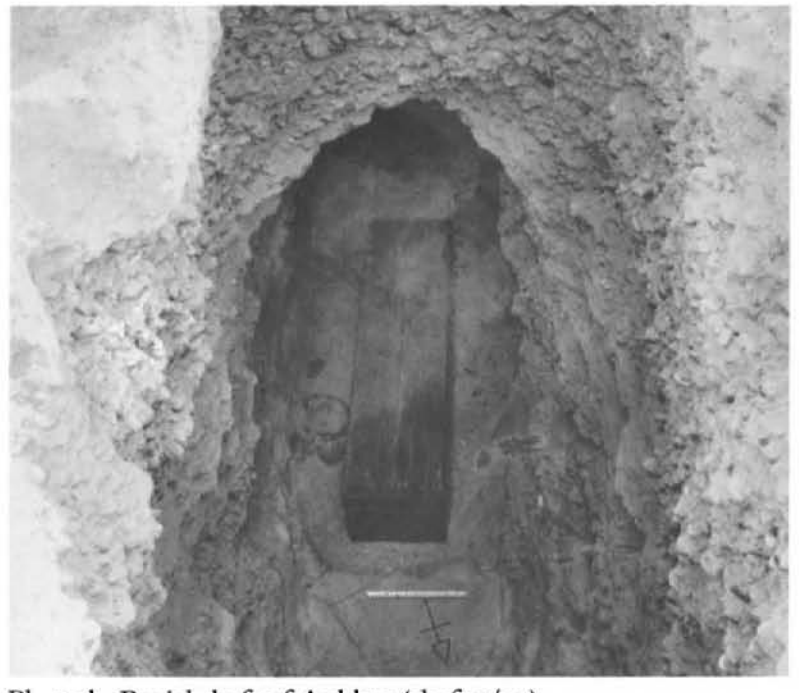
Pl. 57a. Shaft 44/44, with the lower part of a statue (cat. 123, pp. 68–69), seen from the east.



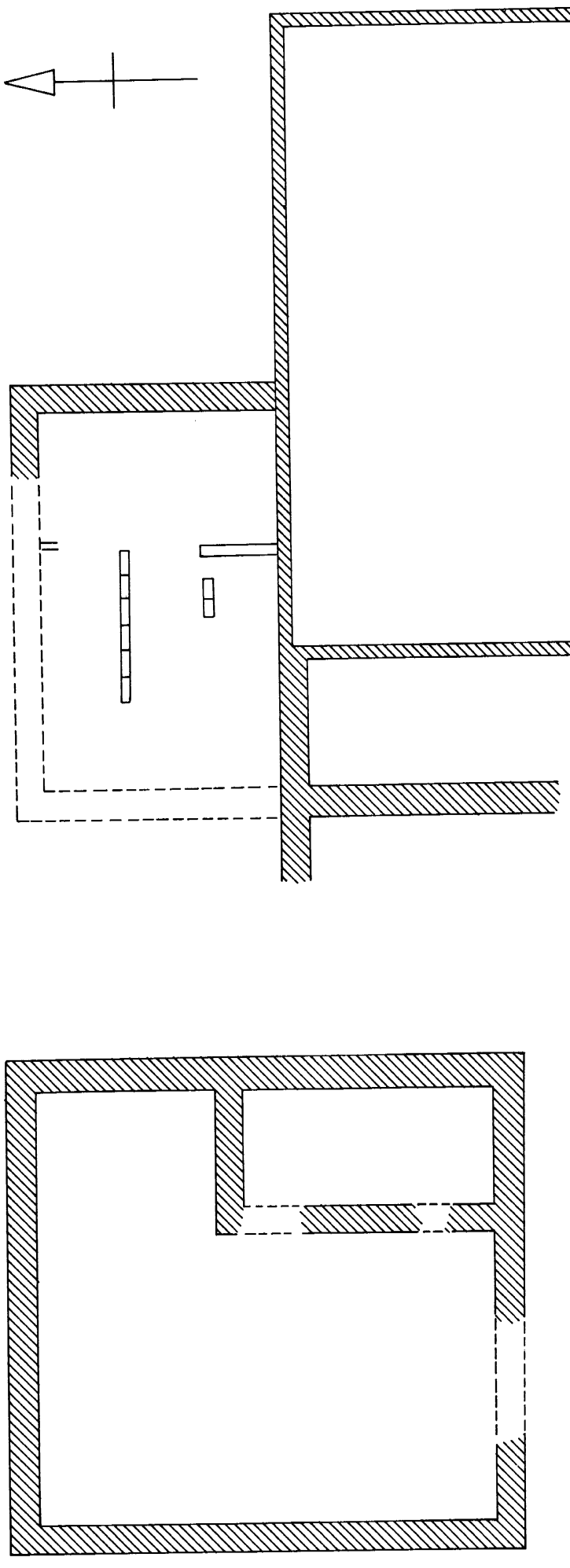
Pl. 57b. Group of unidentified shafts west of pyramid 4. To the right, remains of the west outer enclosure wall.



Pl. 57c. Foundation block covering the mouth of the Ankhty shaft (shaft 7/12) at the northeast corner of the enclosure wall of pyramid 5. Levelling walls in the background.



Pl. 57d. Burial shaft of Ankhty (shaft 7/12).

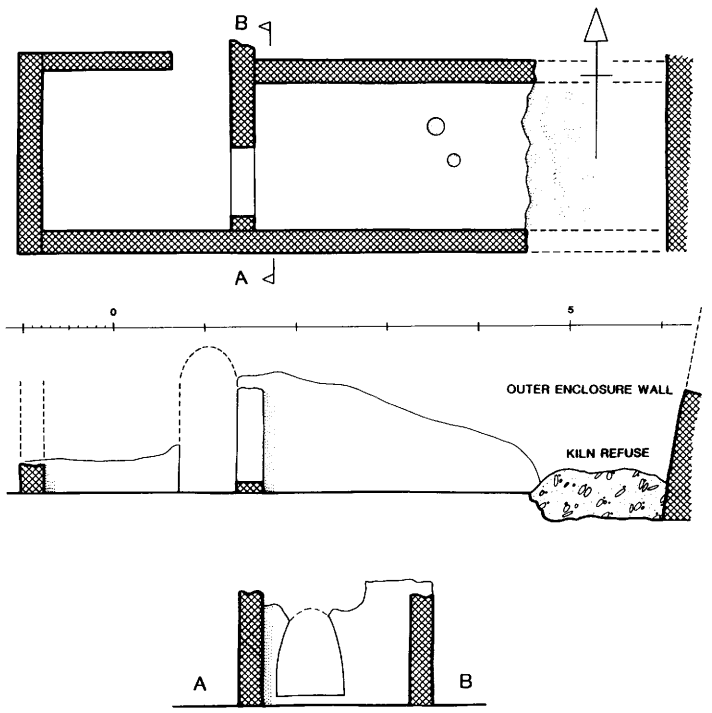


Pl. 58a. Plan of Middle Kingdom(?) house 1 in the OCSW.

Pl. 58b. Plan of Middle Kingdom house 2 in the OCW2 (see pl. 59a).



Pl. 59a. Middle Kingdom house 2 in the OCW2, seen from the northwest.



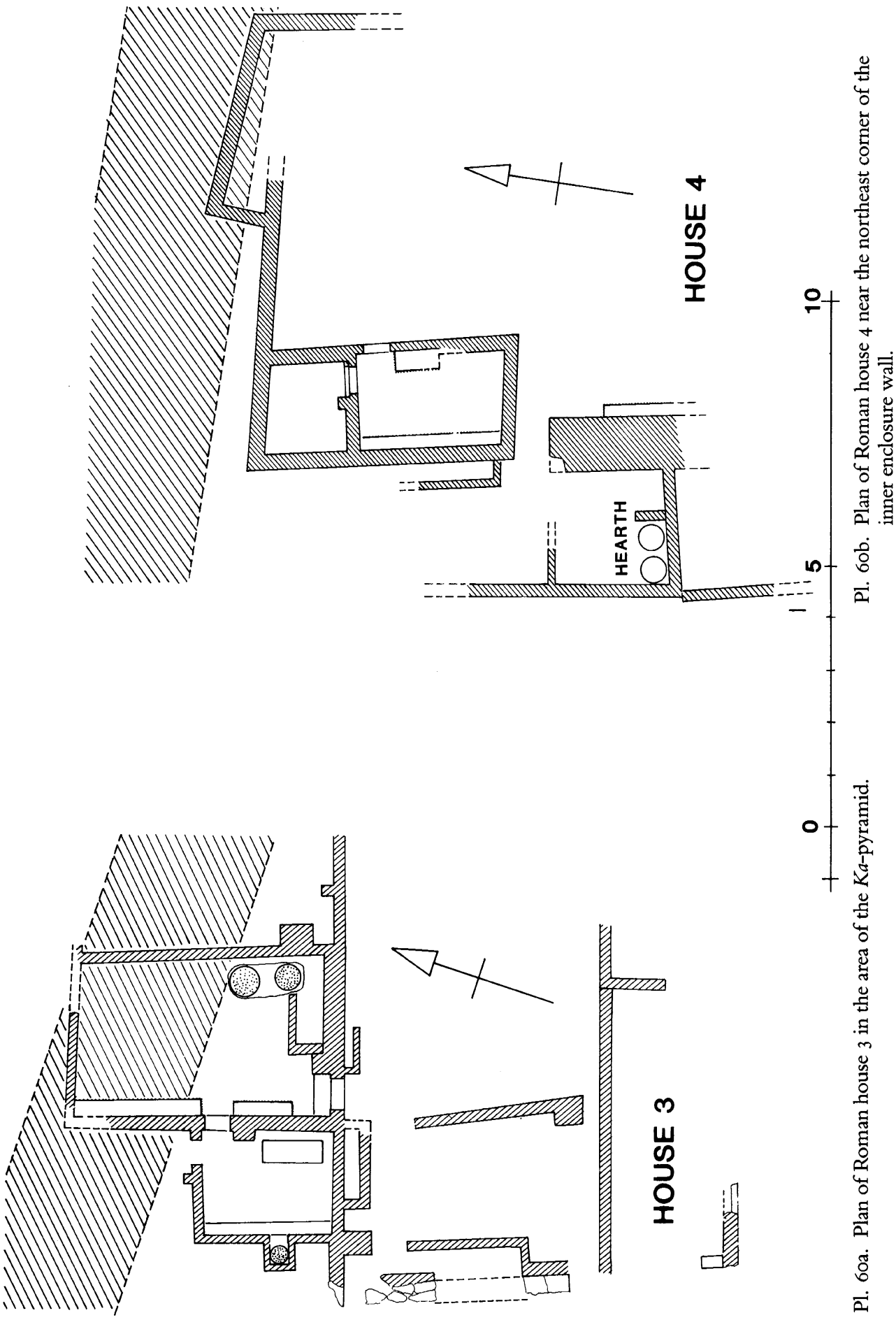
Pl. 59b. Plan and section of the gypsum workers' house.



Pl. 59c. Interior of the gypsum workers' house, seen from the west.



Pl. 59d. Refuse from a gypsum kiln(?) and pottery in the gypsum workers' house.



Pl. 60b. Plan of Roman house 4 near the northeast corner of the inner enclosure wall.

Pl. 60a. Plan of Roman house 3 in the area of the *Ka*-pyramid.



Pl. 61a. *Ka*-pyramid with Roman house 3 in the background. Windmill in the distance.



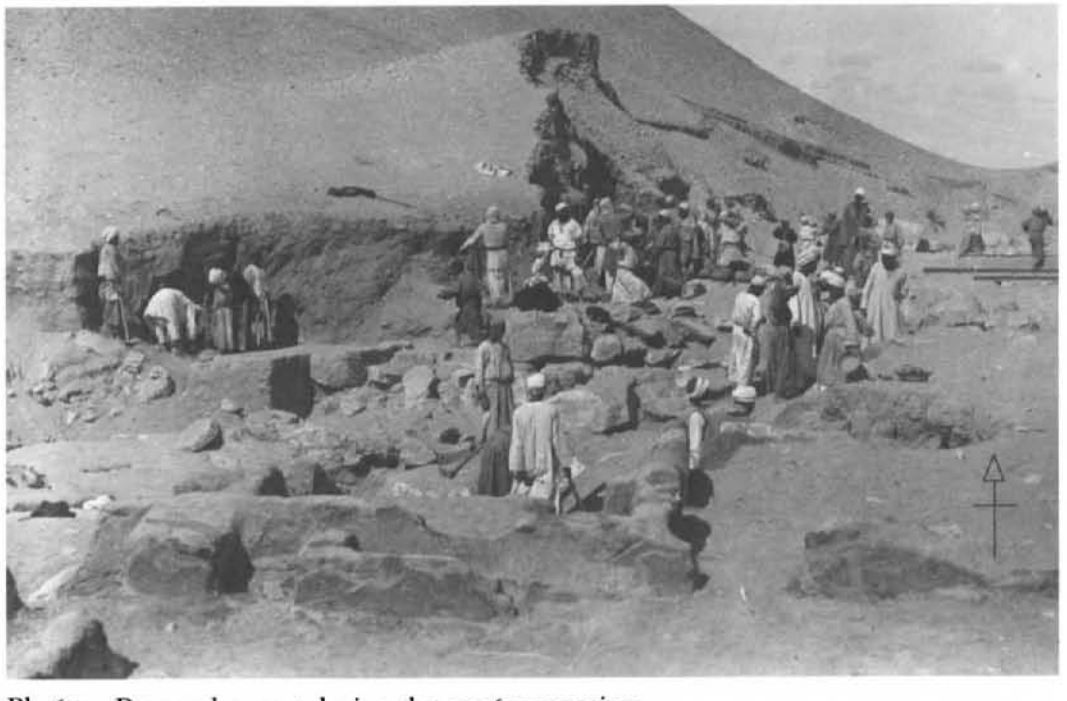
Pl. 61b. Roman house 4 near the northeast corner of the inner enclosure wall.



Pl. 61c. Underground storage chambers in Roman house 3.



Pl. 61d. Niche in Roman house 3.



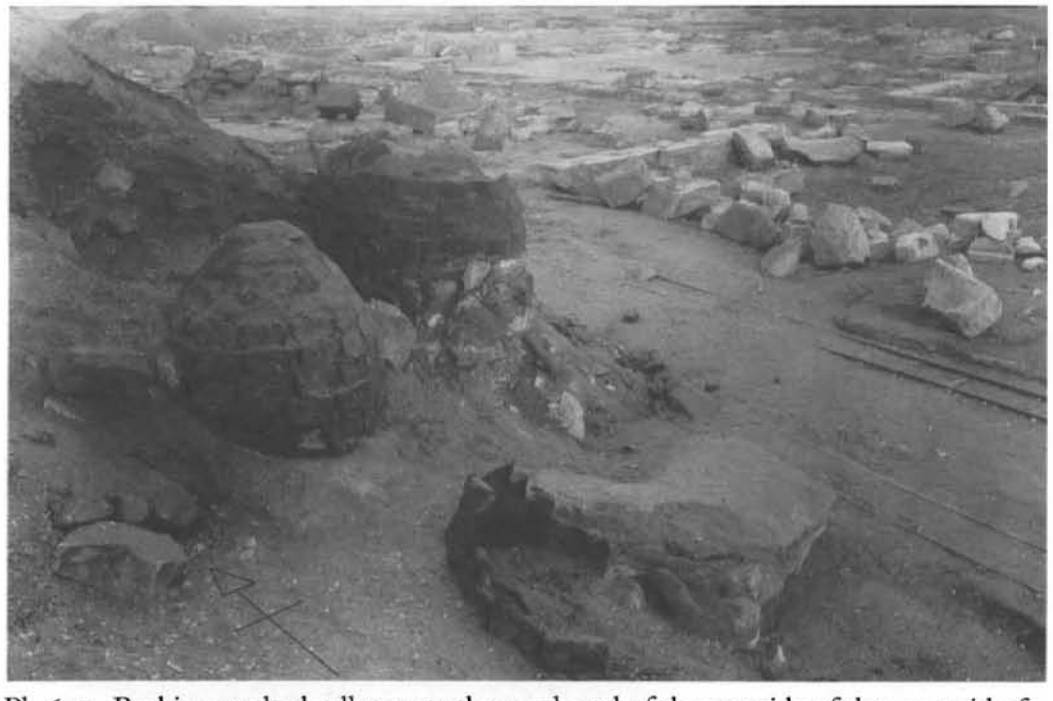
Pl. 61e. Roman house 3 during the 1916 excavation.



Pl. 62a. Group of beehive-vaulted cellars on the southeast corner of the pyramid of Senwosret I.



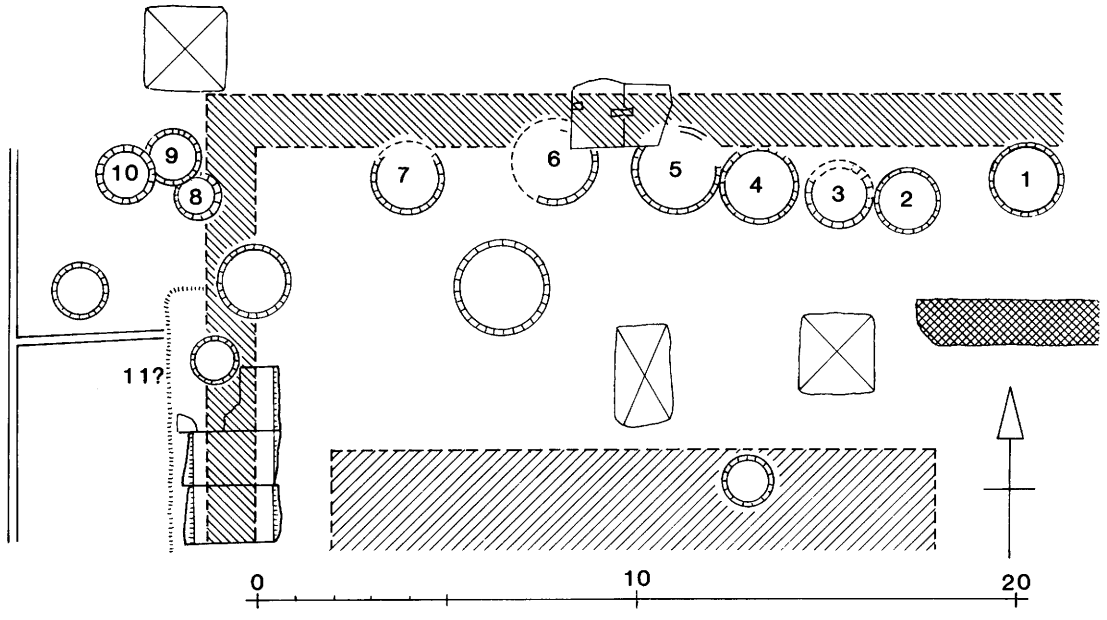
Pl. 62b. Beehive-vaulted cellars on the east side of the southeast corner of the pyramid of Senwosret I.



Pl. 62c. Beehive-vaulted cellars near the south end of the east side of the pyramid of Senwosret I.



Pl. 62d. Beehive-vaulted cellars on the southeast corner of the pyramid of Senwosret I.

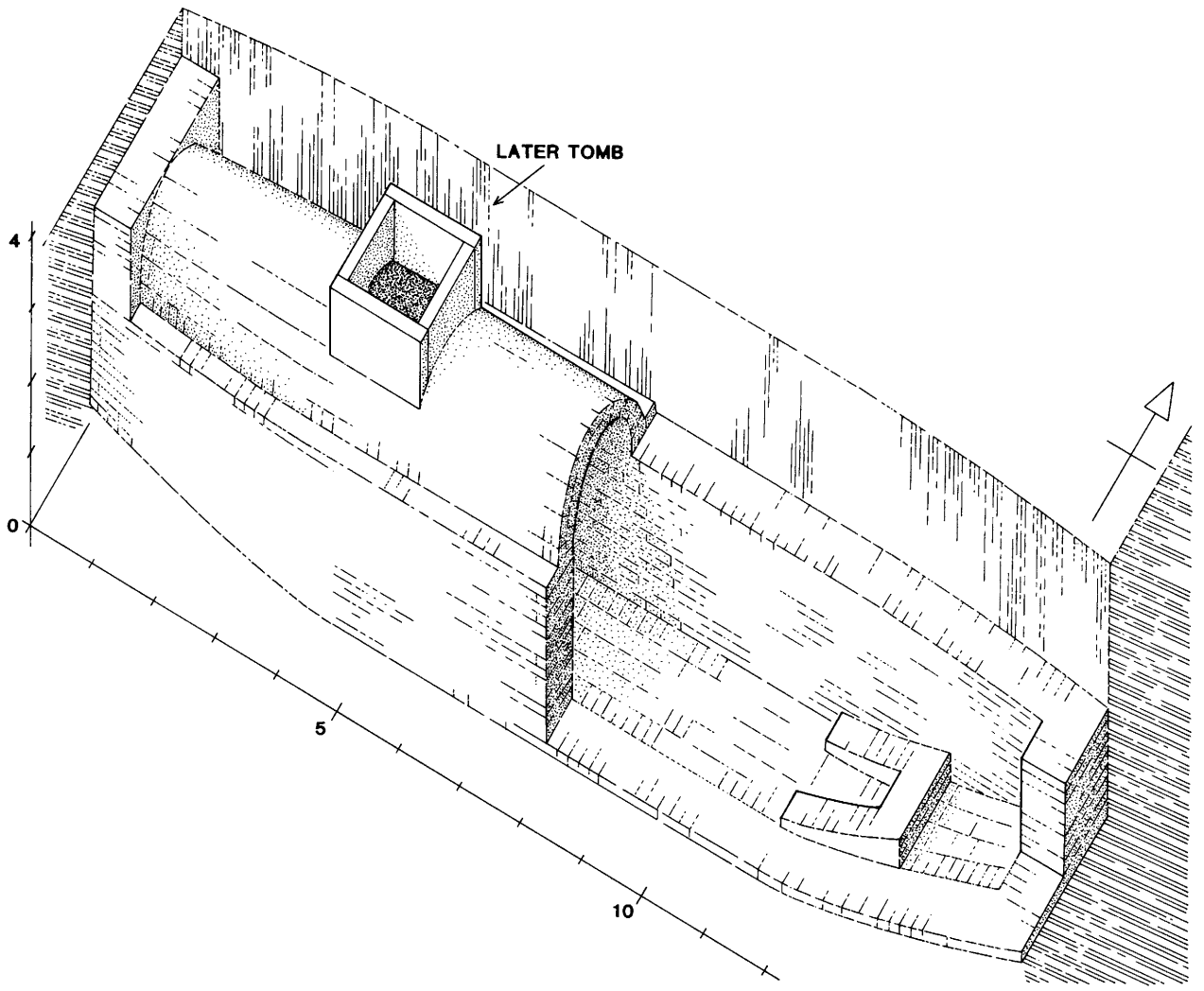


Pl. 63a. Plan of the beehive-vaulted cellars north of pyramid 2.

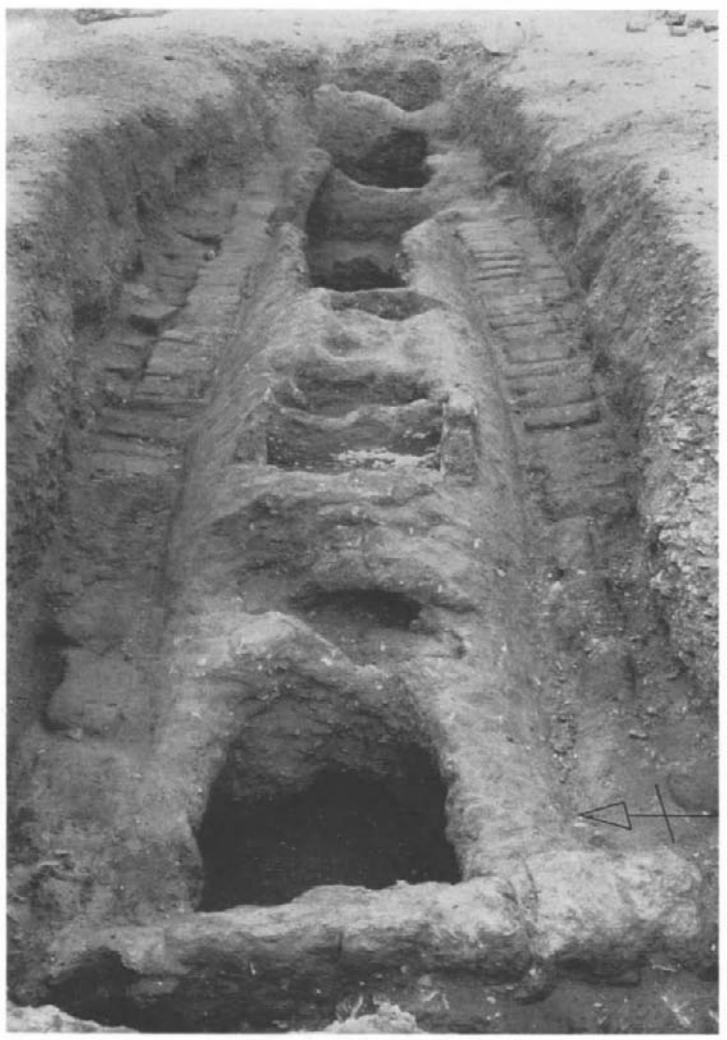




Pl. 63b–c. Beehive-vaulted cellars north of pyramid 2.



Pl. 64a. Axonometric reconstruction of the boat pit south of pyramid 5.



Pl. 64b. Vault of the boat pit seen from the west. On top of the vault, the entrance into a later tomb is seen during its excavation.



Pl. 64c. Same, after clearing the later tomb.



Pl. 65a. Brickwork at the elevated bow of the boat pit, seen from the east.



Pl. 65b. Brickwork at the elevated bow of the boat pit, seen from the west.

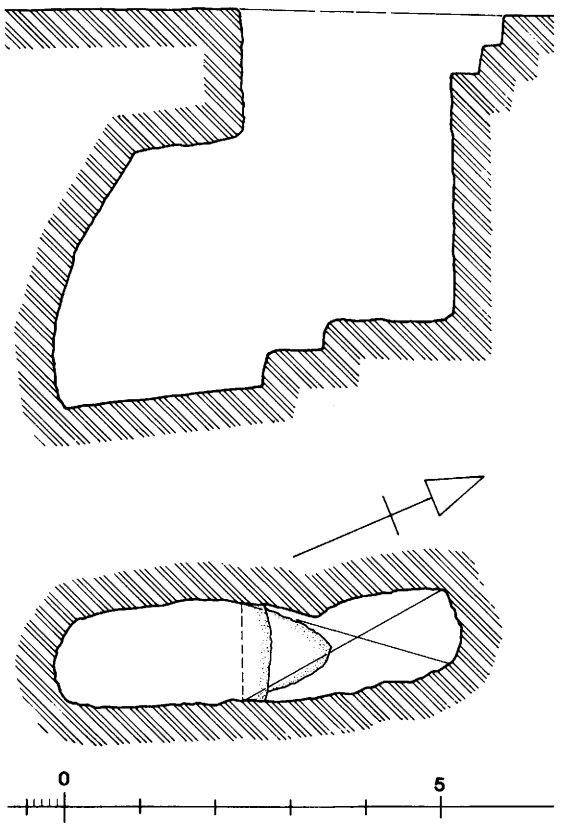


Pl. 65c. Brick walls that supported the stern of the boat.

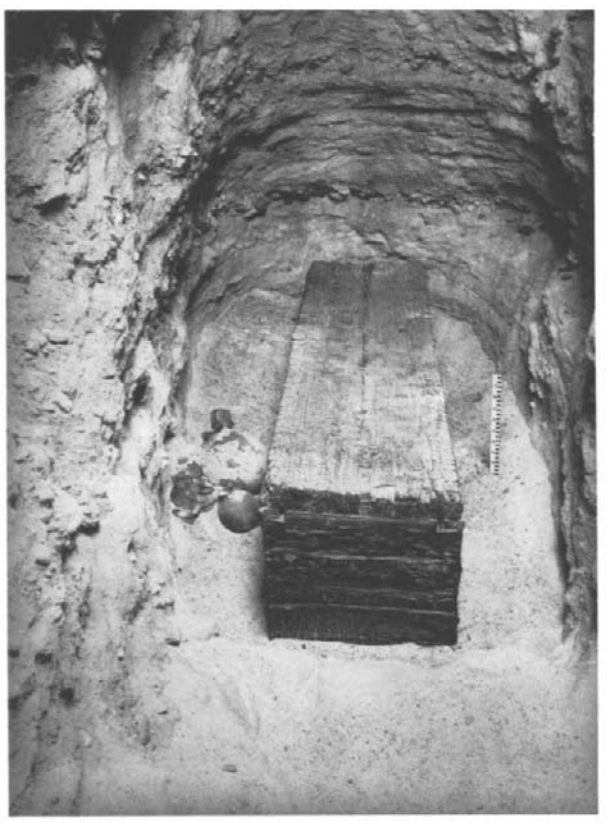


Pl. 65d. Later burial chamber near the bow end of the boat pit.

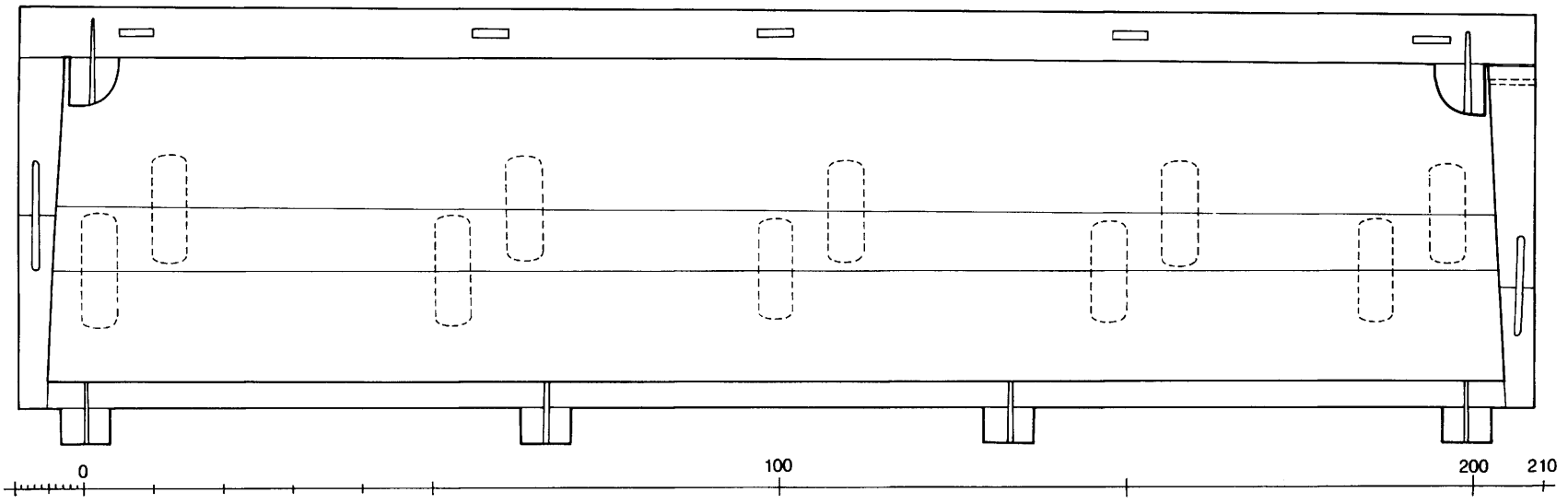
PLATE 66

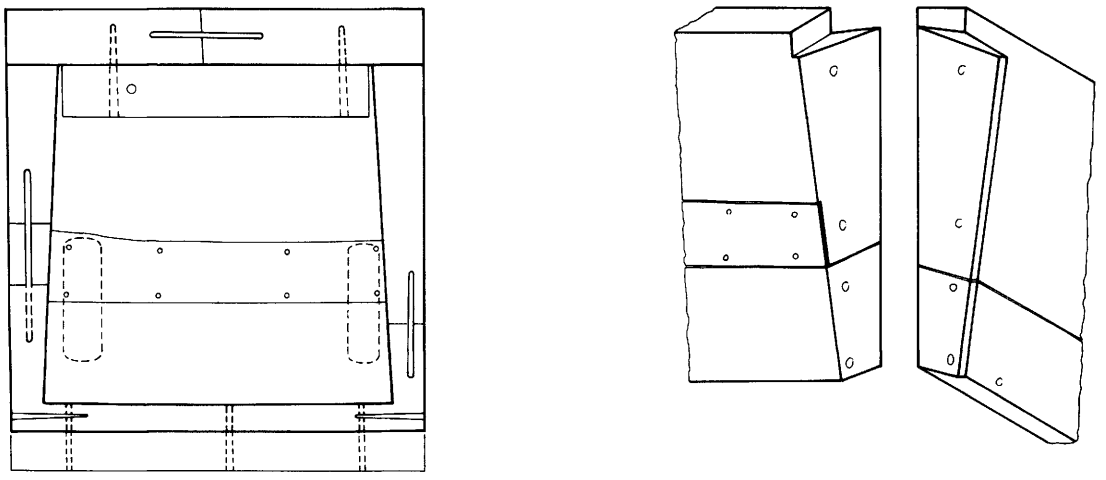


Pl. 66a. Plan and section of the tomb of Ankhty (shaft 7/12).

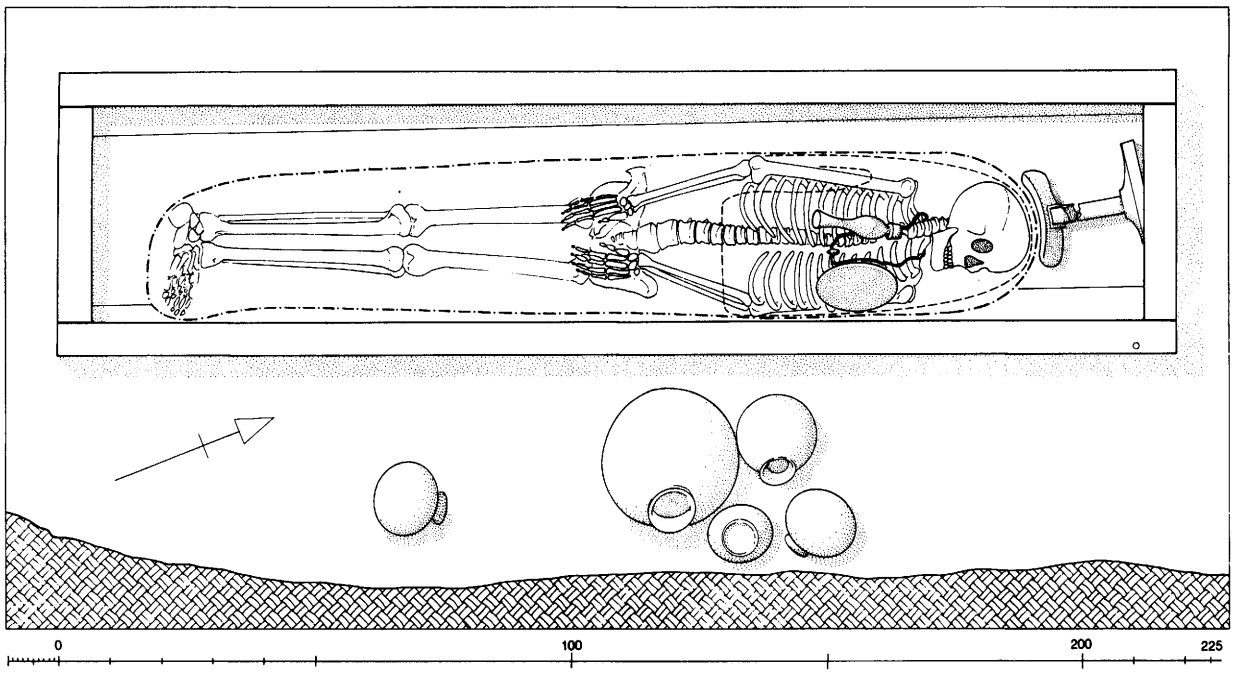


Pl. 66b. Burial of Ankhty (shaft 7/12).

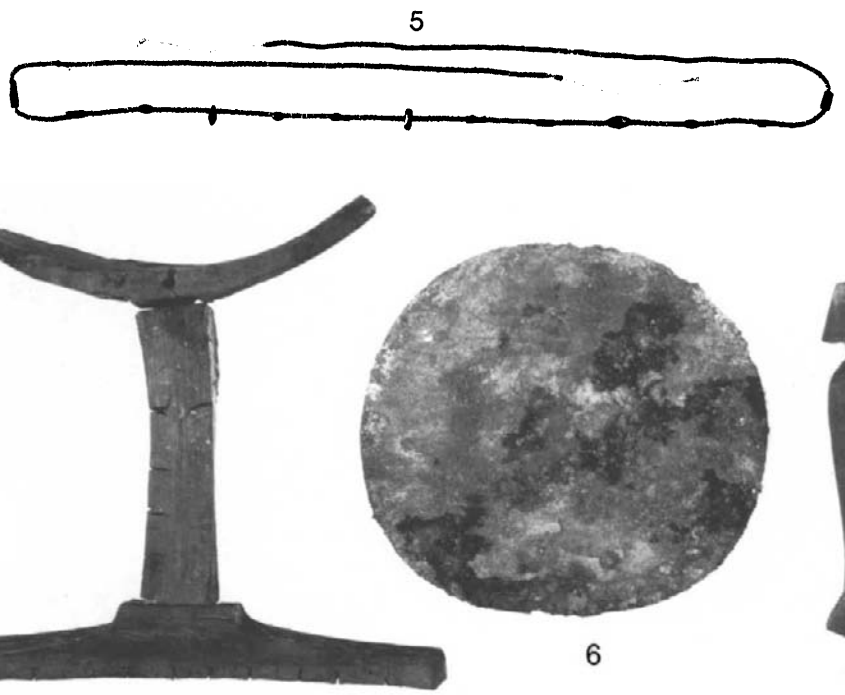


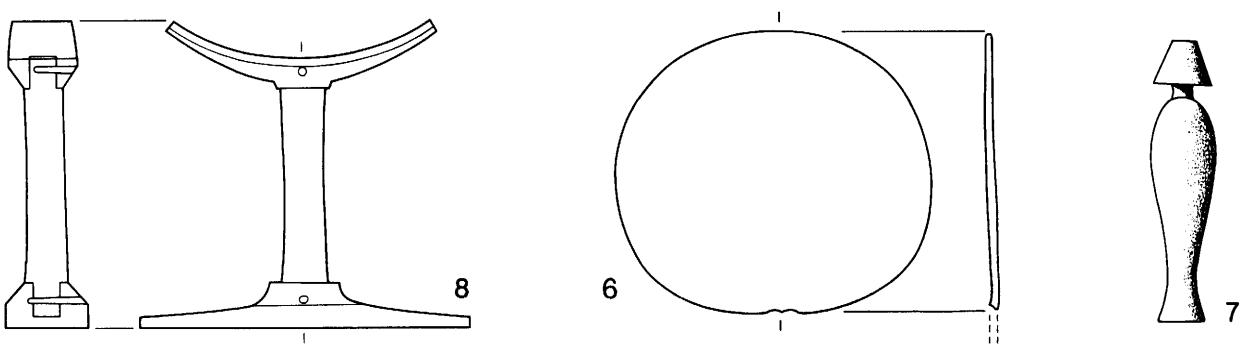


Pl. 66c. Sections and detail of the corner of the coffin (cat. 1) of Ankhty (shaft 7/12).



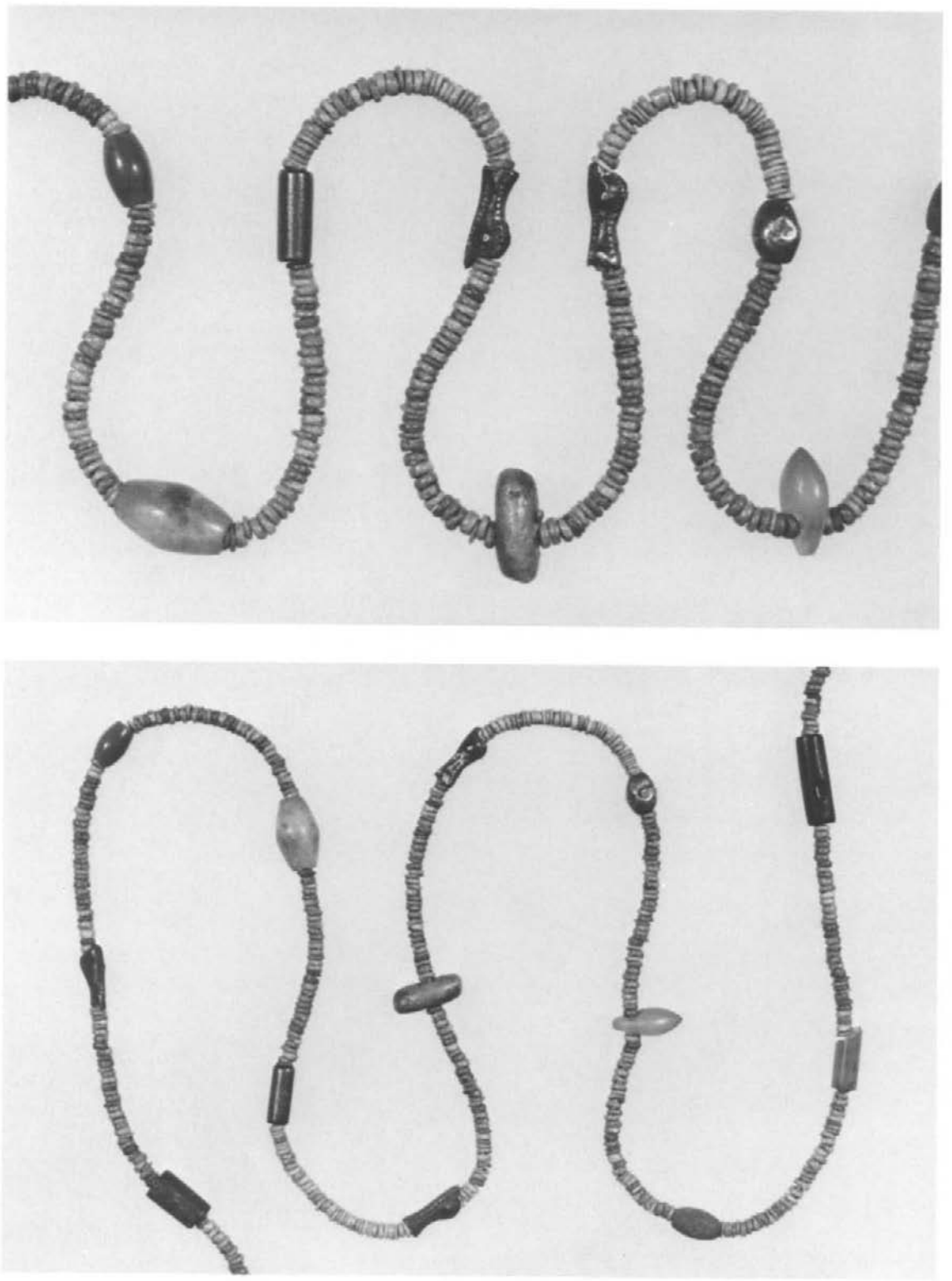
Pl. 67a. Plan of the burial of Ankhty (shaft 7/12).

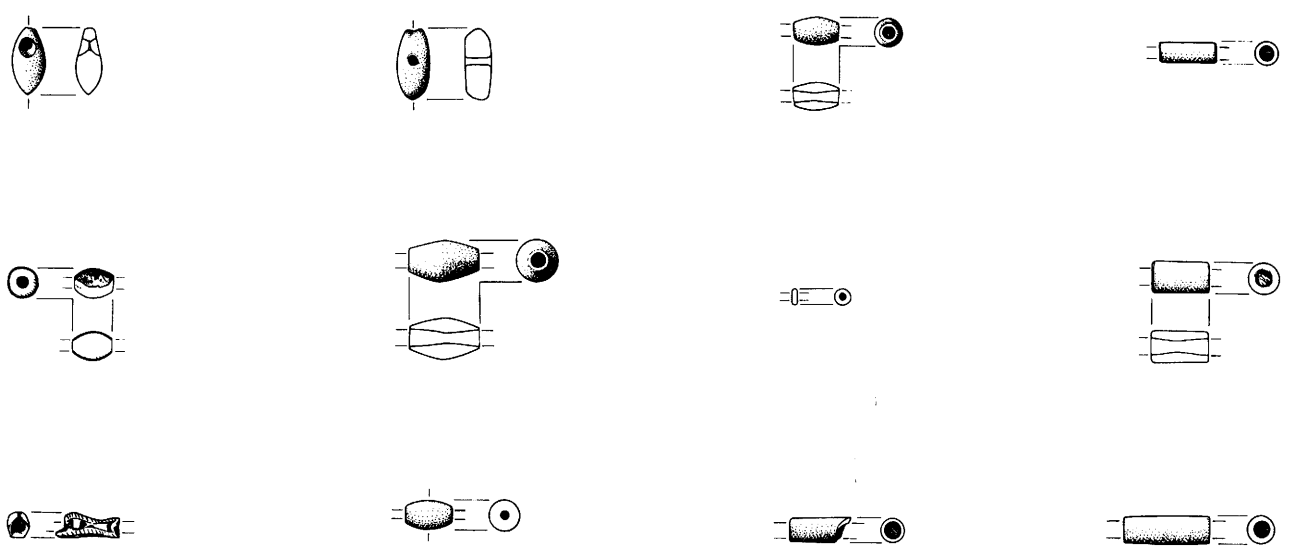




Pl. 67b. Objects (cats. 5–8) from the burial of Ankhty (shaft 7/12).

PLATE 68



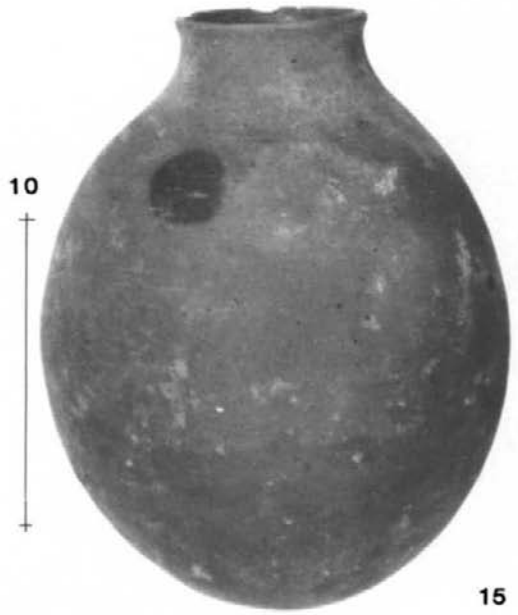


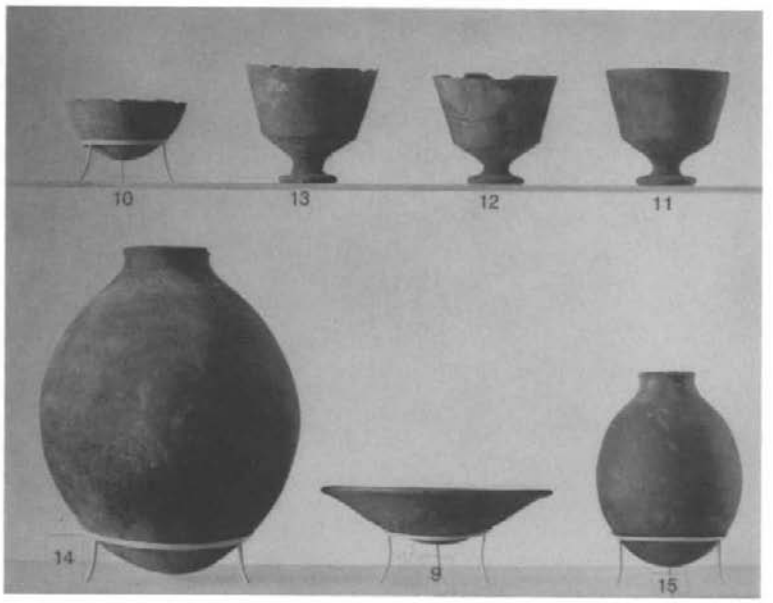
Pl. 68. Necklace (cat. 5, MMA 32.1.108) from the burial of Ankhty (shaft 7/12).

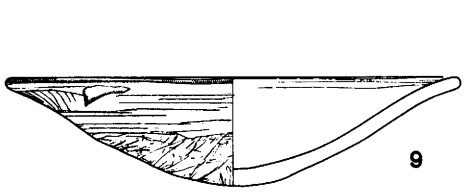


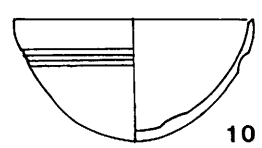


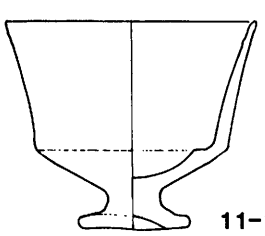


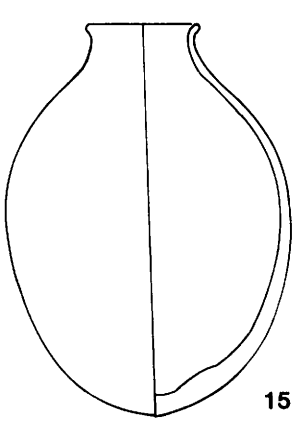


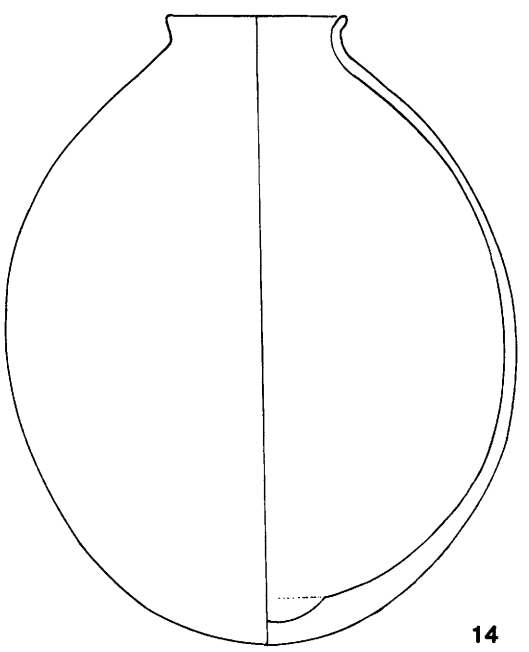






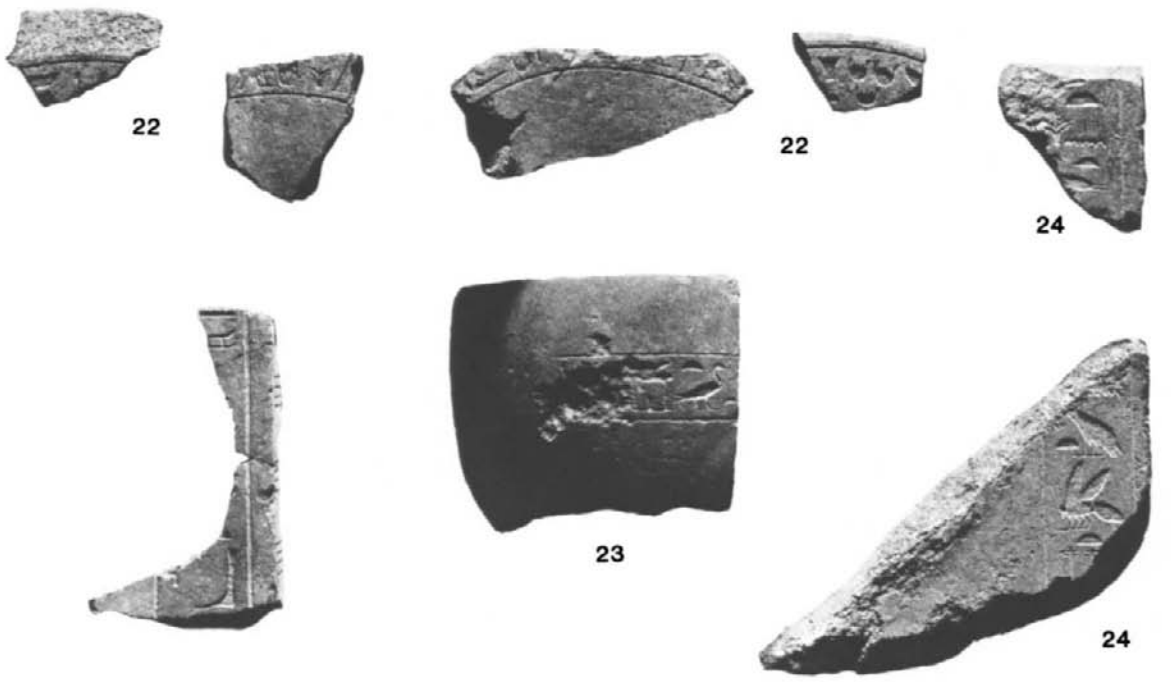




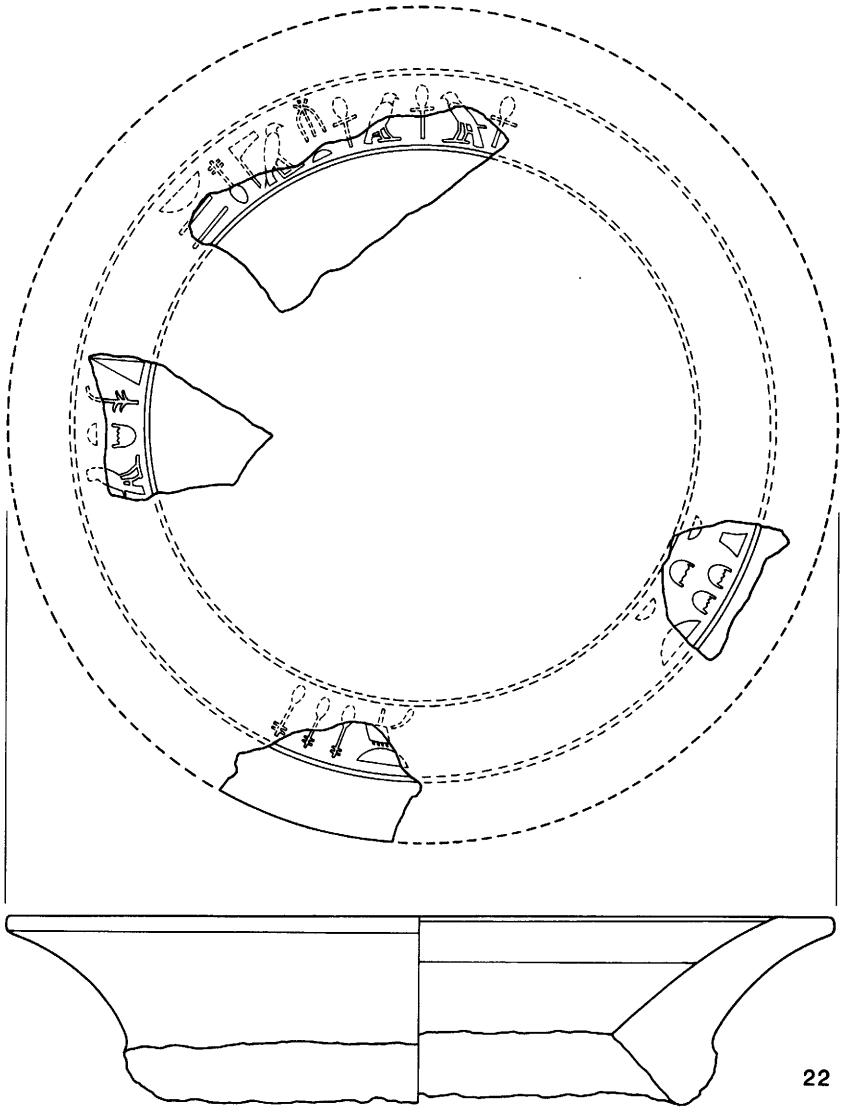


Pl. 69. Pottery (cats. 9–15) from the burial of Ankhty (shaft 7/12).

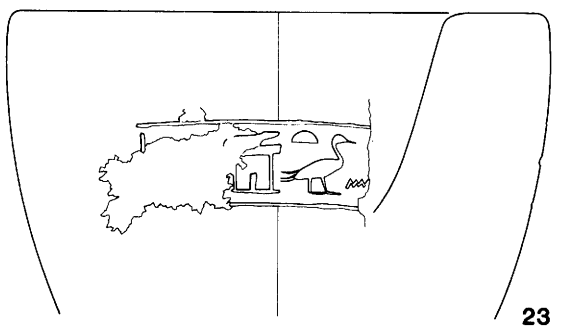
PLATE 70

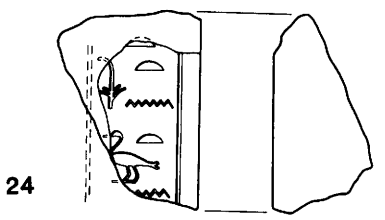


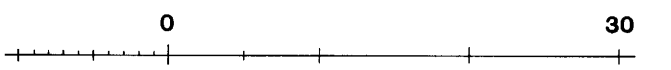




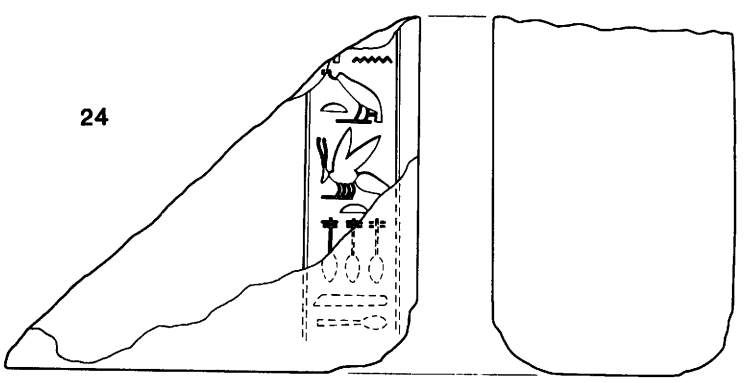
Pl. 70. Fragments of the offering stands of Queen Neferu (cat. 22, MMA [34.1.10]), of Princess ///-Sobek (cat. 23, MMA 34.1.11), and of Queen Neferu (cat. 24).



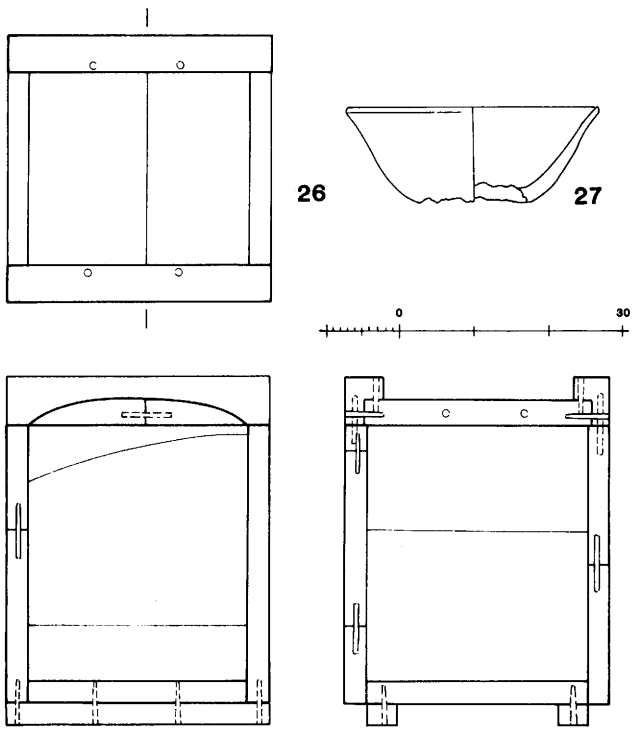








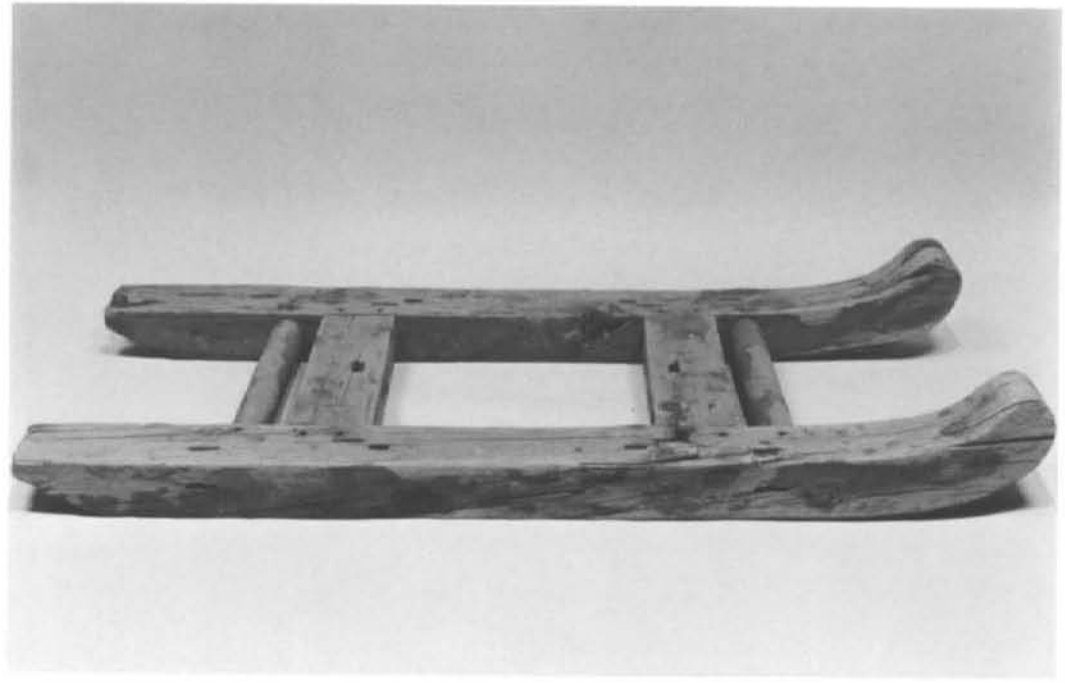
Pl. 71a. Stone fragments with the name of Princess ///-Sobek (cat. 23, MMA 34.1.11) and the name of Queen Neferu (cat. 24).





Pl. 71b. Wooden chest and pot (cats. 26–27) from pyramid 2.

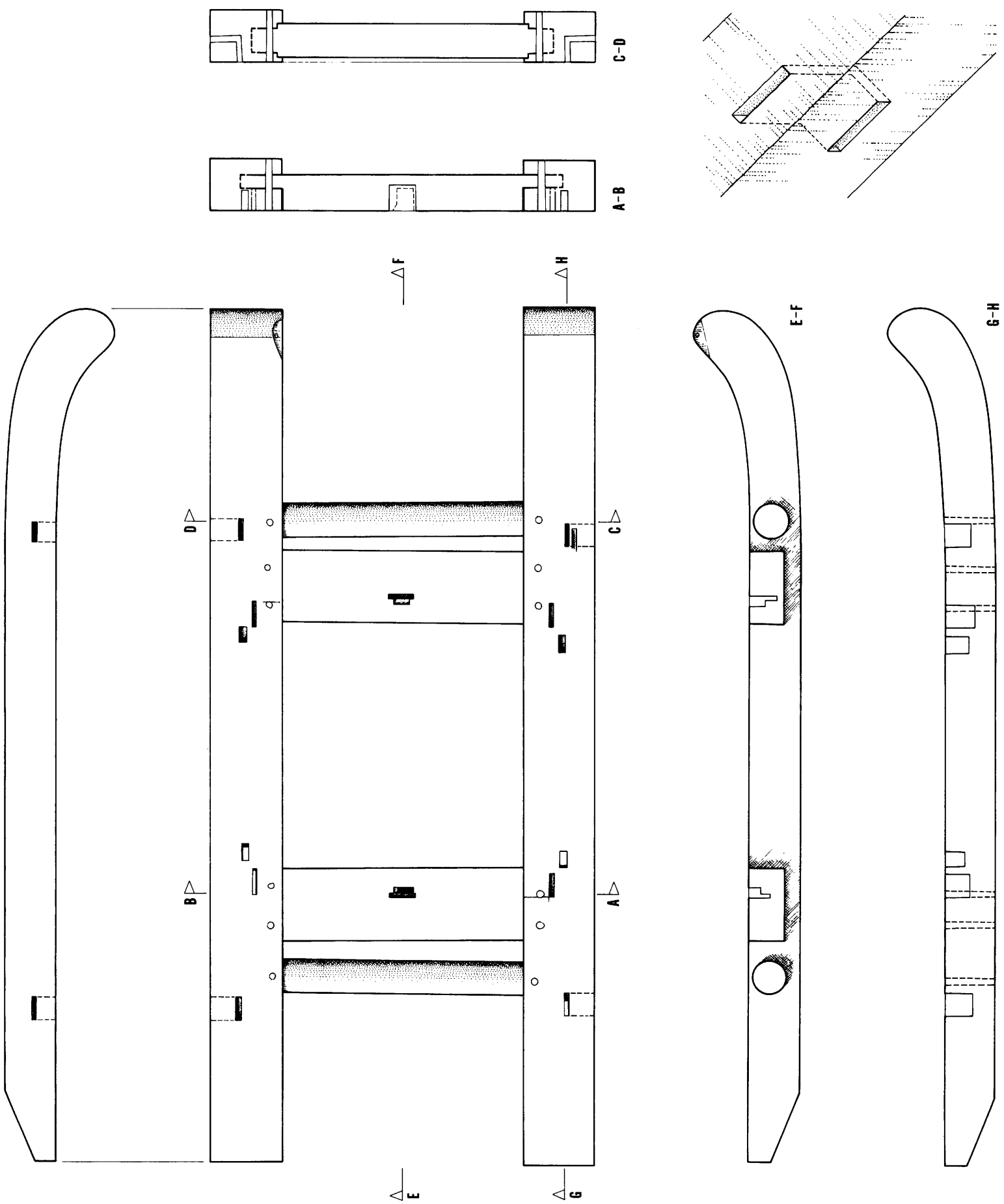








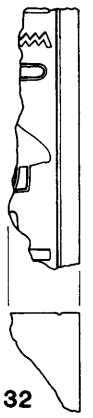
Pl. 72. Wooden sledge (cat. 28, MMA 24.1.84).



Pl. 73. Plan and sections of the wooden sledge (cat. 28, MMA 24.1.84). Scale 1:10.


31


31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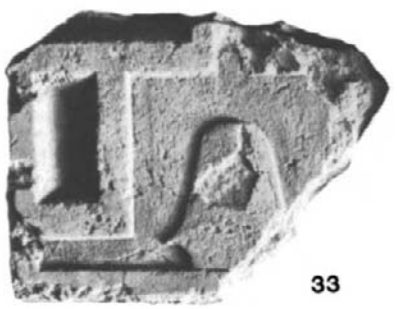
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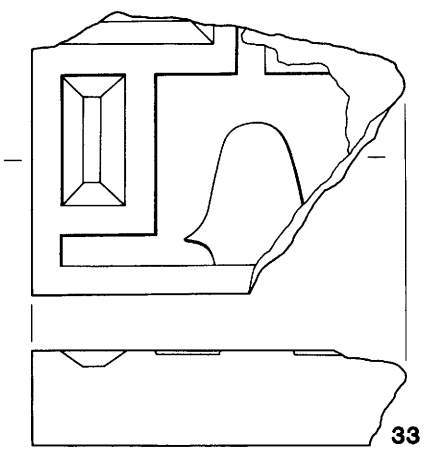
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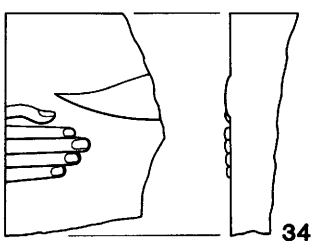
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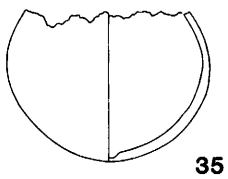
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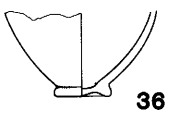
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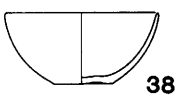
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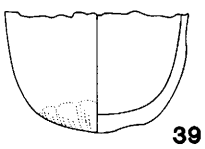
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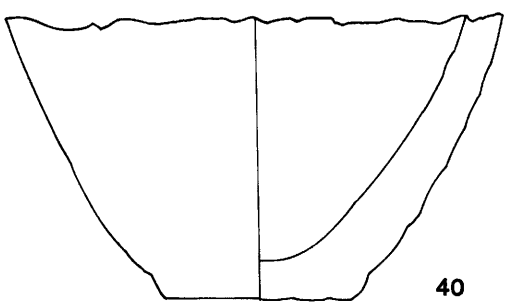
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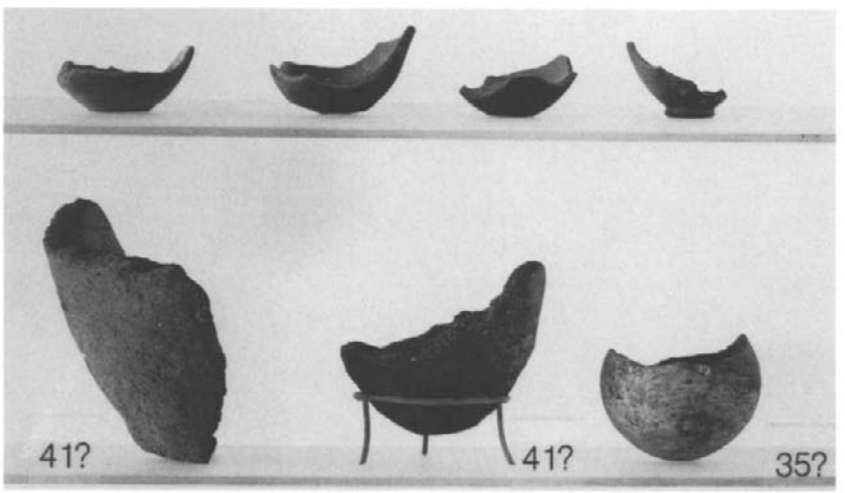
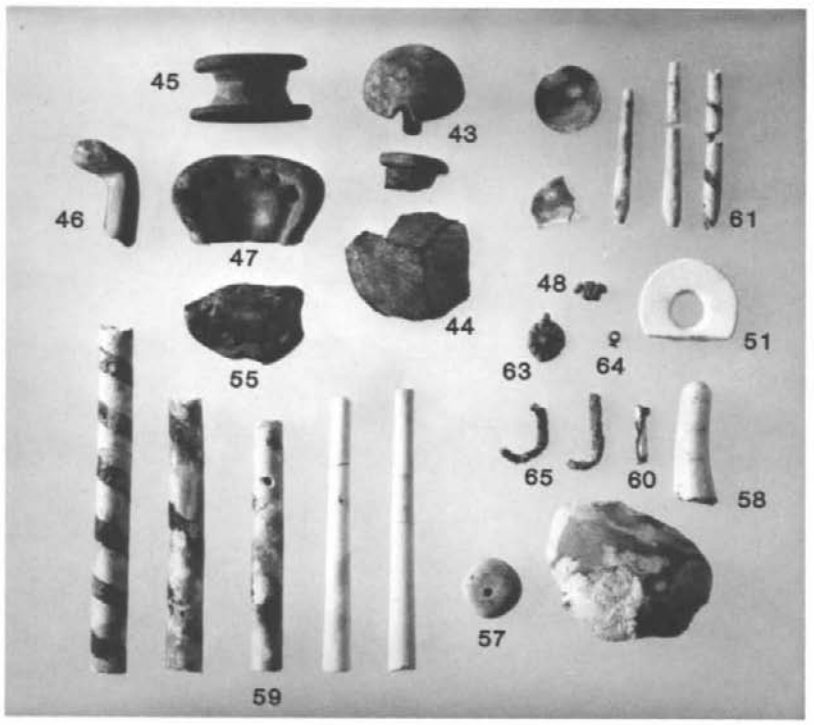
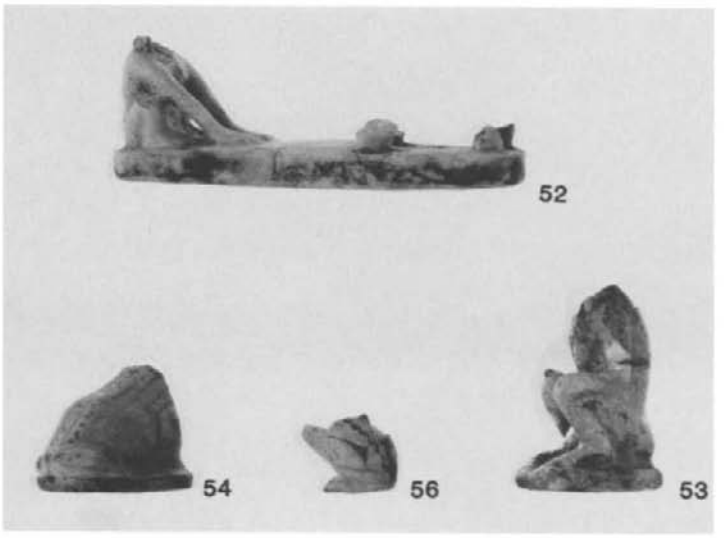
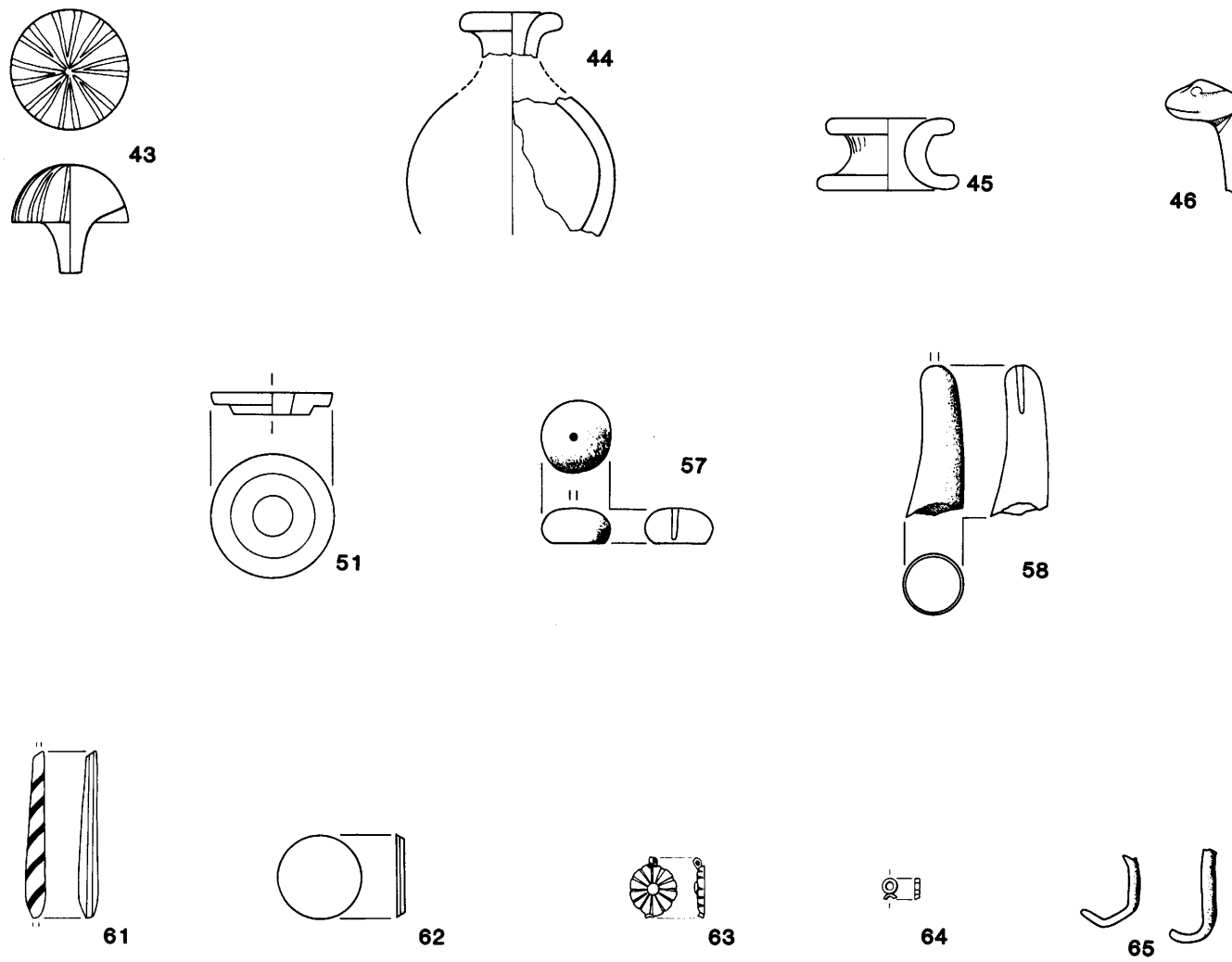


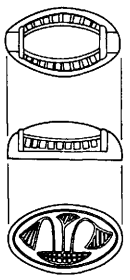
Pl. 74. Objects (cat. 31, MMA 34.1.196; cats. 32–34) and pottery (cats. 35–41) from the main shaft (14/39) of pyramid 3.







Pl. 75. Objects (cats. 43–48, 51–65) from shafts in the area of pyramid 3.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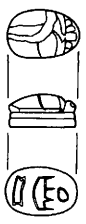
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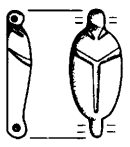
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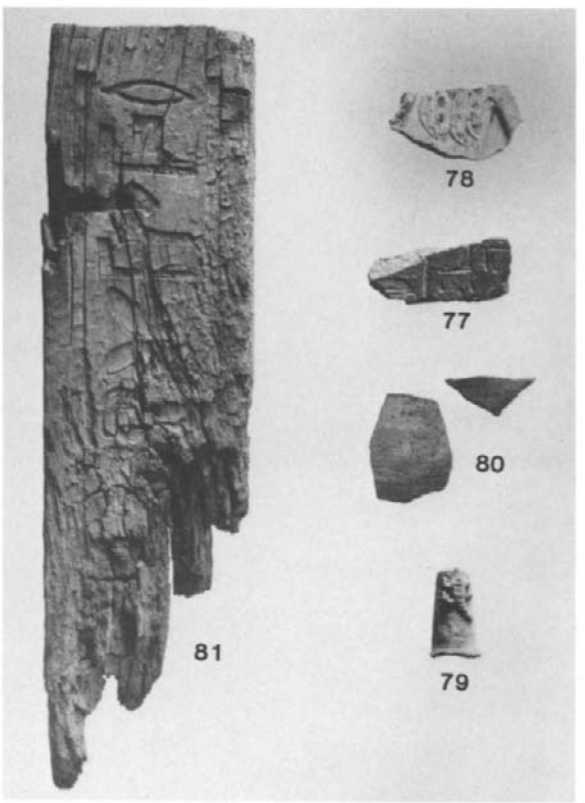
69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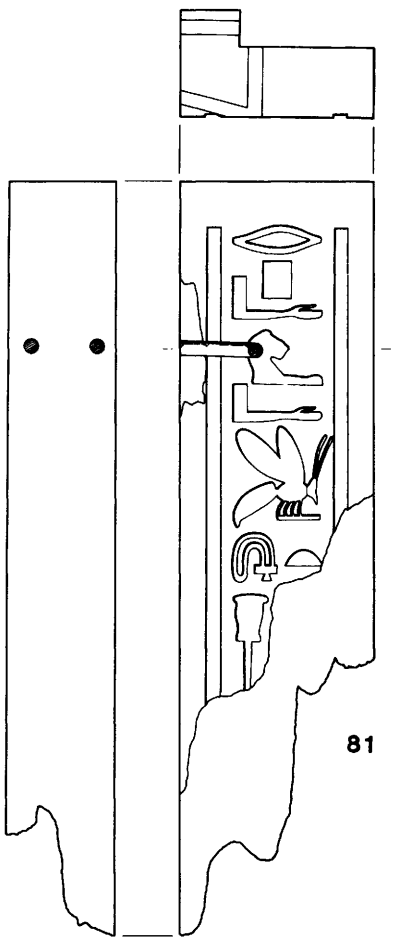
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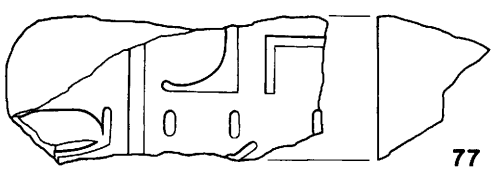
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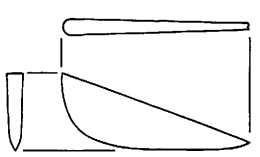
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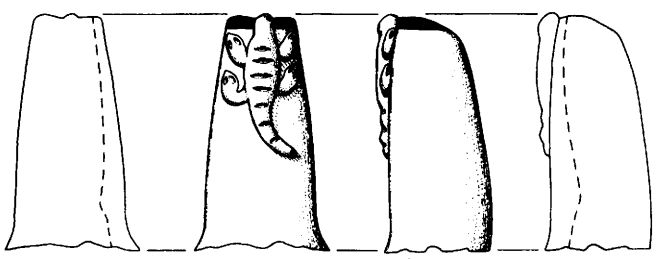
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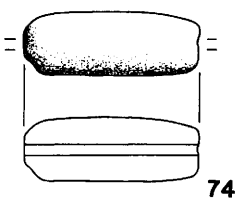
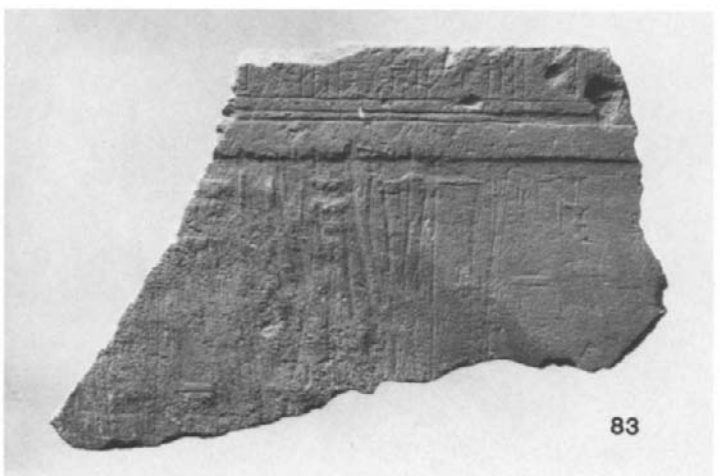

74

Pl. 76a. Objects (cats. 66–69, 71, 74, 77–81) from the *radim* of pyramid 3.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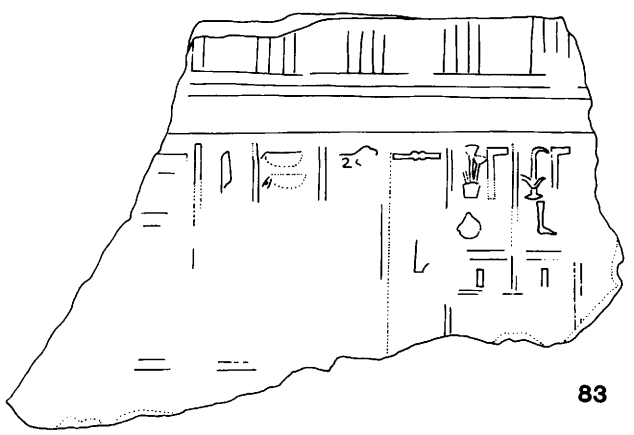
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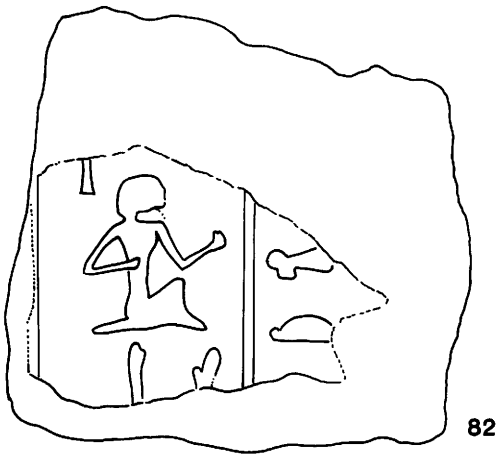
Pl. 76b. Relief fragment (cat. 83) from the *radim* of pyramid 5.

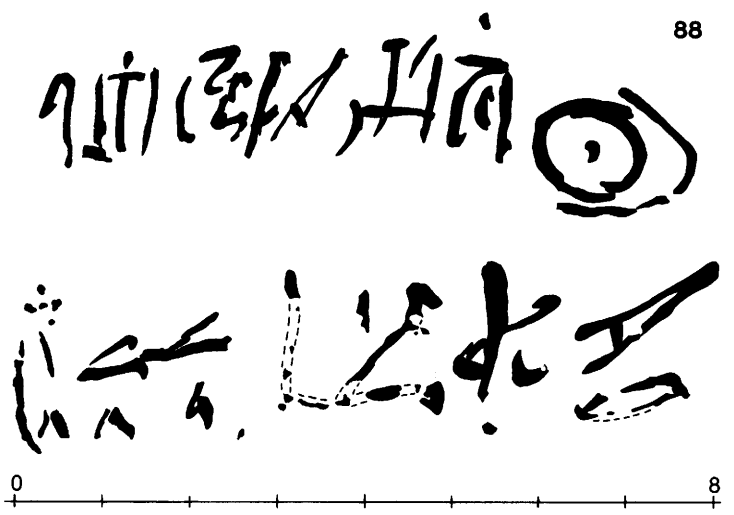




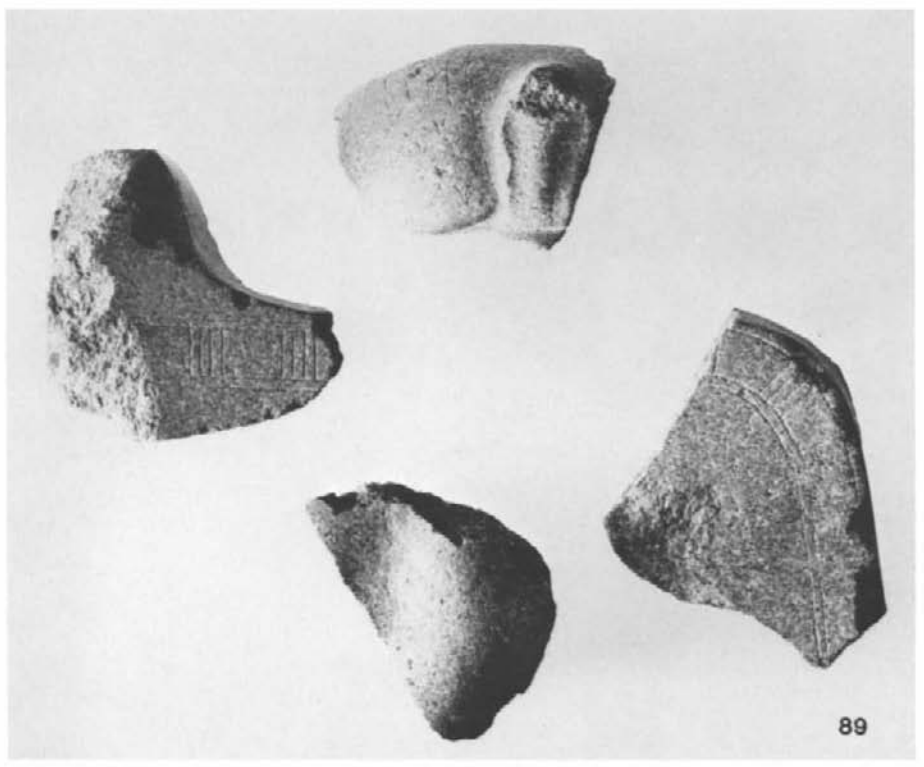




88

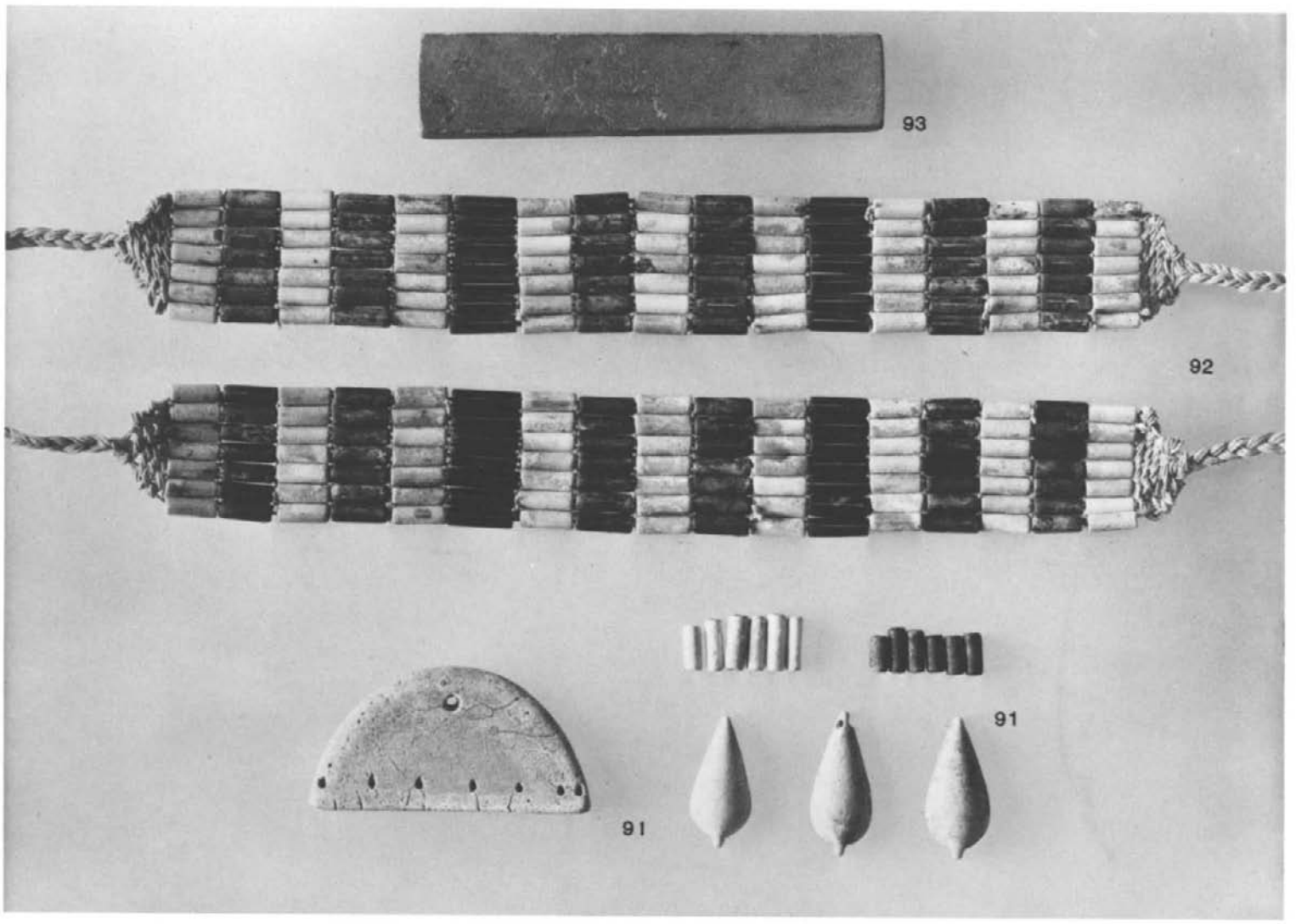


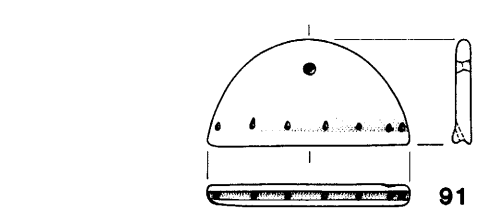
Pl. 77a. Objects (cats. 82, 84, 88) from the *radim* of pyramid 5.

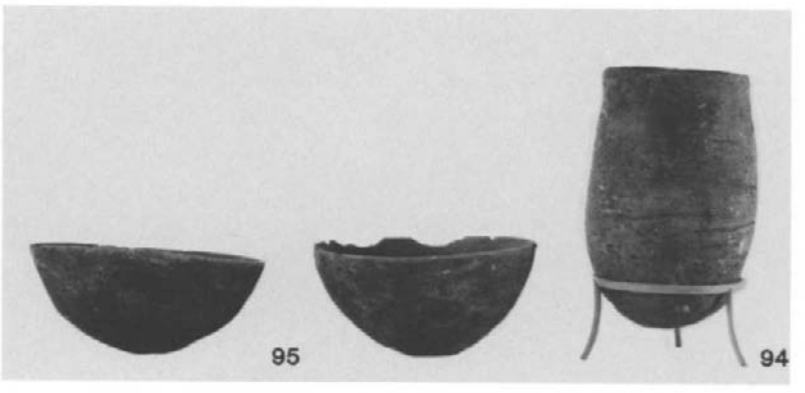


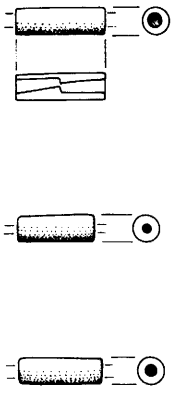


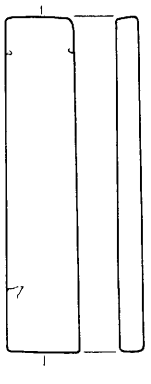
Pl. 77b. Objects (cats. 89–90) from the area of pyramid 6.

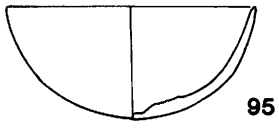


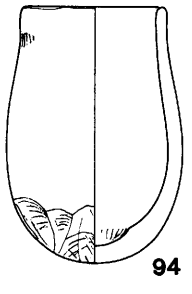




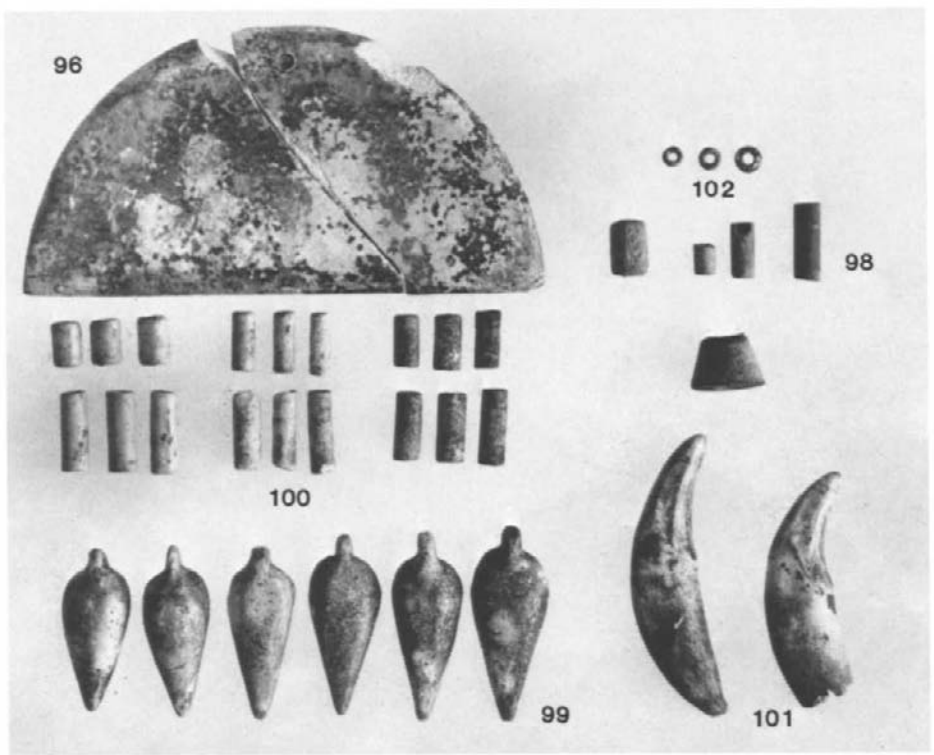


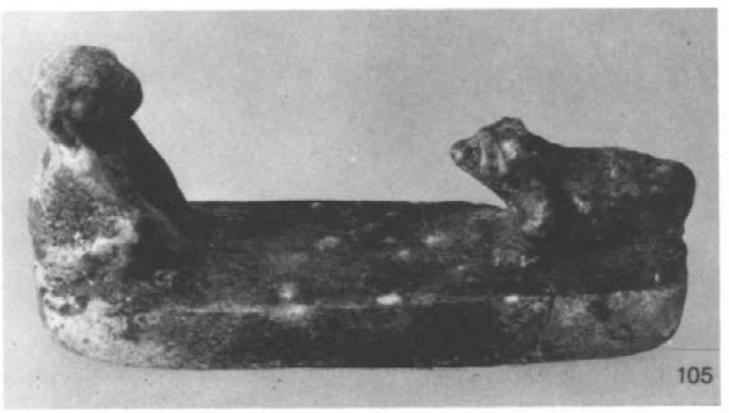


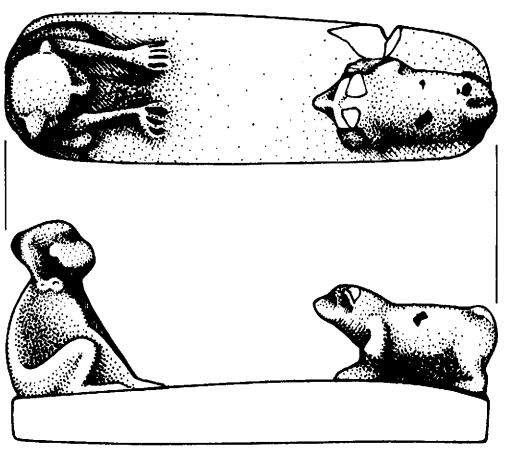




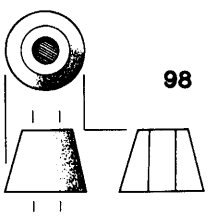
Pl. 78. Objects (cat. 91, MMA 32.1.117; cats. 92–95) from shafts 5/18–19 and 7/26 in the outer court.

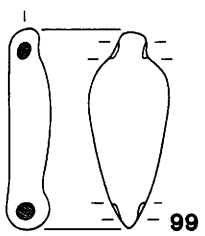


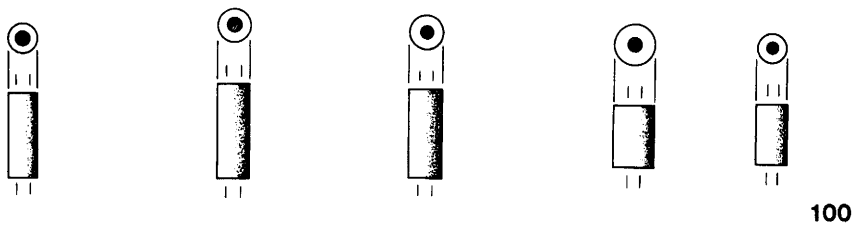


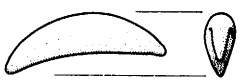


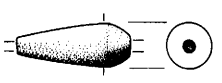


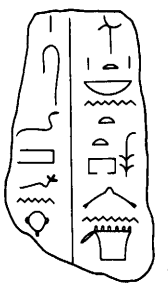


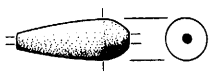


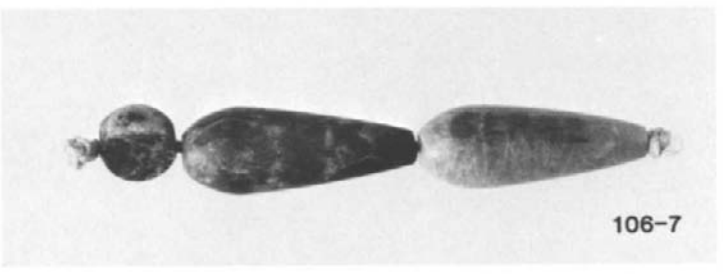


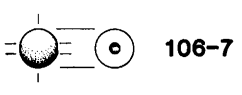


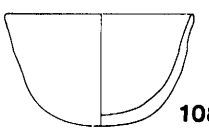


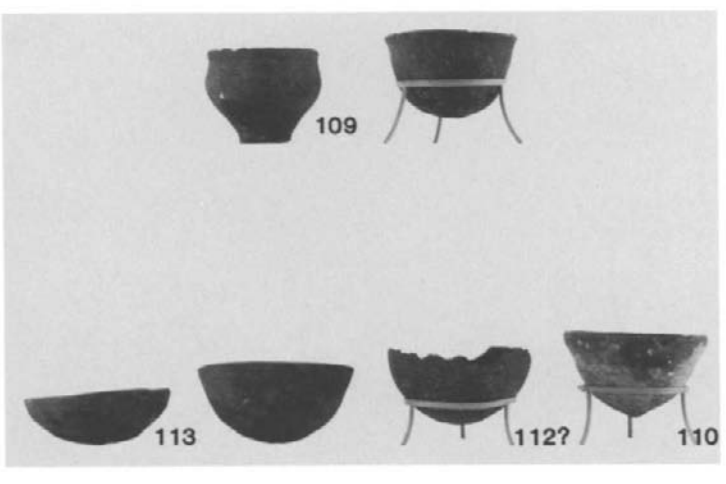


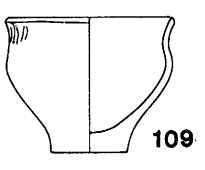


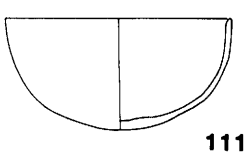


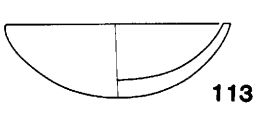


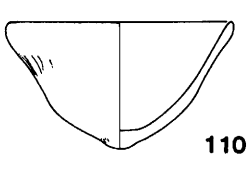




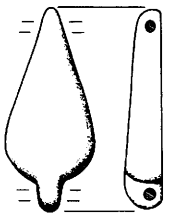








Pl. 79. Objects (cats. 96–103, 105–11, 112?, 113) from shafts in the outer court.



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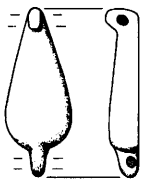

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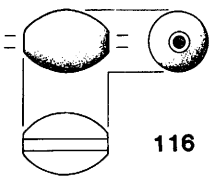

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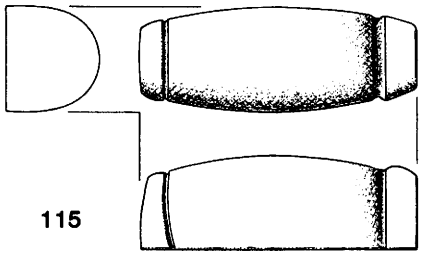

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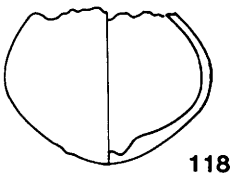

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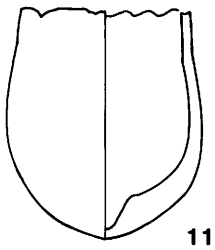

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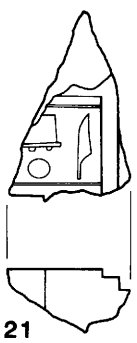

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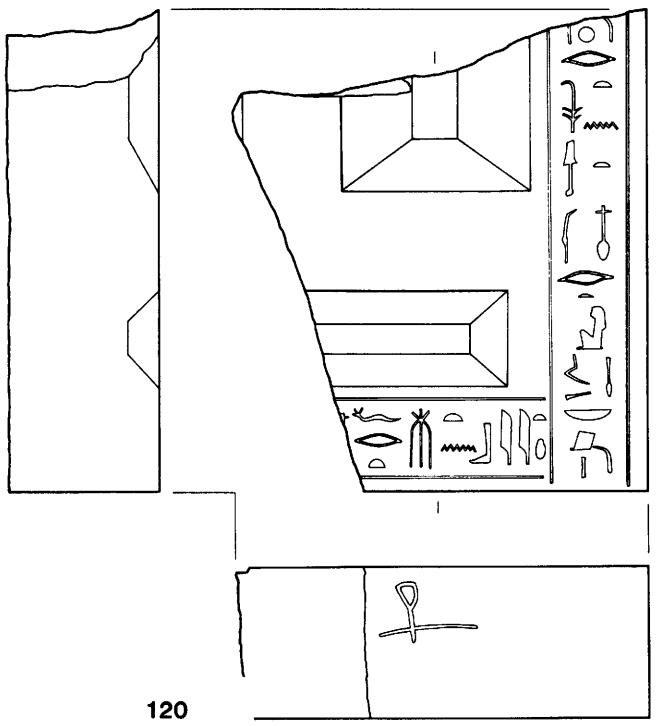

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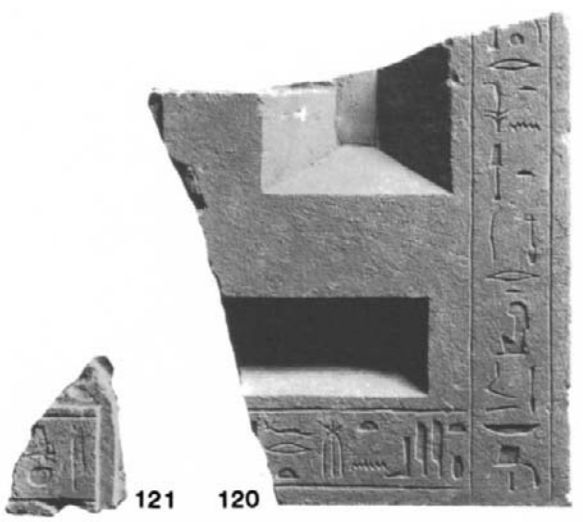

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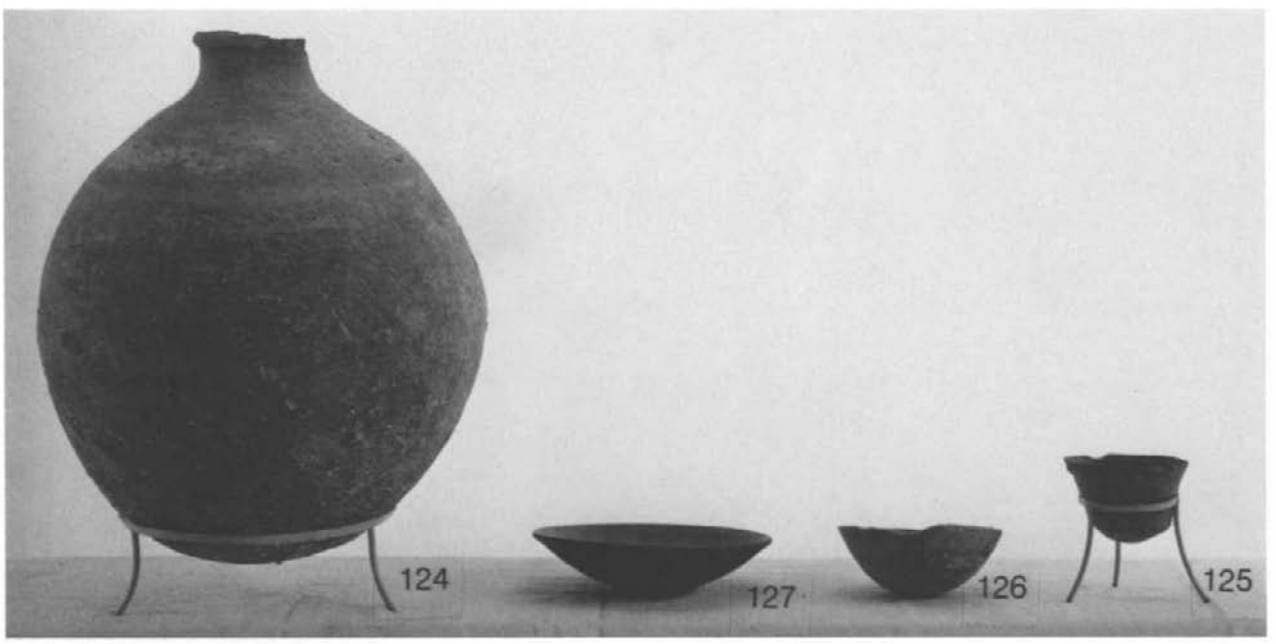
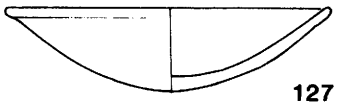


124 127 126 125

Pl. 80. Objects (cats. 115–18, 120–21, 124–27) from shafts in the outer court.



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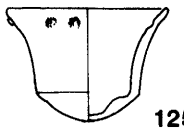

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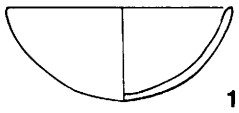

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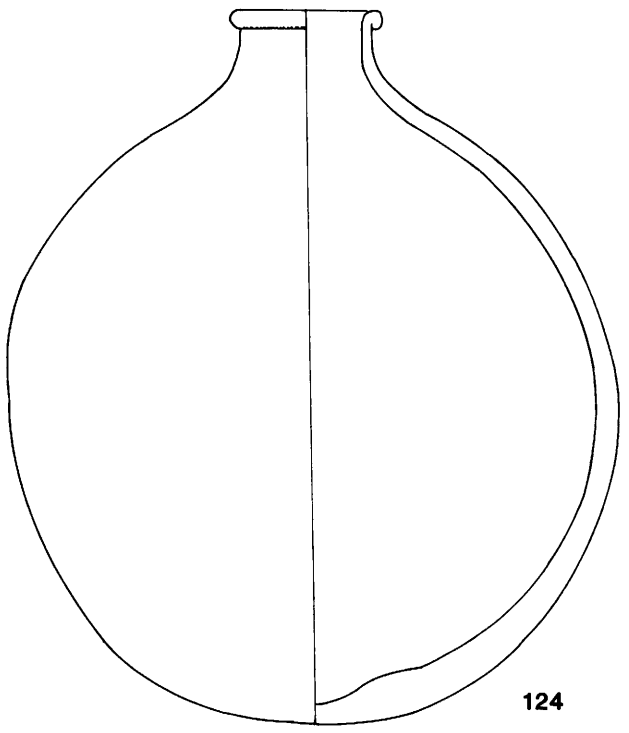


124







128



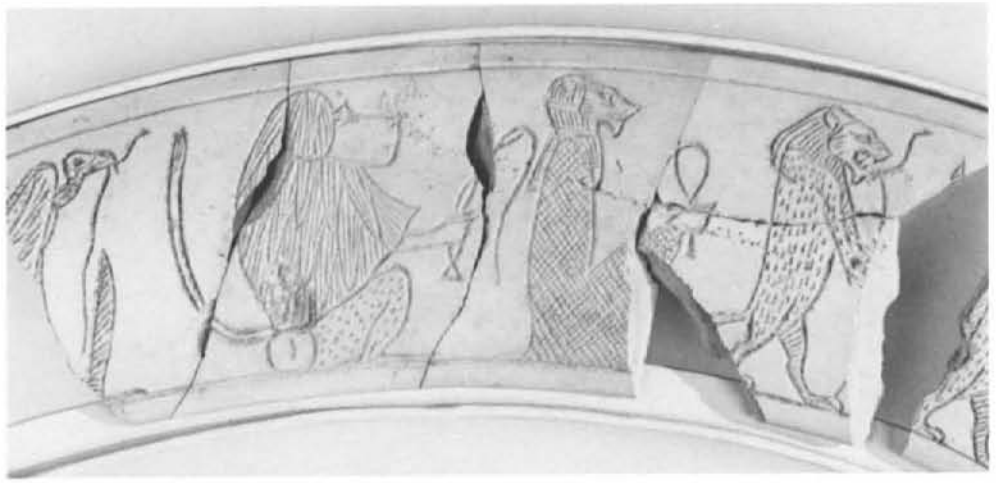
150–59

Pl. 81. Objects (cats. 124–28, 150–59), and an unidentified coffin (cat. 132) from unidentified shaft 5004 in the outer court.



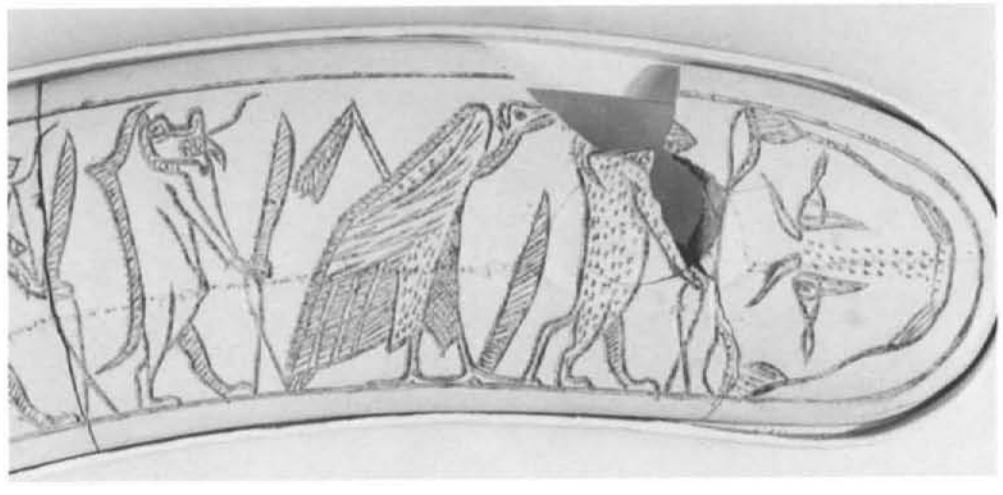
Pl. 82. Magic wand (cat. 135, MMA 08.200.19) from unidentified shaft 5004 in the outer court.



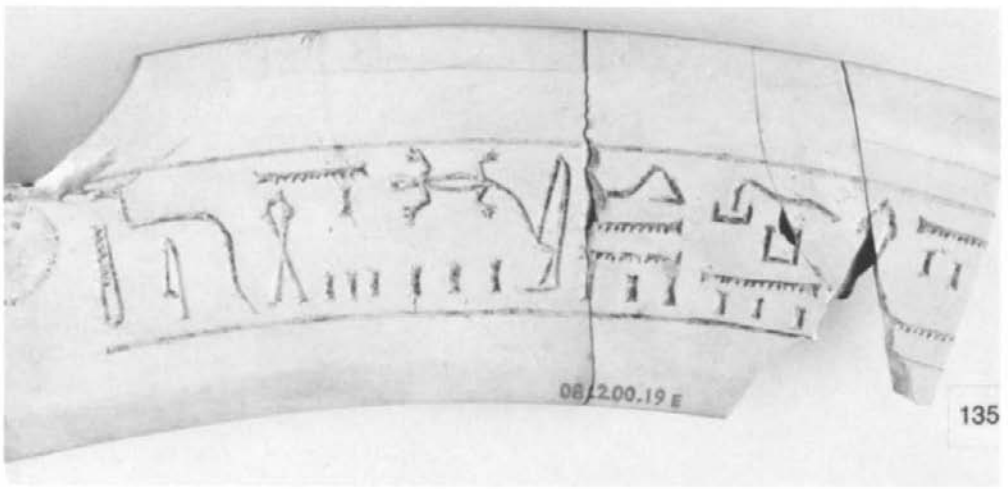




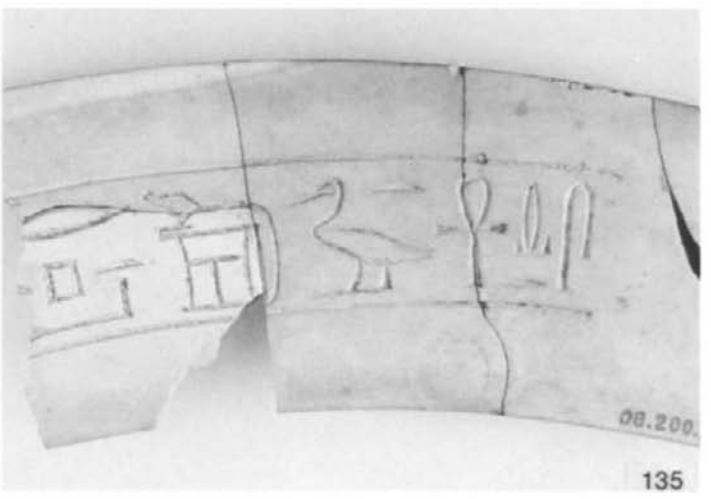




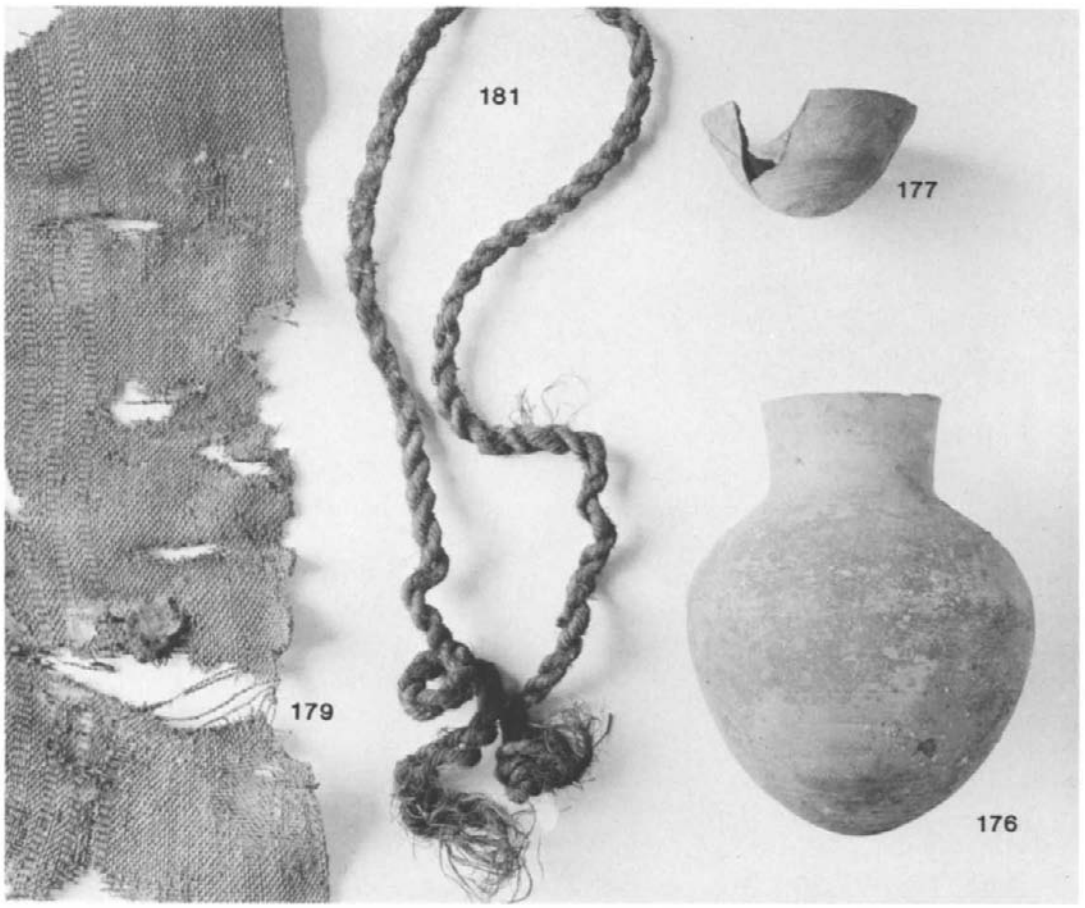
Pl. 83. Details of the front of the magic wand (cat. 135, MMA 08.200.19) from unidentified shaft 5004 in the outer court.

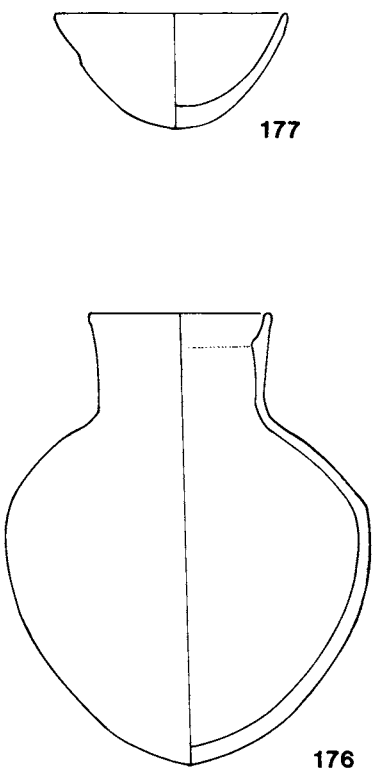






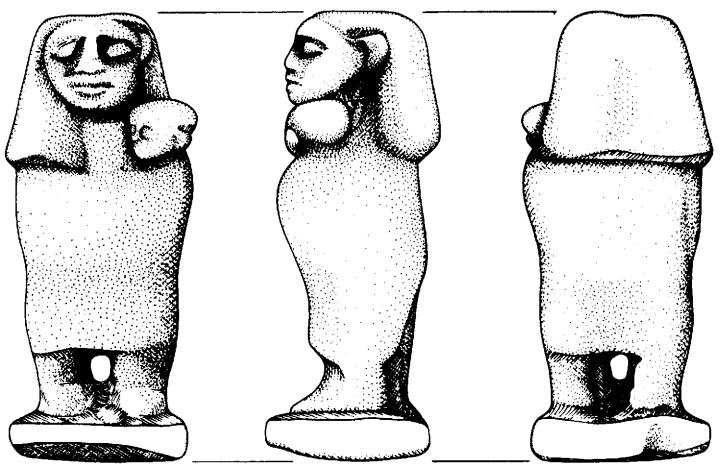
Pl. 84a. Details of the back of the magic wand (cat. 135, MMA 08.200.19) from unidentified shaft 5004 in the outer court.



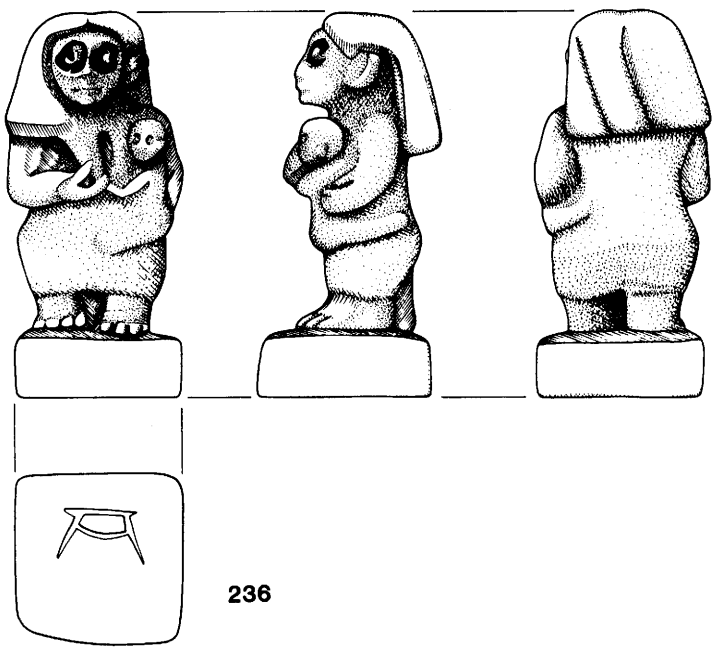


Pl. 84b. Pottery (cats. 176–77), rope (cat. 181), and possibly papyrus cloth (cat. 179) from the outer court.



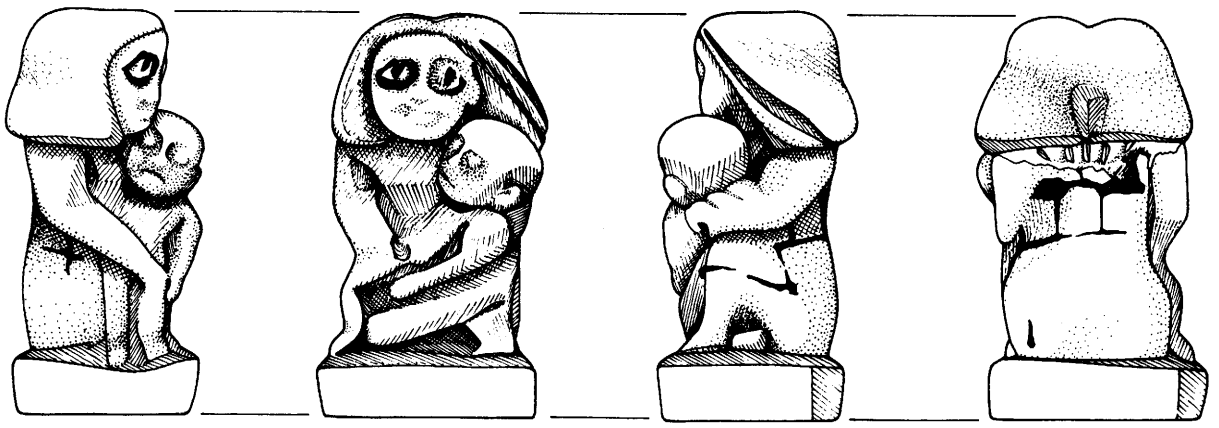






Pl. 85. Faience figurines (cats. 235–36, MMA 24.1.47–.48) from the boat pit.


237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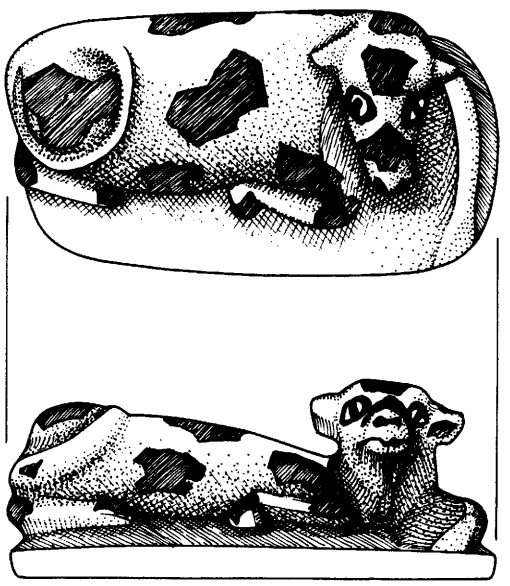
238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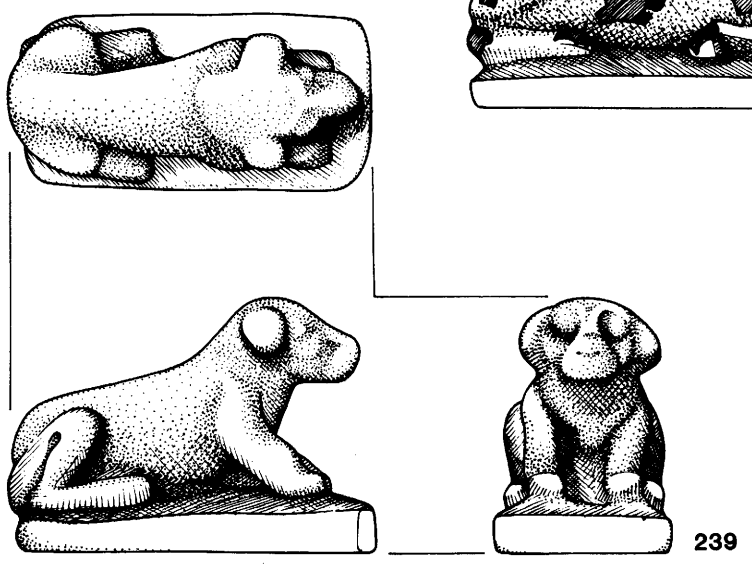
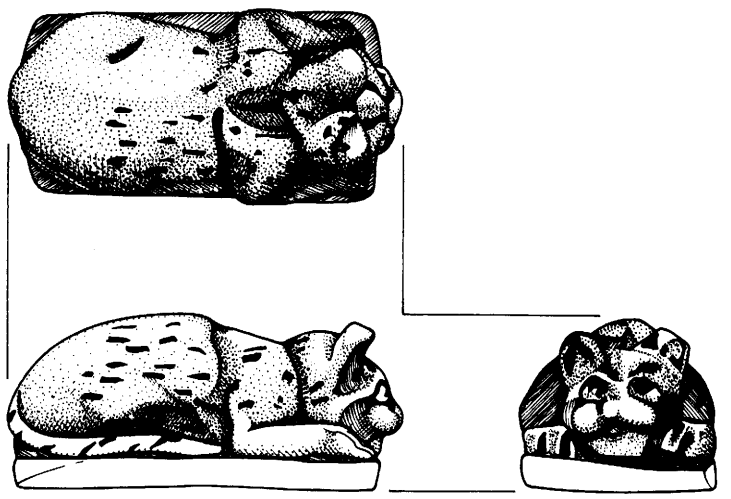

239


239

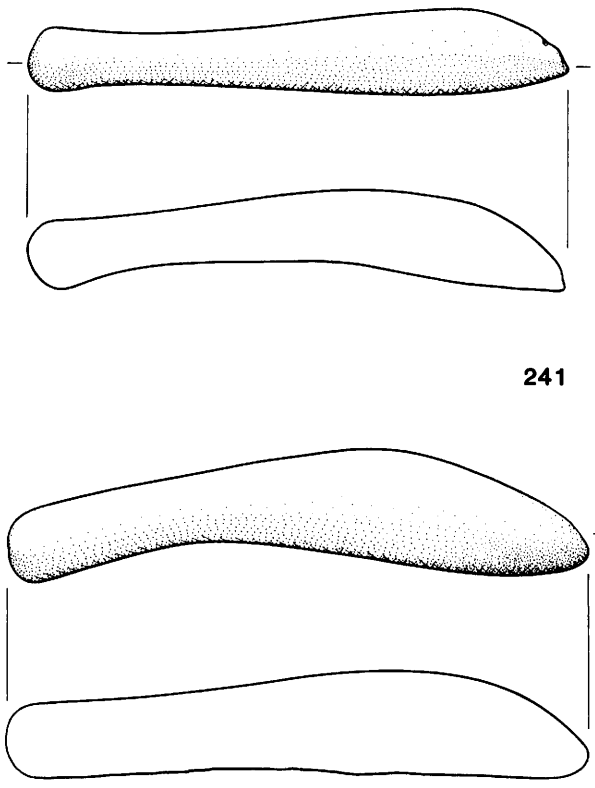

239

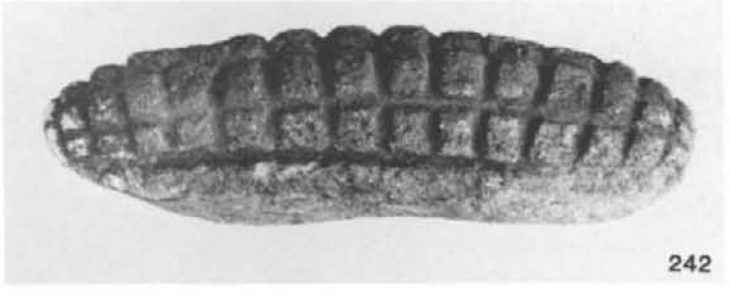
Pl. 86. Faience figurines (cats. 237–39, MMA 24.1.49–.51) from the boat pit.

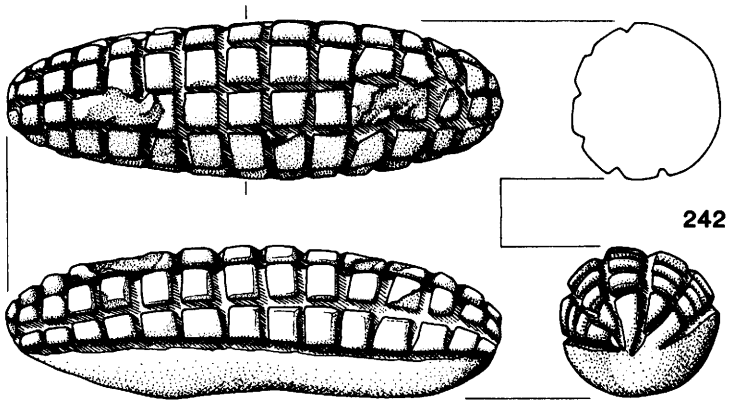










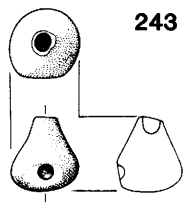


Pl. 87. Faience figurines (cats. 240–42, MMA 24.1.52–.55) from the boat pit.

PLATE 88



241–46



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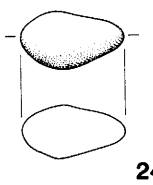


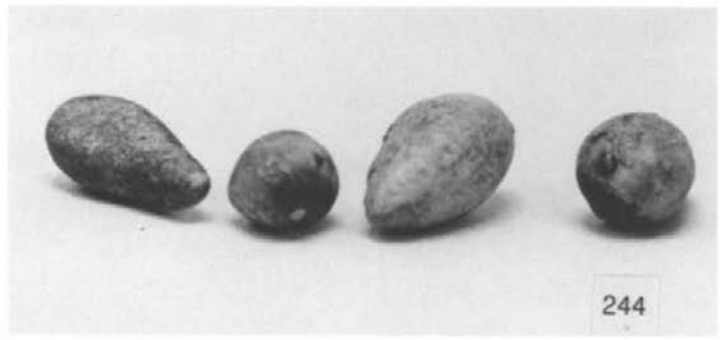
244



245



243



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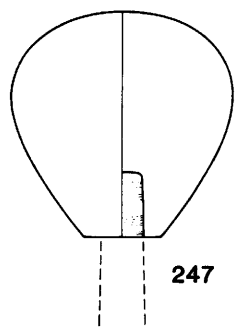

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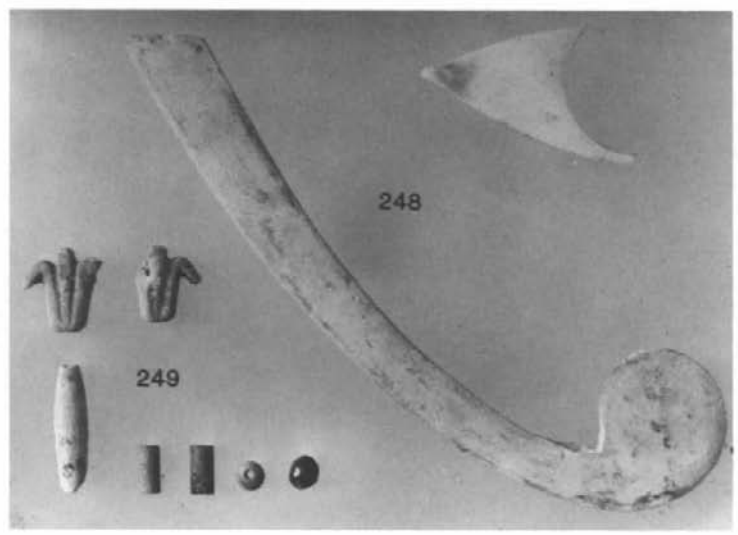
249





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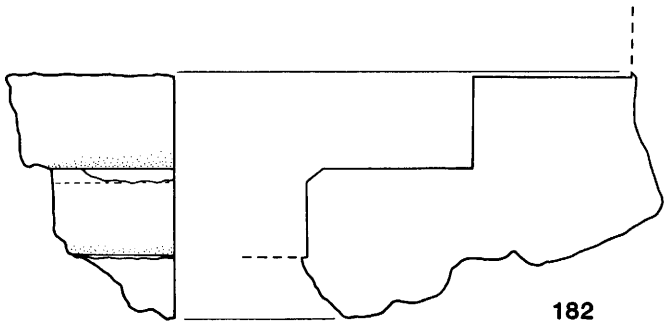
249



250

Pl. 88. Objects (cats. 241–50) from the boat pit and the outer court.



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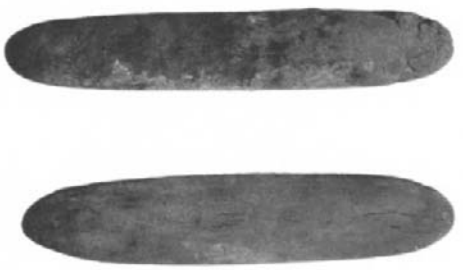

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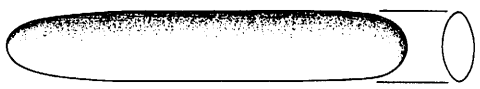

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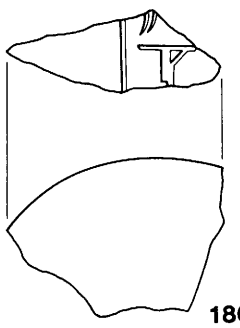
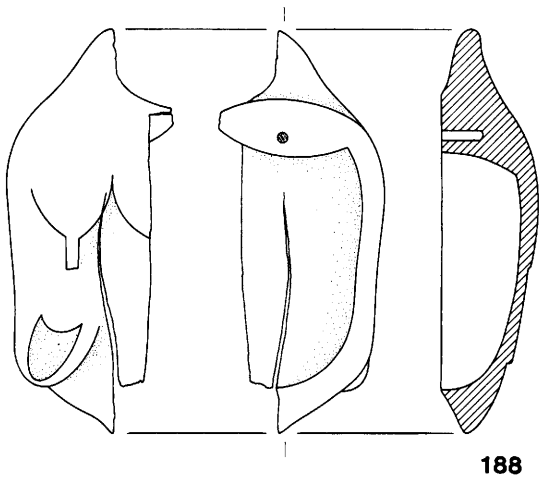


186





187



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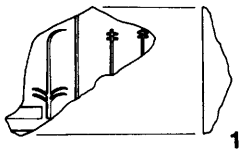

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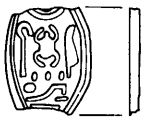

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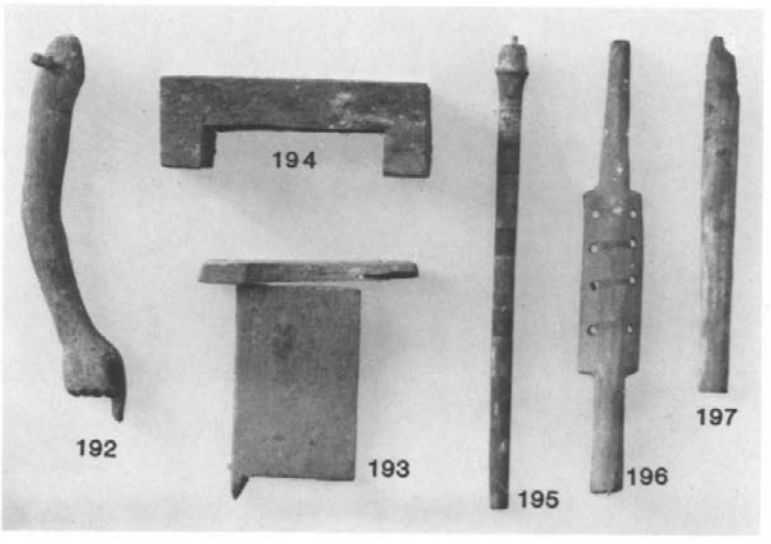
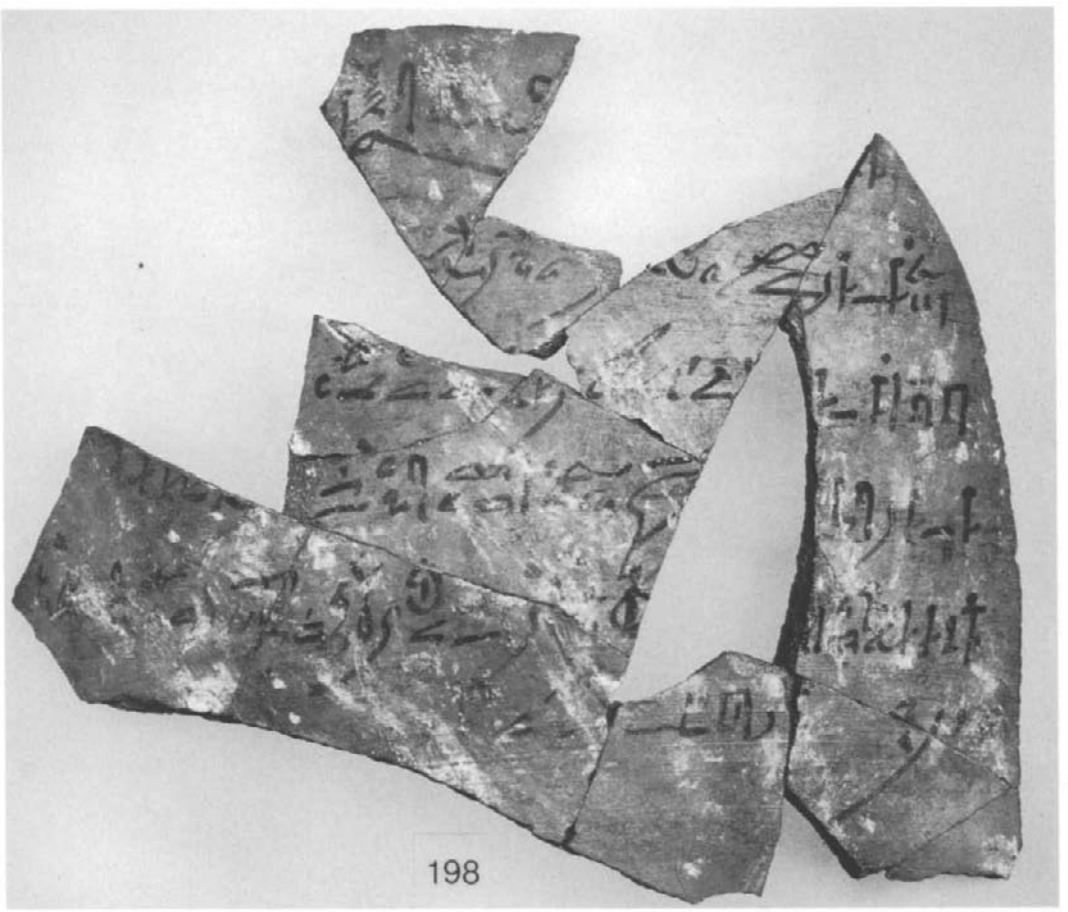
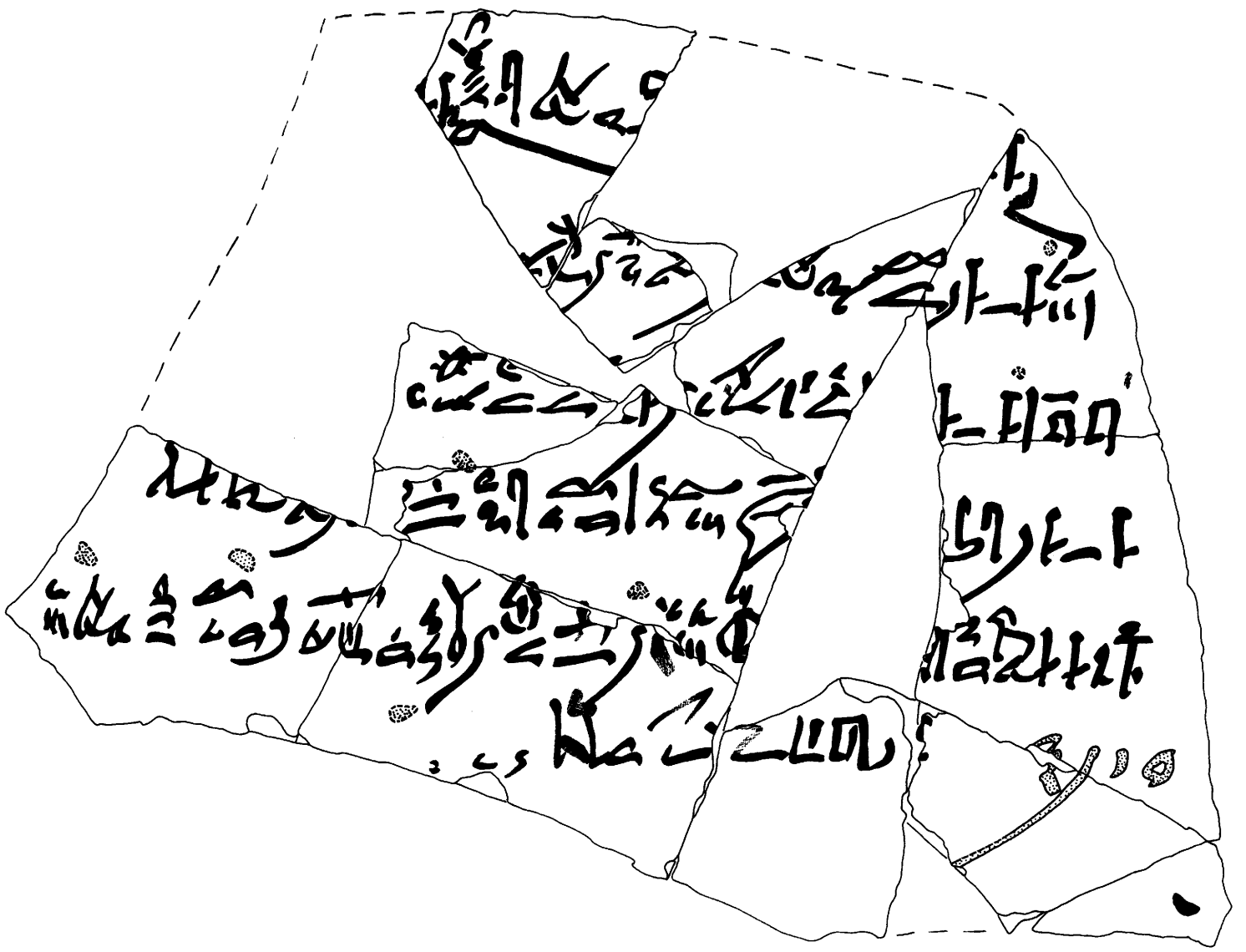


Pl. 89. Objects (cats. 182–83, 186–89, 191–97) from the outer court.

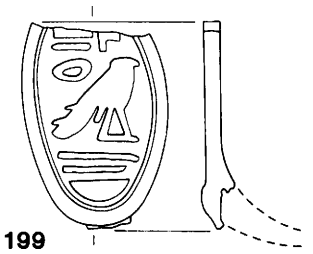
PLATE 90



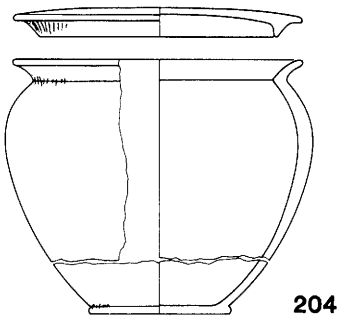


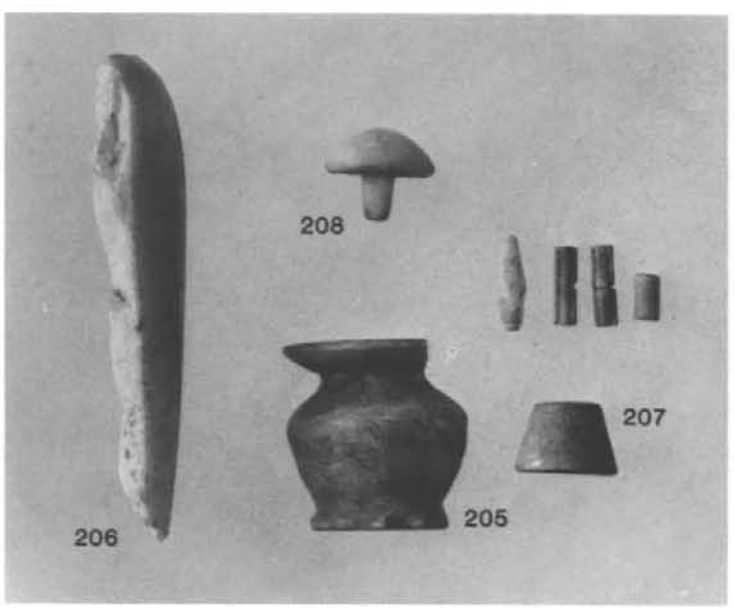
Pl. 90. Ostracon (cat. 198, MMA 32.1.119) from the OCW2.

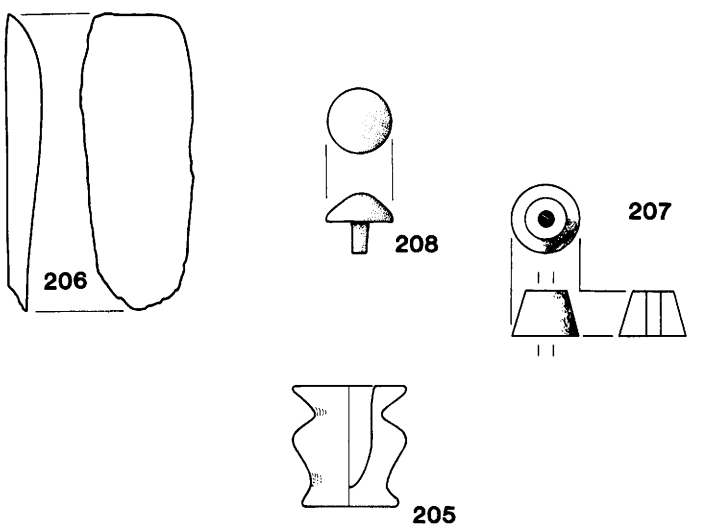




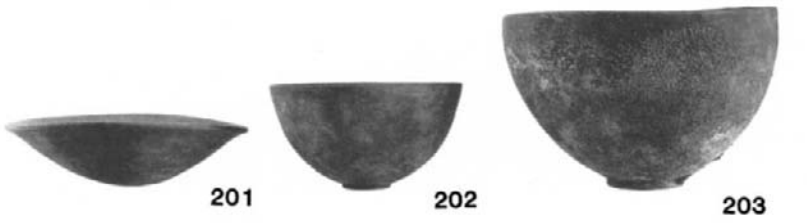


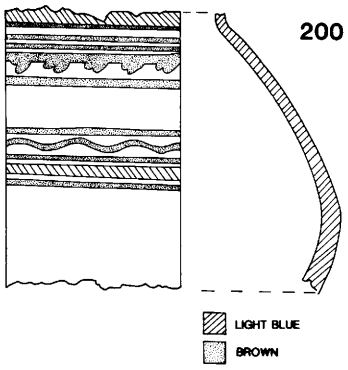


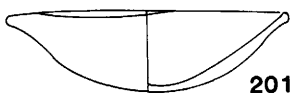


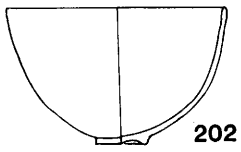


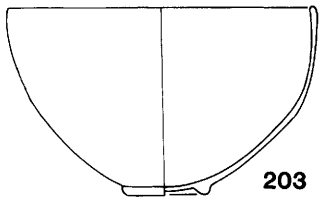
Pl. 91. Objects (cat. 199, MMA 32.1.123; cats. 204–8) from the OCW2.





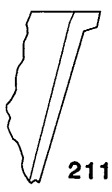


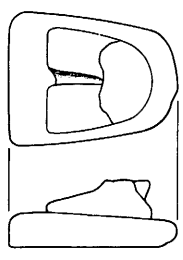








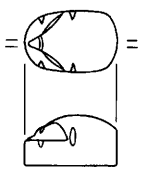




Pl. 92. Objects and pottery (cats. 200–203, 209–12) from the OCW2.



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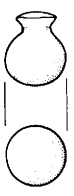
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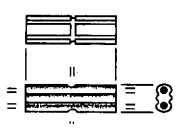
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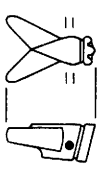
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215e

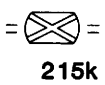

215f


215g


215h


215i


215j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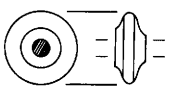
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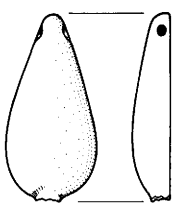
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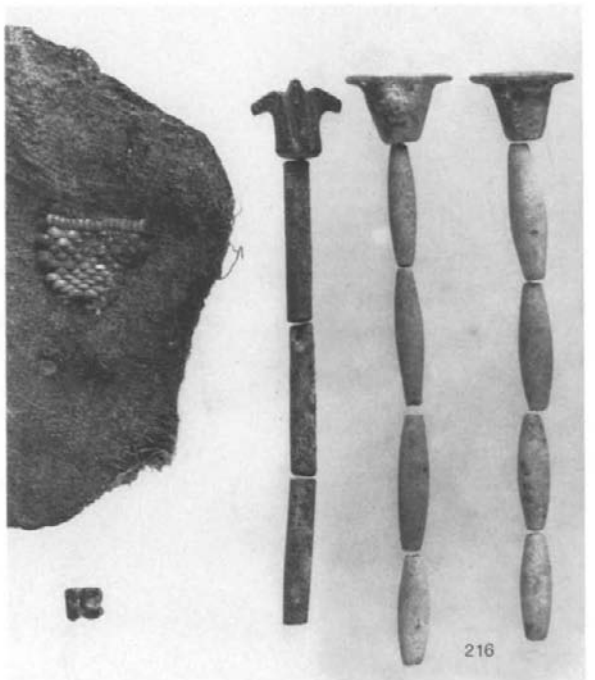
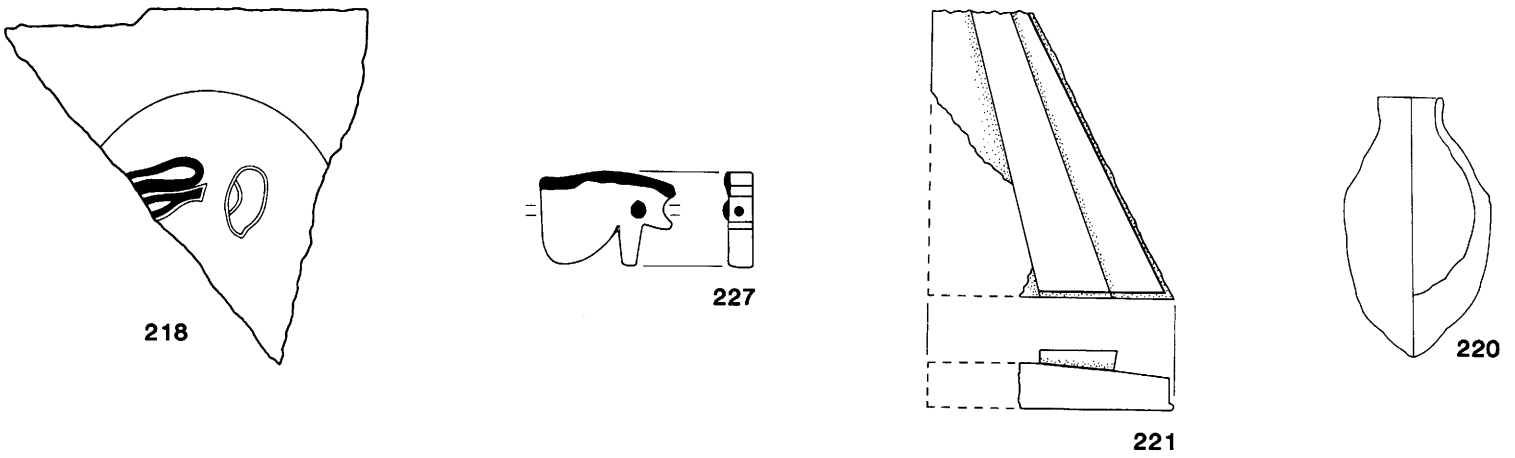
215o



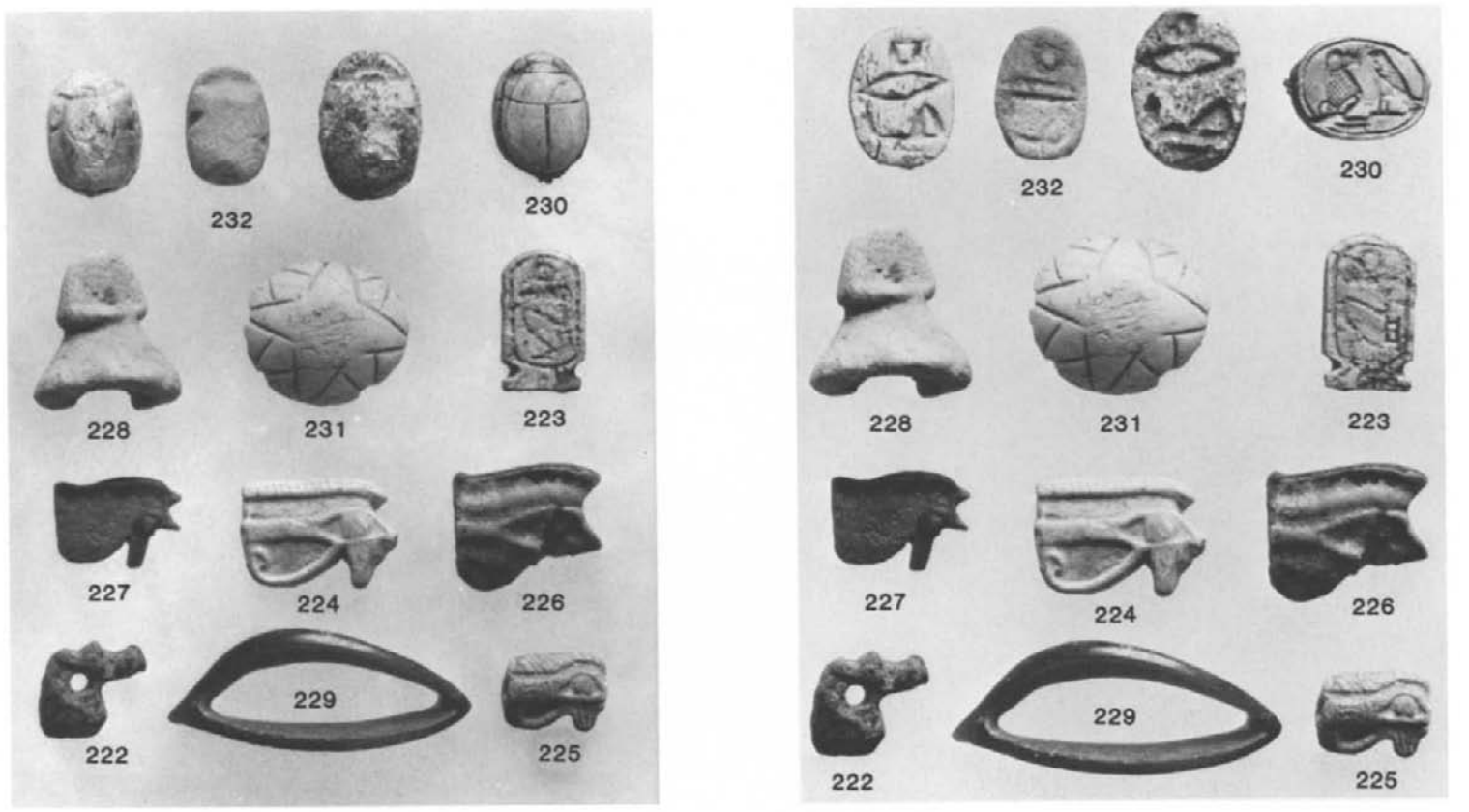

216

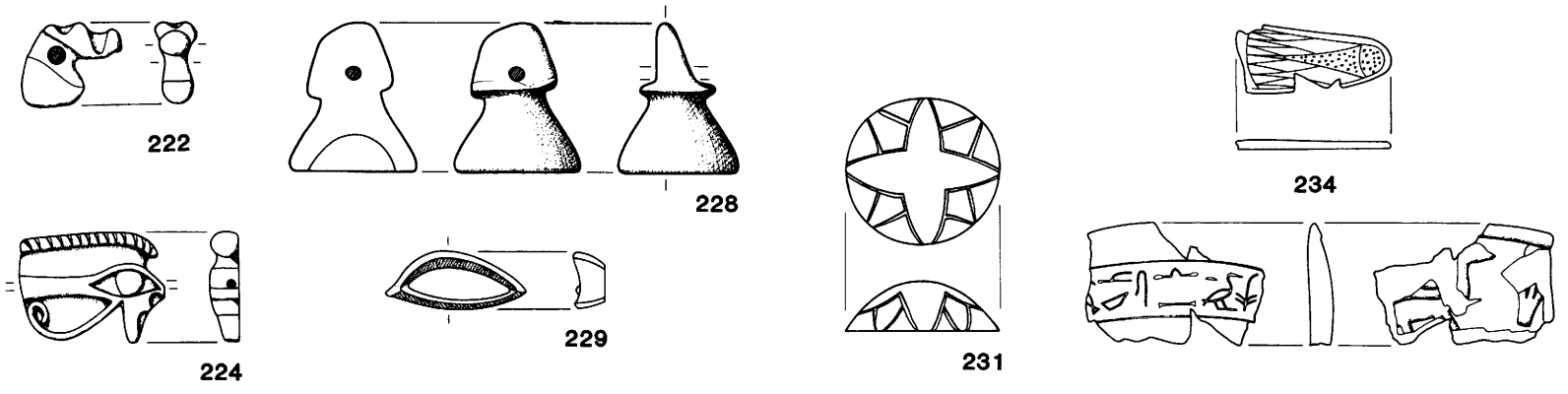
BLUE BLACK WHITE

Pl. 93. Objects (cats. 213–16) from the OCW2.



Pl. 94a. Objects (cats. 218, 220–21, 227) from the OCN.





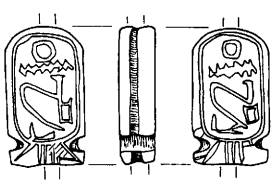
Pl. 94b. Objects (cats. 222–32, 234) from the OCE1.











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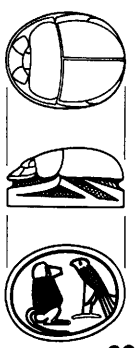

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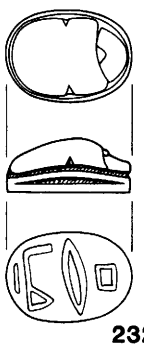

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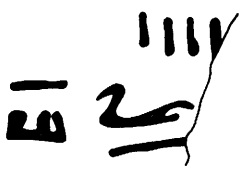
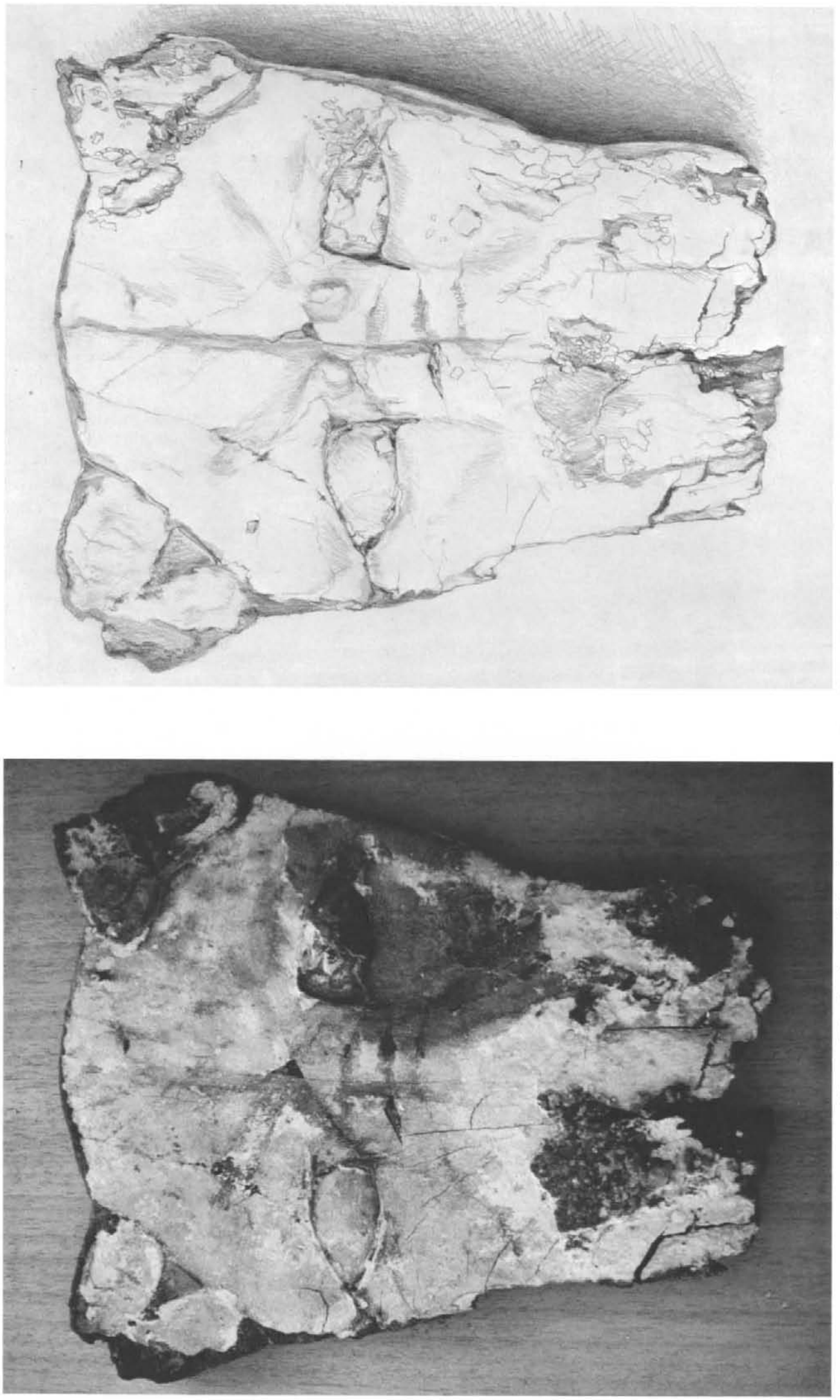
233



233



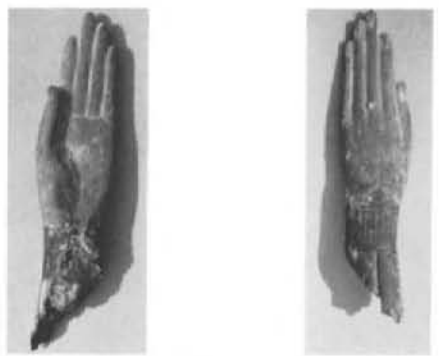
Pl. 95. Objects (cats. 223, 230, 232–33) from the OCE1.



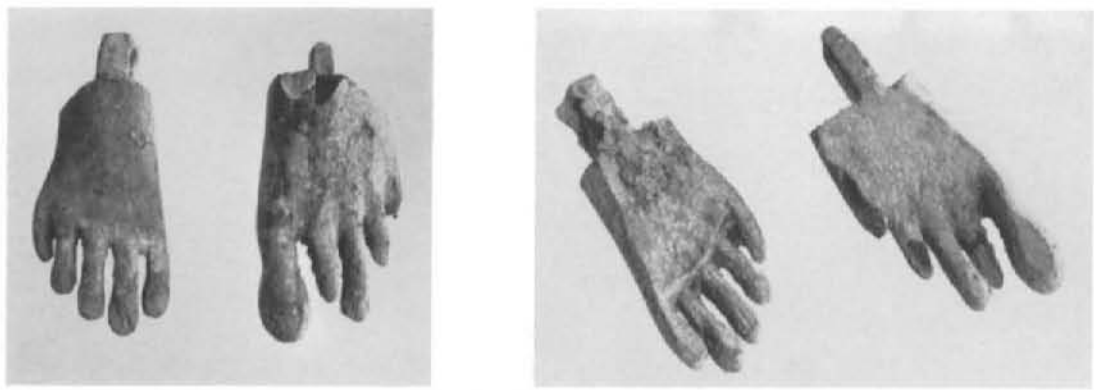
Pl. 96. Wooden leopard's head (cat. 251) from the offering hall of the mortuary temple of Senwosret I.



Pl. 97a–b. Wooden figurine (cat. 252) from the offering hall of the mortuary temple of Senwosret I.

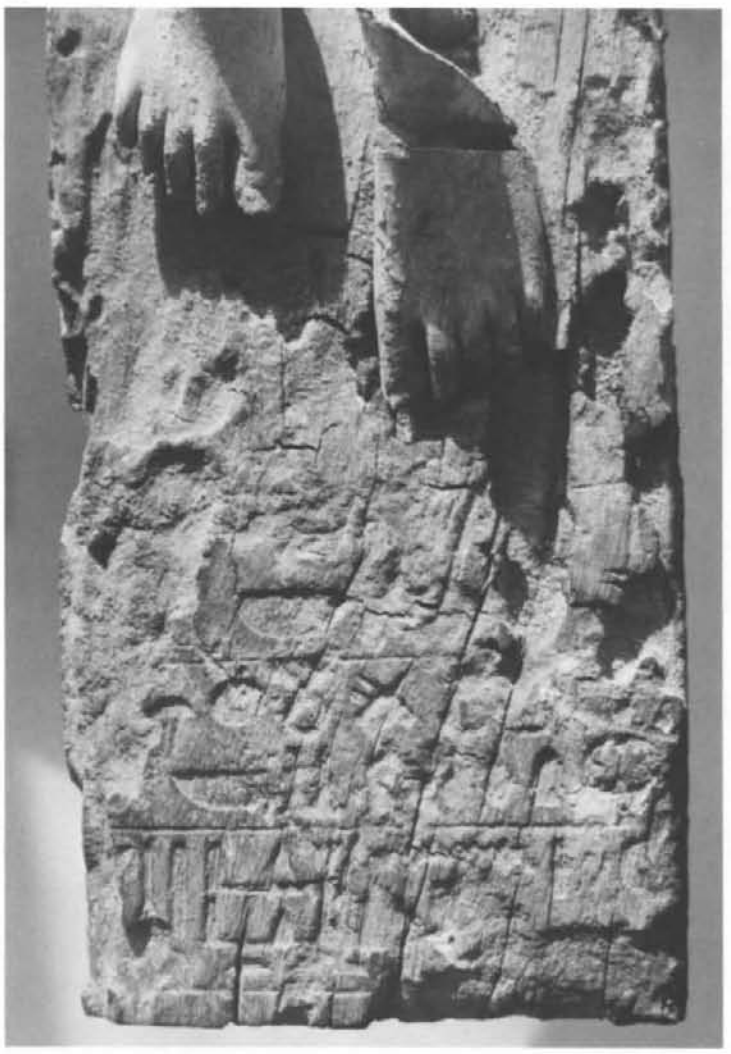


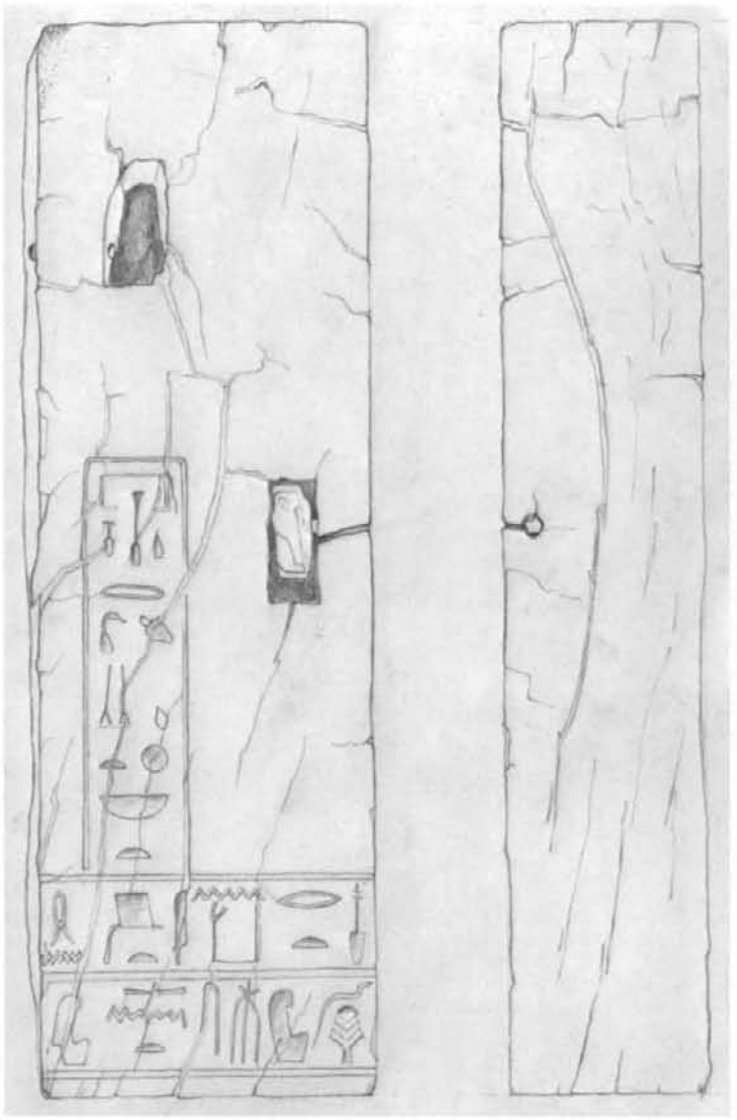
Pl. 97c. Hand of a wooden figurine (cat. 260). Same origin.



Pl. 97d. Feet from wooden figurines (cats. 264–65). Same origin.

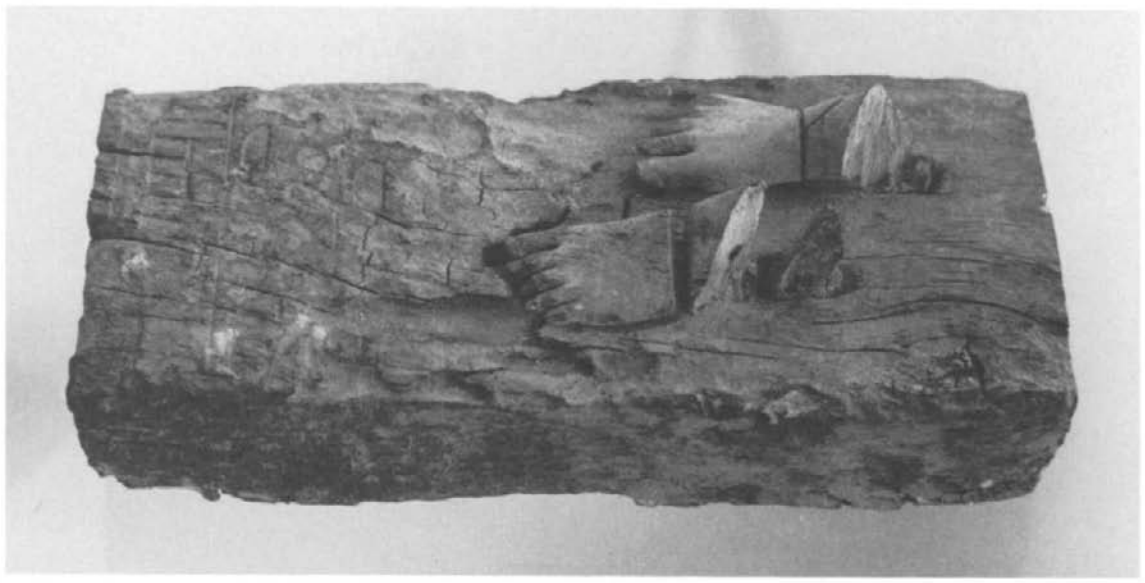


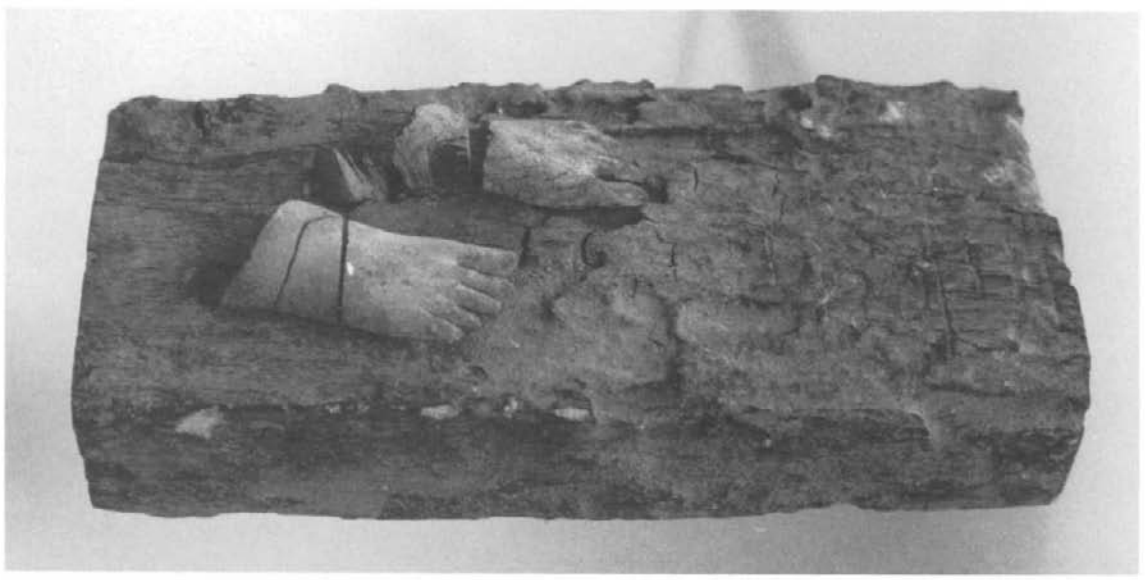




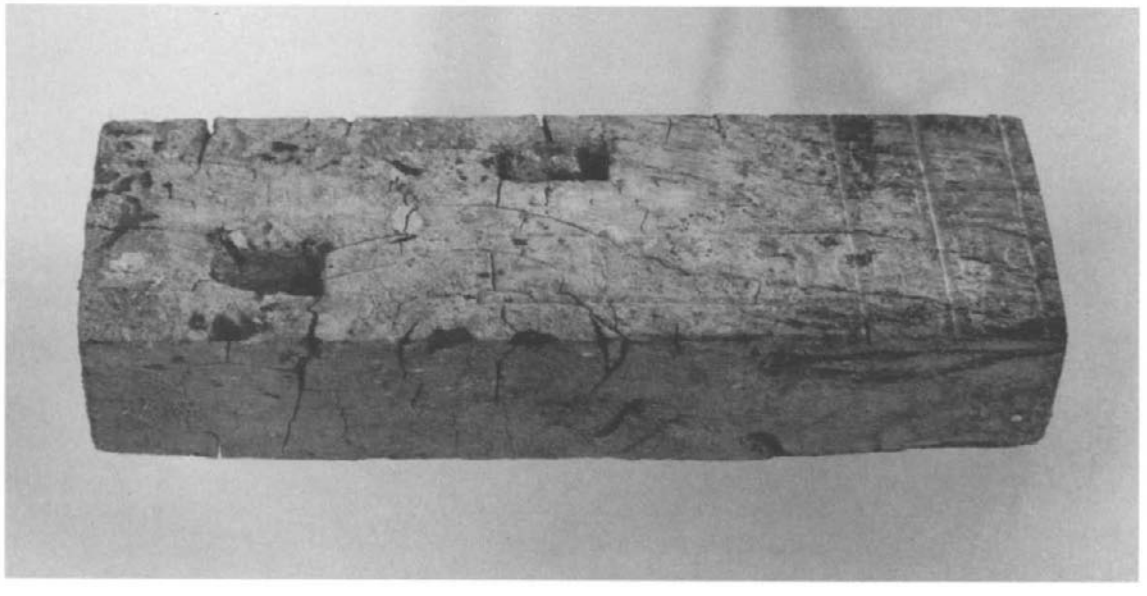


Pl. 98a–d. Wooden bases (cats. 254 [top], 255 [below]) of female figurines from the offering hall of the mortuary temple of Senwosret I (see pl. 99).





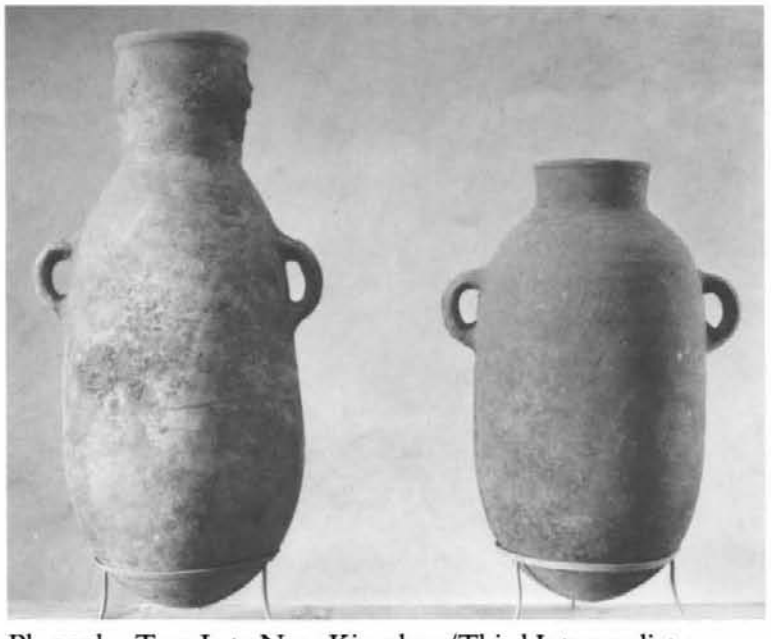
Pl. 99a–b. Wooden base (cat. 254) of a female figurine from the offering hall of the mortuary temple of Senwosret I (see pl. 98a–b).



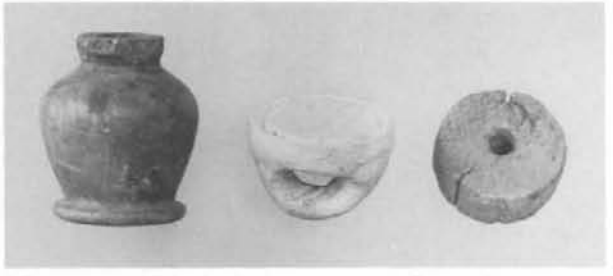
Pl. 99c. Wooden base (cat. 255) of a female figurine from the offering hall of the mortuary temple of Senwosret I (see pl. 98c–d).



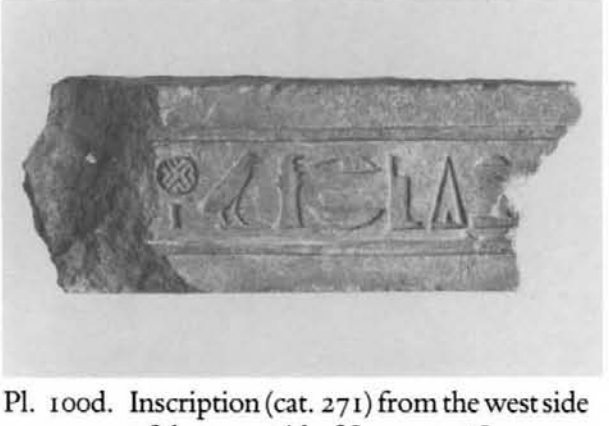
Pl. 100a. Findspot of the wooden figurines in the foundations of the offering hall of the mortuary temple of Senwosret I. Seen from the south.



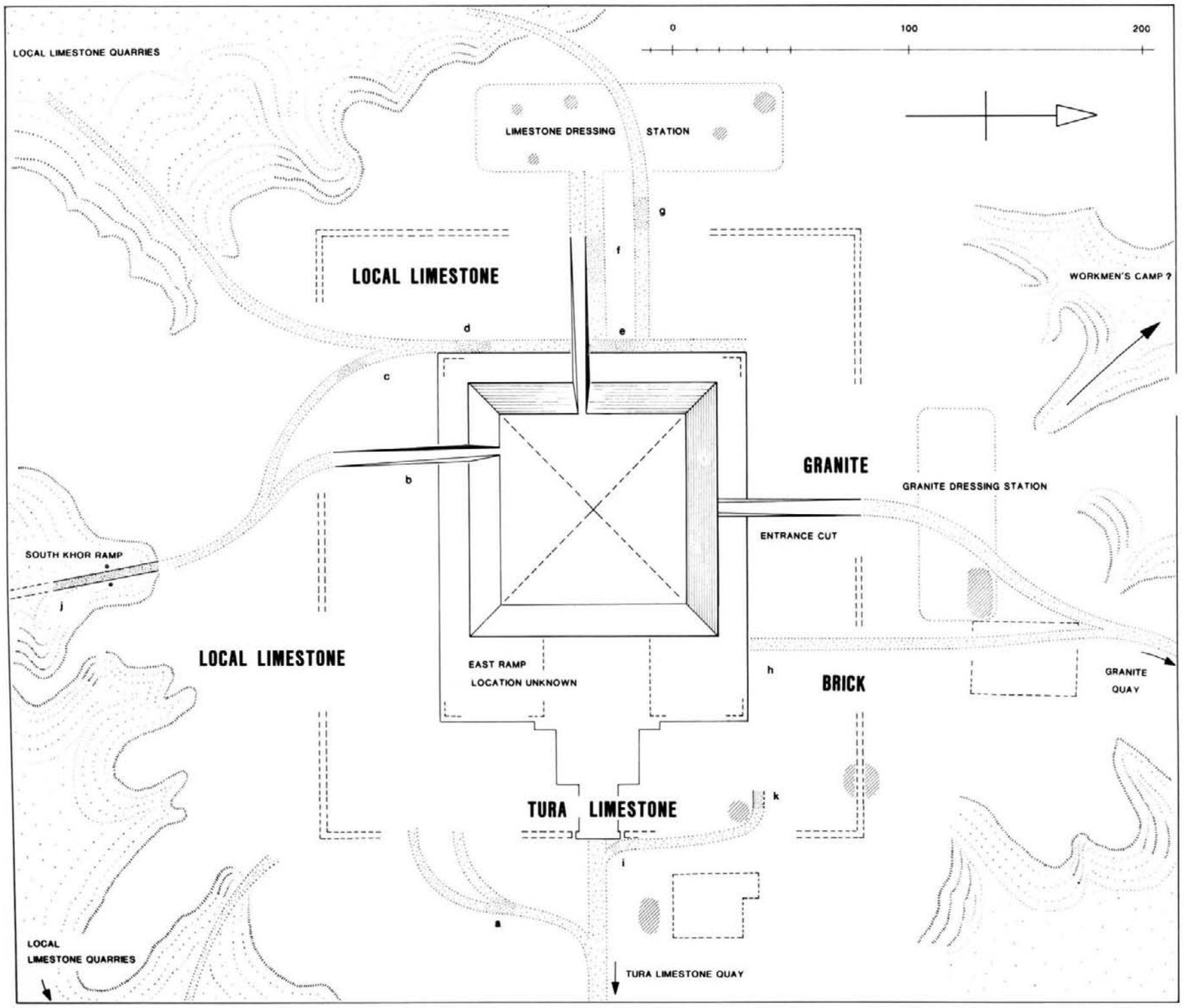
Pl. 100b. Two Late New Kingdom/Third Intermediate Period amphorae (cats. 269–70) from the west side of the pyramid of Senwosret I.



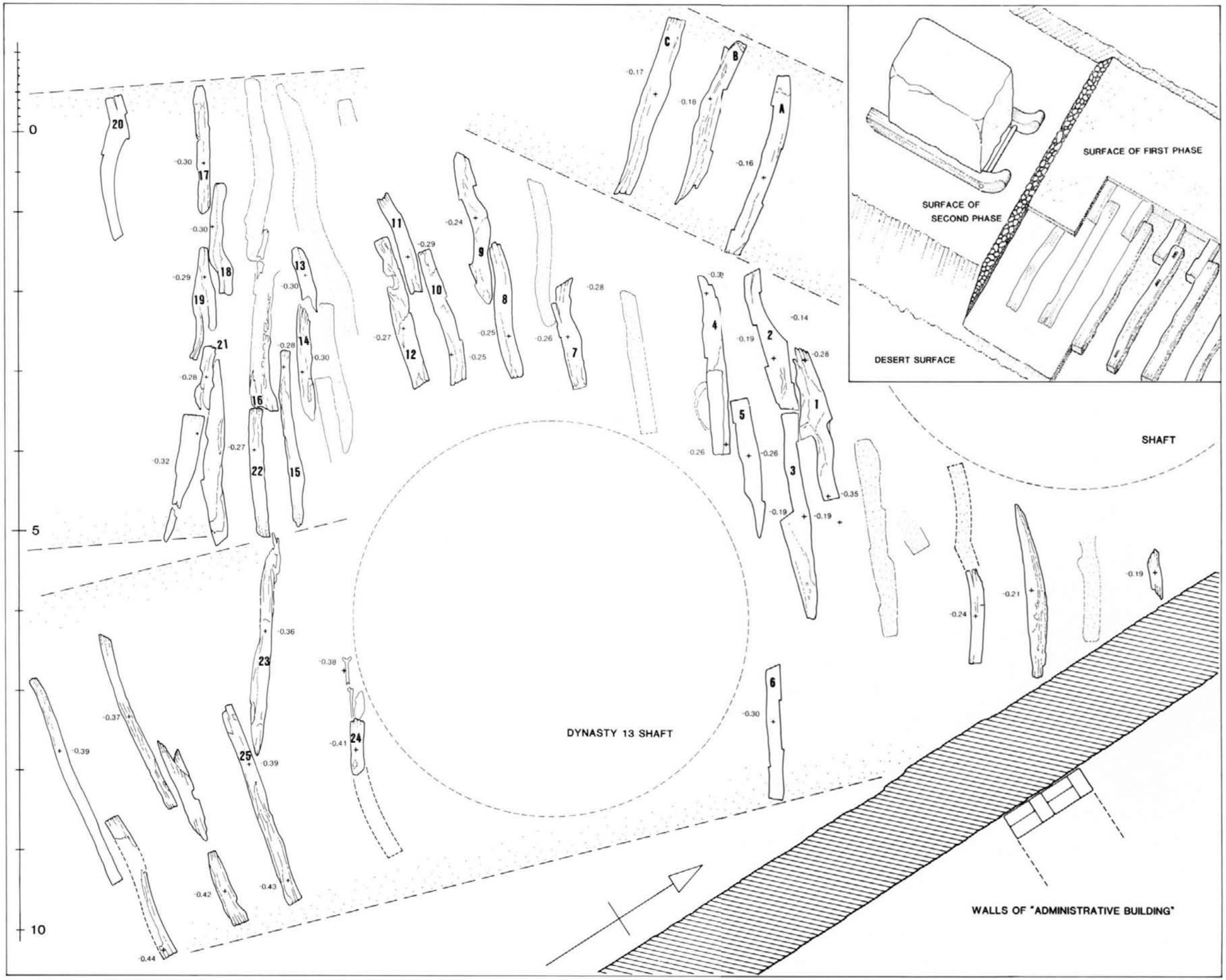
Pl. 100c. Objects (cats. 272–74) from the west side of the pyramid of Senwosret I.



Pl. 100d. Inscription (cat. 271) from the west side of the pyramid of Senwosret I.



Pl. 101. Sketch plan of the organization of the construction area around the pyramid of Senwosret I showing dressing stations, roads, and ramps.



Pl. 102. Plan of the slideway area south of the causeway and east of the outer enclosure wall (see pl. 103a). Inset: Cutaway axonometric drawing showing slideway construction. Scale 1:50.



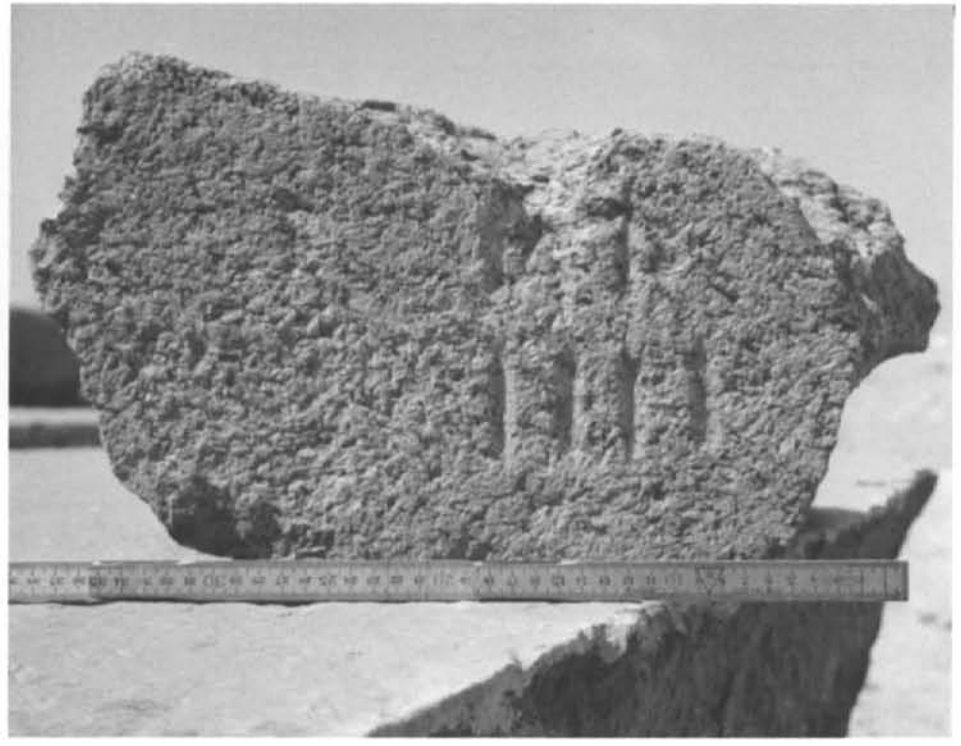




Pl. 103a–c. Slideway area south of the causeway and east of the outer enclosure wall (see pl. 102).

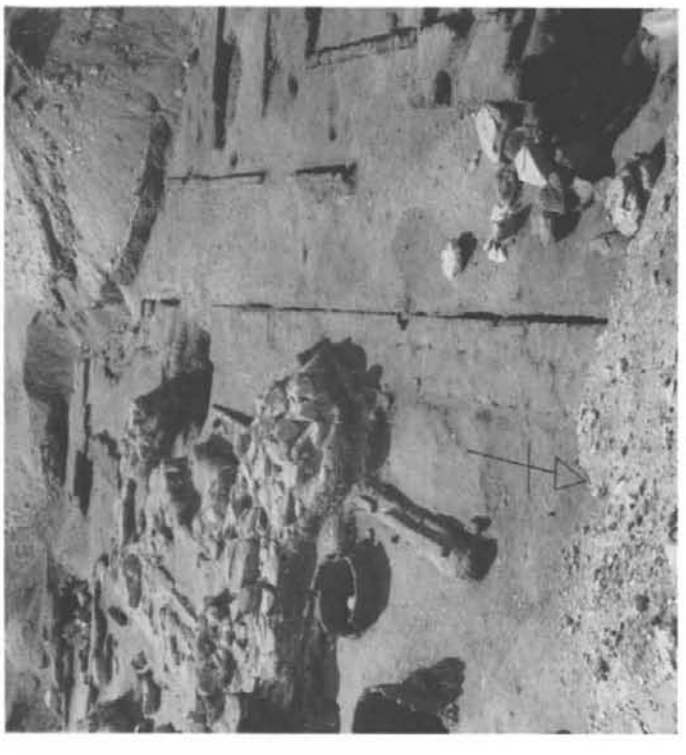


Pl. 103d. Boat timber in situ under two layers of limestone chip.



Pl. 103e. Number 7 or 8 discovered in 1989 on a fragment of a granite plug from the pyramid of Senwosret I (see p. 101).



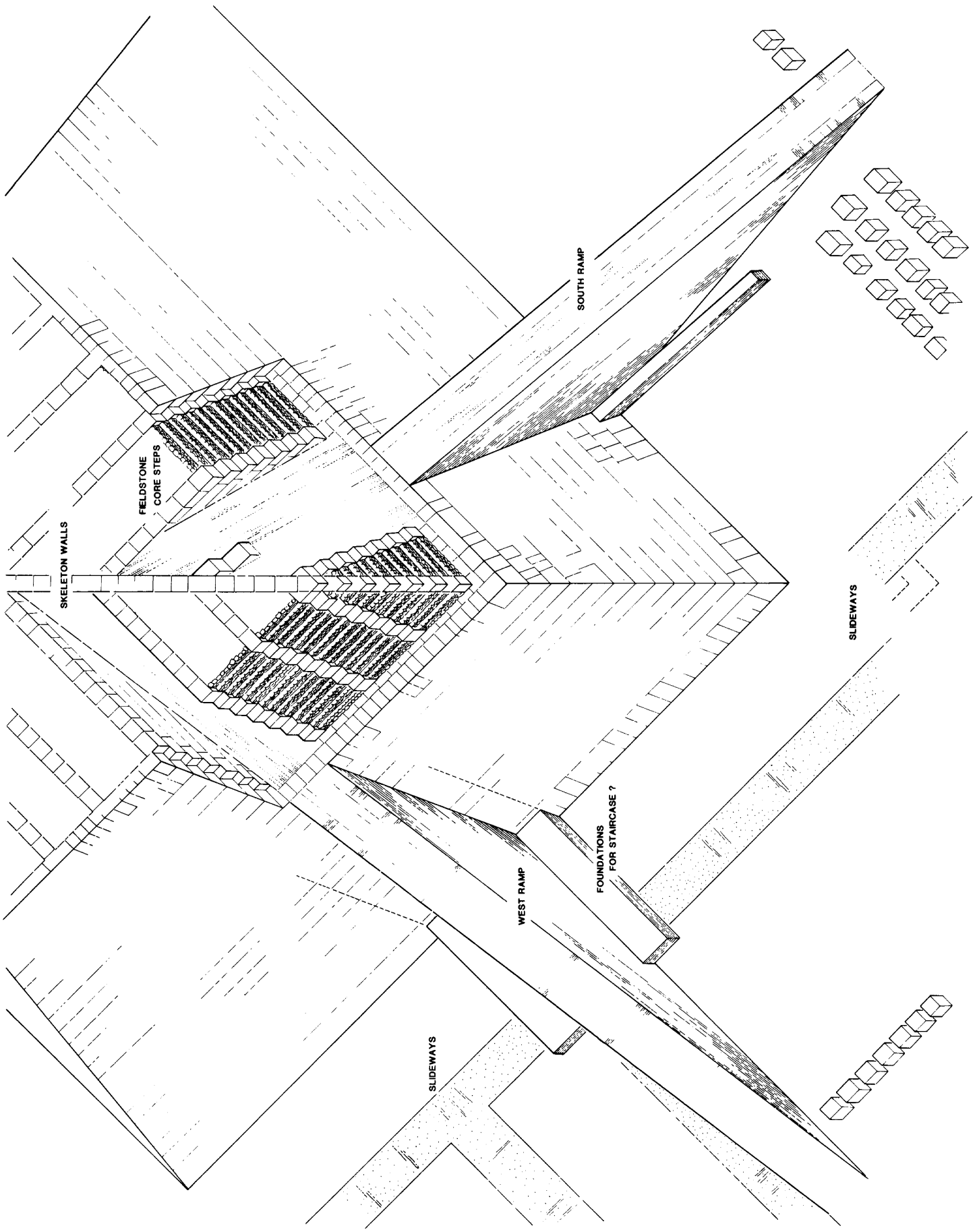


Pl. 104a–b. Remains of a construction ramp between pyramids 2 and 3 as seen during the 1933–34 season.





Pl. 104c–d. Remains of a south to north slideway, probably west of pyramid 3.

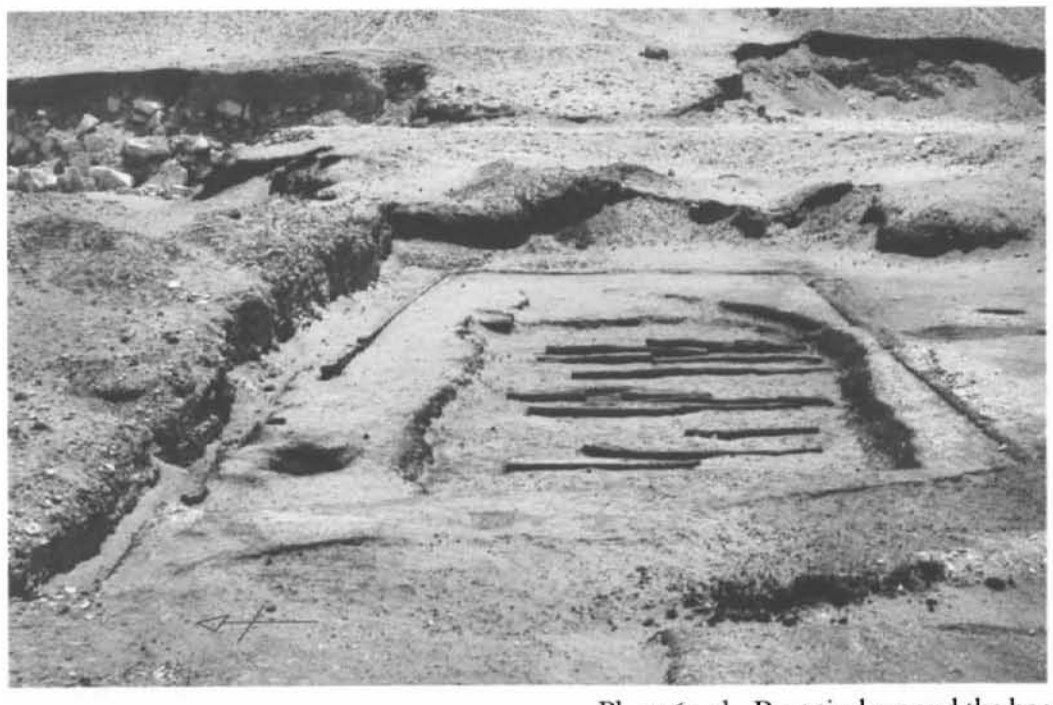


Pl. 105. Hypothetical reconstruction of the organization of the construction area at the southwest corner of the pyramid of Senwosret I.





Pl. 106a–b. Remains of a slideway with boat timbers, the boat frame, and a sloping construction ramp found north of pyramid 4.





Pl. 106c–d. Boat timbers and the boat frame in the slideway north of pyramid 4.



Pl. 107a. Remains of a slideway with boat timbers and the sloping construction ramp northeast of pyramid 4 (see pl. 107c–d).



Pl. 107b. Remains of the sloping construction ramp northeast of pyramid 4.





Pl. 107c–d. Northern continuation of the slideway on pl. 107a.



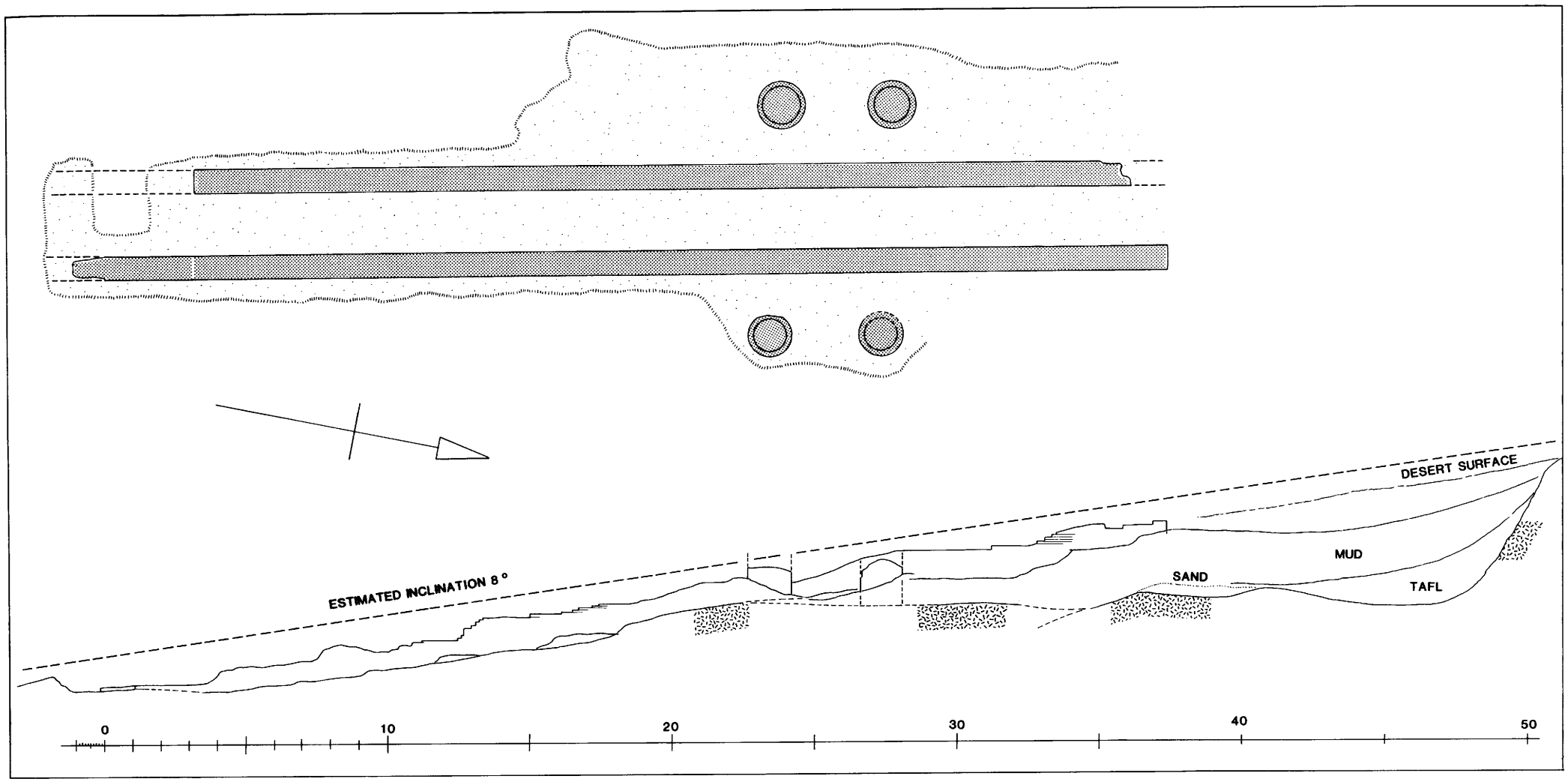
Pl. 108a. Remains of a slideway west of the outer court west. A second slideway is visible in the center on the right.



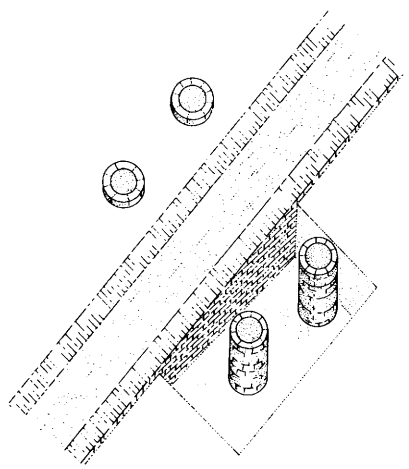
Pl. 108b. Remains of a slideway and Roman house 4 near the northeast corner of the inner enclosure wall.



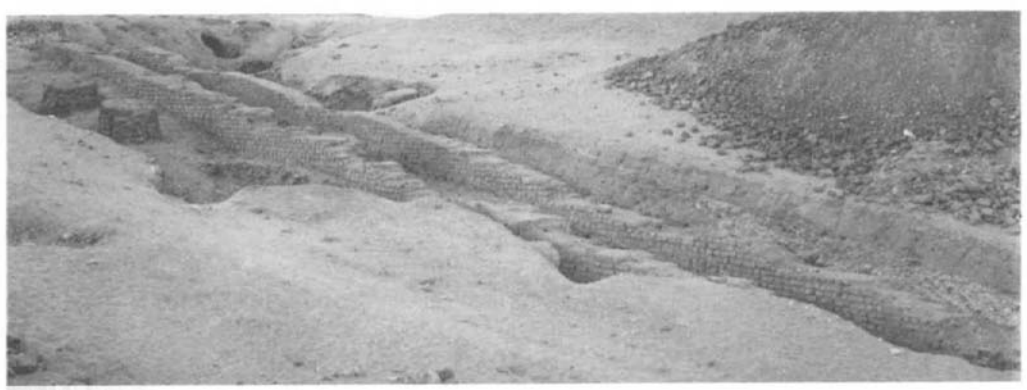
Pl. 108c. Boat timbers in the slideway on pl. 108b.



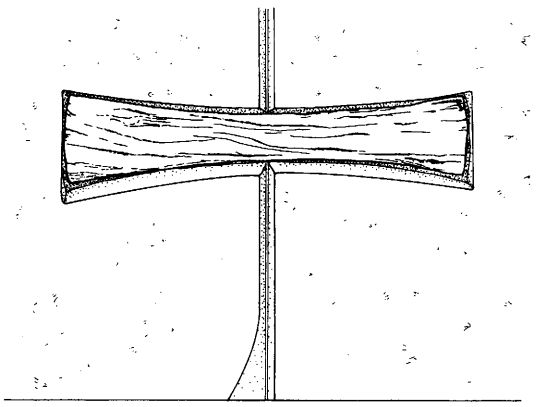
Pl. 109a. Plan and section of a construction ramp ascending the desert plateau in the "South *Khor.*" Scale 1:200.

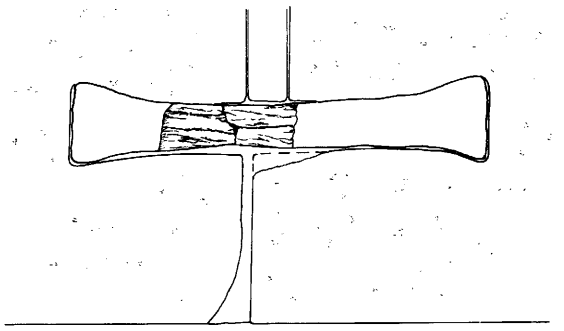


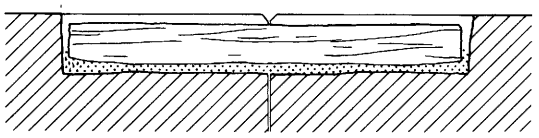
Pl. 109b. Reconstruction of the center section of the construction ramp on pl. 109a.



Pl. 109c. Remains of the construction ramp on pl. 109a.







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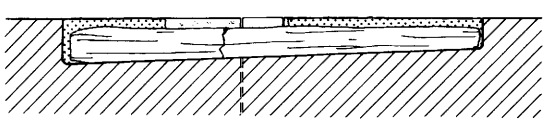

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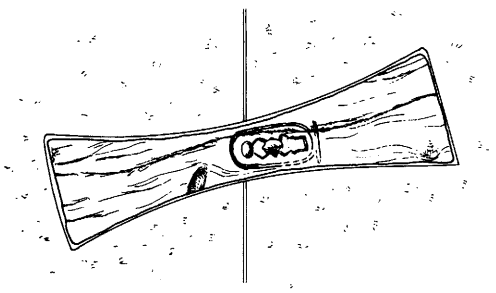

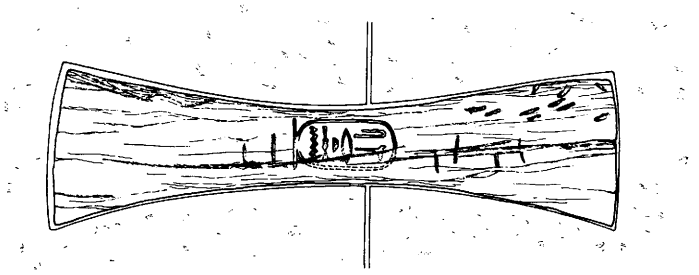

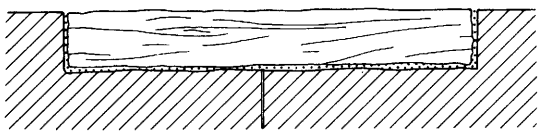

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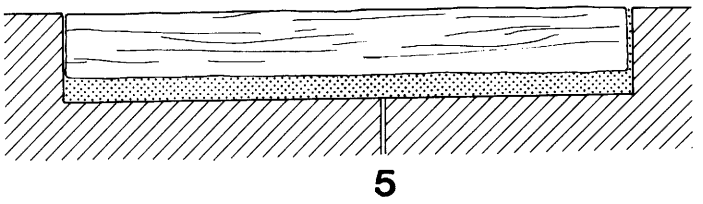

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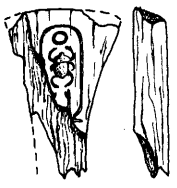

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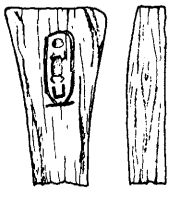

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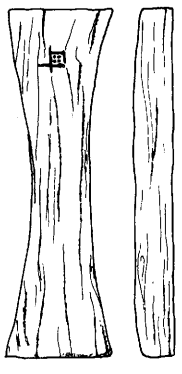

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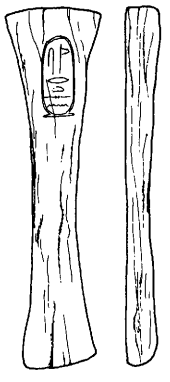

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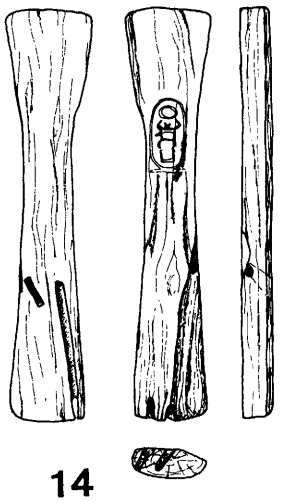
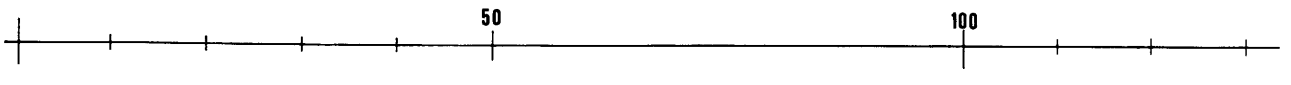
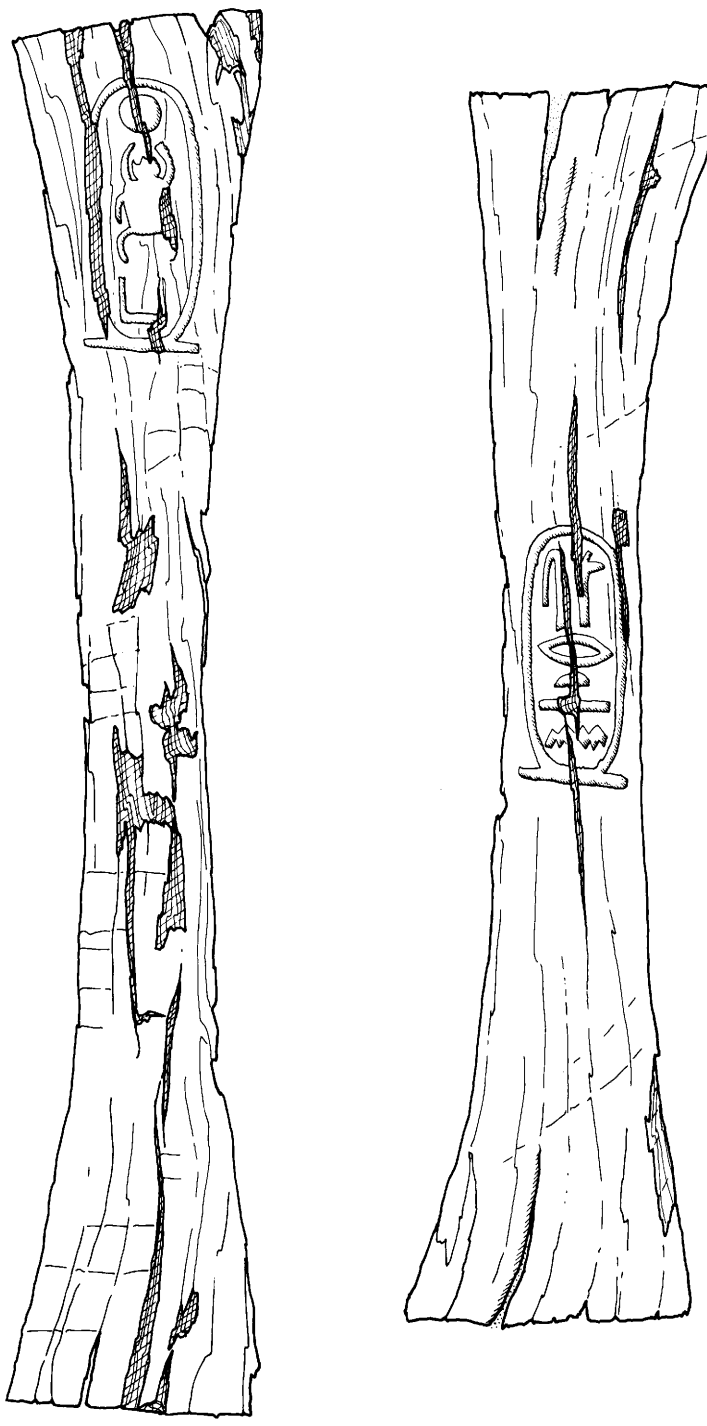


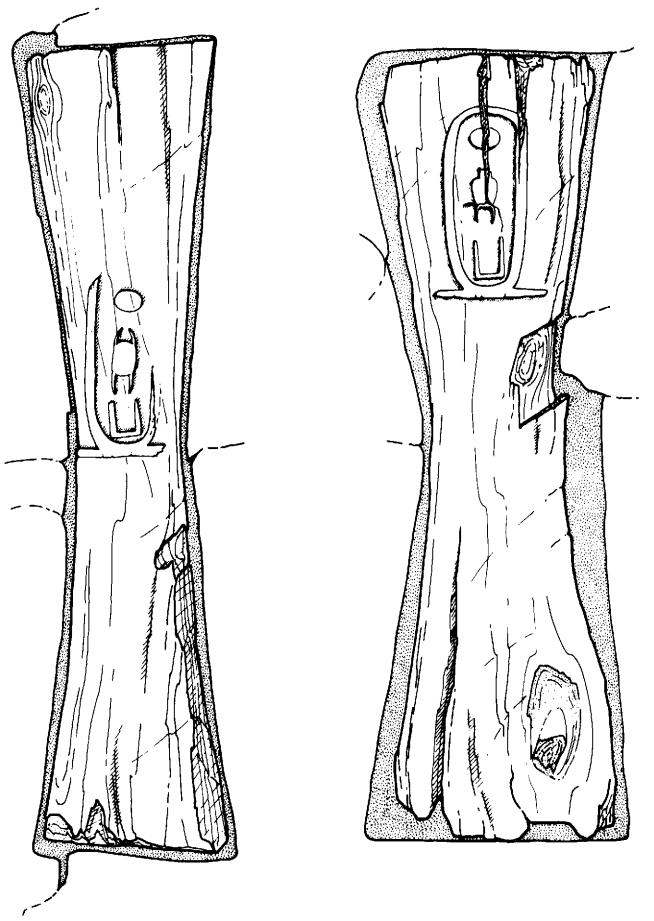
14



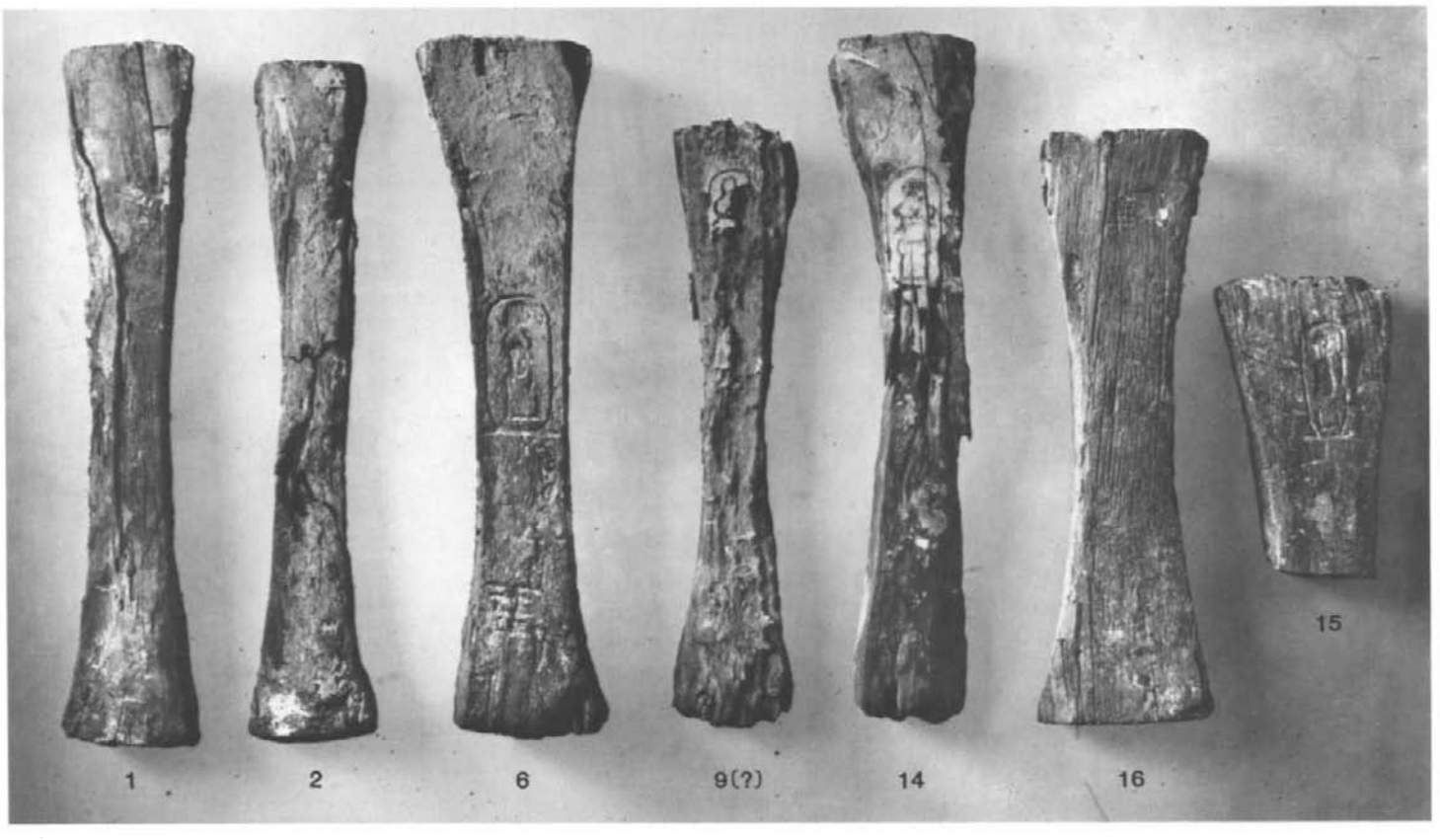
Pl. 110. Wooden cramps from the main and the secondary pyramids of Senwosret I (see cramp list pp. 98–99).



Pl. 111a. Two adjacent cramps from the casing on the north side of the pyramid of Senwosret I, directly west of entrance niche (see cramp list p. 99, nos. 21–22 and pl. 112b). Scale 1:4.



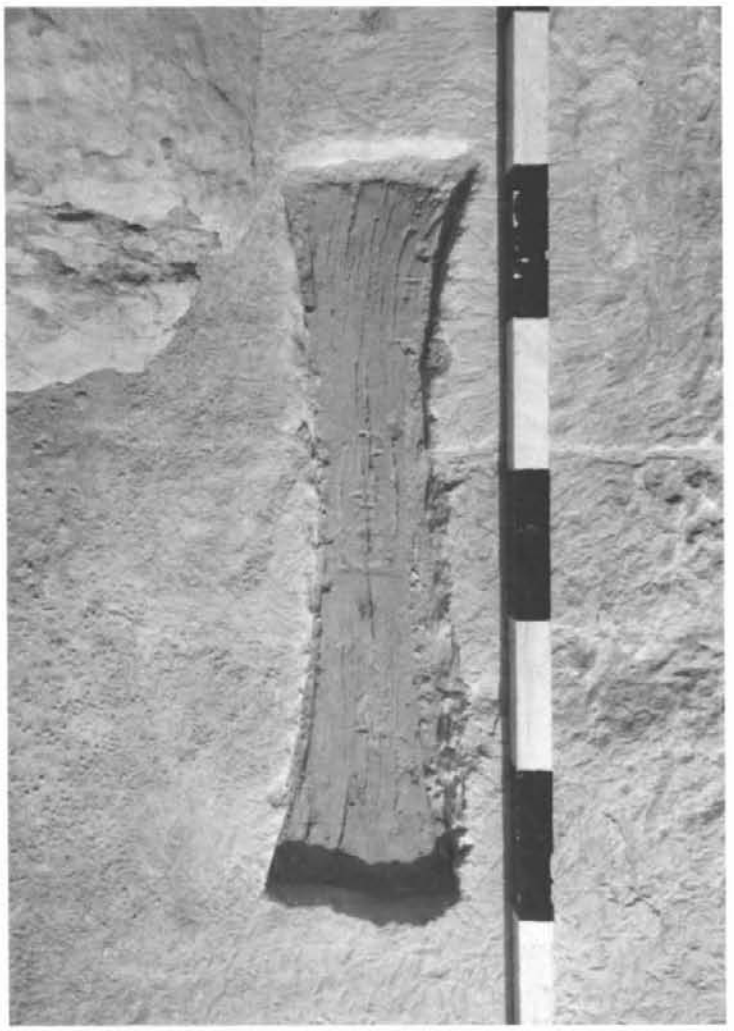
Pl. 111b. Two adjacent cramps from the seventh course of casing on the west side of the pyramid of Senwosret I (see cramp list p. 99, nos. 24–25). Scale 1:4.



Pl. 111c. Cramps from the main and secondary pyramids of Senwosret I in the Metropolitan Museum and in the Egyptian Museum, Cairo (MMA [32.1.96–.97], 32.1.95, [32.1.99], Jd'E 58846, MMA [32.1.98, .100]; see cramp list pp. 98–99).



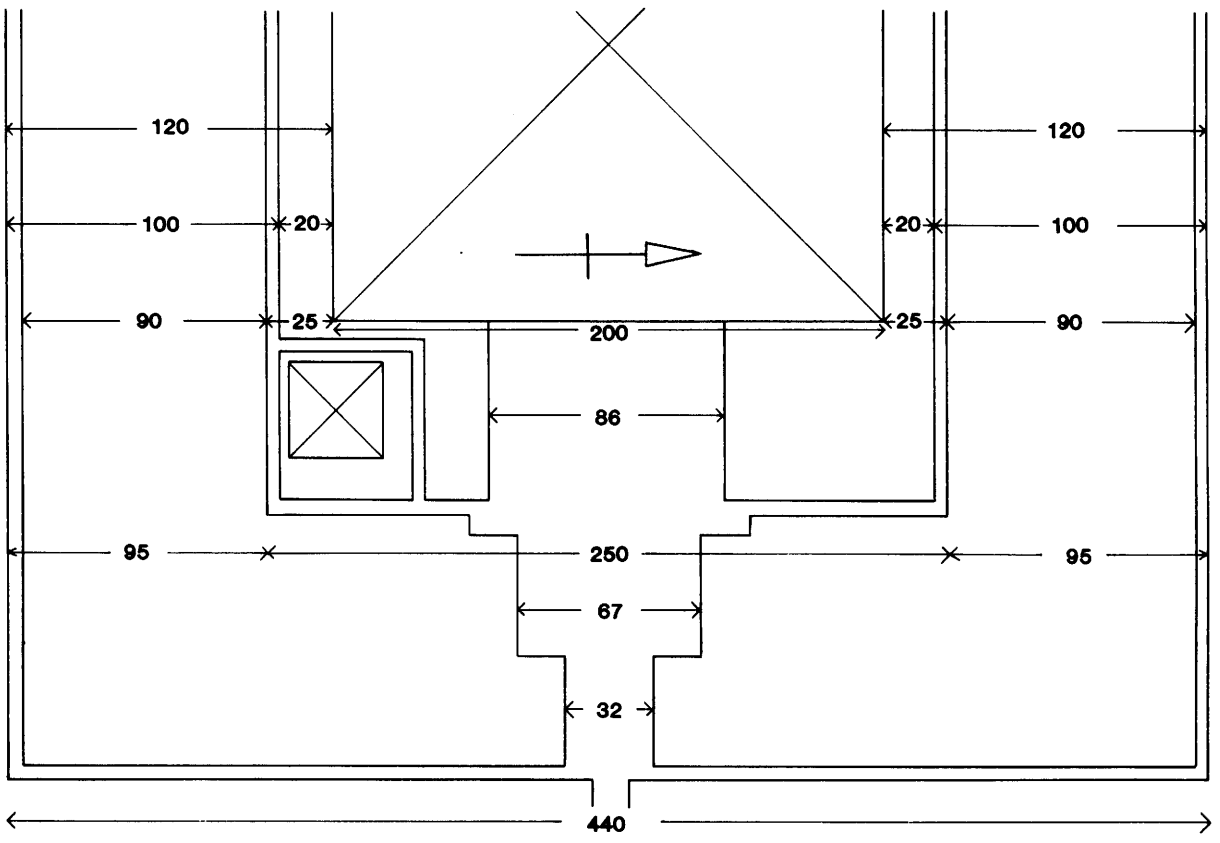
Pl. 112a. Cramps from the seventh course of the casing on the west side of the pyramid of Senwosret I (see cramp list p. 99, nos. 24–25).

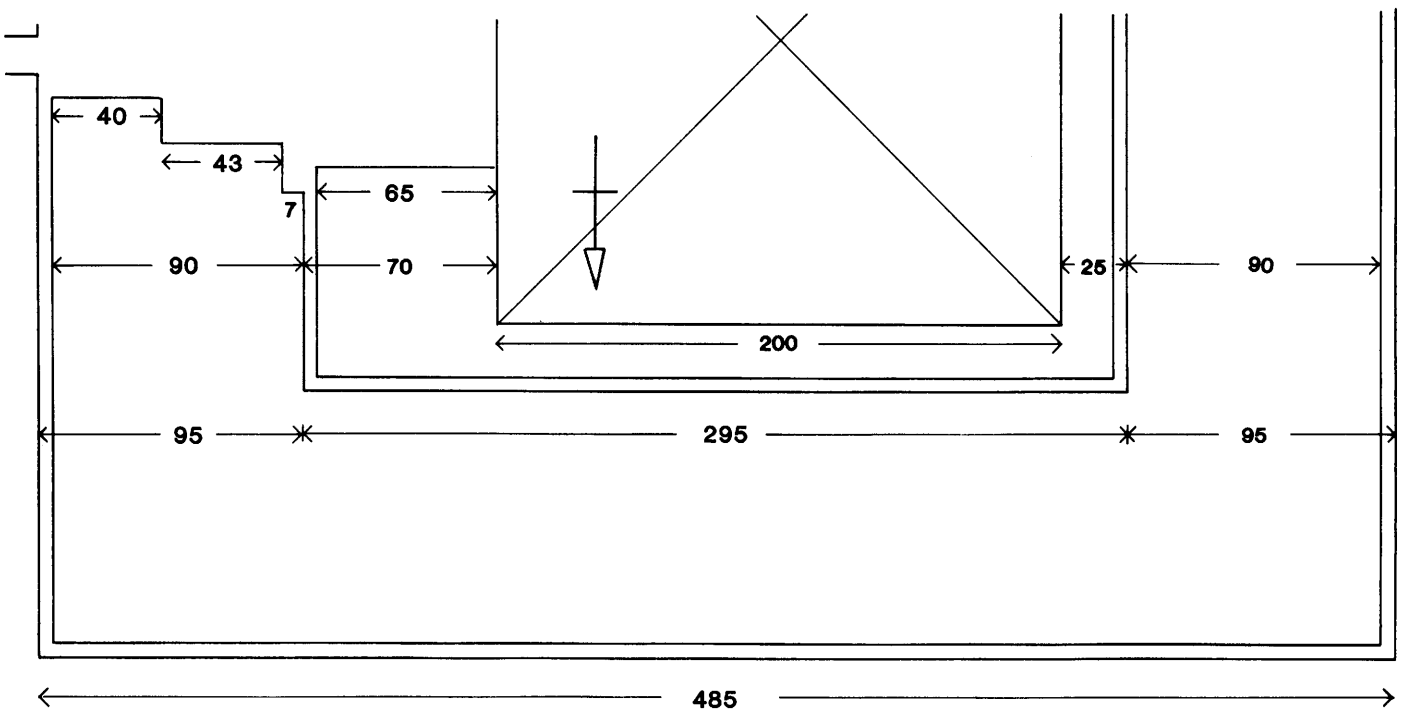


Pl. 112b. Cramp (pl. 111a) from the north side of the pyramid of Senwosret I (see cramp list p. 99, no. 22).

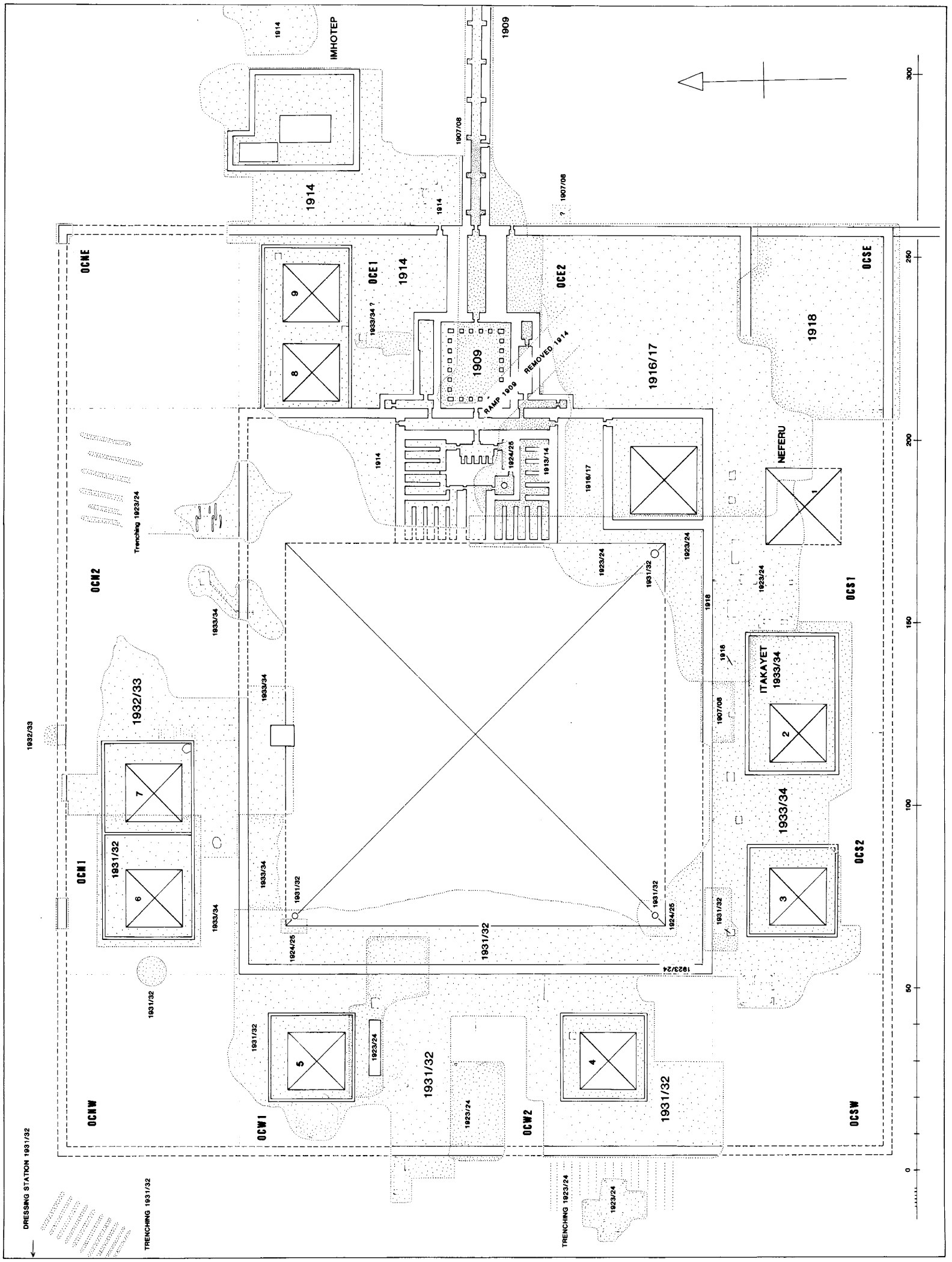


Pl. 112c. Cramp slots in the foundations of the west side of pyramid 9, seen from the north.





Pl. 113. Measuring system (in cubits) of the pyramid complex of Senwosret I.



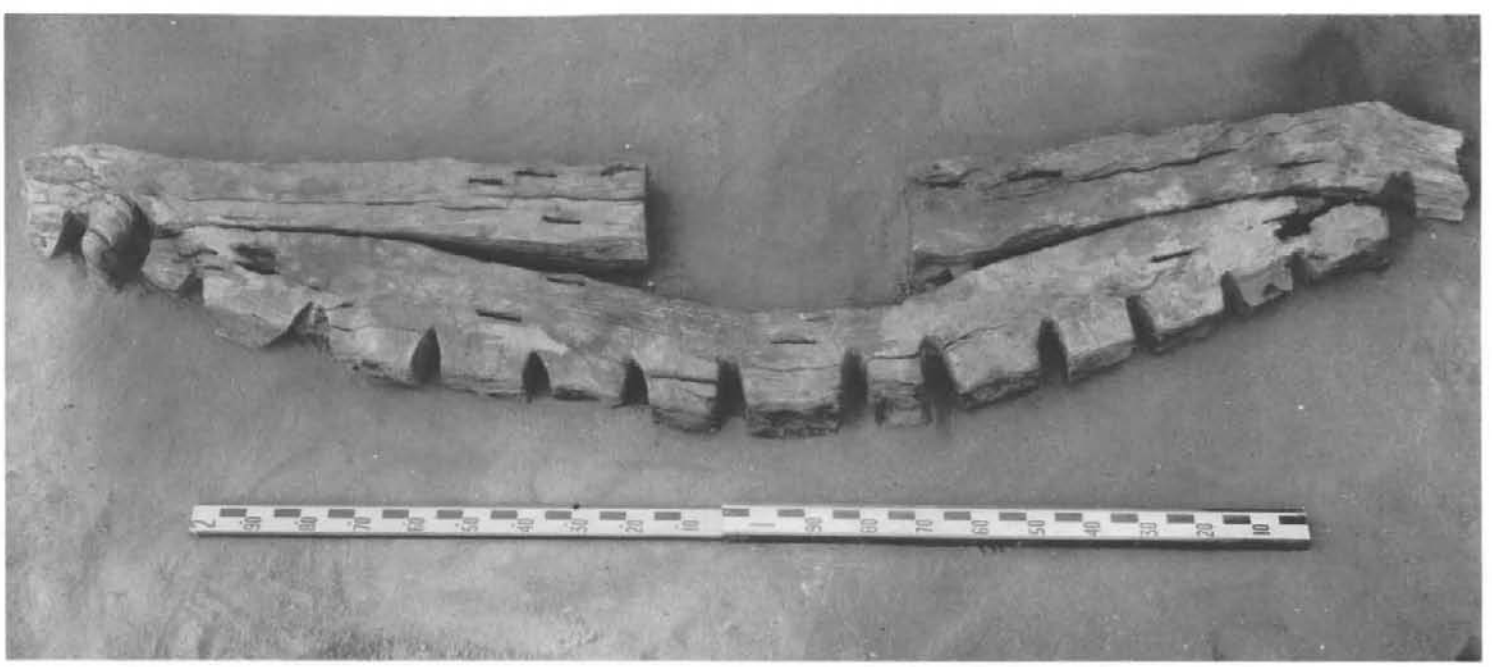
Pl. 114. Plan of the areas excavated by the original Egyptian Expedition of the Metropolitan Museum during the 1907–34 seasons. Scale 1:1250.



Pl. 115a. Boat timbers B and 6 from the slideway south of the causeway.



Pl. 115b. Timber 20 from the slideway south of the causeway (see pl. 131).

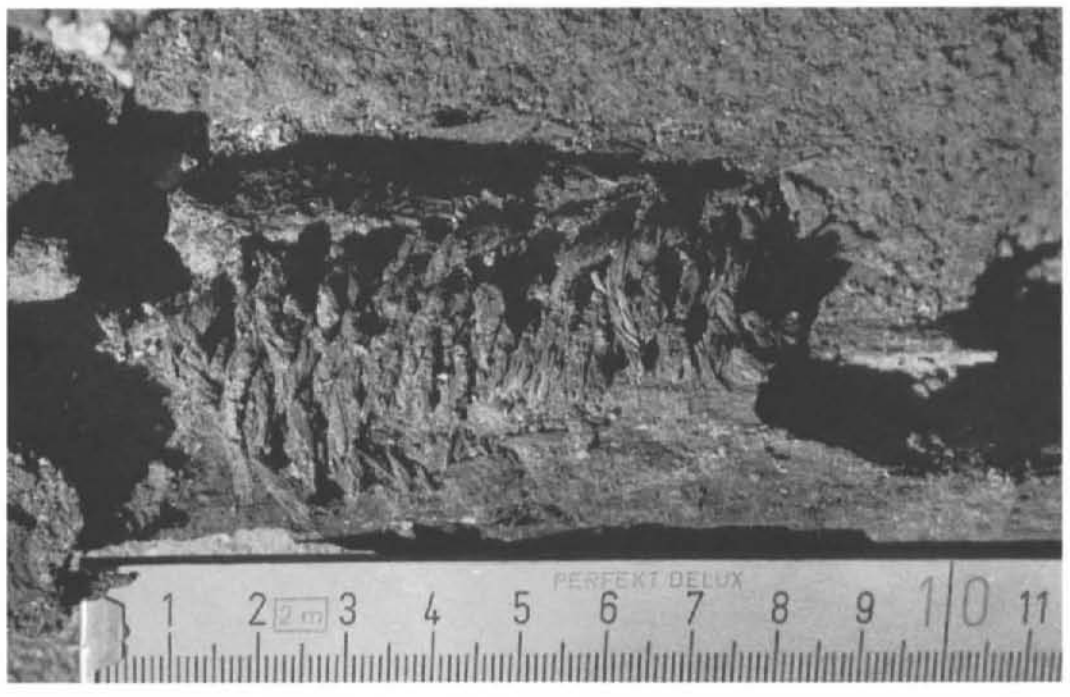


Pl. 115c. The boat frame found in the slideway west of the pyramid of Senwosret I (see pls. 106, 133).





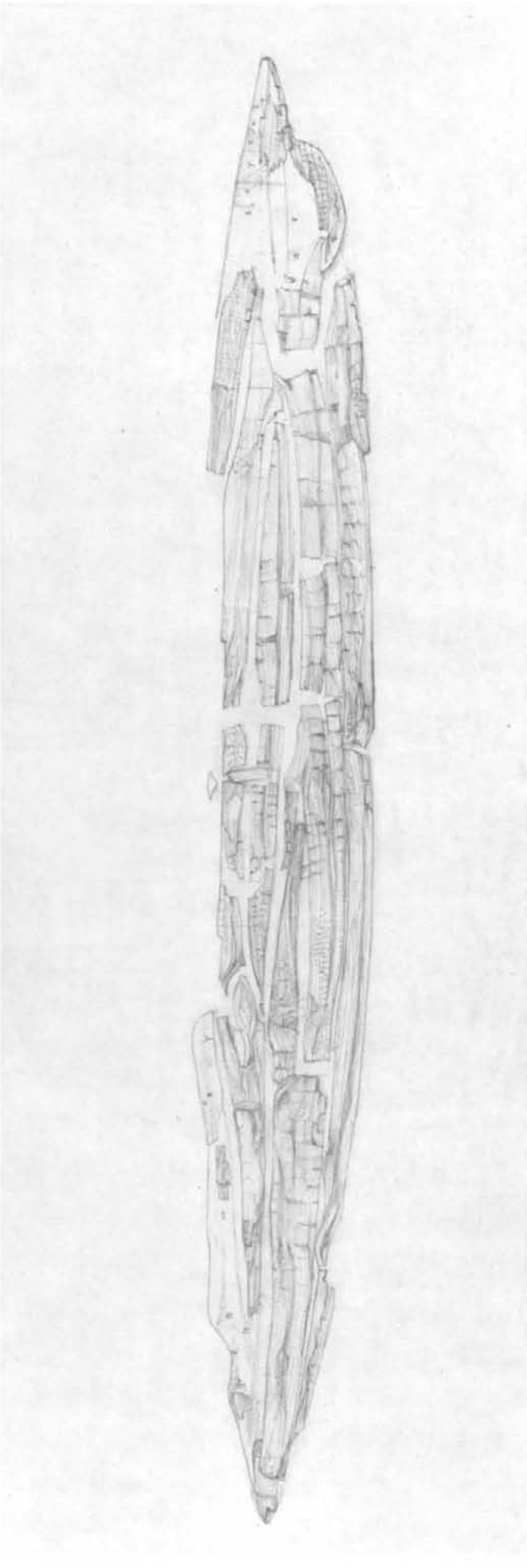
Pl. 116a–c. Remains of the lashings of boat timbers.



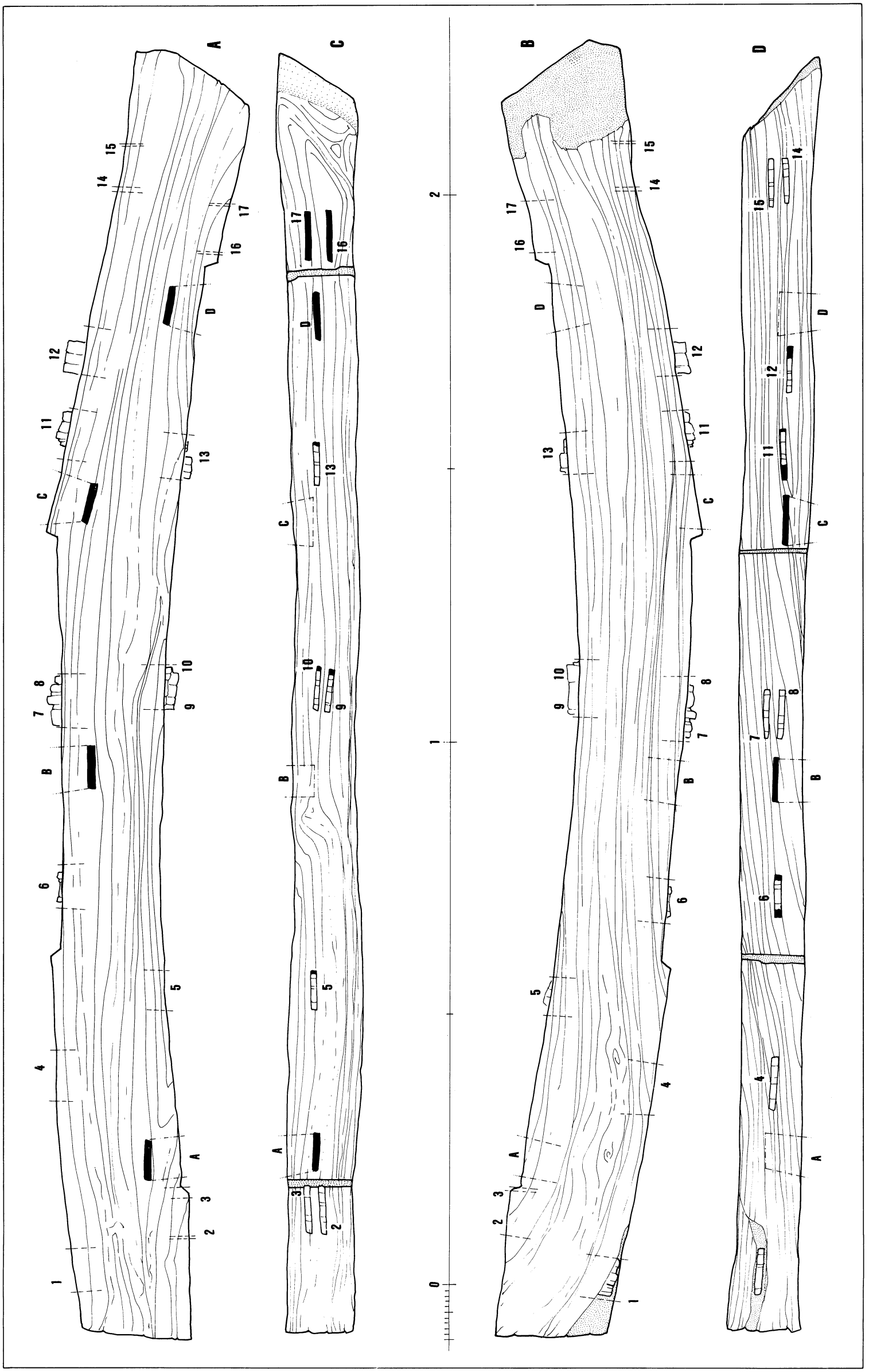


Pl. 116d. Detail of mortise-and-tenon joints.

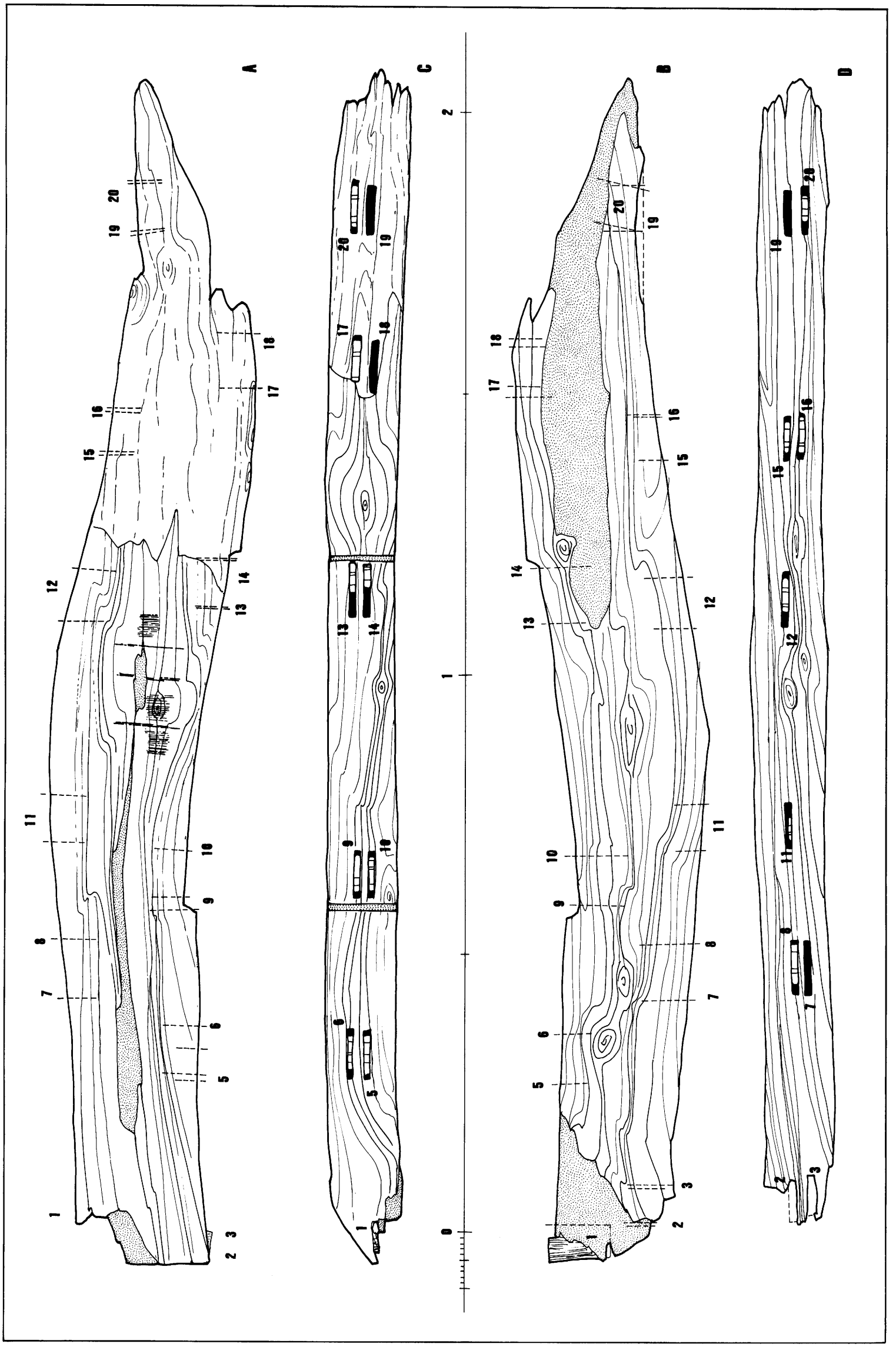




Pl. 117a–b. Remains of a model boat buried south of the southern enclosure wall of the Imhotep mastaba. Scale of drawing 1:8.



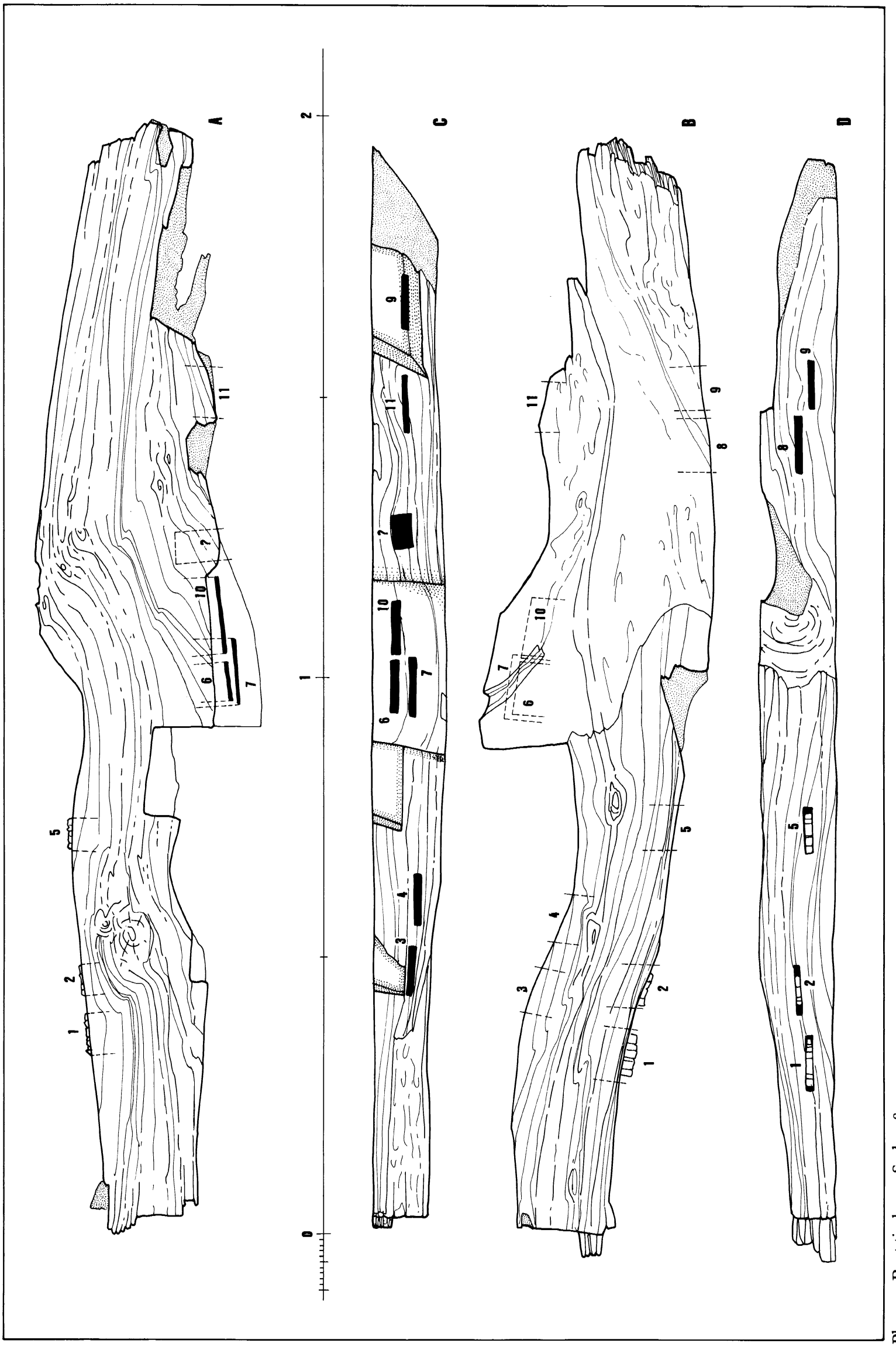
Pl. 118. Boat timber A. Scale 1:8.



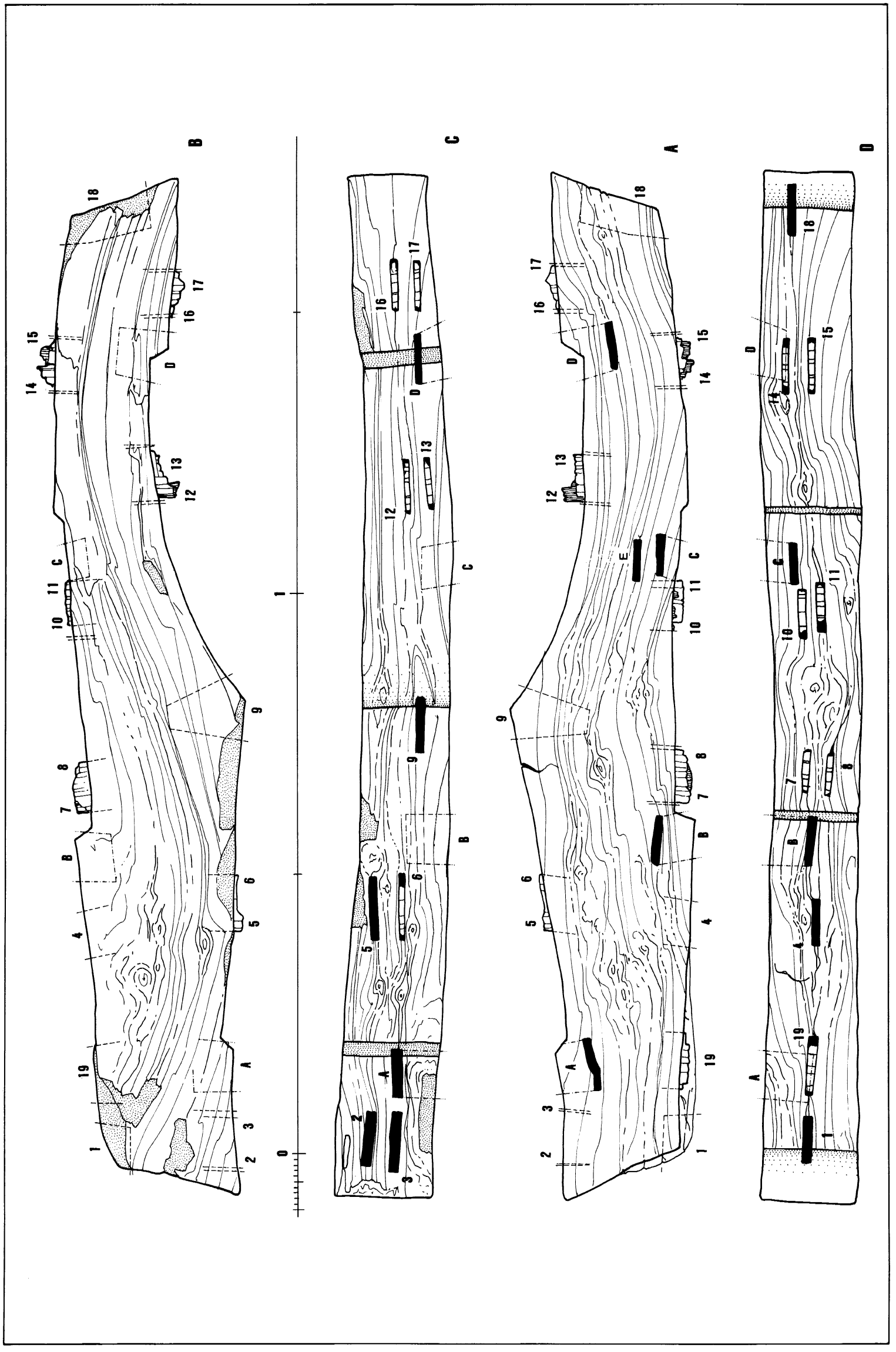
Pl. 119. Boat timber B (see pl. 115a). Scale 1:8.



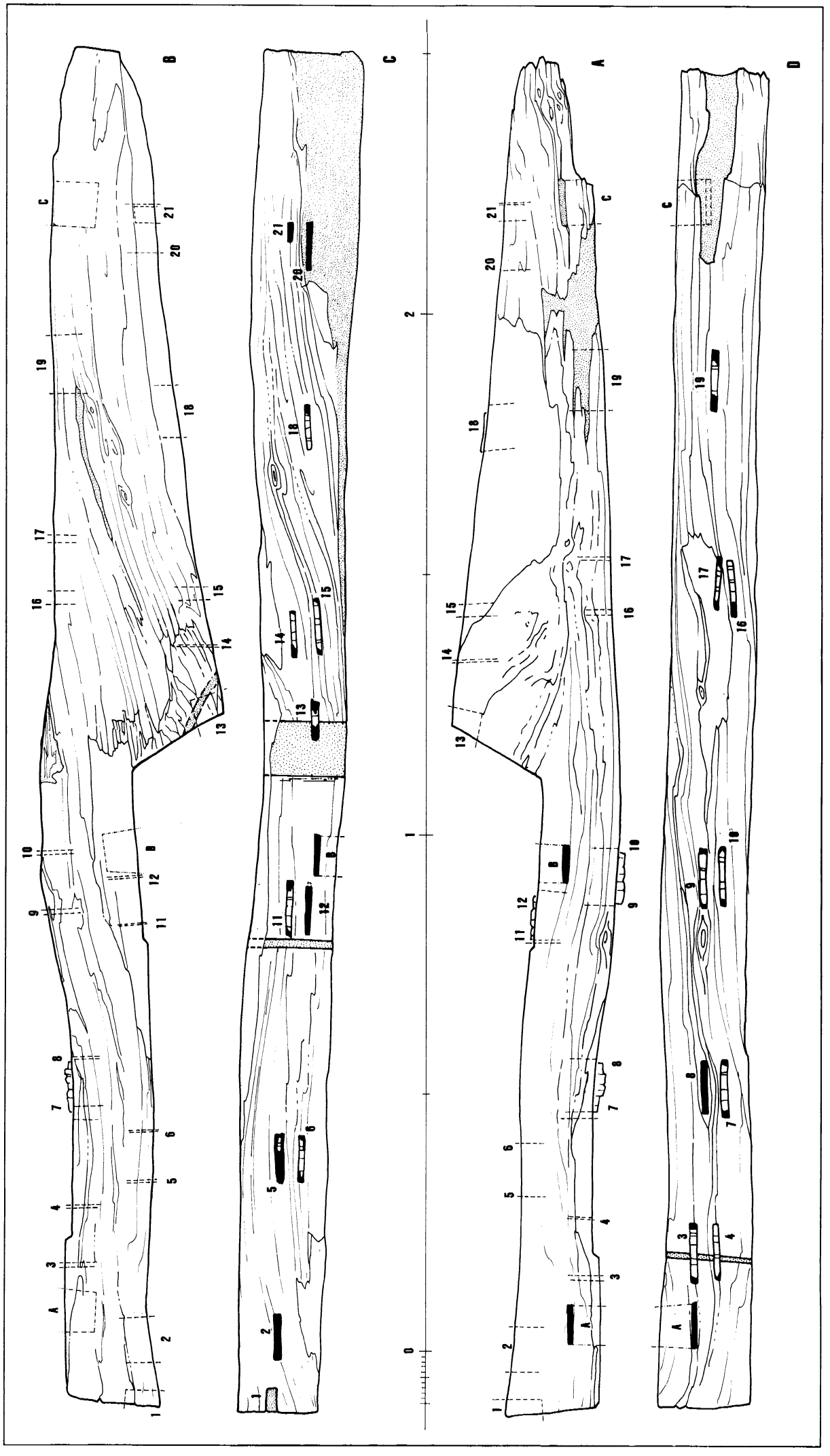
Pl. 120. Boat timber C. Scale 1:8.



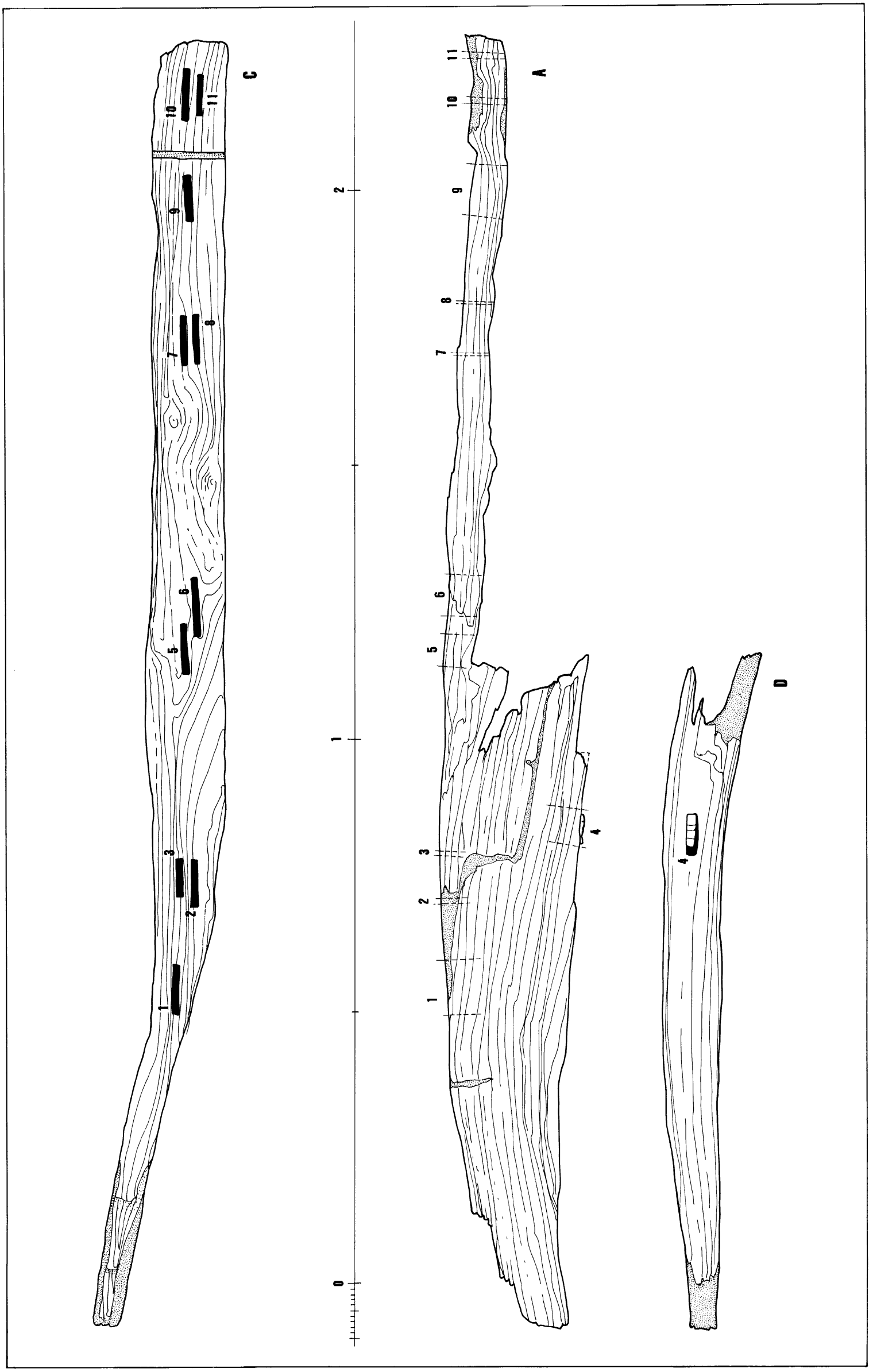
Pl. 121. Boat timber 1. Scale 1:8.



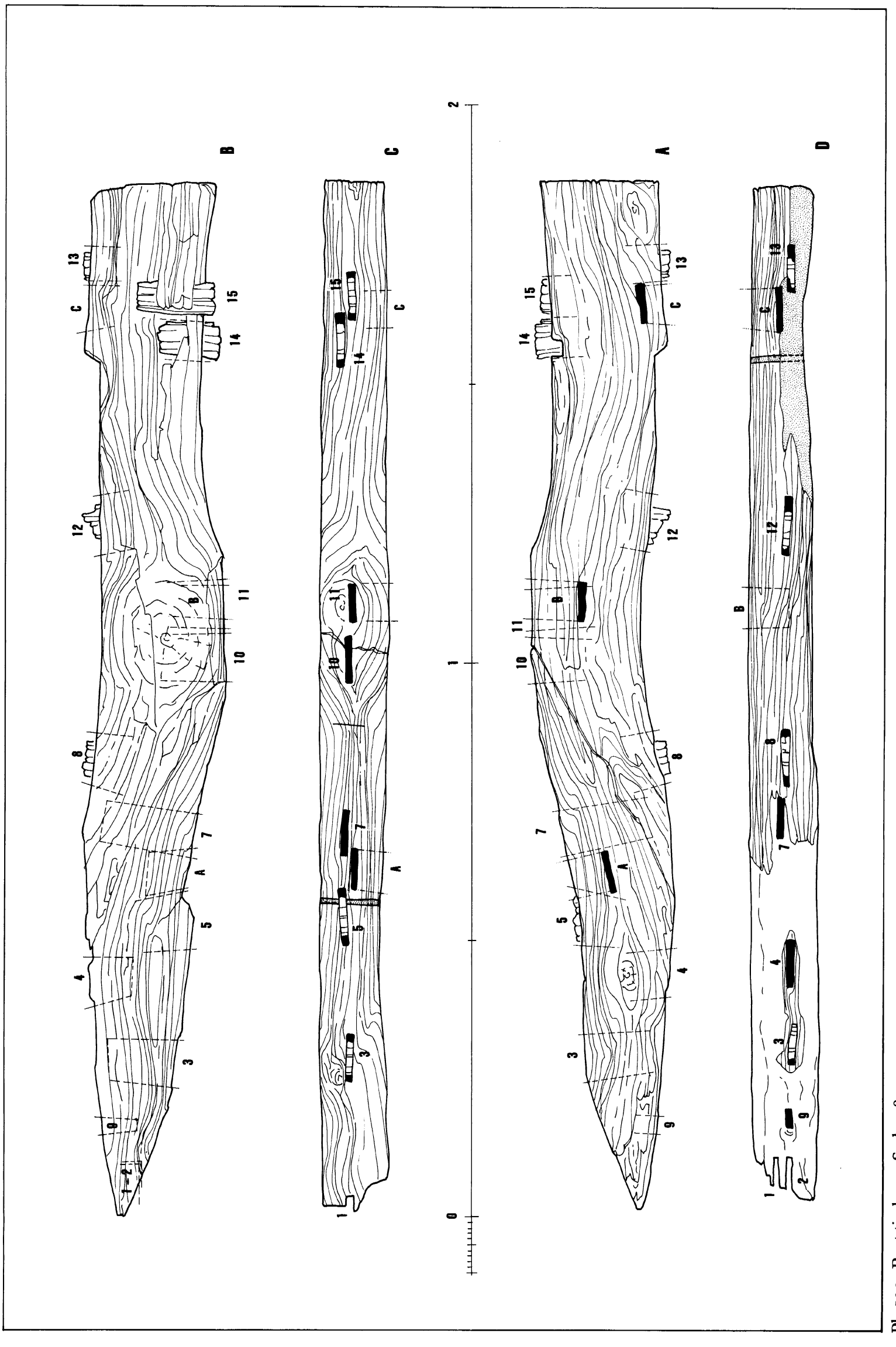
Pl. 122. Boat timber 2. Scale 1:8.



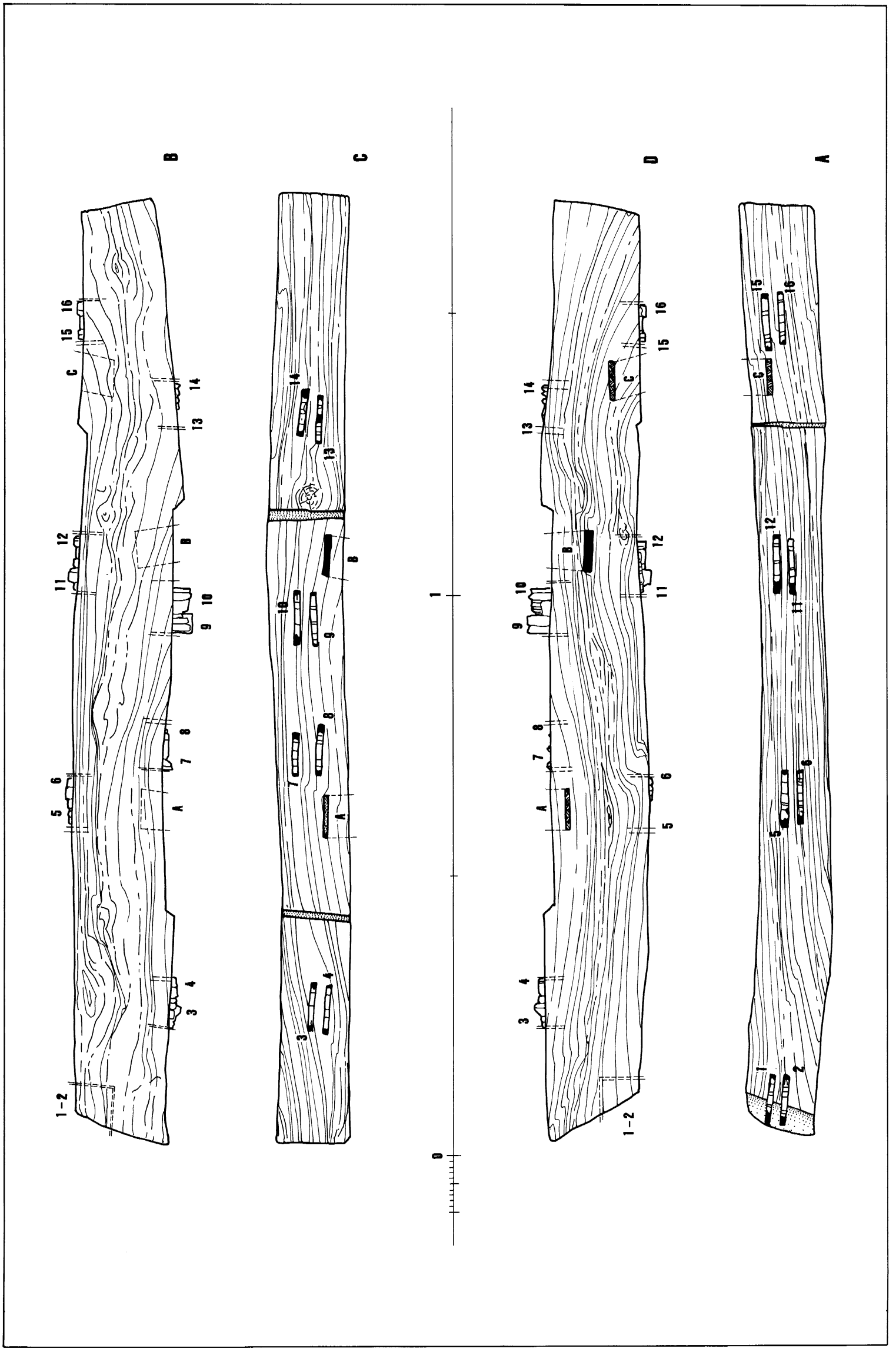
Pl. 123. Boat timber 3. Scale 1:10.



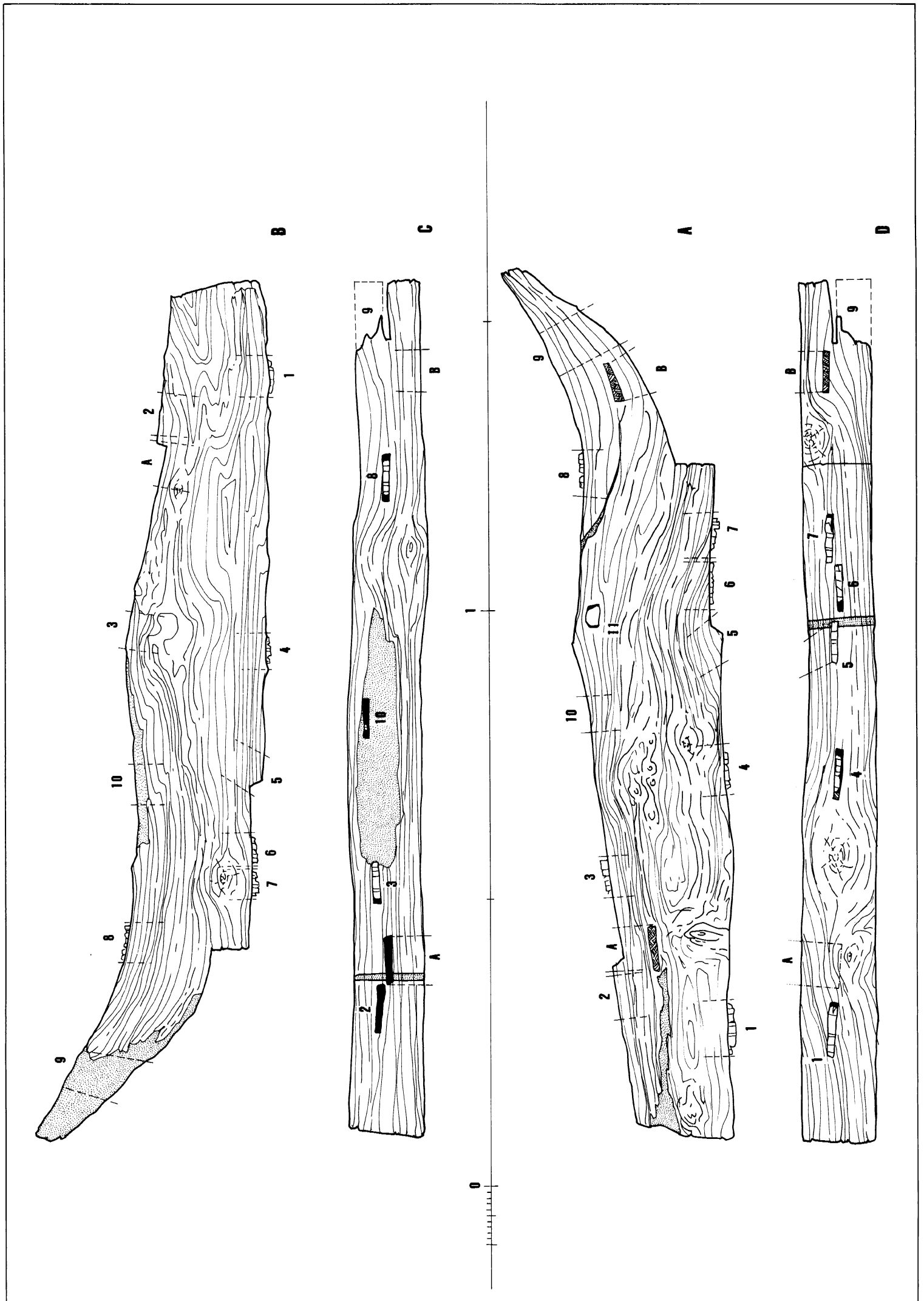
Pl. 124. Boat timber 4. Scale 1:8.



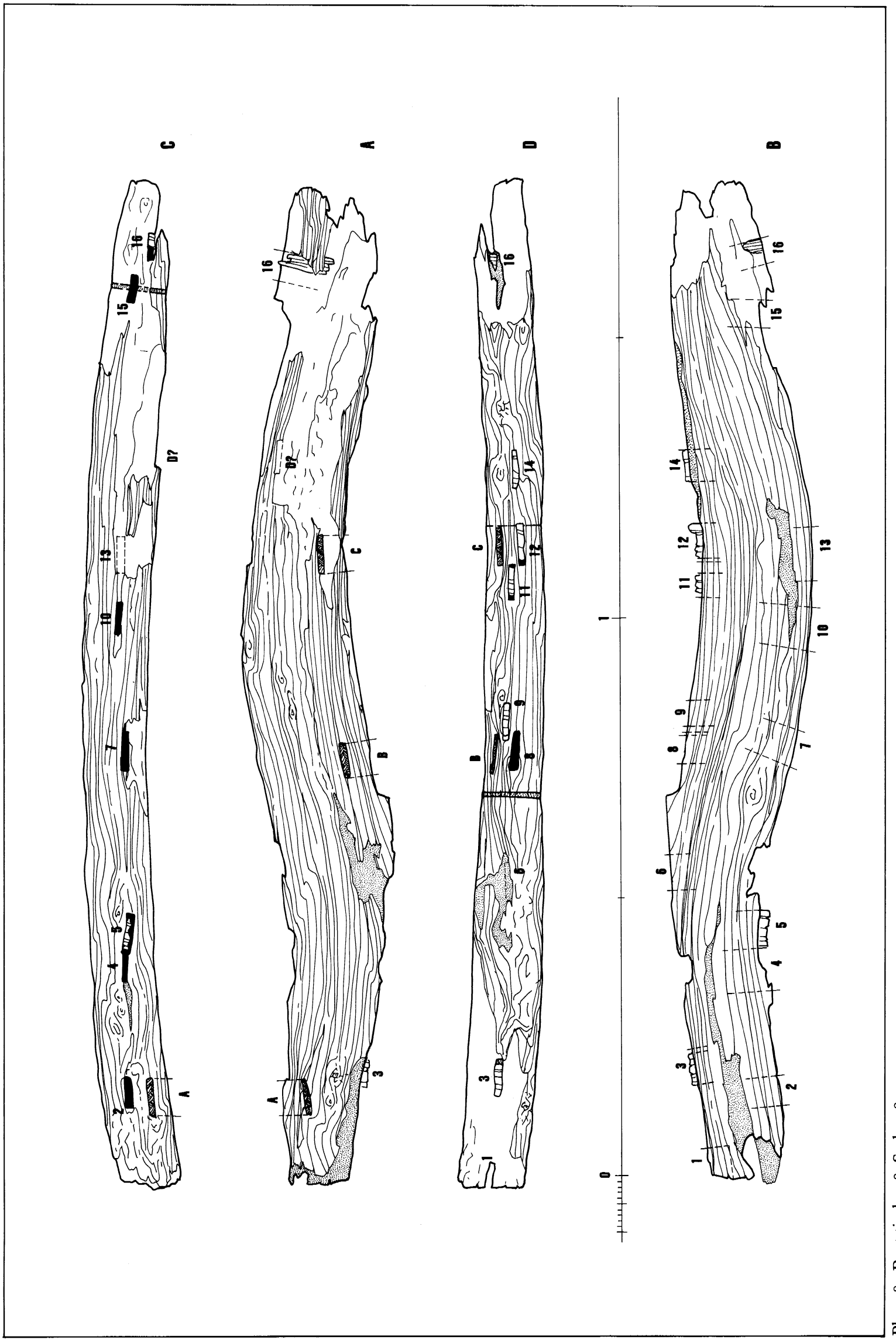
Pl. 125. Boat timber 5. Scale 1:8.



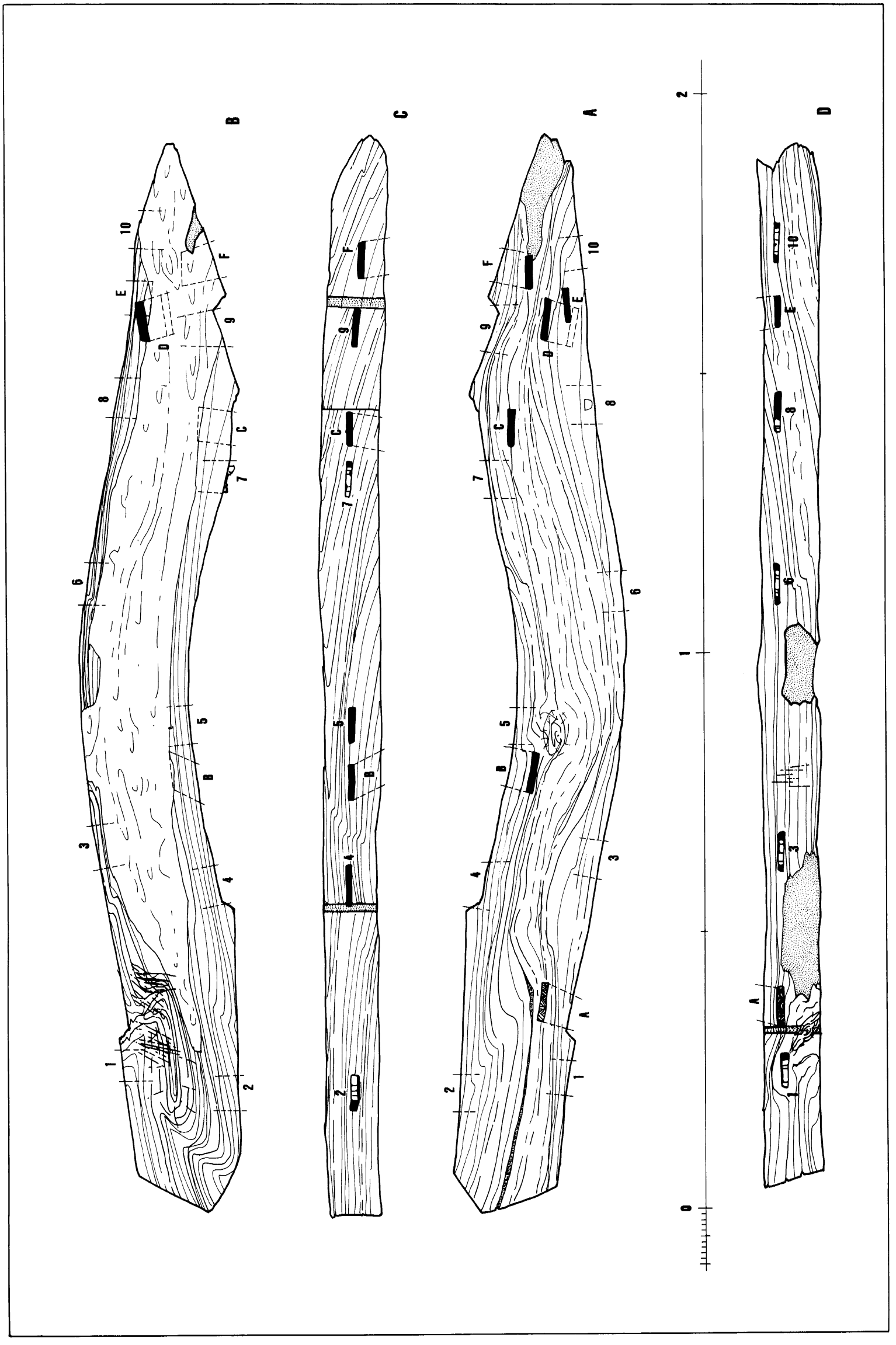
Pl. 126. Boat timber 6 (see pl. 115a). Scale 1:8.



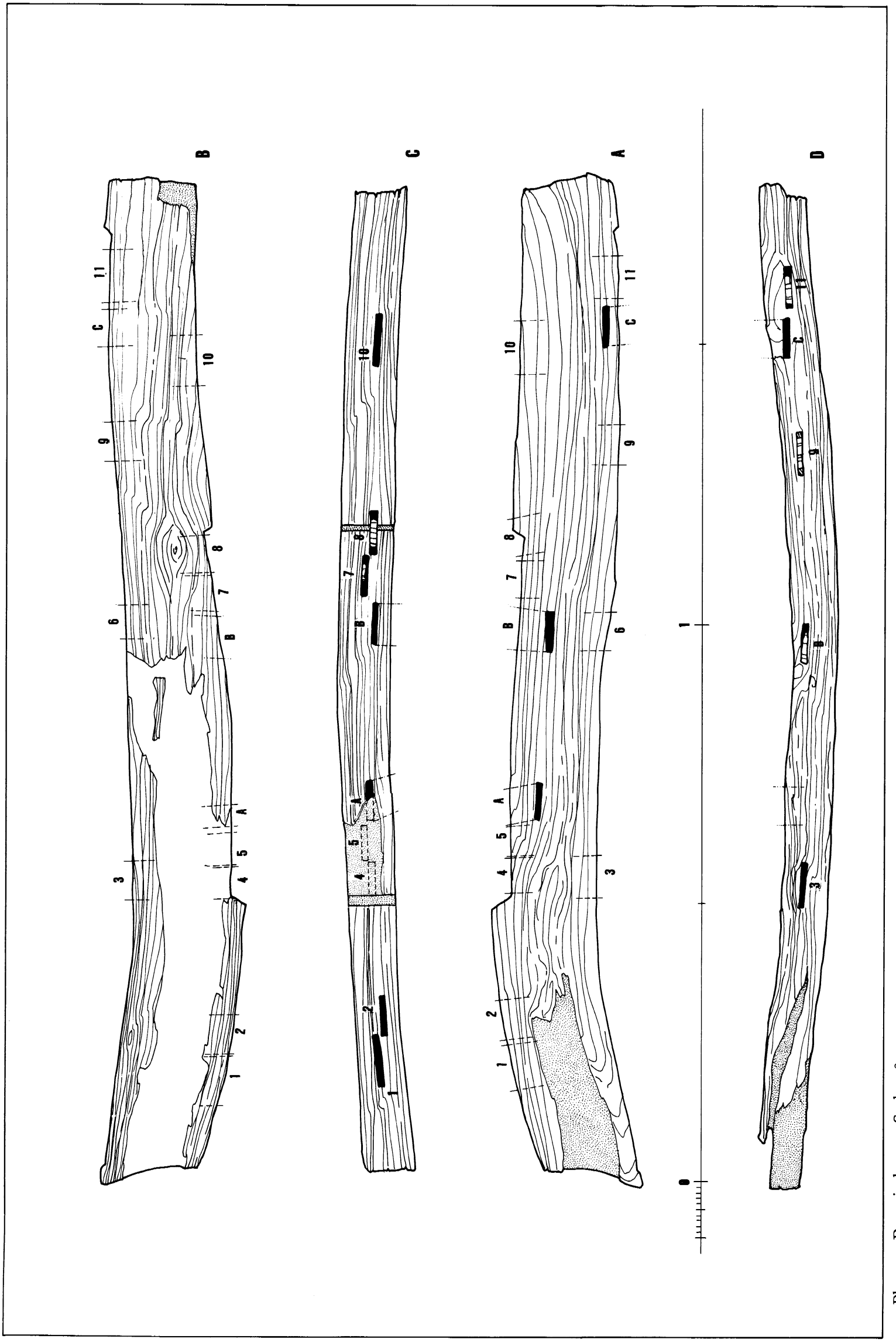
Pl. 127. Boat timber 7. Scale 1:8.



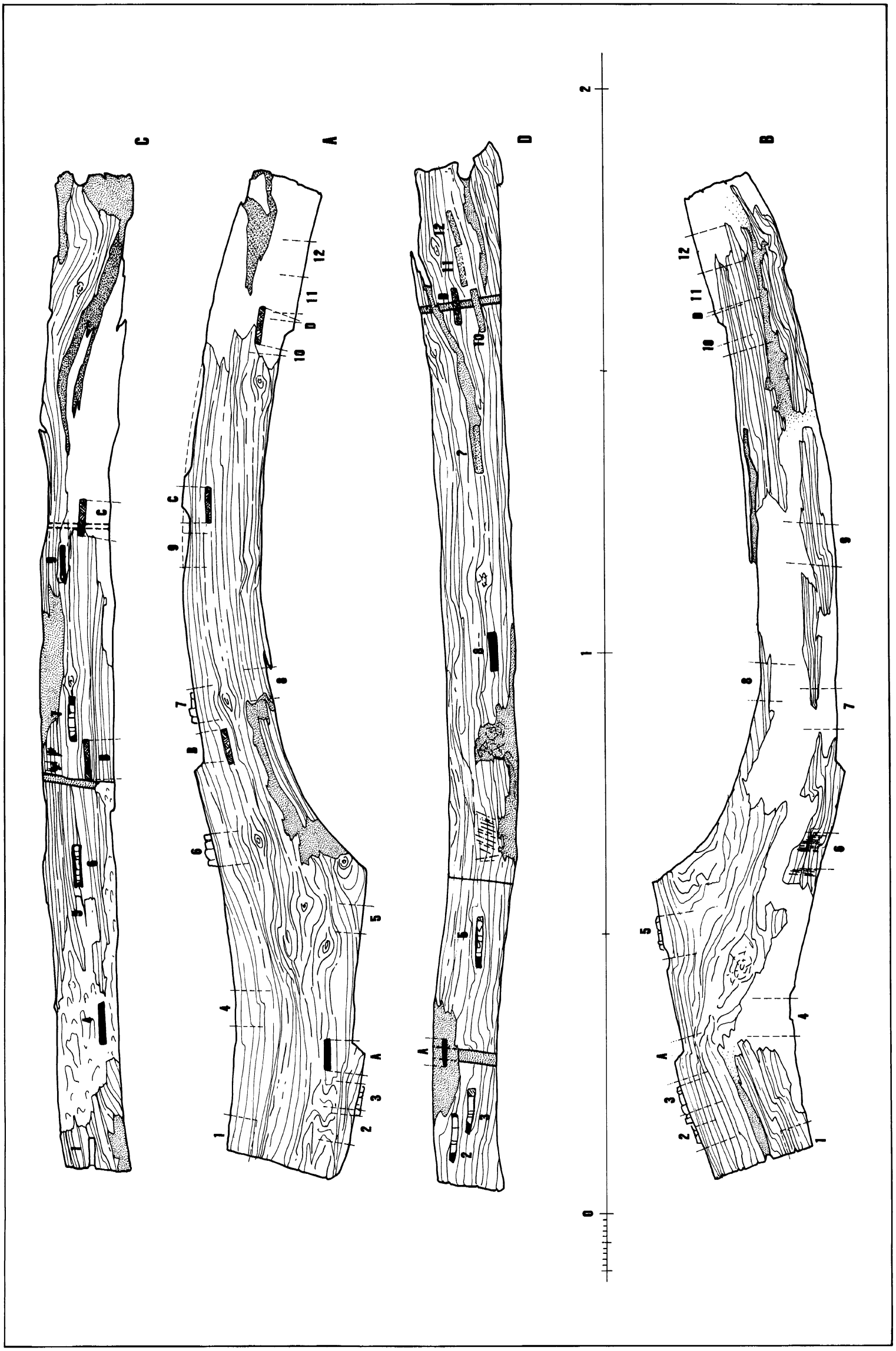
Pl. 128. Boat timber 8. Scale 1:8.



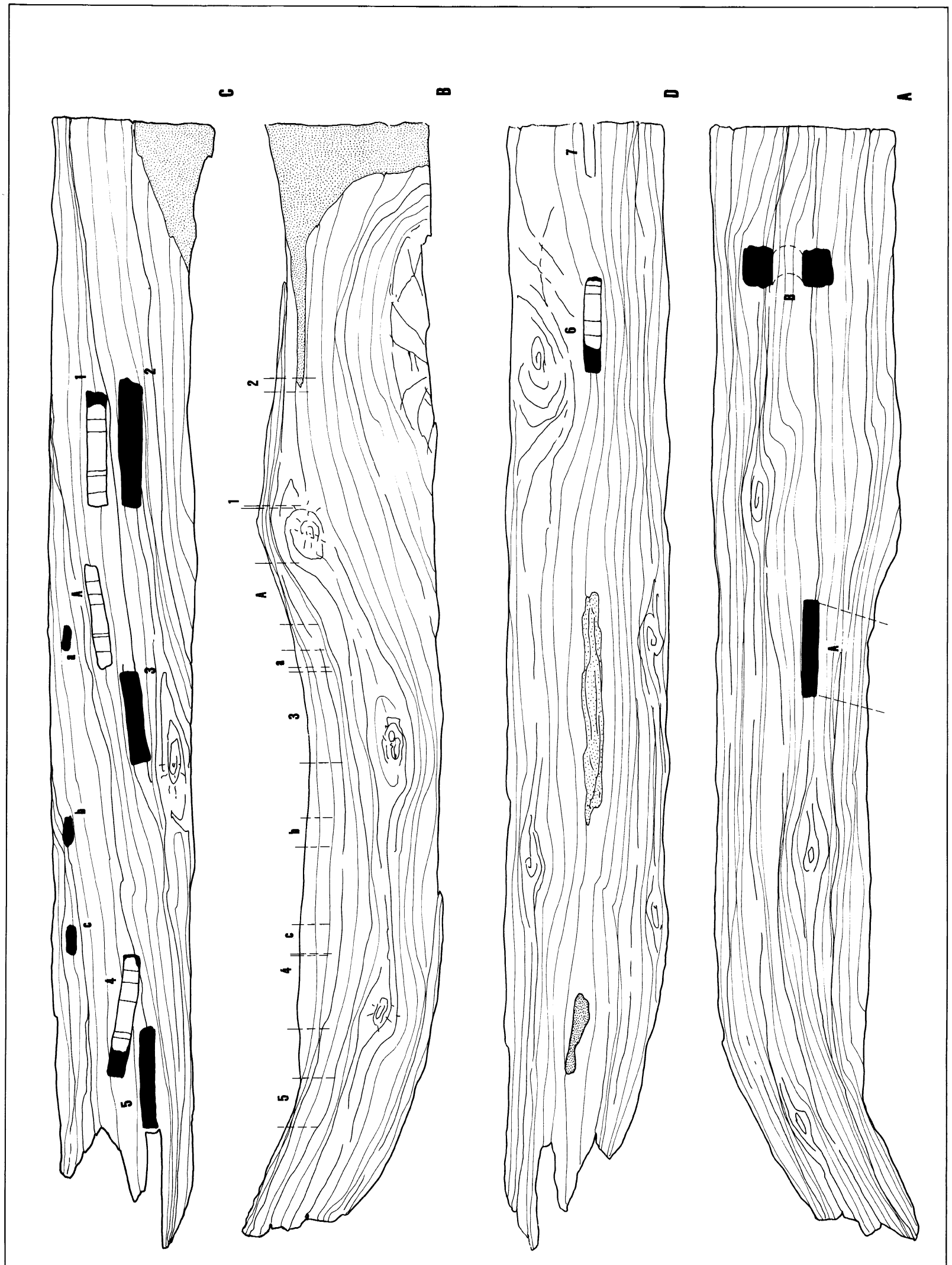
Pl. 129. Boat timber 9. Scale 1:8.



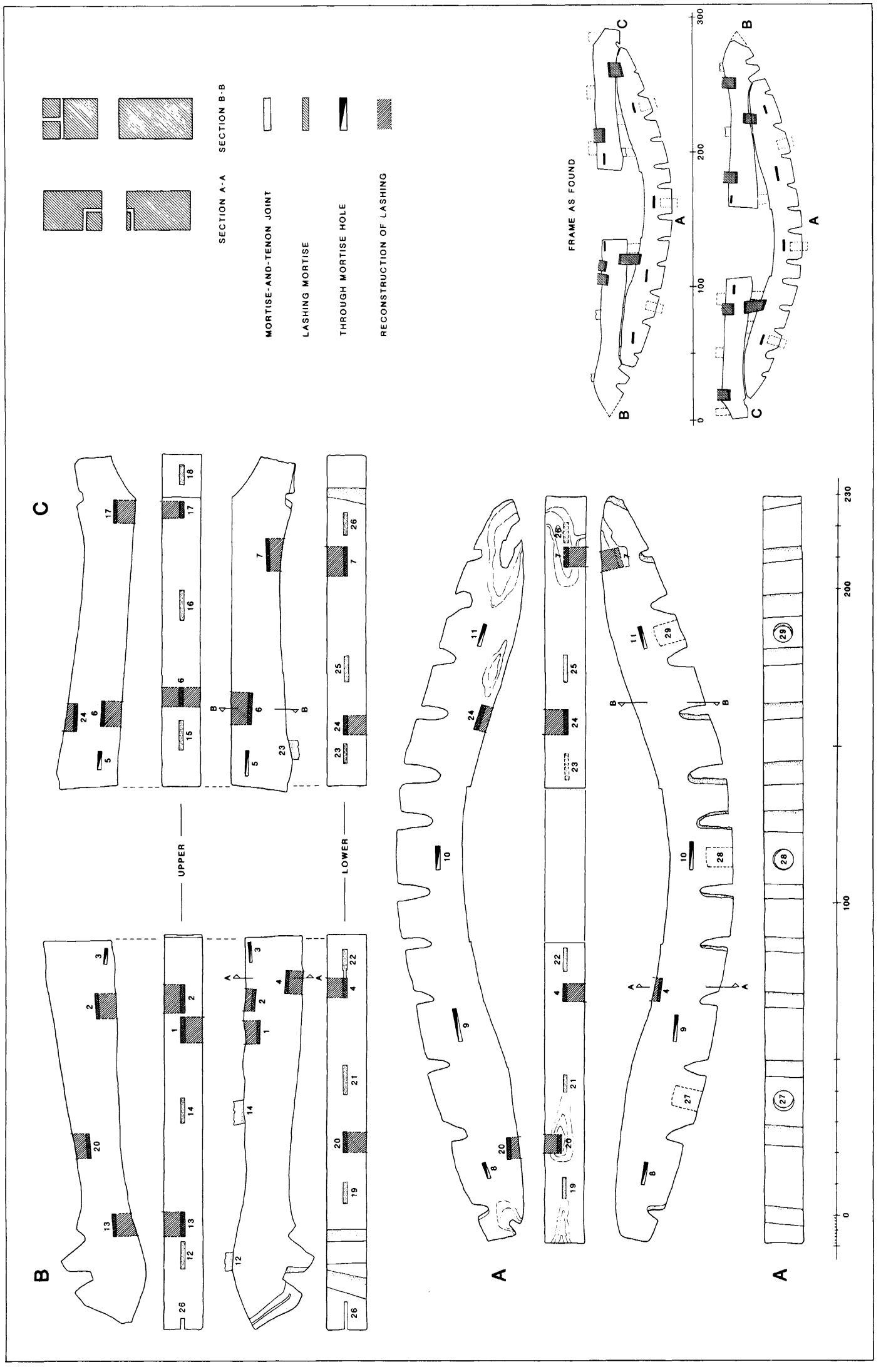
Pl. 130. Boat timber 10. Scale 1:8.



Pl. 131. Boat timber 20 (see pl. 115b). Scale 1:8.



Pl. 132. Unlabelled boat timber. Scale 1:4.



Pl. 133. Boat frame (see pl. 115c).

PLANS I–VI

(in pocket at back of book)

I. Plan of the OCSE. Scale 1:200.

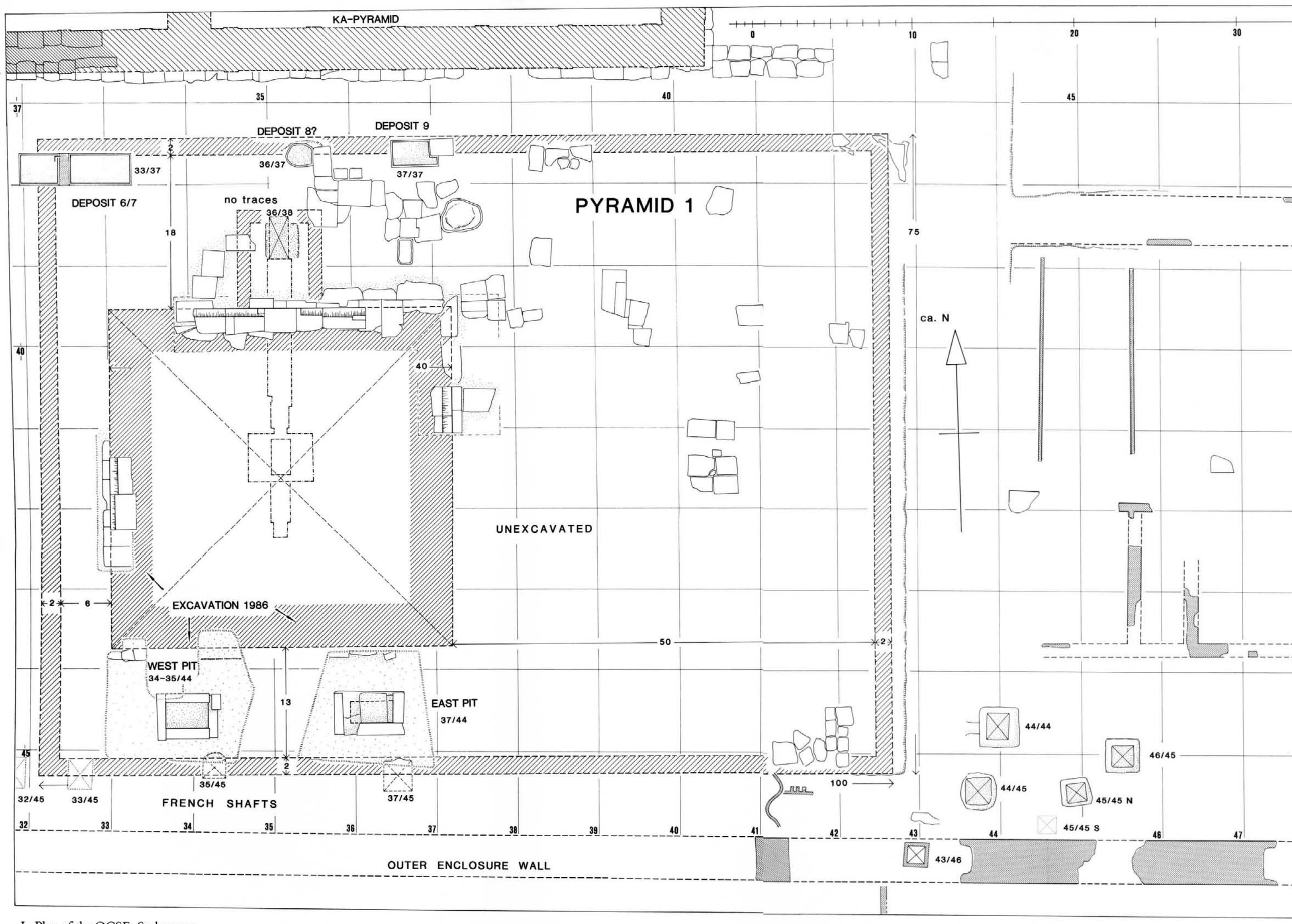
II. Plan of the OCS. Scale 1:250.

III. Plan of the OCW. Scale 1:250.

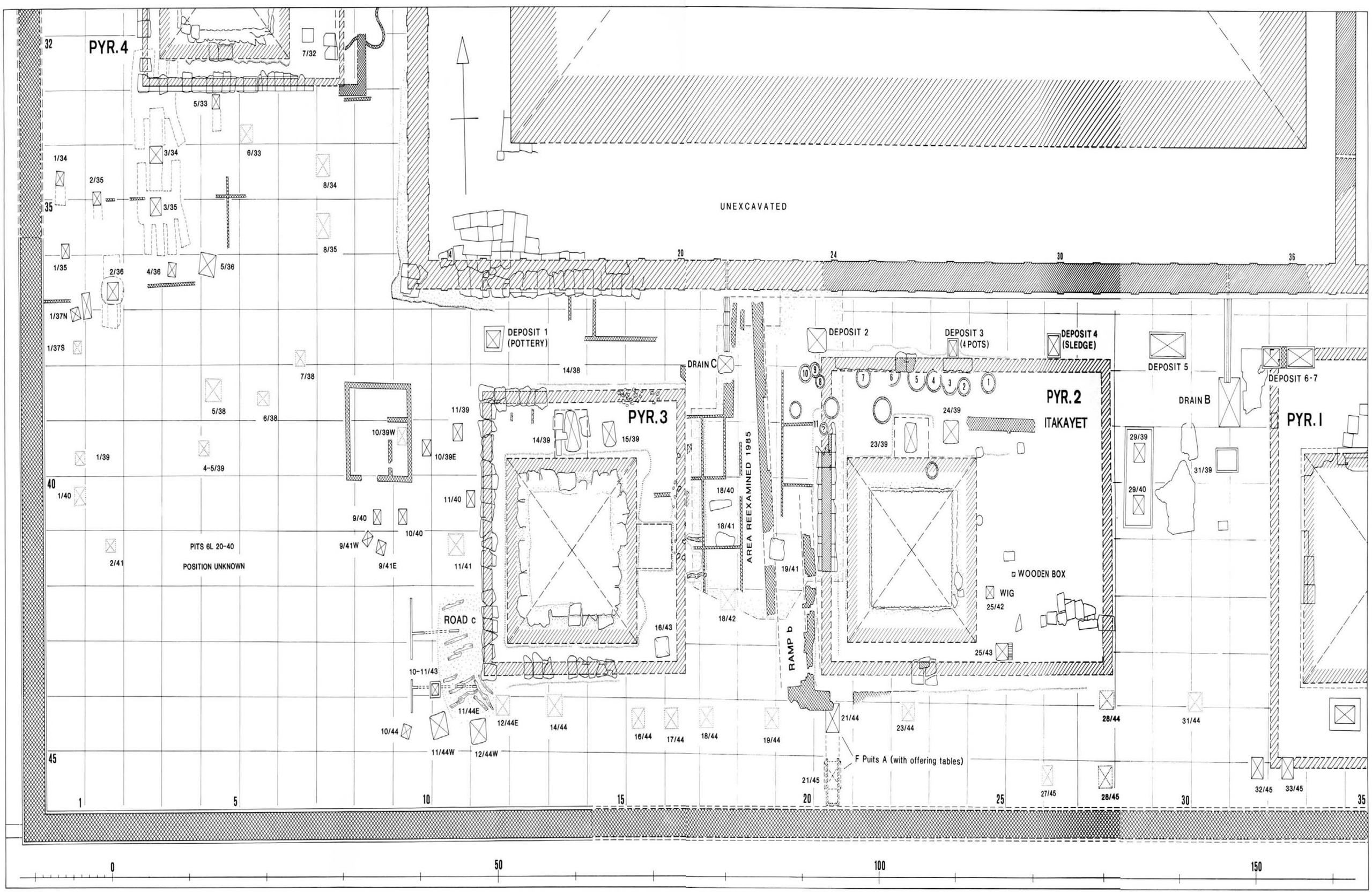
IV. Plan of the OCN and OCNE. Scale 1:250.

V. East-west section through pyramids 8 and 9 seen from south to north:
1. limestone masonry; *2.* brick masonry; *3.* chip and sand in foundation;
4. foundation sand; *5.* mud surface with chip and sand; *6.* conglomerate. Scale 1:100.

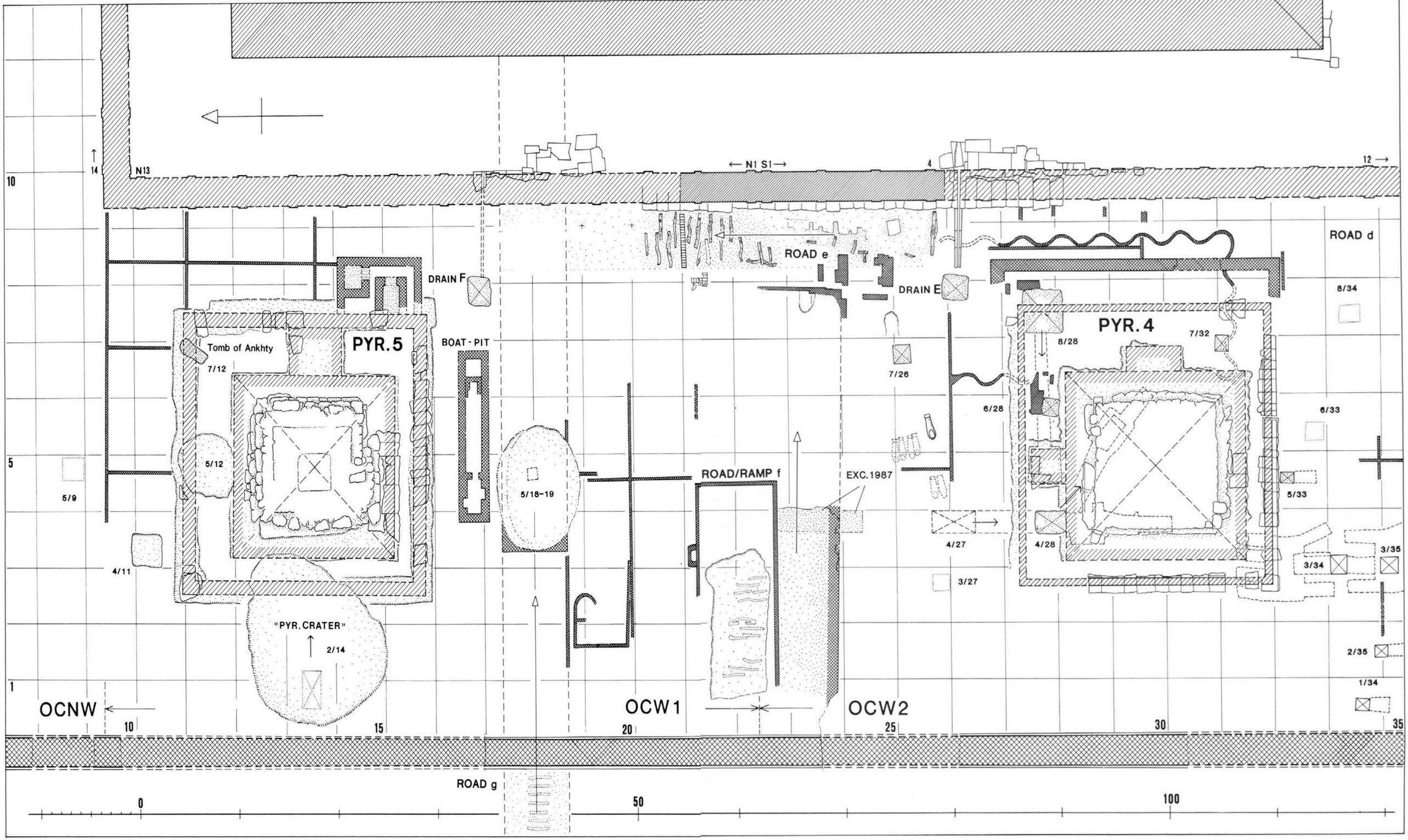
VI. Plan of Lisht South at the conclusion of the 1989 season. Scale 1:1000.



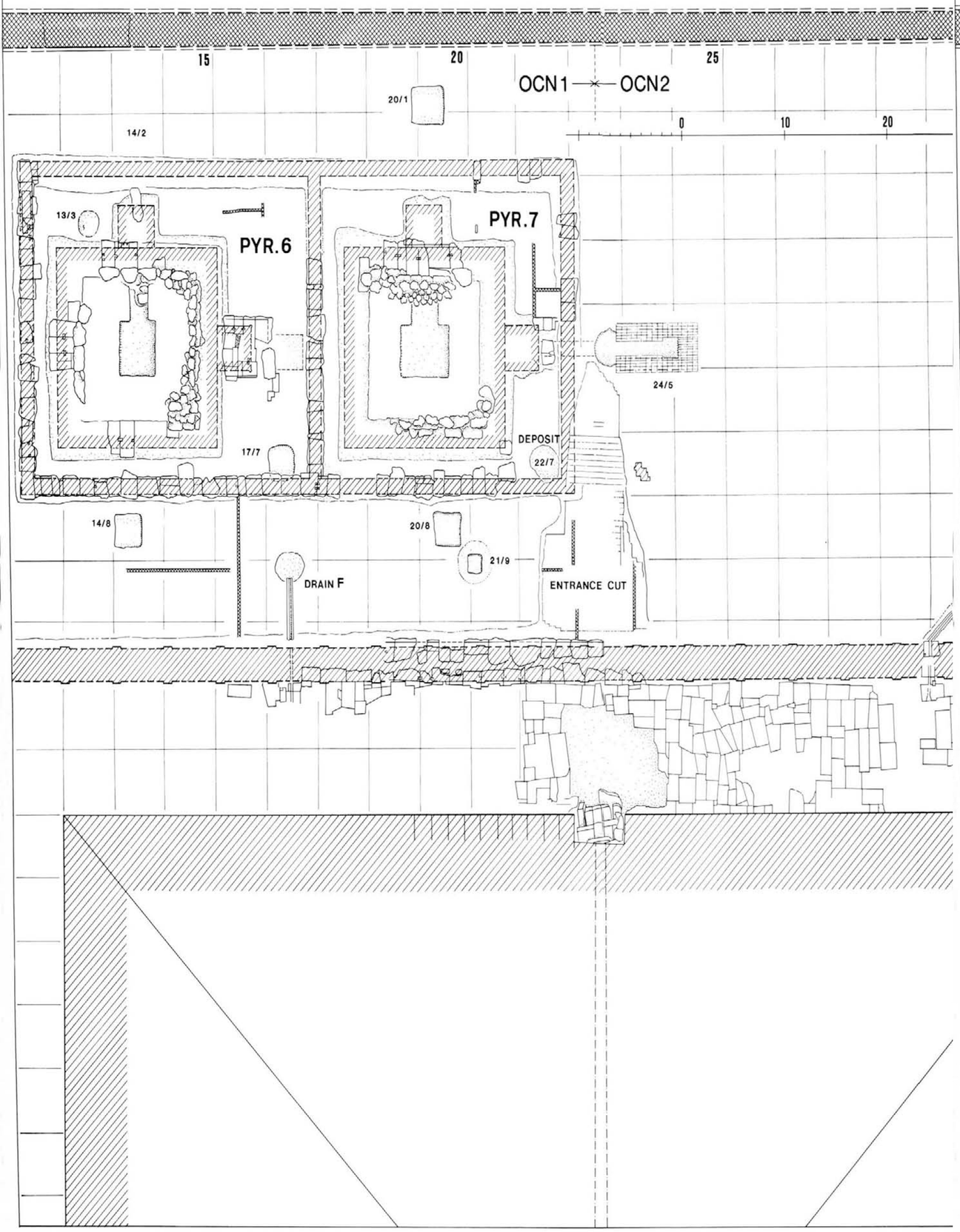
I. Plan of the OCSE. Scale 1:200.



II. Plan of the OCS. Scale 1:250.

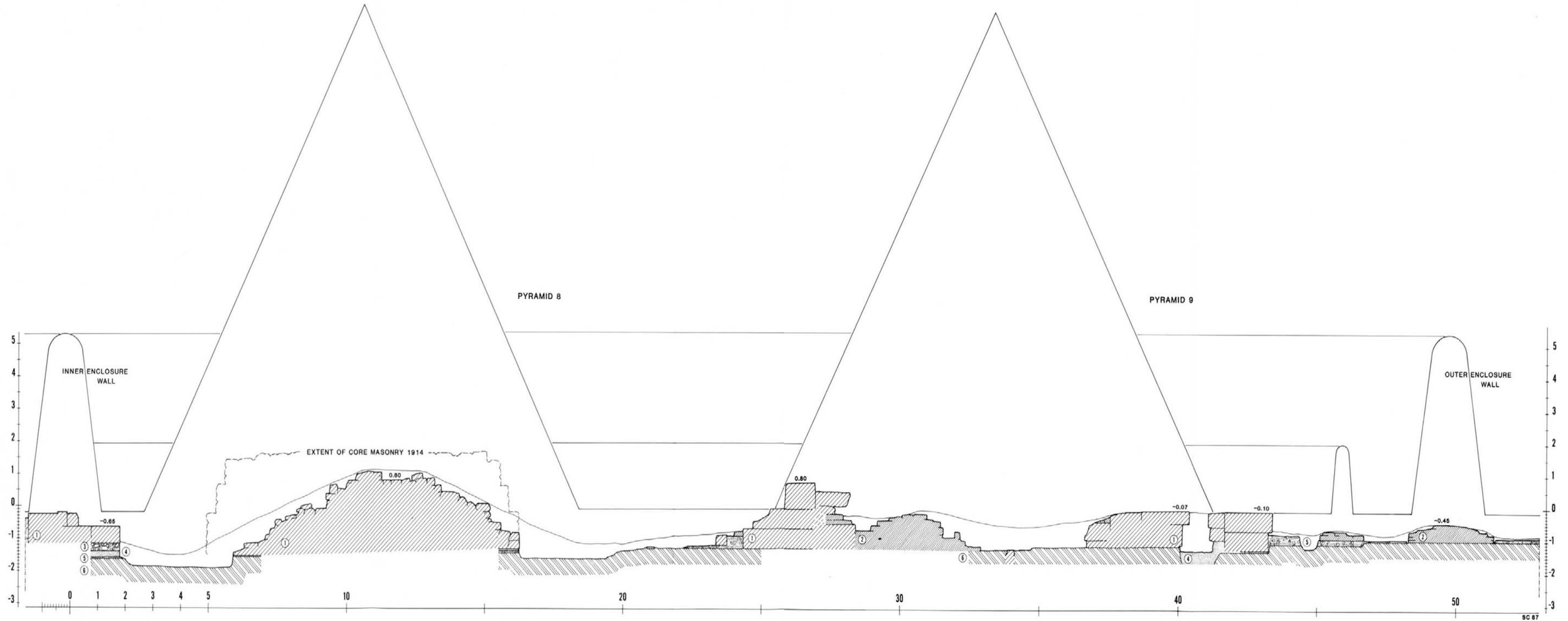


III. Plan of the OCW. Scale 1:250.

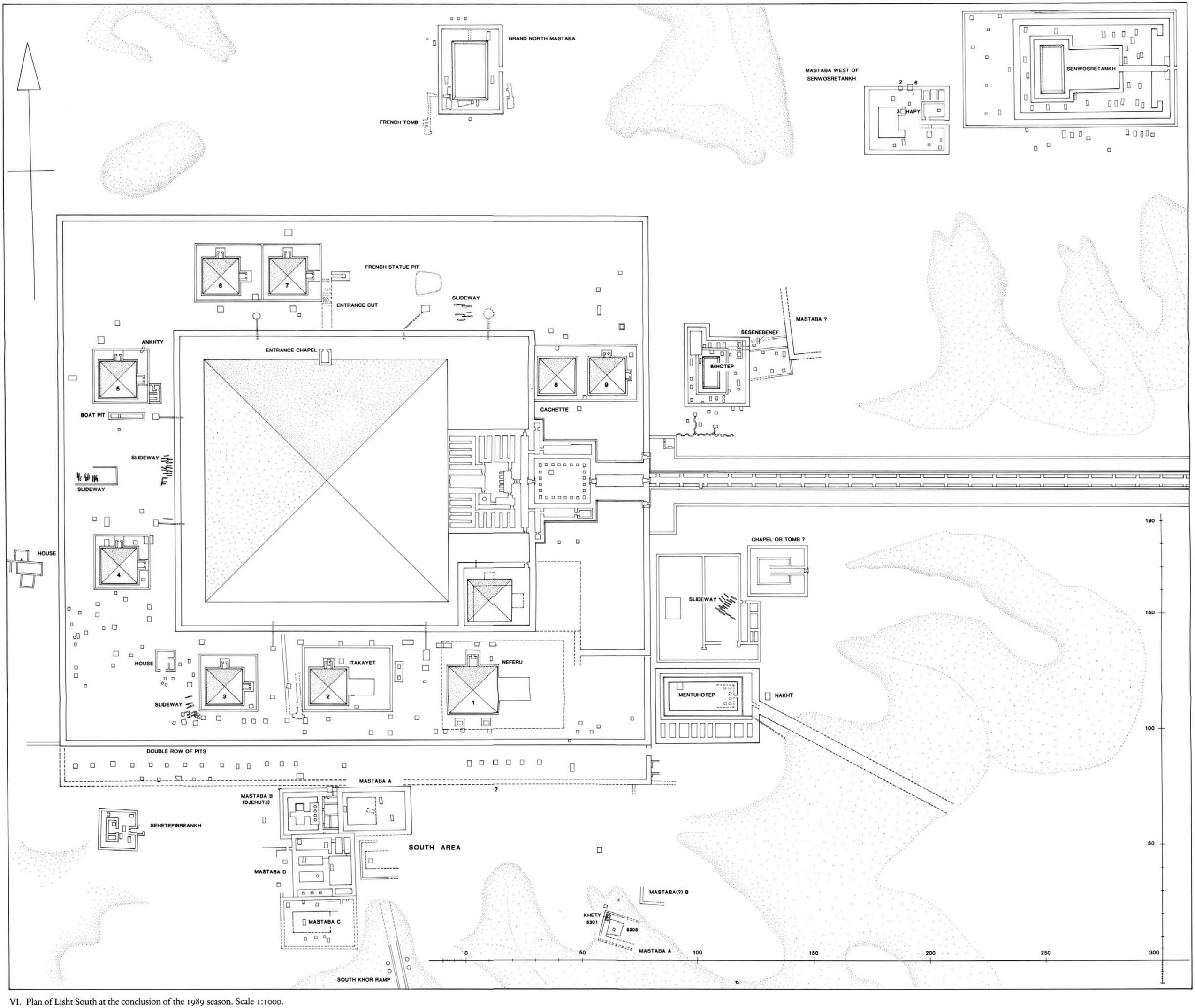


IV. Plan of the OCN and OCNE. Scale 1:250.

IV. Plan of the OCN and OCNE. Scale 1:250.



V. East-west section through pyramids 8 and 9 seen from south to north: *1.* limestone masonry; *2.* brick masonry; *3.* chip and sand in foundation; *4.* foundation sand; *5.* mud surface with chip and sand; *6.* conglomerate. Scale 1:100.



VI. Plan of Lisht South at the conclusion of the 1989 season. Scale 1:1000.

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