

SKRIFTER UTGIVNA AV SVENSKA INSTITUTET I ATHEN 4°, V, 1:1

ACTA INSTITUTI ATHENIENSIS REGNI SUECIAE SERIES IN 4°, V, 1:1

Labraunda

Swedish Excavations and Researches

VOL. I. PART 1:

THE PROPYLAEA

BY

Kristian Jeppesen

WITH 30 TEXT-FIGURES AND 23 PLATES

CW & GLEERUP · LUND 1955

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HÅKAN OHLSSONS BOKTRYCKERI

PREFACE

The excavation of the sanctuary of Labraunda was started in 1948 on the initiative of Professor Axel W. Persson and under his leadership. The excavation work was continued in 1949 and 1950. During the preparations for the campaign of 1951, Professor Persson suddenly died. His responsibilities were then taken over by Professor Gösta Säflund. Owing to the death of Professor Persson, certain modifications of the original plan for the publication of the results have become necessary. The separate parts of the excavation report will appear as soon as they are ready according to the following plan:

- Vol. I: 1. The Propylaea.
: 2. The Great Stairway, The Thermae.
- Vol. II: 1. Topographical Survey and History of Excavation.
: 2. The Andrones.
: 3. The Fountain House, The South Stoa.
: 4. The Storehouse.
- Vol. III: 1. The Temple of Zeus.
: 2. The Oikoi.
: 3. The Area of North Stoa.
: 4. Archaic Remains.
- Vol. IV: 1. Pottery, Sculpture, Other Arts and Crafts.
: 2. Greek Inscriptions.
: 3. Carian Inscriptions.

In Vol. II: 1 a history of the excavation and a topographical survey of the site will be given, as indicated above. For the convenience of the reader, a sketch plan of the site with indication of the names applied to all the more important buildings so far identified, has, however, been included in the present volume.

The Editors

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TOPOGRAPHICAL SKETCH PLAN
(in pocket of back cover)

INTRODUCTION

In 1950 the author was invited by the late Professor A. W. Persson to take part in the excavations of the Swedish Caria Expedition at Labraunda, which started in 1948, and during the campaigns of 1950 and 1951 he accomplished the work in the field, which forms the basis of the present account.

Of the illustrations given here, some photos were taken by Mr. S. Lingheim of Stockholm and Mr. T. I. Dahlén of Uppsala, whereas other photos and all the drawings except Pl. I, which is copied from a plan by Mr. Dahlén, were made by the author. Mr. Dahlén, moreover, has kindly permitted the use of his diaries and of his preliminary sorting of some of the material.

Of other colleagues, I am especially indebted to Mr. J. Crampa of Stockholm, who has undertaken to classify and to restore the inscriptions in my field, and to Mr. D. E. Strong of Oxford, The British School at Rome and the architect Mr. Edwin D. Thatcher, New York, for many valuable suggestions and advices in revising my English.

To the direction of the expedition and to the direction of the Ny-Carlsberg Foundation, Copenhagen, which has granted parts of my travel expenses, I offer my sincere thanks for the profit of two instructive campaigns.

As for the arrangement of this account, I should say in advance, that I have tried to make it as brief and concentrated as possible, and have consequently preferred not to separate the description of the material and the argument for the restoration. The photos and drawings on the Plates are arranged so as to facilitate comparisons between analogous parts of the buildings in question. The theoretical analysis pp. 43 ff., may be contradicted, together with most other attempts at a methodical research of the Greek theories on proportions in architecture; however, I do not belong to those sceptics who deny the very justice of that research, and I am convinced, that starting afresh with an objective approach to new material, one may at last reach firm ground in this matter.

The two Propylaea, which are the objects of this study, gave access, from the south and from the east, to an oblong square at the southeast corner of the Labraundan sanctuary. Therefore, and because they have no other distinctive characteristics except their situation, the excavators have chosen to call them "The South Propylaea" and "The East Propylaea", respectively. The capitals K and H refer to remains of the "South Propylaea" and "East Propylaea", respectively. The main features of the square and its immediate surroundings, or what may be called

"the enclosure of the Propylaea", appear in the plan and the sections on Pls. XXII, XXIII. Together with adjacent buildings, the Propylaea form a group about a rectangular open space, and the roads through these gates cross each other at the foot of a wide stairway leading uphill in the direction of the sanctuary proper.

In Pl. XXII the rather wide-spaced horizontal hatching covers unexcavated or only superficially investigated areas (the evidence for the walls shown in these areas is partly indefinite and perhaps not altogether trustworthy). There are two symbols for masonry: a close, diagonal hatching for solid walls, mainly in ashlar masonry, and a speckled tone for walls of a bad quality, especially in rubble masonry. For the purpose of reference, the plan and the sections are divided into ten-metre squares, designated by small and capital letters and having numbered dots for every metre.

Of all the buildings in the area in question, apart from the Ionic Propylaea, only the little Doric house to the east of the South Propylaea had any superstructure of marble; this was in the front, alone, the rear wall and the sidewalls being of gneiss. Consequently, with the exception of those, which from their find-spots may have belonged to either Propylaea, or of those which have been washed down from the north, the loose marbles can be assigned with certainty to their original positions.

THE SOUTH PROPYLAEA

The South Propylaea were excavated in July, 1949, under the supervision of Mr. T. I. Dahlén, of Uppsala, who wrote the diary and made a provisional catalogue of the scattered blocks (numbered K 1 through K 93) as well as a map of the find-spots, from which Pl. I is taken. On the site, before the excavation, only a few loose marbles were visible, observed by Laumonier.¹

In the course of the excavation, a great many blocks from the building were uncovered on and around the foundation. Some of these were loose and some had been re-used in secondary walls of rough masonry, which had been constructed between the column bases of the north front and in the area north of and alongside the foundation (see Pl. XXII). These secondary walls probably were remains of poorly-built houses belonging to a late period in the history of Labraunda. In the lateral passage to the east one course of a crosswall in gneiss ashlar was uncovered; it contained pry-cuttings for another course above it (see Pl. XXII: D 6—D 8, e 5).

¹ A. Laumonier, who visited Labraunda before the excavations and reported his investigations in *Bull. Corr. Hell.*, LX, 1936, pp. 303 ff., correctly identified two loose marbles (our K 11 and either K 14 or K 21) as "montants de la porte Sud"; they are shown in Fig. 21, on p. 309 of his article. And he understood that the main entrance of the sanctuary should be located in the area in question, shown between the

letters I-O-G and H on his preliminary map, Pl. XXXVI. Since the above-mentioned blocks were half-buried, he could not have seen that they carry moulded door-frames on both faces, one face having three fasciae in the frame, and the other face having two; and, because of the weathering, he took the border-fillet, or backband, of the moulded frames to be semi-circular, instead of rectilinear.

In the lateral passage to the west, and level with the marble pavement of the Propylaea, the foundation for a door was uncovered; this, also, was in gneiss ashlar and was supporting two monolithic jambs of the same material (see Pl. XXII: C 3—C 5, e 4; and Fig. 2). So far as could be observed, neither of these structures is bonded with the foundation of the Propylaea.

Foundation

Soundings at the north and south fronts of the Propylaea showed that its foundations rest on virgin soil composed of heavy, yellowish clay. This clay, made up of eroded rock-particles, normally adheres closely to the rock beneath; but here and there it has been displaced, probably by earthquakes, and has slid southwards down the sloping rock-side, taking with it some of the foundations that were built upon it. This is possibly the main reason for the ruin of the south front (see Fig. 4) and for the slightly curved outline, in plan, of the north front (see Pl. II); the distorted plan of the Doric house (see Pl. XXII: DE, de) gives an even better example of the considerable disturbances of the ground that have taken place in the area. Two fig-trees that had taken root in the south half of the foundation of the Propylaea have contributed greatly to its destruction, having been given free rein by the complete absence of metal fastenings between the euthynteria blocks; one of these trees was felled during the excavation, but the other had to be left on the site (see Fig. 3).

The foundation (Pl. II, a through g) has the form of a podium with vertical sides and with marble steps on both fronts; the vertical sides are built of gneiss ashlars, with flat but rather rough surfaces, in a header-and-stretcher bond. The north front (Pl. II, g; and Fig. 1) and the west side (Pl. II, a) are completely preserved, except the ends of the steps at the southwest corner, whereas the east side (Pl. II, c) and the south front (Pl. II, b through f; and Fig. 4) are very much destroyed, especially at the southeast corner. None of the south steps has been found in situ.

The main features of the plan are clear: the top courses of the sides of the podium, level with the marble pavement, form toichobates for the sidewalls of the superstructure; at the same level, between the pavements of two similar porticoes, runs the toichobate for a crosswall with three doorways; on the top-bed of the toichobates are dowel-holes and pry-cuttings, showing the positions of the wall-blocks above and of the thresholds of the doorways.

The marble slabs of the pavement rest on gneiss euthynteria blocks, some of which are visible in the south half of the plan. At any rate, it was ascertained that they are of the same irregular shape and of about the same size as the euthynteria blocks of the East Propylaea (see Pl. III).

The slabs of the pavement have perfectly smooth surfaces and tightfitting joints and are roughly flattened on their undersides. Many are cracked, but for the sake of clearness the cracks are omitted on Pl. II. The forward edges of the slabs of the



Fig. 1. North front of the South Propylaea (phot. Nilsson).

first row on the north front are very worn by traffic between the columns, and this is especially true of those in the center; however, in front of the column bases, the slab-thickness is intact (see Fig. 9).

The pavement forms the only step down to ground level at the north front (Pl. II, g). The original number of steps on the south front appears from the west elevation of the foundation (Pl. II, a; and Fig. 6): there were five risers and, including the pavement, five treads. Measured here, the height of the risers is



Fig. 2. West lateral passage at the South Propylaea (phot. Nilsson).

c. 24.5 cms. and the width of the treads c. 41 cms.; these dimensions agree with those of a number of loose step-blocks found scattered at the south front, the best preserved of which are shown on the restoration diagram, Pl. XVII (Nos. K 227, K 228, K 238). On their upper surfaces, which are very worn at the forward edges, these blocks have slight depressions, dowel-holes and pry-cuttings, showing the outline and the vertical points of the block above.



Fig. 3. The South Propylaea viewed from the south (phot. K. J.).

For the other dimensions of the plan, as restored by taking into consideration loosened joints and other displacements, see Pl. XVII, as well as p. 46, n. 18, which gives evidence for the calculation of the depth of the south portico. This depth cannot be obtained directly, because none of the pavement slabs in the last row, i. e., the south stylobate, survives.

Technical premises

The marble is whitish, of a bad, friable quality, and the surface of the blocks has been worn away, in many cases, to a depth of several millimetres. In most cases the amount of wear can be estimated with fair accuracy by observation of the surface dressings — toothed-chisel or pointed-chisel — and by the evidence of holes for fastenings. Most of the fractures have been smoothed by disintegration, so that they are not clearly defined and cannot be described in diagrams with any accuracy. As a consequence, the restoration of fractured blocks is often a matter of individual judgement and cannot be demonstrated easily by photographs or drawings.



Fig. 4. South front of the South Propylaea (phot. K. J.).

The faces of the blocks² were smoothed, finally, with the toothed chisel (with teeth c. 2.5 mms. apart) and the joints and beds were flattened with the pointed chisel, the margins along their edges (anathyrosis) having been perfectly smoothed to secure almost invisible contact.

There were two kinds of block in the bond: "full" blocks (of a depth equal to the thickness of the wall) and "half" blocks (of a depth equal to half the thickness of the wall and with backs roughly dressed). Many of the "full" blocks has curved joints (some examples of which are shown on Pl. XVII), perhaps to avoid the waste of precious marble, which would have resulted from shaping the uneven quarry-blocks into regular ashlar.

² The following terms are used here to describe the various faces of the blocks:

"Face": the side of the block which is exposed when the block is laid in the wall.

"Back": the side opposite the face and hidden in the wall.

"Joint": the end, right-hand or left-hand, which adjoins the next block and which is also hidden in the wall.

"Return-face": an end which is not hidden in the wall, as on a corner block.

"Top-bed": the top-surface of the block, adjoining the block in the next higher course and hidden in the wall; if not hidden, it would be called the "top-face".

"Bottom-bed": the surface opposite the "top-bed", also hidden in the wall; if not hidden, it would be called, of course, the "soffit".

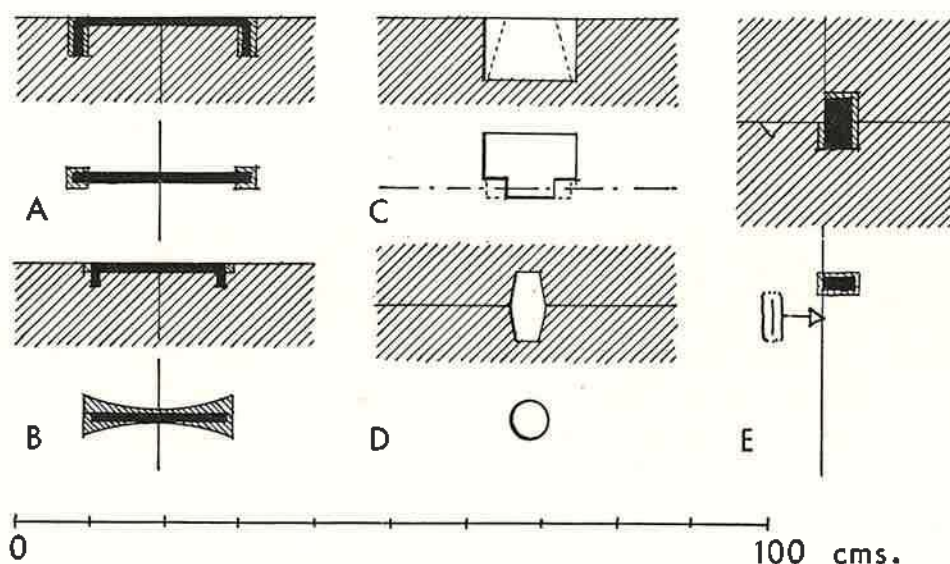


Fig. 5. Technical details (K. J.)

The freestanding blocks and the blocks at the ends of the walls included: blocks with anta capitals, anta bases and anta offsets; blocks from the piers between the doorways of the crosswall; and column drums. They were connected, vertically, by *πόλοι* embedded in conical holes c. 4 cms. deep and c. 5 cms. in max. diameter. The holes were bored in the beds c. 10 cms. from the faces and centered over each other to form barrel-shaped cavities hidden in the core of the structure (see Fig. 5, D); column drums were bored at their centers. The blocks with four faces had two empolion-holes in each bed, whereas blocks with three faces sometimes had only one (which was sufficient, rotation having been prevented by dowels at the back). The material of the *πόλοι* is unknown, since none of them has been preserved.³

The normal wall blocks, with one or two faces and two joints, were connected horizontally by clamps and vertically by dowels. The "half" blocks had a clamp across each vertical joint and, in the bottom-bed near one of the joints, one dowel; the "full" blocks had two clamps across each vertical joint and, in the bottom-bed near one of these, two dowels. The clamps consisted of iron bars 8-to-12 mms. square in section and bent into the form of a double-hook from c. 12 to c. 24 cms. in length and with "legs" from c. 2 to c. 4 cms. long. They were placed in cavities in the top-beds, c. 10 cms. from the face (see Fig. 5, A; at the north front of the foundation two specimens were found, and a heap of loose lead from clamp-holes was

³ They were probably of metal. Barrel-shaped bronze *πόλοι* have been found, e.g. at Halicarnassus (see Newton, *A History of Discoveries*, II, 1, p. 180), at Magnesia on the Maeander (see Humann, Kohte &

Watzinger, *Magnesia am Maeander*, p. 35, Fig. 22), and at Didyma (see Wiegand & Knackfuss, *Didyma*, I, p. 89). Cf. also Dinsmoor, *The Architecture of Ancient Greece*, p. 171, n. 3.

found at the east side). The clamps of smaller size were used in wall-blocks, those of larger size in the architraves.⁴

The cavities for the clamps on the outside rows of pavement slabs (two across each joint; see Pl. XVII) were of an elaborate type in the form of a dove-tail, with a depth of 10 mms.; these were filled with lead, after the clamp had been inserted, and gave the visible fastening the look of an ornament, rather than of a technical device (see Fig. 5, B).⁵

The dowels, of which single specimens have been preserved in situ, were small rectangular pieces of iron, c. $15 \times 40 \times 50$ mms., embedded in rectangular holes, c. $20 \times 50 \times 60$ mms. (see Fig. 5, E). All marbles, with the exception of the inner rows of pavement slabs, were dowelled.

The blocks were shifted by means of crow-bars applied to V-shaped pry-cuttings, 5-to-6 cms. long and c. 2 cms. deep, in the top-beds, and 5-to-6 cms. from the dowel holes (in cases where double shifting was necessary, the same distance is found between two pry-cuttings).

Most of the blocks probably were hoisted and set in position by means of lifting-bosses on the unfinished surfaces. Lewis-holes are found in only some of the pier-blocks of the crosswall (viz., K 2 and K 21; see Pl. XV, f, g and Pls. VIII, 4, IX, 4); these are centrally placed in the top-beds and take the form of deep, rectangular cuttings, with a wedge-shaped cavity in one of the vertical faces (see Fig. 5, C). When the wedge-shaped lifting device (similar to a Lewis anchor) had been lowered into the cavity, the remaining space was filled tightly, probably with a block of wood, and the stone hoisted into position.

Description and restoration of the superstructure

The most important fragments of the superstructure, marked by the excavators with the capital K, are illustrated in Plates and Figures. Pl. I shows the find-spots of all loose blocks, except wall-blocks; Pls. VII through XII and Figs. 7 through 10 and 12 through 18 give photographs in varying scales; and Pls. IV through VI show sections of mouldings. In the diagrams showing the restoration — Pls. XIII through XVII — the individual blocks (marked with large numerals) are restored to their original form, as far as the state of preservation permits; and they are set in their original positions, as far as these can be ascertained from find-spots, characteristic shapes and constructional evidence (all *πόλοι*, clamps, dowels, pry-cuttings and Lewis-holes are shown; dimensions are given in italicized numerals). The final restoration, in both elevation and section, appears on Pls. XIX through XXI.

⁴ For the various types of clamps and their chronological order, cf. E. Dyggve's survey, *Das Laphrion, der Tempelbezirk von Kalydon*, p. 260, n. 3.

⁵ Note also the unique dove-tail cutting, without

holes for a clamp, in the top-beds of the blocks K 8 and K 9 (see Pl. XV, d and p. 21, n. 9). The Greek term for dove-tail clamps seems to have been *γόμεποι πελεκῆνοι* i.e. "axe-clamps" (*I. G.* VII, 3073, 171).



Fig. 6. Northwest corner of the South Propylaea (phot. Dahlén).

The side-walls

The material of the side-walls consists of:

1) blocks from the lowest courses, viz., the orthostates. Some of these blocks were found approximately in situ, slightly displaced by dowel-robbers (K 31—31 A, K 109, K 110, K 57, K 100; K 40 and K 51 on edge); they are shown in their proper places on Pls. XVI—XVII.

A few more orthostate blocks can be identified, but not located with accuracy (K 111, K 113, K 108, K 516).

All orthostate blocks are "full" blocks and, since their faces were flush with the projections of the antae, they can be identified by their width; this exceeds the width of the regular "full" ashlar in the lowest course, but one, of the side-walls by two anta offsets, or by 2 cms.

2) blocks from the antae. These are "full" blocks, also, and include the terminal blocks of the orthostates (with moulded anta bases, but without anta offsets), blocks with anta offsets, and blocks bearing anta capitals; for the find-spots, see below.

3) regular ashlar, both "half" and "full" ones, found scattered over and around the foundation in such confusion that the find-spots do not give any conclusive information regarding their original positions.

The orthostate blocks measure c. 62 cms. in width at the bottom-beds and, owing to a slight upward tapering, a little less at the top; those of the west wall are 45 cms. high, those of the east wall only 42.5 cms. As may be inferred from the locations of the dowel-holes in the euthynteria, the inner faces of these blocks, when in position, formed the limit of the marble pavement; the outer faces came to within c. 10 cms. of the side of the foundation, thus leaving slightly more than sufficient space to support the cushion-like projections of the anta bases (see Fig. 8 and Pl. IV, c).



Fig. 7. Orthostate blocks K 109 and K 110, with erosion reflecting the sill of the crosswall (phot. K. J.).

The majority of the blocks with anta projections were found in well-defined heaps where they had fallen — at the northeast and southeast corners of the foundation (see Pl. I). These blocks — fourteen in all — comprise about three-quarters of the northeast anta and about half of the southeast anta. Their order can be reconstructed almost exactly by a study of the spacing of the empolion-holes, the location of the dowel-holes and the width of the blocks (in general, there are two empolion-holes in each bed, but a few beds have only one). Because of erosion, the criterion of width is rather an uncertain one (see Pls. XIII and XVI).

At least two blocks which belong together — K 31 and K 32 — are preserved from the northwest anta (see Pl. VIII, 1 and 7). Perhaps no more than the capital — K 1 — is preserved from the southwest anta. Since their find-spots do not indicate their original positions, the blocks K 84, K 86, K 105 and K 146 may belong to any of the antae; for the sake of convenience, they are shown in the southwest anta (see Pl. XIII, B and Pl. XVI, A).

The dimensions of the antae appear clearly from the surviving blocks. The width of the anta faces is between 55 and 56 cms. at the top, below the necking of the capitals, and about 61 cms. at the bottom, on a level with the top of the orthostates. The width of the anta sides is between 35 and 36 cms. at the top and about 38 cms. below. The depth of the offsets measures 8 to 10 mms.

Three anta capital blocks are extant: K 58 from the northeast anta, found in the heap of marble at the northeast corner of the foundation; K 80 from the southeast anta; and K 1 from the southwest anta. The last two blocks have been assigned to their original positions on the evidence of dowel-holes in their top-beds, for the attachment of epistyle architraves (see Pl. XV, a, c).

All the capitals are very damaged, some of their carved ornament being quite effaced; only the face and one side of K 1 and K 80 are tolerably well preserved (see Pl. VII, 1 through 4; and Pl. IV, b & e).



Fig. 8. Orthostate blocks K 31 and K 31 A (phot. K. J.).

At the base of the capitals, the uppermost part of the anta curves outwards into a narrow necking: above this is a bead-and-reel, running across the main face of the capital and down each side; and, over all, is a low abacus with vertical faces. The main face of the capitals has three rows of decorated moulding: first, below, a leaf-and-dart, then a pendant palmette-and-lotus, and finally an egg-and-tongue (Pl. IV, e). The cavetto sides are enriched by floral ornament consisting of two double volutes with fluted stems rising from acanthus-calyces and joined together by a pair of palmettes in the center; of these the lower has a simple fan with the ends of the leaves curling outwards, and the upper takes the form of two half-palmettes with the ends of the leaves curling inwards (cf. the palmettes on the south cornice of the central doorway, Pl. V, d). The triangular space above each of the double volutes is filled by a bell-flower, in perspective view, and the outside volutes, which are a little lower than the inner ones, branch off, above, into half-palmettes.

The curious cyma recta profile at the right end of the preserved side of K 1 seems to be an anomaly caused by the mistake of an artisan (see Pl. VII, 4; and Pl. IV, b); the sides of the other extant capitals were apparently symmetrically shaped, the profiles of both ends reflecting the triple division of the main face (e. g. K 80, see Pl. VII, 2), just as they do on the anta capitals of the East Propylaea (Pl. VII, 6—8). The deep, square holes in the acanthus calyces on one side of K 58 and on both sides of K 1, which no doubt served for attaching central projecting acanthus leaves like those carved on the side of K 80 (see Pl. VII, 2), are better considered, also, as makeshift work than as device for refinements.

The anta blocks, although they are very weathered, in part, and do not permit accurate measurement, show that the antae had a slight entasis very like the entasis of the columns (i. e., maximum deviation from a straight line of about one-half centimetre).

For the total height of the antae, the combined evidence of the blocks from the northeast anta and the southeast anta is fairly conclusive; only the heights of some of the lowest courses seem uncertain. In order to attain a total height equalling the height as calculated from other evidence (i. e., the columns, see p. 14, and the crosswall, see p. 18), we must assume that there were fourteen courses, including the orthostates, in each of the side-walls. We must accept, as well, the inference from the surviving blocks, that the five lowest courses were "high" courses (measuring c. 42-to-46 cms. in height, like the anta blocks K 31, K 32, K 40, K 73, K 76, K 86, K 91, K 146, and the blocks K 14, K 99, K 201, K 207 from the piers of the crosswall), and that all the nine topmost courses were "low" courses (measuring c. 34 to 38 cms. in height, like the anta blocks K 41, K 42, K 43, K 44, K 45, K 54, K 58, K 77, K 78, K 79, K 80, K 83, K 84, K 92, K 105; and the pier block K 21 — for the position of which see p. 20).

A total of 135 pieces of regular wall-blocks have been found: 23 "full" blocks and 112 "half" blocks, covering, altogether, about one-third to one-half of the total surface area of the restored walls. Discounting inaccuracies due to erosion and to workmanship, they are of at least twenty-three different heights, varying from 27 to 50 centimetres; "half" blocks are found in at least twenty-one of these height-categories, as shown in the following table.

heights cms.	number of				
	anta blocks	"full" blocks	"half" blocks	crosswall blocks	orthostate blocks
27			2		
28		1			
31			3		
32		2	4	1	
32.5			1		
33.5	3	3	3		
34	1	2	7	1 (K 200)	
34.5		3	5		
35	1	2	9		
35.5	1	4	3		
36	1	3	4		
36.5	3	2	6		
37	3		17		
37.5	2	1	5		
38	1		3		
42.5			1	1	4
43			2		
44	1		8		
44.5			4	1	
45	2		16		8
45.5	3		8	1	
46				1	
50			1		
totals	23	23	112	6	12

Of the two "low" crosswall blocks in the table, which are both "full", one belongs to the south cornice of the central doorway (K 200); the other can be assigned to one of the three courses of regular ashlar above the minor doorways of the crosswall (see Pl. XIV), which, unlike the side-walls, had a constant width of 61.5 cms. These and the "full" blocks from the side-walls, which can be placed in their proper levels by the criterion of width, form a group confirming the arrangement inferred from the anta blocks and the pier blocks, i. e., all of them belong to the upper two-thirds of the walls and all of them are "low".

Of the "half" blocks, a few may have belonged to the crosswall (in practice they cannot be identified, because their vertical faces are impossible to distinguish from the imperceptibly sloping faces of the side-wall ashlar); but even if we allow for this possibility, the variation in their heights proves that most of the courses in both side-walls must have had a special height. Some of the extremely "low" or "high" blocks, which are lower or higher than any of the anta blocks, may have belonged to courses with varying heights, of which the blocks from the south cornice of the central doorway give an example (see p. 21, n. 9). Because the evidence of their widths is inconclusive, the "half" blocks can be only roughly located; we must be satisfied to find that their heights repeat the heights of the anta blocks.

As for general conclusions, the material serves to establish only the following:

- 1) that most of the courses were composed of both "half" and "full" blocks, and that probably there were no other "full" block courses than those of the orthostates;
- 2) that the combination of "half" and "full" blocks produced a kind of bond, in which the "full" blocks performed the function of "headers" and the "half" blocks the function of "stretchers";
- 3) that the length of the blocks varied arbitrarily, from c. 25 cms. to c. 150 cms., so that the *appearance* of the bond — which did not, in every case, necessarily reflect the *functioning* of the bond — was markedly "header-and-stretcher", and therefore was similar to that of the majority of walls in Labraunda.

It remains to be noted that some of the blocks from the side-walls have inscriptions, viz. the anta blocks K 73 and K 86 and the ashlar K 22, K 5 and K 19. Mr. J. Crampa, the philologist, who is preparing a record of all the inscriptions from Labraunda, considers the proposed arrangement of these blocks, as shown on Pl. XVI, quite possible.

The columns

The surviving fragments from the columns comprise⁶:

K 28 A. column base; consists of a disc with two scotiae, elevated on a square plinth measuring c. 79 cms. × c. 79 cms. × c. 14 cms.; total height 28.5 cms.

⁶ At the South Propylaea was found a fragment (K 68) comprising one volute of a Ionic capital, and in the "apodyterium" was found another (R 9 A) of

the same scale. They are too small and too roughly carved for the columns of the Propylaea.

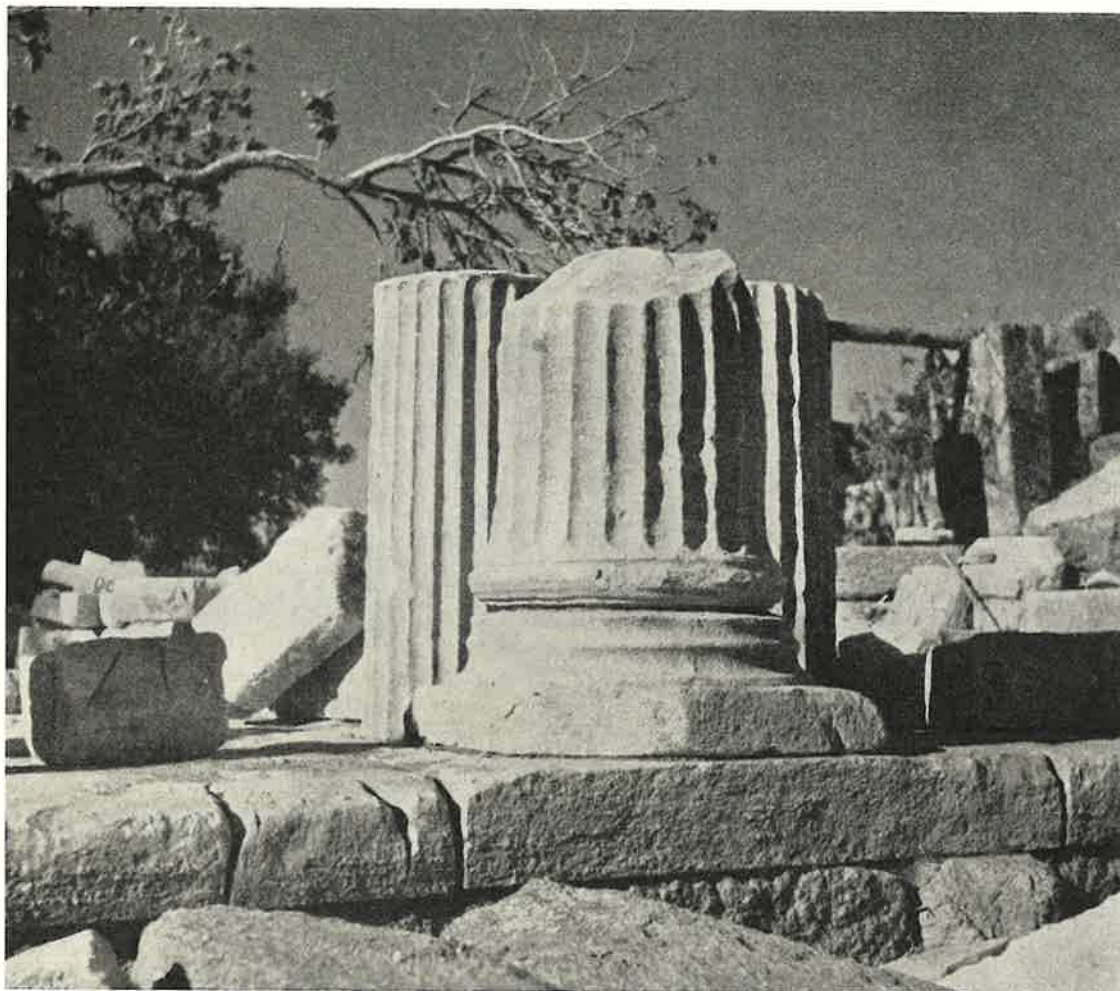


Fig. 9. Western column base K 27, in situ in the north front of the South Propylaea (phot. Lingheim).

K 28 B. lowest drum; includes a torus, c. 10 cms. high, with six horizontal flutes and an astragal beneath the constriction of the shaft; height 120 cms.; upper diameter 52.8 cms.; diameter just above the torus 54.2 cms.

K 47. drum; height 120.3 cms.; upper diameter 50.9 cms.; lower diameter 52.8 cms.

K 46. topmost drum; carries an astragal above the necking; height 113 cms.; upper diameter, just below the necking 45.25 cms.; lower diameter 48 cms.

K 27 A. column base; like *K 28 A* (see Figs. 9—10).

K 27 B. lowest drum; like *K 28 B*, but broken above; preserved height c. 76 cms.; diameter, just above the torus 54.4 cms.

K 26. drum; height 117 cms.; upper diameter 50.7 cms.; lower diameter 53 cms.

K 75. drum-fragment; top-bed preserved; height c. 46 cms.; top diameter 48 cms.

The diameter measurements refer to the distance between the deepest points of two opposite flutes, which is almost invariably the same for all twenty-four flutes of the shaft. The lower full diameter is c. 60 cms.



Fig. 10. Moulding of column base K 27
(phot. Lingheim).



Fig. 11. Top drum and capital from the Temple
of Zeus Labraundos (phot. Nilsson).

The details are very damaged: the mouldings of the bases are almost weathered away and the arrises between the flutes are quite effaced, or reduced to sharp, uneven edges (see Pl. V, c). They seem to have been similar to the details of the column bases from the Temple of Zeus Labraundos, some of which are very well preserved.

K 27 A, K 27 B and K 28 A were found in situ at the north front of the foundation; K 28 B was found upset; all the other drums lay scattered around them, except K 75, which was found at the south front (see Pl. I). Since the position in which K 26 was found plainly showed that it had fallen from the drum K 27, it is evident that K 47, which is of almost the same diameter as K 26, must be connected with K 28. It is uncertain whether or not the top drum K 46 belonged to K 26—K 27, or to K 28—K 47; but as all measurements go to show that the two north columns were practically uniform, we can at least roughly calculate the total height of a column from the difference between the upper diameter of K 47 and the lower diameter of K 46. This difference — 2.9 cms. — when multiplied by the tapering coefficient (i. e., the height in which the diameter increases or decreases one millimetre), gives the height of the missing drum (cf. Pl. XIII, A). However, the calculation of the tapering coefficient itself is complicated by the fact that the columns had a slight entasis, as is shown by the difference between the slope of K 28—K 47 and that of K 46. But, provided that the entasis was a regular, symmetrical curve (no matter whether circular, parabolic or elliptical), we can account for it by the following equation, which is based on the fact that the height of the top drum K 46



Fig. 12. Jamb block K 2 and lintel K 7 (2 fragments) with cornice block K 10 on its top (phot. K. J.).

— from the bottom-bed to a point immediately beneath the top necking — equals the height of the base drum K 28 B — from the top-bed to a point immediately above the torus (i. e., 110 cms.):

$$\frac{\text{lowest shaft diameter} - \text{topmost shaft diameter}}{\text{total shaft height (excluding torus and necking)}} =$$

$$\frac{\text{lower diameter of K 47} - \text{lower diameter of K 46}}{\text{height of K 47} + \text{height of the missing drum}} =$$

$$\frac{8.95}{340 + X} = \frac{4.8}{120 + X}; X = c. 132 \text{ cms., the height of the missing drum.}$$

Consequently, the total height of the column is equal to K 28 A + K 28 B + K 47 + 132 cms. + K 46 + the height of the capital. Calculating the last measurement as c. 25 cms., by inference from the extant capitals of the Temple of Zeus Labraundos (see Fig. 11), this total is found to be c. 540 cms.⁷

Thus the top-bed of K 47 is approximately the middle of the shaft; and the amount of the entasis (i. e., the maximum deviation from a straight line) appears from the upper diameter of K 47, which exceeds the mean between the lowest and topmost diameters of the shaft by c. 1.2 cms., i. e., by an entasis of c. 6 mms. The axial spacing of the columns, measured from the two column bases in situ, is 327-to-328 cms.; and the same distance is found between the column axes and the axes of the side-walls, as restored.

⁷ Both the Temple of Zeus Labraundos and the South Propylaea were dedicated by Idrieus, Maussollos'

brother; their details suggest that they were built by the same architect(s) and craftsmen.



Fig. 13. Lintel fragments K 16 and K 20 (back) with cornice fragments K 18 and K 18 A on top (phot. K. J.).

The crosswall (Pls. XIV—XV)

The surviving blocks from the crosswall show that it was pierced by three openings separated by piers: a great central doorway flanked by two minor doorways.

The sill, which covered the width of the toichobate (85.5 cms.) under the crosswall (which has a width of only 61.5 cms.), was shaped, no doubt, precisely as that in the East Propylaea (cf. p. 37). However, its top-bed was 28.5 cms. above the surface of the surrounding pavement, as appears from block K 85 (see Pl. IX, 1), which was found near its original position beneath doorway A (see Pl. I and Pl. XVII, A). K 85, which is the only extant block from the sill, corresponds with block H 31, from one of the minor doorways of the East Propylaea (see Pl. XVI, B); and its antithema must have had the same profile as H 30, from the central doorway of the East Propylaea, which is rebated to receive the lower edge of the door. Since K 85 is 47 cms. wide, the missing antithema, in order to cover the width of the gneiss toichobate, must have been at least 38.5 cms. wide. On K 85, the face is worn, and the back, to meet the antithema, is characterized by anathyrosis. The top face contains pivot-holes and holes for locking-bolts, belonging to a little doorway about one metre in width; this doorway must have been installed in late antiquity, as a substitute for the original great door (see Pl. XVII, A).

One end joint of the block contains a hole for a dowel, as well as a cutting for the horizontal clamp which secured it to the antithema. The other joint, although very damaged and without preserved cuttings, is not broken, so that the original length of the block can be estimated, with fair accuracy, at c. 189 cms. To allow space for the pivots of the doors, the rebate in the sill beneath the doorways must have continued, as well, in front of the piers; this means that the weathering, c. 28 cms. high, on the inner face of the orthostate block K 109, from the west



Fig. 14. Architrave antichemara K 435 and K 442 (phot. K. J.).

side-wall (see Fig. 7), must reflect that side of the sill which, like K 85, had no rebate. Consequently, K 85 faced south and the doors opened to the north (i. e., in the direction of the enclosure, just as in the East Propylaea; cf. Pl. XVIII).

The evidence of the numerous dowel-holes and pry-cuttings in the toichobate is partially indefinite (Pl. XVII, B); but it is obvious that they are so grouped as to indicate, in the main, the positions of the doorways, as well as of the piers between them, which rested on separate sill blocks. The spacing of the dowel-holes beneath the minor doorways fits the length of K 85; and the spacing of those beneath pier II fits the length of K 11, which seems to have the lowest block in pier II (cf. below). From this evidence it can be concluded that piers II and III were centered on the columns of the fronts.

Four facts suggest that K 11 (Pl. VIII, 2) was the lowest block in pier II:

- 1) the space between the moulded door-frames, which converge towards the bottom, is only c. 1 cm., measured at the bottom-bed.
- 2) on both faces of the block the adjacent moulded frames are 52.2 cms. and 45.5 cms. wide, with border fillets — or backbands — 6.5 cms. and 6.0 cms. wide, respectively; but on one face the moulded frames have three fasciae, while on the other face they have only two. The face with two fasciae is found by other evidence (see below) to have faced north, therefore the block can be located in pier II.
- 3) the block is extraordinarily high, and its height (62 cms.) added to the height of the sill (28.5 cms.), matches the combined height of the two lowest courses in the west side-wall (anta blocks K 31 + K 32: 45 cms. + 45.5 cms. = 90.5 cms.).
- 4) there are two diagonally-placed empolion-holes in the top-bed of the block, but none in the bottom-bed.

Other pier blocks, K 14, K 99, and K 21 (see Pls. VIII, 4—6; IX, 2), can be located by examining their lengths, the widths of the spaces between the backbands of the moulded frames, and the number of fasciae. Judging from the spaces between the backbands, K 14 and K 99, which belonged to pier II, may have been adjoining; moreover, the two diagonally-placed empolion-holes in their beds would allow contact. But K 99 is so damaged that the evidence of its original length cannot be obtained. Its top-bed has been cut off below the depth of the empolion-holes, so that the preserved maximum height is only c. 42 cms.; its original height may have been the same as that of K 14, i. e., 46 cms.

The pier block K 21 (Pl. VIII, 4), 38.5 cms. high, belonged to pier III. It has two diagonally-placed empolion-holes in each bed and, in addition, a Lewis-hole in the top-bed (see Pl. XV, g); and from the width of the space between the backbands of the moulded frames, it appears to have been placed in a course immediately above that of K 99.

All these pier blocks, like K 11, have a constant width of c. 61.5 cms.

The width of the central doorway was c. 229 cms., i. e., the axial spacing of the columns (327-to-328 cms.) minus the lower length of K 11 (98.3 cms.). The width of the minor doorways (judging from K 85) was c. 189 cms. Therefore, a length of c. 58 cms., measured from the inner face of the orthostates, was left for each of the piers I and IV. Block K 201, from pier I (Pl. VIII, 3), was set a little into the core of the west side-wall and fastened to it by means of transverse clamps (see Pl. XIV, and Pl. XV, g). Only half of this block is preserved, but on the intact face of the fragment is a distinct vertical anathyrosis, made to fit the joint of the adjoining side-wall block; and the distance between this anathyrosis and the return-, or jamb-, face of K 201, measured at its bottom-bed, is c. 59.5 cms. (or, subtracting 1 cm. for the orthostate offset, 58.5 cms. to the inner face of the orthostates). This measurement shows that K 201 must have belonged to one of the lowest courses in pier I, and its height (45.5 cms.) suggests that it was placed on a level with the lowest course, but one, of the west side-wall (cf. northwest anta block K 32). Since it has an empolion-hole in each bed, it hardly can have been placed directly on the sill of the crosswall (the lowest block from pier II, viz. K 11, has no empolion-holes in its bottom-bed). K 207 (Pl. IX, 3) has anathyrosis on its back to meet the inner face of the west side-wall, to which it was attached by means of longitudinal clamps. There are two empolion-holes in its top-bed; those in the damaged bottom-bed have disappeared, but the length of the block at the bottom (c. 62 cms.) suffices to show that it was placed not directly over K 201, but one or two courses higher and approximately on a level with K 99.

Block K 2 (Pl. IX, 4) is of a short, special type, with the moulded frame of only the central doorway on each face and with two empolion-holes placed along the jamb-edge of each bed (see Pl. XV, f). The block obviously adjoined the lintel fragment K 7 (see Pl. IX, 9; and Figs. 12, 15), which is found to fit K 2 perfectly, not only in its vertical anathyrosis, but also in the common height of 43 cms. and in the matching of two halves of a connecting clamp. K 7 is a "half" block, with anathyrosis on the back to fit an antithema. Its face carries two fasciae, in the lower

of which there are four cuttings, each c. 10 cms. long, 4 cms. high and 6 cms. deep. Since there must have been an attachment on the face of the lintels to take the upper pivots of the doors (the existence of which we have hitherto accepted implicitly), it seems reasonable to assume that these cuttings were made for securing a metal bar containing holes for the pivots.⁸ This theory agrees very well with the fact that there are two closely-spaced cuttings just where the outward draw of a pivot would demand an extra-solid fastening. This is proof that those moulded frames having two fasciae faced north.

The fragment K 20 (44 cms. high; see Fig. 13) is preserved from the north "half" lintel of the central doorway. It comprises part of the free span between the jambs and carries two fasciae, but with no backband above them; it contains three cuttings in the lower fascia, similar to those in K 7. Its original position, as suggested in Pl. XIV, A and Pl. XV, e, is inferred from the two closely-spaced cuttings farthest to the right, which no doubt indicate the position of the upper pivot of the right-hand leaf of the door; and is inferred, as well, from a clamp-hole in the top-bed, which, presumably, should be set at the same distance from the end of the lintel as the clamp-hole at the preserved end of the antithema fragment K 16.

K 16, from the south "half" lintel of the central doorway (see Pl. IX, 7 and Fig. 13), is c. 6 cms. higher than K 20, because it has a backband above its three fasciae; but, since the clamp-hole in its top-bed is deeper, by c. 6 cms., than the clamp-hole in K 20, it is evident that these blocks belong together. The absence of cuttings on K 16, similar to those on the lower fasciae of K 7 and K 20, confirms our interpretation of them as a part of the door-pivot arrangement.

Three different types are preserved of the cornices above the doorways: 1) K 10, 2) K 18—K 18 A, 3) K 8—K 9 and K 200. All of them are clearly characterized as crowning members projecting from the face of a wall, which can be no other wall than the crosswall. In fact, they were found near the crosswall, scattered on the pavement of the south portico (see Pl. I).⁹

⁸ In the Parodos doorways of the Theatre of Epidauros are found similar holes, see Παρθενία, 1883, Pl. B', 1.

⁹ K 10 (see Pls. V, g; X, 4; XV, e; and Figs. 12 & 15). "Half" block with a projecting member (very weathered) in the form of a cyma reversa carved with a leaf-and-dart (distance, center-to-center of the leaves, 10.5 cms.), and crowned by a cavetto carved with a palmette-and-lotus (distance between the palmettes 10.5 cms.). Left joint preserved, with a dowel-hole in the bottom-bed; a dowel-hole and a clamp-hole in the top-bed. Above the cornice proper a smooth, vertical face c. 11.5 cms. high. Total height 29 cms.; length, as preserved, c. 63 cms.

K 18—K 18 A (see Pls. V, a; IX, 6, 10; XV, d; and Fig. 13). Two fragments of "half" blocks with a projecting member in the form of a plain cyma reversa, crowned by a plain cavetto; a pry-cutting in the

top-bed of K 18 A. Height 25 cms.; length of K 18, as preserved, c. 66 cms.; length of K 18 A, as preserved, c. 20 cms.

K 8—K 9—K 200 (see Pls. V, d; IX, 8; X, 1—3; XV, d and Fig. 16). These form a series.

K 8. Composed of the fragments K 8 A, K 8 B and K 15 and intact with both joints. On the face a projecting member in the form of a cavetto, decorated with a carved palmette-and-lotus (distance between the palmettes 14 cms.). The vertical face above the point-chiselled top of the projecting member is quite smooth for a length of c. 108 cms. from the left-hand joint; but, excepting a smooth margin c. 2.5 cms. wide along the top, this face is point-chiselled for the rest of its length. In the top-bed a dowel-hole, a pry-cutting, a clamp-hole at the left-hand joint, and a clamp-hole at the back for attaching the antithema. Total height 27.5 cms.; height of pro-

The cornices of K 10 and K 18—K 18 A have the same combination of mouldings, viz. a cyma reversa crowned by a cavetto. But, since the cornice of K 10 is c. 16 cms. high, whereas that of K 18—K 18 A is c. 19 cms. high, it is obvious that K 10 must have belonged to one of the minor doorways and K 18—K 18 A to the central doorway.

The vertical face beneath the cyma reversa of K 18—K 18 A is c. 6 cms. high, which is the height — or breadth — that the missing backband above the fasciae of the lintel block K 20 ought to have; this suggests that these blocks belonged together. If this is correct, K 18—K 18 A faced north and the series K 8—K 9—K 200, which is too long to be placed above one of the minor doorways, certainly belonged to the central cornice of the south facade of the crosswall.

K 200 is a "full" block with a vertical north face and a crowning cavetto on the south face. The vertical north face indicates a position on top of the north central cornice K 18—K 18 A (cf. Pl. XVI, B); when so placed, the block reveals a space, between it and the lintel K 16, which could have been filled by a "half" block c. 36 cms. high. This block, facing south, probably bore tiers of ornament, to complete the cornice crowned by the cavetto of K 200. The completely flat face of the ashlar projection on the end of the lintel block K 16 (see Pl. IX, 7), seems to exclude the existence of consoles to support the cavetto.

Since K 10, like K 8—K 9—K 200 (but unlike K 18—K 18 A), has carved ornament, it probably faced south. A position above doorway C is the only possible one, because, unlike K 10, the cornice blocks above doorway A were pryed, in the laying, from east to west (cf. the pry-cuttings and dowel-holes in the top-bed of K 2, shown in Pl. XV, f). A narrow relieving margin on the top of the backband of the lintel K 7 (see Fig. 15) shows that there were cornices on the north side of the minor doorways, also, presumably similar to K 18—K 18 A and as high as K 10.¹⁰

Summing up, the dimensions of the moulded door-frames, as well as of the cornices of both the central doorway and the two minor doorways, are found to group in approximate conformity with the following ratio:

jecting member 13.5-14 cms.; total length 192.5 cms.
K 9. "Half" block with a projecting member like that of K 8. The whole of the vertical face above the projecting member is point-chiselled. Left-hand joint preserved; in the top-bed a clamp-hole for attaching the antithema. Total height 25 cms. (less than K 8); length, as preserved, c. 71 cms.

Cuttings for a hook-clamp on the tops of the projecting members and for a low, flat dove-tail clamp of a rather individual type in the top-beds of both blocks prove that K 8 and K 9 were adjacent.

K 200. "Full" block with a projecting member, like that of K 8 and K 9, which has been broken off to a little stump. The bottom-bed of the block is divided in half by two levels; one level corresponds with the soffit of the projecting member, the other is c. 6.5 cms. lower. In the top-bed are clamp-holes at each joint

and a dowel-hole. Height of south face 27.5 cms.; height of north face 34 cms.; length c. 50 cms.; width c. 61 cms.

K 200 has no clamp-hole to match the clamp-hole at the left-hand joint of K 8, but the vertical face above its projecting member is point-chiselled, like the face of K 9 and the right-hand end of K 8. Consequently, it must have been attached to the missing part of K 9.

¹⁰ The restored cornices, apart from the south central one (see Pls. XIX and XXI), look exceptionally low, and in this respect they seem to be unique in the surviving repertory of Greek monumental architecture. It is to be noted, however, that low cornices of precisely this type are very common on classical grave stelae (e.g. the stele of Philis, see *Jahrb. deutsch. arch. Inst.*, XXX, 1915, p. 118, Fig. 12).

$$\frac{\text{the width of the minor doorways}}{\text{the width of the central doorway}} = \frac{189 \text{ cms.}}{229 \text{ cms.}}$$

The ratio of the moulded frames of the jambs is $\frac{45.5 \text{ cms.}}{53 \text{ cms.}}$; and of the moulded

frames of the lintels is $\frac{43 \text{ cms.}}{49 \text{ cms.}}$. Excepting the special case of the south central

cornice, the ratio of the cornice heights is $\frac{16 \text{ cms.}}{19 \text{ cms.}}$. No doubt the heights of the

doorways were governed by the same ratio; consequently, they may be calculated, provided that the difference between that of the central doorway and that of the minor doorways can be fixed accurately. We may argue that this difference is equal to the height of K 7 plus the height of K 10. K 7, as we have seen, fits perfectly with K 2 and has a common height of 43 cms. K 2 must have had at least one jamb block above it, as is demanded by the two empolion-holes in its top-bed (these holes cannot have been used for fastening the lintel, because the lintel was dowelled; this is shown by the dowel-hole in the lower end of the lintel fragment K 7 and by the absence of empolion-holes in the bottom-bed of the lintel fragment K 16). The height of this missing jamb block is unknown, but we may assume that it was the same as that of the cornice block K 10, the top-bed of which was planned, evidently, to line up with the bottom-bed of the central doorway lintel. We may be fairly certain of this because of the ashlar-projection on the end of K 16, which indicates a regular course of ashlars to which it was bonded; this course would have run above K 10 and would have matched the vertical face of this block, which is found above the cornice proper.

Since K 10 has a height of 29 cms. and K 7 (or K 2) has a height of 43 cms., making a total of 72 cms., it follows that the difference in height between the lintel-soffits of the central doorway and the minor doorways must have been the same. Therefore, to find the height from the sill to the lintel-soffit of the minor doorways, we may use the following equations: $H - h = 72$ and $\frac{h}{H} = \frac{189}{229}$; in which H and h are the heights from the top of the sill to the lintel-soffits of the central doorway and the minor doorways, respectively. This height (h) we find to be c. 340 cms.

Although this is an approximate calculation, it is, apparently, not far wrong. For, when h is added to the combined heights of K 85 (sill), K 7, K 10, K 20, K 18 and K 200 (203.5 cms.; cf. Pl. XVI, B), the total is 543.5 cms. This is the minimum height of the crosswall — to the soffit of the architrave — and equals approximately the height (540 cms.) of the columns and of the side-walls, as already calculated.

This result agrees very well with the reconstruction of the side-walls. K 200, like the top course of the side-walls, is c. 34 cms. high (cf. anta capital blocks K 1, K 58 and K 80). K 18 and K 20 (combined height 69 cms.) correspond with two east side-wall courses of 34 and 35 cms. (cf. anta blocks K 78 and K 92). K 10 and K 7 (combined height 72 cms.) are equivalent to the two courses next below (cf.

anta blocks K 42 and K 43). Above the series K 8—K 9—K 200, which has dowel-holes in the top-beds, probably was a low course corresponding with the shelf of the architrave antithema.

It may be maintained that the ashlar-projection on the end of K 16, which is 38 cms. high, should correspond with the side-wall course at the same level, which is only 35 cms. high (cf. anta block K 78); but here we are entitled to assume that only the bottom-beds of K 16 and the blocks of the side-wall lined up, and that the crosswall-course contiguous to K 16 contained some "random" ashlars (cf. the cases where blocks of varying heights certainly were used in the same course, e. g. K 16—K 20 and K 8—K 9—K 200).

The discussion of the evidence provides the following measurements, which have been adopted in the restored elevation of the crosswall, Pls. XIX and XXI:

Total height of the crosswall — 540 cms.

Height of the central doorway — 408.5 cms.

Height of the minor doorways — 336.5 cms.

Widths of the central doorway — 229 and 222 cms. (above).

Widths of the minor doorways — 189 and 183 cms. (above).

(The amount of doorway taper is inferred from the space between the backbands of the moulded frames on K 2 — the central doorway frame — and K 7 — the minor doorway frame; this space measures from 10.5 to 11 cms. in width.)

Elements of moulded frames:

	backband		fascia		fascia	fascia
Lower jambs of —						
Minor doorways	6	cms.	20	cms.	19.5	cms.
Central doorway	6.5	"	26	"	20.5	"
(measured on the north face of K 11; the south face, with three fasciae, is too weathered to furnish exact measurements)						
Lintels of —						
Minor doorways	5.5	"	19	"	17.7	"
(measured on the north face of K 7)						
Central doorway	6	"	20	"	14	" 10 cms.
(measured on the south face of K 16)						
Central doorway	6	"	20	"	24	"
(measured on the north face of K 20; observe that the lower of the two fasciae is the wider)						

Cornice heights:

Central doorway, north (K 18) — 19 cms.

Central doorway, south (K 8—K 9—K 200) — 40 cms. (cavetto — c. 14 cms.)

Minor doorways, south (K 10) — 16 cms. (approx.)

The architrave and the ceiling

The architraves are of two different types, viz. epistyle and flank architraves.

The epistyle architraves (see Pl. XIII; Pl. XV, a, c; and Pl. XVI) consist of facing blocks and antithemata. The facing blocks are c. 49 cms. high, the faces



Fig. 15.

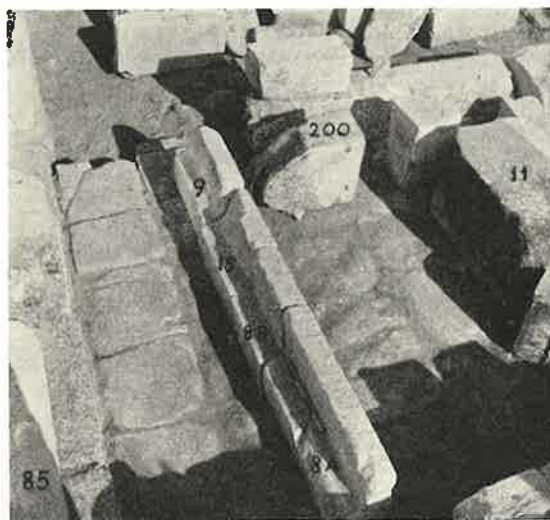


Fig. 16.

Fig. 15. Jamb block K 2, and lintel K 7 with cornice fragment K 10 on top (phot. K. J.).

Fig. 16. Blocks from crosswall arranged on the pavement of the south portico (phot. K. J.).

divided into two fasciae (the lower 19 cms. high and the upper 24 cms. high) crowned by an egg-and-tongue (c. 6 cms. high) above a bead-and-reel (Pl. VI e). The antithemata are of the same height, but their faces are distinguished by a shelf on the lower part, which measures 14 cms. in height from the soffit of the block and 10 cms. in depth; above this shelf the face has been cut back, with the pointed chisel, in a hollow curve. The soffit width of the facing blocks is 32 cms. The inner 10 cms. of this width is recessed to a depth of c. 10 mms., to form a shallow coffer; the coffer extends to within 25 cms. of the joint over the columns and to within c. 51 cms. of the return-face of the architrave over the antae, measured at the lower fascia. Since the antithemata is 22 cms. wide, the coffer is placed centrally in the soffit of the complete architrave.

Two entire facing blocks are preserved of the architrave on the north front: the central block, K 37, measuring 327 cms. in length (the same as the axial spacing of the column bases); and the westernmost block, K 60 (see Fig. 17), measuring 351.5 cms. along the lower fascia. A fragment survives, also, of the easternmost span, viz. K 38, with the right-hand joint preserved.

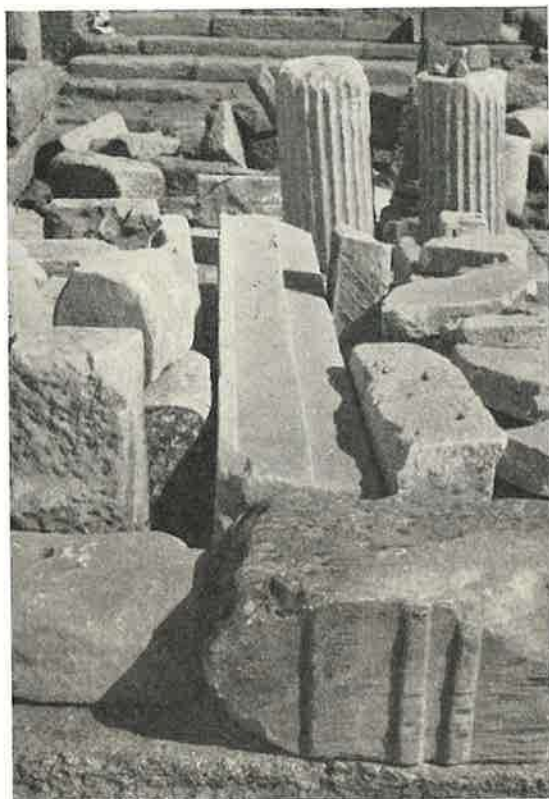


Fig. 17.



Fig. 18.

Fig. 17. Architrave K 60, column drums K 26 and K 46 (phot. K. J.).

Fig. 18. Detail of votive inscription on architrave fragment K 81 (phot. K. J.).

The architrave of the south front can be restored from three fragments: K 4 and K 81, from the two ends of the westernmost span (see Pl. X, 6—7); and A 16, extending almost to the mid-point of the central span. K 4 and K 81 both lay beneath their original positions, whereas A 16 was found near the Temple of Zeus Labraundos, c. one hundred metres from the Propylaea and on a considerably higher level. However, these blocks certainly belong together. K 81 and A 16 fit each other perfectly in size and have corresponding clamp-holes; and, moreover, they contain adjacent parts of an inscription on the lower fascia. This inscription, in letters six centimetres high, commences on K 81 (see Fig. 18) as ΙΔΠΙΕΥΣΕΚΑΤΟ , and continues on A 16 as ΜΝΩΜΥΛΑΣΕΥΣΑΝΕΘ — the left hasta of M in ΕΚΑΤΟΜΝΩ being intersected by the joint. The face of A 16 has been roughly redressed with a toothed chisel (the teeth spaced c. 4.5 cms.), thus obliterating all but a few small areas of the original surface and blurring the inscription; some long, deep cuttings have been made, as well, in the top-bed. This reworking of the block explains its find-spot; it clearly was re-used in some wall or building of the late Hellenistic epoch.

K 81 has preserved its original surface and is affected only by a repair beneath the

inscription (see Fig. 18), in which an oblong piece of marble was inserted to mend damage at the offset of the upper fascia; in the upper side of the cutting is a shallow pour-channel, and in the bottom remains of oxydized lead.

Mr. J. Crampa has restored the inscription by analogy with the votive formulas on the architraves of the Temple of Zeus Labraundos and the so-called Oikoi (which face the Temple of Zeus), both having been dedicated by Idrieus, Maussollos' brother. Mr. Crampa suggests that the complete inscription should read as follows:

ΙΔΡΙΕΥΣ ΕΚΑΤΟΜΝΩΜΥΛΑΣ ΕΥΣΑΝΕΘ[ΗΚΕ *e. g.* ΤΑΓΡΟΥΤΑΙΑΙΑΔΙΙ
ΛΑΜΒΠΑΥΝΔΩΙ]

The surviving fragments show that the architraves were dowelled at the joints above the columns, as well as at the ends above the antae. Corresponding dowel-holes are found in the top-beds of the anta capitals (see Pl. XV, a, c) and here, also, is a distinct weathering, which reflects the outline of the architrave soffit. From this evidence it appears that the lower fascia of the architraves was flush with the offsets of the antae. And, by placing the entirely preserved architrave, K 60, in its proper position, the outer faces of the side-walls are found to be inclined towards the central axis of the building; their inner faces, however, are perpendicular.

The only significant fragments of the antithemata are K 435 and K 442 (see Fig. 14 and Pl. X, 10), which may have belonged together, as suggested in Pl. XIV, b. The top-bed of each of these, at the unbroken end — or joint — has been cut down to a depth of c. 15 cms. for the full width of the bed; these cuttings run back a distance of about 30 cms. from the unbroken ends and each contains a hole for a clamp across the joint. Probably all the antithemata had similar cuttings which, combined, would have provided recesses c. 62 cms. wide above the columns; these recesses, no doubt, served as bearings for longitudinal beams, which extended to the crosswall and supported the coffers of a wooden ceiling. The width of the beams was hardly greater than that of the soffit of the epistyle architrave, viz. 54 cms., so that 4 cms. could have been left on each side for wedges. Their height cannot be concluded from the depth of the recesses, which can have sufficed only to hold tenons; their soffits may have been held on a level with either the soffit of the architrave, the top of the antithema shelf, or the bottom of the recesses (if the tops of the beams had risen above the architrave, the dentil blocks could have been cut, of course, to allow room for them). On the top of the shelf of K 435 is a dowel-hole, which probably was used to fasten some horizontal division of the ceiling.

The combination of facing blocks and antithemata is proved both by anathyrosis and by more or less frequent holes for clamps with which to secure this combination (one hole has survived on the antithema fragment K 435).

The epistyle facing blocks are clearly distinguishable from the facing blocks of the flank architraves; these are roughly cut, on their rear faces, and certainly had no other antithemata than low blocks corresponding with the shelves of the epistyle antithemata.

Most of the blocks from the flank architraves are broken: only K 82 and K 55, from the east side-wall, are completely preserved in length (Pl. X, 8; Pl. XV, a—c;

Pl. XVI, A), and they measure 205 cms. and 103 cms., respectively. The faces of all of them carry the same ornament as that of the epistyle architraves, but it is more carelessly carved; on K 82, for example, the offset of the upper fascia is curved upwards considerably, probably to mend damage such as that which necessitated the complicated repair work on K 81. In the top-beds of the facing blocks from both the epistyle and flank architraves are numerous pry-cuttings and dowel-holes; these are so closely spaced that they cannot refer to the blocks of a frieze, unless, by some peculiar chance, these were chiefly very short (Pl. XV, a—c). They seem adapted, far better, to the extant dentil blocks, some of which are very short (e. g., K 63, which comprises one dentil and two interstices). Since, moreover, no frieze blocks have been found, we may conclude definitely that the entablature had, in fact, no frieze.

The dentils

Twelve specimens of dentil blocks are preserved, all but two having been found on the site; the two came from the rubble walls to the north of the Doric house. They measure 13.5-to-14.5 cms. in height, but only K 63, mentioned above, is intact as regards length. The others are broken, in both length and depth, the longest block measuring about 86 cms. and the deepest measuring about 60 cms. (K 30 and K 74; see Pl. XIII, A—B). The combined width of a dentil and an interstice is almost a constant 16-to-16.5 cms.; but the width of the dentils varies from c. 9 cms. to c. 10 cms., and in some cases the sides of a dentil converge so as to reduce the width of the face to c. 8 cms. The depth of the interstices is 14.5-to-15.5 cms. The top-beds of the dentils have depressed margins, c. 10 mms. wide, along their edges, to relieve the pressure of the cornice blocks above (see K 88, on Pl. X, 9).

The cornice

Twelve cornice blocks have been found on the site, including one that was re-used in a rubble wall to the north of the Doric house. They are c. 14 cms. high and some preserve the moulding of the cornice; this consists of a crowning astragal at the top of the fascia, a curved soffit and a bed-moulding decorated with a carved leaf-and-dart, under which is a narrow fillet. The projection of the cornice measures 15 cms., from the fillet to the fascia, and its height is c. 9 cms. (cf. Pl. VI, c). The exposed soffit, between the corner dentils, of the corner block K 64 (Pl. XI, 2—3) has no carved decoration.

A series of blocks, K 33 through K 36, which were found along the north front (cf. Pl. I), have holes for two clamps across each of the preserved joints. The depth of the blocks (maximum c. 80 cms.) is divided, on the top surface, into two levels; the first has a width of c. 36 cms., measured from the fascia of the cornice, and the other, which is c. 5 mms. higher, extends to the back of the block and is more roughly dressed. The dividing line between the two levels indicates the front of the tympanum

(cf. the roof blocks). There is no precise evidence, in either weathering or workmanship, for the exact projection of the dentils over the architrave and of the cornice over the dentils; the reconstruction shown on Pl. VI is conjectural, in this respect.

The roof

Fragments of two corner blocks are preserved from the roof (each block originally comprised four pan-tiles, see Pl. XI, 7—9); moreover fragments of three eaves-tiles (two of which are shown on Pl. XII, 6), and a fragment of the raking cornice (see Pl. XII, 5). Loose tiles are lacking completely.

Both K 3 and K 69 (Pl. XII, 3—4 & 7—8) belonged to the left corner block of a pediment and can be assigned, by their find-spots, to the southwest and northeast corners, respectively (cf. Pl. I). K 69 fits in with K 59 (Pl. XI, 4—6) and six minor fragments, which were all found together, in a heap, with the northeast anta blocks.

These fragments give sufficient evidence for the reconstruction of the roof (see Pls. VI and XIX through XXI):

The length of the roof, between the raking cornices, was divided into twenty courses of flat pan-tiles, laid on a spacing of c. 62 cms., "to the weather", so as to form nine longitudinal courses, including the eaves-tiles, on each slope of the roof. The pan-tiles were c. 3.5 cms. thick and c. 58 cms. wide, with raised rims. The saddle-shaped cover-tiles, c. 16 cms. wide, overlapped the pan-tiles by c. 9 cms.; since there were no antefixes, the lowest cover-tile stopped about 18 cms. from the inner edge of the lateral sima. The lateral sima had a delicate, steep, cyma recta profile, c. 10 cms. high, and was pierced by spouts in the form of a lion's head. These spouts were centered on each of the eaves-tiles (since, between the lion's heads on the two outermost courses of eaves-tiles, we find the prime number of nineteen tile-widths, a wider spacing of the spouts is out of the question; one of these lion's heads survives on K 59 and, being beneath the acroterion base, it is not perforated for a spout).

The raking cornice was as high as the horizontal cornice. It had a projection of c. 36 cms., from the tympanum to the fascia of the cornice, and a bed-moulding c. 9 cms. high, consisting of a bead-and-reel and an egg-and-tongue under a narrow fillet. The raking sima had the same profile as the lateral sima, but was separated from the cornice-fascia by an ovolo c. 1.7 cms. high (cf. Pl. VI, a).

On the corners of the roof were rectangular acroterion bases, as on K 59, with top surfaces sloping slightly towards the flanks of the building. With a width of c. 44 cms., they rose to a height of c. 5 cms. above the lateral sima and had asymmetrically-curved recesses, c. 21 cms. wide, 39 cms. long and 5 cms. deep, for the plinths of acroteria, which were obviously of an irregular, perhaps sculptural, form.

The pitch of the roof was c. 1 : 5.

Thus the roof can be restored in all essential details, with the exception of the cover-tiles of the ridge, which may have had crestings (the crestings shown on Pl. XX are restored by analogy with a ridge covertile from the Oikoi), and the

modelling of the lion's-head spouts, of which only the very weathered specimen on K 59 survives.

Pockets were cut in the backs of the eaves-tiles, at each joint, to receive the rafters which supported the pan-tiles. These pockets, cut into the top-bed of the tiles to a depth of c. 6 cms., were c. 10 cms. wide, so that, when two eaves-tiles were joined, there was a bearing of c. 20 cms. in width for the rafter. The rafters also were supported by a system of longitudinal beams, or purlins (Pl. XIX, A), which can be restored by a comparison with the roof construction of the East Propylaea; here, beam-pockets on the top of the tympanum block H 15 (cf. p. 40) give evidence of purlins, 20-to-24 cms. high and c. 25 cms. wide, spaced c. 123 cms. apart.

Summary

The South Propylaea were a symmetrically-planned building with two identical porticos, but the architect took care, by various means, to emphasize the south portico, which carried the votive inscription, and to ensure that it should be especially impressive. To achieve this, he took advantage of the sloping terrain to raise the south front upon a massive flight of steps. And he favored the south facade of the crosswall over the north facade by the use of three fasciae, instead of two, on the moulded door-frames; by carved ornament, instead of plain mouldings, on the cernices above the doorways; and by an especially high and rich cornice above the central doorway.

The order used was the pure Ionic 4th century style of Asia Minor, characterized by:

- 1) Typical column bases, anta bases and anta capitals. Compare the column bases of the Mausoleum (Newton, *A History of Discoveries*, Pl. XXII) and of the Temple of Athena at Priene (Wiegand & Schrader, *Priene*, Fig. 57); the anta base at Priene (*op. cit.*, Fig. 63); the anta capitals from the Nereid monument at Xanthos (with triple frieze also on the sides; see Niemann, *Das Nereiden-Monument in Xanthos*, Figs. 26—28) and from the Temples of Athena and of Asclepius at Priene (with two acanthus-calyces on the sides; see *op. cit.*, Figs. 64, 65, 112, 117). The same type of anta capital was used in the Hellenistic epoch, e. g. in the Artemision, the Agorapropylon and the Temple of Zeus Sosipolis at Magnesia on the Maeander (with a central acanthus-calyx on the sides; see Humann, Kohte & Watzinger, *Magnesia am Maeander*, Figs. 64, 65, 136, 158). For the style of the floral ornament, see p. 42.
- 2) A frieze-less entablature. Since it may be considered doubtful whether or not the entablature of the Temple of Athena was actually without a frieze, the Temple of Asclepius at Priene perhaps is a better comparative example to be quoted, as is the "sarcophagus of the mourning women" (see Dinsmoor, *Architecture of Ancient Greece*, Pl. LXIII, c). As for the Mausoleum, the published evidence does not allow definite conclusions; but, according to the architect L. Käll, of Göteborg, there was probably no frieze on the Temple of Zeus Labraundos.

3) Patterns. Compare the leaf-and-dart, bead-and-reel and egg-and-tongue on the Mausoleum and on the temples at Priene (Newton, *op. cit.*, Pl. XXIX; Wiegand & Schrader, *op. cit.*, *passim*). The sima of the Mausoleum (Newton, Pl. XXIV) has the same variant on a palmette-and-lotus design as the crowning cavetto on the south central cornice of the South Propylaea (cf. our Pl. V, d).

According to the architrave inscription, the building was dedicated by Idrieus, Maussollos' younger brother, who reigned from 351 to 344 B. C. (see Judeich, *Kleinasiatische Studien*, pp. 226 ff.).

THE EAST PROPYLAEA

The East Propylaea were excavated in June, 1949, under the supervision of Mr. Dahlén, who wrote the diary and made a catalogue of most of the loose blocks, which were found on and around the foundation. Only a part of the south side was visible before the excavation (traced on Laumonier's map, *Bull. Corr. Hell.*, LX, 1936, Pl. XXXVI).

To the north of the foundation, level with a rough cutting in its outer edge, but not bonded to it, a gneiss threshold, or wall-course, was uncovered; this extends to the side of a narrow, uphill stairway of gneiss masonry and is at right angles to it (see Pl. XXII: b 7—8, G 2). Indefinite remains of a wall of gneiss ashlar were found at the east front; these have an eastward slope and are probably part of a poor ramp (see Pl. XXII: c 5, H 1—4).

As appeared from further excavation in 1951, the south side of the foundation rises about two metres above a paved area to the south of it (see Pl. XXII: "apodyterium") and is covered by a secondary wall built to flank this area. Soundings showed that the foundation on the north side is not very deep and is based on the yellow clay immediately above the native rock. Consequently, the slope towards the south side must be rather abrupt; and, from the sinking of both north and south sides towards the east, it is evident that the terrain has an eastward slope, as well.

Foundation

The foundation (see Pl. III, a—d; and Figs. 19, 20, 21), apart from the northeast corner, the pavement and the marble steps, is wholly preserved; only a few of the steps, at the northwest, southwest and northeast corners, are in situ. The foundation has the same form as that of the South Propylaea, apart from the following features of detail; 1) the steps, on both fronts, are composed of three risers and, including the pavement, three treads; the risers measure c. 21 cms. in height and the treads c. 38.5 cms. in width; 2) the toichobate of the crosswall is c. 13 cms. lower than the toichobates of the side-walls; 3) the width of the foundation, along the fronts, is 1083 cms.; 4) the euthynteria blocks protrude c. 9 cms.



Fig. 19. Foundation of the East Propylaea viewed from the north (phot. Nilsson).

from the lowest steps of the fronts; 5) there are nine transverse rows of pavement slabs in each portico (in the south portico of the South Propylaea there are only eight, cf. Pls. XVII—XVIII).

The pavement has partly disappeared, but enough is left in situ to indicate the widths of all the transverse rows, with the exception of the last row on the east front; this row can be restored, however, from a slab, 86 cms. in width, which was found loose near its original position. Therefore, the total length of the floor of each portico can be calculated exactly (cf. p. 46, n. 18). All other details of the foundation are the same as those of the South Propylaea, with the exception of a lifting boss on both north and south walls, and incised, anthropomorphic sketches on one slab in the east portico (see Pl. III).



Fig. 20. Foundation of the East Propylaea, with the sill block H 31 and the orthostate block H 60 almost in situ (phot. Lingheim).

Description and restoration of the superstructure

The material for the restoration of the superstructure is so scarce, but so similar to the material of the South Propylaea, that one diagram is sufficient (Pl. XVIII); the technical devices are also the same as those used in the South Propylaea. All blocks



Fig. 21. West front of the East Propylaea (phot. Dahlén).

found in the excavation of the East Propylaea are designated by the excavators with a capital H; those from the supplementary excavation of the "apodyterium", in 1951, are designated by a capital R.

The side-walls

The surviving fragments of the side-walls comprise:

1) orthostate blocks; all "full" blocks. H 60 is almost in situ in the north side-wall, as is H 17 — with anta base — at the northwest corner (see Pl. XVIII and Fig. 23); both are c. 45 cms. high and, measured at the bottom-bed, c. 62 cms. wide. The loose blocks, H 61 and H 62, on the other hand, are c. 47 cms. high and must have belonged to the south side-wall; however, they have the same lower width.

2) blocks with anta offsets and anta capitals; all "full" blocks. H 18 (anta capital), H 19, H 20, H 21, H 23, H 24, and H 25 were found at the northwest corner of the foundation; H 8 and H 9 to the east of the "late tower" (Pl. XXII:

e, F); H 3 and H 10 to the east of the foundation; R 9 (anta capital) in the "apodyterium" (see Fig. 22).

3) regular ashlar; both "half" and "full" blocks. 8 "half" and 8 "full" blocks were found on the site, and 26 "half" blocks in the "apodyterium".

The orthostate blocks, when placed in position, cover a space from the edge of the marble pavement to within c. 10 cms. of the side of the foundation.

The anta blocks are so few and their find-spots so scattered that the original height of the antae cannot be reconstructed from them; but, when arranged according to width, they form a sequence, in which the lowest of them (those immediately above the orthostates) are 44-to-45 cms. high, whereas the upper ones have heights varying from 28.5 cms. to 38 cms. The sequence shows, further, that the widths and tapering of the faces and of the side offsets of the antae, (as well as the projection of these offsets), were precisely as in the South Propylaea.

The regular ashlar, also, are too few to make up the elevations of the side-walls, but, from the table below, it appears that their heights vary in the same way as the heights of the blocks from the South Propylaea; and, since the lengths of the blocks display the same minimum and maximum dimensions as the K-blocks, everything indicates that the bonds of the two propylaea were very much alike.

heights cms.	number of			
	anta blocks	"full" blocks	"half" blocks	orthostate blocks
28.5	1 (H 18)			
29.5	1 (R 9)			
32.5			1	
33			1	
34			2	
35	1	1	1	
35.5		3	2	
36	1		4	
36.5		1	5	
37	2		4	
37.5	1		6	
38	1	2	4	
38.5			1	
44	3			
44.5			1	
45	1			2
45.5		1	2	
47				2
totals	18	12	34	4

The anta base on H 17 (see Fig. 23 and Pl. IV, d) is almost identical with the anta base of K 31 (Pl. VIII, 7 and Pl. IV, c), but it is not an unbroken cushion-moulding; it is subdivided, by a horizontal groove, into a cavetto with a cyma reversa above.



Fig. 22. Anta capital R 9 and "half" ashlar, on the pavement of the "apodyterium" (phot. Eriksson).



Fig. 23. Anta base H 17 and anta capital H 18 (phot. Lingheim).

The anta capitals, H 18 and R 9 (Pl. VII, 5, 6, 7, 8), have the same form and dimensions as the K-anta capitals, but the floral ornament on the sides is different (Pl. IV a). There is one central acanthus-calyx with doubled leaves, from which rise two fluted stems; each stem bears two volutes, the upper of which branches off into a half-palmette above. Between the two volutes of a pair is inserted a lily flower with six petals, in perspective view, and above the calyx are two stems curving inwards, with a palmette of nine leaves hanging down between them (Pl. VII, 8); the space beneath each of the fluted stems is filled by a bell flower in perspective view. The ornament of the main faces (almost obliterated on R 9, but well preserved on H 18) is the same as that of the K-anta capitals.

The columns

The fragments of the columns comprise:

- H 51. topmost drum; carries an astragal above the necking; height 97.5 cms.; top diameter, just below the necking, 45.2 cms.; lower diameter 47.5 cms.
- H 52. drum; height 145.5 cms.; top diameter 50.2 cms.; lower diameter 53.0 cms.
- H 1. drum; height 110.5 cms.; top diameter 47.7 cms.; lower diameter 50.0 cms.
- H 2. lowest drum; fragment, carrying the very weathered upper part of a torus; preserved height c. 55 cms.; diameter, just above the torus, 54.2 cms.
- H 6. drum; fragment, without preserved beds; height c. 35 cms.; diameter c. 52 cms.

The diameter measurements refer to the distance between the deepest points of two opposite flutes. The drums have twenty-four flutes, in section like the K-flutes; the torus on H 2, so far as it is preserved, resembles the K-torus.



Fig. 24. Toichobate of the crosswall, with sill block H 31 (phot. Lingheim).

H 51 and H 52 were found at the west front of the foundation, where they had fallen. H 1, H 2 and H 6, together with the anta blocks H 8 and H 9 mentioned above, lay to the east of the "late tower"; such a find-spot, of course, does not exclude the possibility that these fragments may have belonged to the South Propylaea.

However, for the following reasons, there is no doubt that the columns of both propylaea were uniform: H 51 has the same top diameter as K 46; the same tapering coefficient is found on H 51 and K 46, as well as on H 52 and K 26; H 2 has the same lower diameter as K 27 B and K 28 B; and H 1 has the same tapering coefficient as the drum restored between K 46 and K 47.

The crosswall

No more survives of the crosswall than a fragment of a cornice (Pls. V, e—e; IX, 5) and two blocks from the sill, viz. H 30 and H 31 (Figs. 24—25). The cornice fragment, found on the site, is a counterpart to K 18—K 18 A.

H 31 was found almost in situ (see Figs. 19, 20, 24), displaced a little by the removal of the dowels near its joints; these have left holes in the toichobate to indicate its original position (see Pl. XVIII, B). Its position, form and size show that it is a counterpart to K 85, from the western minor doorway of the South Propylaea (cf. p. 18): its back has anathyrosis to fit an antithema; it is c. 29 cms. high (but stands only 16.5 cms. above the pavement, since the toichobate is lower than the pavement of the porticos) and 45 cms. wide, with a plain upper face; judging from the end joints, which are damaged, but not broken, it had an original length of at least 187 cms.

H 30 (Fig. 25) was found lying across the southeast quarter of the foundation and, as shown by dowel-holes in the toichobate, not far from its original position under the central doorway (see Pl. XVIII, B). Like H 31, it has anathyrosis to fit a lost antithema, the clamps for which have left holes in its ends. It has the same height as H 31 and is c. 40 cms. in width, with a rebate in the top face to receive the lower edge of the doors. In this rebate, which is c. 4 cms. deep and measures 19 cms. in width from the outer face, two holes for locking-bolts are preserved (they are placed symmetrically about the center of the block, c. 15 cms. apart); and at each end of the rebate there is, as well, the part of a square socket, c. 2.5 cms. deep and c. 10 cms. wide, for a pivot-bearing. This bearing, however, rested mainly on an adjoining sill block. From these sockets, which are spaced 244 cms. apart, it is evident that the length of the block, viz. c. 249 cms., exactly equalled the width of the central doorway.

When they are set in position, there is a distance of c. 84 cms. between H 30 and H 31; this must have been occupied by an intermediate pier. Therefore, this pier, and the other pier which flanked the central doorway, were spaced c. 333 cms. on centers; this is one-third of the spacing, center-to-center, of the restored side-walls.

The combined widths of H 30 and H 31, together forming a sill, 85 cms. wide, like that of the South Propylaea, covers the width of the gneiss toichobate (see Pl. XVI, B, where they are shown side by side); therefore, it is probable that the widths of the crosswalls of both propylaea were similar, also, and this means that the crosswall of the East Propylaea was located in the exact center of the edifice (cf. p. 46, n. 18).

The architrave

Only two antithema fragments of the epistyle architrave survive: R 1 and R 3. They are broken at both ends and measure c. 160 cms. in length by c. 38.5 cms. in height; their faces are cut back to a depth of 8.5 cms., and to within 13.5 cms. of the soffits, thus forming a shelf. On the top of the shelf of R 1 is a dowel-hole, similar to the one on K 435 (cf. p. 27). The soffits of the blocks are only c. 20 cms. wide, which is 2 cms. narrower than the soffits of the K-antithemata; this narrowness may be due to a greater width of the coffer in the soffits of the facing blocks, none of which has been preserved.

The facing blocks had the same height — c. 49 cms. — as those of the K-architrave;



Fig. 25. Toichobate of the crosswall, with sill block H 30 put in position (phot. Dahlén).

this is evidenced by several fragments of facing blocks from the flank architrave, viz. H 11 (see Pl. X, 5) and R 2, R 4, R 5 and R 7 (maximum length c. 190 cms.). All of these fragments, like K 82, are rough on the back, and their faces are divided into an upper fascia of 23 cms., crowned by an egg-and-tongue c. 6.5 cms. high, and a lower fascia of 19.5 cms., inset c. 2 cms. There is no evidence for a frieze above the architrave.

The dentils

The extant dentil blocks, c. 14 cms. high, are mostly fragmentary; only R 10, c. 87 cms. long and 75 cms. wide, has preserved its original dimensions. The dentils are c. 10.5 cms. wide and c. 15 cms. deep, separated by interstices c. 6 cms. wide (see Pl. X, 5).

The cornice

Two cornice blocks were found at the west front of the foundation and one (H 16; see Pl. XI, 1) in the area immediately to the east of the "late tower". One of the blocks found at the west front has preserved its original length of 160.5

cms. and original width of c. 83 cms., and the top surfaces of both blocks are divided into two levels; the first measures c. 36 cms. from the fascia of the cornice, and the second, c. 5 cms. higher, extends to the back. As on the cornice blocks from the South Propylaea, the dividing line between the two levels must indicate the front of the tympanum. The blocks are 13.6-to-15 cms. high and have cornices and mouldings, the dimensions and details of which are similar to those of the K-cornices. There is anathyrosis, as well, at the forward edge of the bottom-bed; this is 18.5 cms. wide, to fit the top-beds of the dentils.

The roof

The roof can be restored from the tympanum blocks H 15, found to the east of the "late tower" (see Pl. XII, 1—2), and R 17; from a fragment of the raking cornice, R 11; and from three fragments of eaves-tiles, R 13, R 15 and R 19.

H 15, from the left wing of a pediment, is entirely preserved, but for a fracture at the left end, which leaves its original length uncertain. The preserved length is c. 220 cms., the height of the right-hand joint is c. 62 cms., and the width of the block, which is roughly tooled on the back, is c. 38.5 cms. The raking top is framed by the bed-moulding of the superimposed cornice, an egg-and-tongue like that of the K-cornice, and contains two dowel-holes (with pry-cuttings) spaced c. 118 cms. apart. These dowel-holes must refer to a roof block equal to the length of two tiles, each one 59 cms. long. In the back are two rough beam-pockets, measuring c. 20 and c. 24 cms. high (because of the raking top), c. 25 cms. wide and 13-to-15 cms. deep; they are spaced c. 123 cms., on centers, and the lower of the two reaches the bottom-bed of the block. The pitch of the raking top is c. 100 : 530.

R 17, a fragment of the point of the outermost tympanum block from the right wing of a pediment (maximum height 21 cms.; preserved length c. 52 cms.), has a raking top framed by the bed-moulding of the cornice. In this respect it is similar to H 15 and it shows more definitely than the latter that the corner roof blocks of the East Propylaea were cut separately, and not in one piece with the point of the tympanum, as they were in the South Propylaea (cf. p. 29).

The sima of R 11 has the same moulding and is of the same size as the K-sima, and part of the base for a corner acroterion is preserved on its top.

Since none of the three fragments of eaves-tiles has preserved the original length and width, these give little evidence.

Summary

On the whole, and in most of their details, the two propylaea were identical. Judging from the dimensions of the column drums, the height of the superstructure of the East Propylaea cannot have differed much from that of the South Propylaea. Therefore, the only uncertainties in the sketch of a restored front, shown in Fig. 26, are the heights of the doorways and the location of the columns in line with the

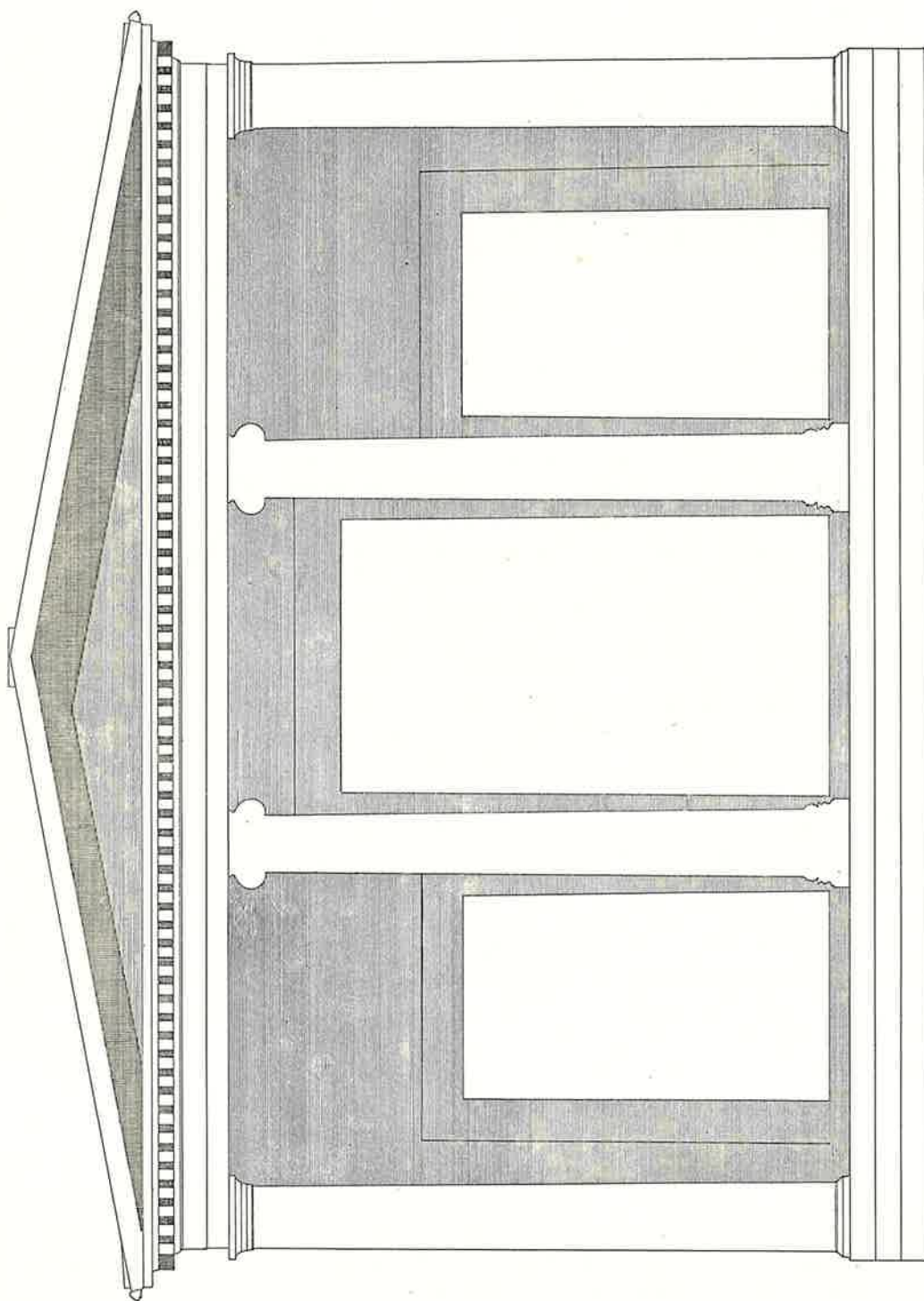


Fig. 26. Front of the East Propylaea, restored (K. J.).



Fig. 27. Anta capital from Mausollos' Andron at Labraunda (phot. K. J.).

crosswall piers; for these uncertainties there is no direct evidence. It should be noted, in the plan, that the widths of the crepidoma and of the central doorway were c. 20 cms. greater, and that of the crosswall piers c. 14 cms. less, than in the South Propylaea (the piers would carry, therefore, narrower moulded frames).

The design and style of the floral ornament on the anta capitals of both buildings vary greatly. The volutes of the H-capitals are thin and delicate and the acanthus leaves refined and wide-spread; these elements, on the K-capitals, are heavy and clumsy. This contrast possibly indicates a lapse of time between the erection of the buildings, the East Propylaea being the younger. The volutes of anta capital R 9 (Pl. VII, 8), especially, are more in keeping with Hellenistic ornament than those of the K-capitals. However, it is difficult to support this view by cogent reasons. Of the scarce comparative material available, the ornament on the anta capitals of the Temple of Zeus Labraundos is identical with that of the South Propylaea; the ornament on the anta capitals of the Andron, dedicated by Mausollos, at Labraunda (Fig. 27), is not clearly older than that of the H-capitals¹¹; and that of the anta capital from the Temple of Athena at Priene (Wiegand & Schrader, *Priene*,

¹¹ On the other hand, the ornament of the Andron capitals looks rather individual. The best approach seems to be the decoration on the Nikopol silver vase (see Jacobsthal, *Ornamente griechischer Vasen*, p. 223, Pls. 142—143), the Ionic origin of which has been

maintained long ago; this is evident, for one thing, by comparison with our Fig. 27, where the characteristic "brush" palmettes and lily flowers with three petals will be noted.

Abb. 64) is not clearly younger in style than the ornament of Maussollos' Andron and of the South Propylaea.

Since general stylistic criteria are not sufficient to prove the earlier date of the East Propylaea, we may attach, perhaps, some importance to the lily flower with six petals, in perspective view, which, excepting the anta capital from Priene, is not found in the above-mentioned comparative material. This fact may suggest a date in the last quarter of the 4th century B. C.¹²

AN ATTEMPT AT A THEORETICAL ANALYSIS

General premises

A theoretical analysis of the Propylaea must, of course, be carried out along the lines which can be laid down from the surviving evidence of the methods of the Greek architects. Strictly speaking, the direct evidence concerns only those buildings of which original descriptions are extant, viz. 1) the Erechtheum (cf. Dörpfeld, *Ath. Mitt.* XV, 1890, pp. 168 ff.); 2) the Arsenal at Piraeus (see Marstrand, *Arsenalet i Piraeus og Oldtidens Byggeregler*, Copenhagen, 1922).

But we may rely, as well, on that research into the remains of Greek buildings which, because the simple proportioning of the architectural members is immediately evident, enables us to deduce the units of measurement with certainty. I know of only one example in this category, viz. the Temple of Athena at Priene.¹³

The indirect evidence is Vitruvius' theoretical doctrines (which are more or less clear concerning their practical significance and their dependence on Greek sources) and his formulas, which no doubt must reflect some principles of Greek architectural tradition.

This combined evidence indicates that the Greek architects were disposed to use simple dimensions and simple proportions. Possibly this simplicity may often have arisen from a choice of basic dimensions, which, for practical reasons, they could

¹² Unfortunately, the relative dating of the Propylaea cannot be concluded from their positions in the enclosure. For the present no more can be affirmed than the following chronological sequences (in which > means "older than"):

a) the South Propylaea > the Doric house;
b) Oikos "L" > the great stairway and the terrace > the magazine > the east stairway (cf. Pl. XXII).

The evidence for these sequences is briefly:

a) the extra-thick, boundary-like rear wall of the Doric house seems to imply the preexistence of the South Propylaea;

b) to match the length of the great stairway, the roughly-dressed north flank of Oikos "L" was lengthened by a smoothly-dressed ashlar wall like that

of the terrace; since the east side of the terrace was carefully dressed and had spouts like the other sides, it was no doubt visible until it was covered by the adjacent magazine; the small ashlar of the east stairway obviously were cut to fit the rough ashlar of the magazine.

¹³ I should insert an apology for not mentioning here the Temple at Didyma. However, v. Gerkan's efforts to explain the design of this building have hardly yielded really convincing results (see *Österr. Jahresh.*, XXXII, 1940, pp. 127 ff.), and one feels a little uneasy, because the accounts hitherto published of the measurement-inscriptions on the unfinished columns are so summary (see Pontremoli & Haussoullier, *Didymes*, p. 72; and Wiegand & Knackfuss, *Didyma*, I, p. 89).

not allow to become complicated; and, also, they may have arrived at simplicity because they loved to systematize their arts. However, Vitruvius' mention of the *ἀναλογία*¹⁴ shows irrefutably that, at least in some epochs, the Greek architects were inclined to proceed by means of theoretical methods. Remains of such methods may have been preserved in the "golden section" of the Middle Ages.

More especially in the case of our propylaea, both of which belong, no doubt, to the 4th century B. C., we are entitled to stress the importance of the Temple at Priene and the Arsenal at Piraeus; they were built in the same epoch and must betray common features of both Continental and Asiatic Greek architecture.

Regarding the Temple at Priene, the following list of dimensions and proportions speaks for itself (cf. Wiegand & Schrader, *Priene*, passim):

Dimensions (in Greek feet)

height of column base (without torus)	2 ft.
plinth of column base	1 × 6 × 6 ft.
axial column spacing	12 ft.
column height ¹⁵	38 1/2 ft.
architrave height	3 1/2 ft.
entablature	7 ft.
treads of crepidoma steps	1 1/2 ft.

Proportions

axial column spacing : column + architrave	as 2 : 7
axial column spacing : width of plinth	as 2 : 1
height of architrave : column + architrave	as 1 : 12
height of column base : width of plinth	as 1 : 3
width of crepidoma steps : axial column spacing	as 1 : 8

Indeed a very simple design.

In the Arsenal at Piraeus, W. Marstrand has demonstrated that the elevation can be adapted to a network of rectangles, 1 1/2 × 2 1/2 feet (see *op. cit.*, p. 181; Fig. 152); but he fails to observe that the plan may have been composed in similar terms, viz. by 2 1/2-foot squares.¹⁶ Whether or not these networks were actually employed by the architect is open to discussion; at any rate, they serve to illustrate the simplicity of the proportioning.

As for the employment of the "golden section", it can be only a question of approximate "golden sections" (1 : 2 : 3 : 5 : 8 : 13, etc.), because the basic dimensions are rational. In the Arsenal, some of these proportions are found (cf. the examples

¹⁴ III, 1, 1: *ea (symmetria) autem paritur a proportionione, quae graece ἀναλογία dicitur.*

¹⁵ According to the calculations of Hicks, quoted by Schrader (Wiegand & Schrader, *Priene*, p. 97), the height of the antae was c. 1135.6 cms.; this equals 38 1/2 feet, each foot being of 29.5 cms.

¹⁶ The plan of the Arsenal, as restored by Marstrand, cannot be adapted to a network of squares, because

the center-to-center spacing of the colonnades flanking the central aisle is (according to the inscription) 22 1/2 feet, whereas the center-to-center spacing of the columns in the colonnades is calculated, in the restoration, as only 11 feet; to be adaptable, this dimension would have to be 11 1/4 feet. This may be obtained, however, in the arrangement shown in our Fig. 28, for which I can only give full grounds in a detailed study.

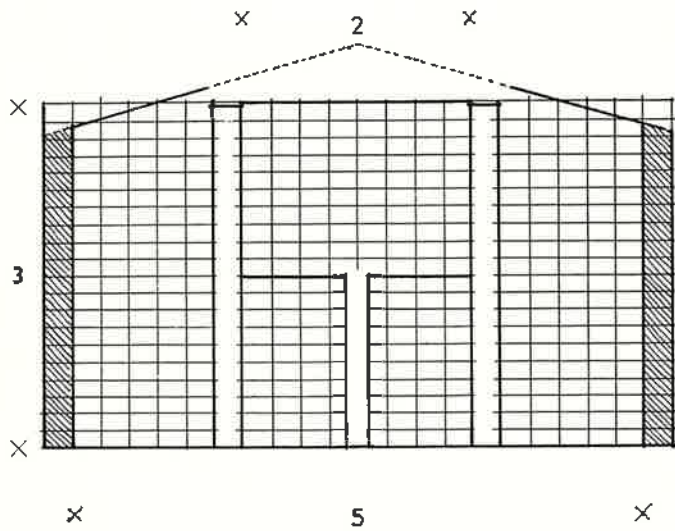


Fig. 28.

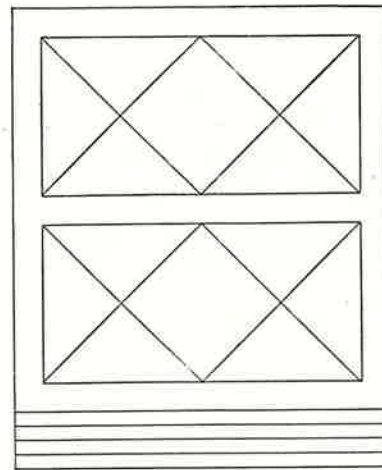


Fig. 29.

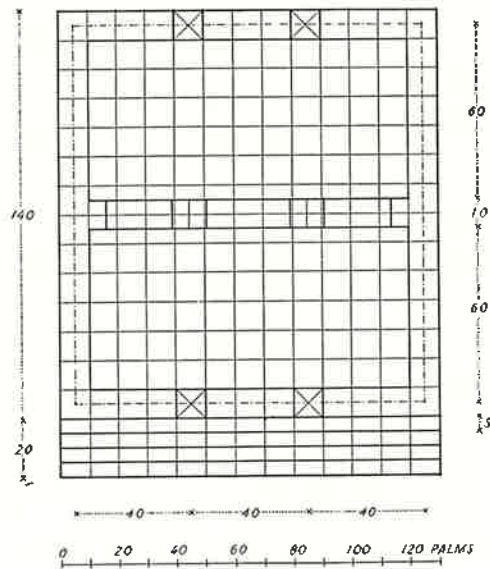


Fig. 30.

Fig. 28. Plan and Elevation of the Arsenal at Piraeus, adapted to a net-work of $2\frac{1}{2}'$ squares and $1\frac{1}{2}' \times 2\frac{1}{2}'$ rectangles.
 Fig. 29. Plan of the South Propylaea, composed of four squares (see p. 47).

Fig. 30. Plan and Elevation of the South Propylaea, adapted to a net-work of $2\frac{1}{2}'$ squares and $1\frac{1}{2}' \times 2\frac{1}{2}'$ rectangles.

pointed out by Marstrand, *op. cit.*, pp. 180 ff.; some of them may be incidental, but most conspicuous is the following series: width of central aisle : inner height of central aisle : total inner width, as 20 feet : 30 feet : 50 feet; see our Fig. 28).

However, apart from the plan, which has the form of two squares, and the dentil frieze, these proportions seem to be lacking in the Temple at Priene; in the dentil frieze, the width of the interstices : the width of the dentils : the height of the dentils, as 5 dactyls : 8 dactyls : 13 dactyls.

Briefly then, the foregoing examples of dimension and proportion are the main premises for an analysis of the Propylaea.

The South Propylaea

As an important consequence, we have good reason to suppose, a priori, that the foot-unit employed in these buildings was a simple fraction of the basic dimensions. Beginning with the South Propylaea, which because of its preservation is the best starting point, it appears that there are three sizes of foot which deserve special consideration: the so-called "Doric" foot of 32.7-to-32.8 cms.¹⁷; a foot of 30.7-to-30.8 cms.; and a foot of 29.7-to-29.8 cms. (which approaches the foot-unit of 29.5 cms. employed in the Temple of Athena at Priene). The following table illustrates how each foot-unit is accommodated by the basic dimensions of the Propylaea:

	cms.	foot-units		
		32.7—8	30.7—8	29.7—8
width of crepidoma	1063	32 1/2'	34 2/8'	35 3/4'
length of crepidoma ¹⁸	1144.5	35'	37 1/8'	38 1/2'
inner width of portico	920.8	28' 2"	30'	30' 15"
axial column spacing	327—328	10'	10 2/8'	11'
width of plinth	79	2' 7 1/2"	2' 9"	2 2/8'
width of orthostate	61.5	30"	2"	33"
width of stylobate ¹⁹	82	2 1/2'	2 2/8'	2 3/4'
width of piers	98.3	3'	3' 3"	3' 5"
width of centr. doorway	229	7'	7' 7"	7 3/4'
width of minor doorways	189	5 3/4'	6' 2"	6 1/8'
height of column	540	16 1/2'	17 1/2'	18' 3"
height of architrave and of lintel of centr. doorway	49	1 1/2'	1' 10 1/2"	1' 11 1/2"
height of centr. doorway	408.5	12 1/2'	13 1/8'	13 3/4'

(' = "foot"; " = "dactyl".)

¹⁷ It is true that the "Doric" foot-unit was often used in Continental buildings (especially at Athens), but this fact does not allow the conclusion that it was "extremely improbable" in the Ionic area (cf. Dinsmoor, *The Architecture of Ancient Greece*, p. 275, n. 1). As yet the only certain proof of the existence of an "Ionic" unit of c. 29.5 cms. is the Temple of

Athena at Priene, and it seems probable that the "Doric" unit was used by Hermogenes in the Artemision at Magnesia on the Maeander (see Humann, Kohte & Watzinger, *Magnesia am Maeander*, p. 45).

¹⁸ The length of the crepidoma (which cannot be measured, because the outermost row of pavement slabs in the south portico has entirely disappeared)

As appears from the table, all three units have certain advantages. But it is clear that the unit of 32.7-to-32.8 cms. has the most, because it can be contained in the basic dimensions more simply than the others and without thirds of a foot (in antiquity, one-third was not a common fraction of a foot, which was divided into four palms of four dactyls each).

Proceeding, then, with this unit, we find that the calculated design of the plan can be illustrated by a net-work of $2\frac{1}{2}$ -foot squares, and of the elevation by a net-work of $1\frac{1}{2}$ -foot by $2\frac{1}{2}$ -foot rectangles (see Fig. 30); the crosswall, however, must be accounted for separately, as will be shown below. In this arrangement, the width of the crepidoma is 13 squares and the length 14 squares (the length of 14 squares is equal to 35'; to this we may add four step-treads, each of 5 palms, or 40.9 cms., and obtain 5', which is an additional 2 squares). The columns and the side-walls are centered on the outermost rows of squares, the crosswall on the line between the two middle transverse rows, and the piers of the crosswall, as well as the columns, on the fifth and ninth longitudinal rows. The front elevation is composed of $2\frac{1}{2}$ rectangles for the height of 5 risers (each of which equals 3 palms, or 24.5 cms.), plus 11 rectangles for the height of the columns, plus 1 rectangle for the height of the architrave.

The plan can be described, also, as being composed of 4 squares, each of $13\frac{3}{4}$ feet, enclosed by $2\frac{1}{2}$ -foot-wide toichobates and stylobates (see Fig. 29). And it is noteworthy that the width of the treads is a common denominator (module) of the plan, and that the height of the risers is a common denominator of the elevations.²⁰

was planned, no doubt, to equal the length of the crepidoma of the East Propylaea, viz. 1144.5 cms. The following comparative dimensions suggest this conclusion:

depth of west portico of East Propylaea — 522.5 cms.
depth of north portico of South Propylaea — 519.0 cms.
width of sill of East Propylaea — 85.0 cms.
width of sill of South Propylaea — 85.5 cms.
depth of east portico of East Propylaea,
minus width of outermost row of slabs — 451.0 cms.
depth of south portico of South Propylaea,
minus width of outermost row of slabs — 449.3 cms.
These dimensions imply, as well, that the crosswalls were centered in the middle of the building.

¹⁹ i.e. the outermost row of pavement slabs in the north portico on which rest the columns.

²⁰ The use of a step-tread as a module is possibly alluded to by the *embater* of Vitruvius, mentioned in *De arch.* I, 2, 4, where he says: *uti in hominis corpore e cubito, pede, palmo, digito ceterisque particulis symmetros est eurhythmiae qualitas, sic est in operum perfectionibus. et primum in aedibus sacris aut e columnarum crassitudinibus aut triglypho aut etiam embatere, ballistae foramine, quod Graeci περίτρητον vocitant, navibus interscalmio, quod διπηχναῖα dicitur, item ceterorum*

operum e membris invenitur symmetriarum ratiocinatio. Here *embater* (ἐμβάτης) is no doubt synonymous with the term ἐμβάτης (Vitr. IV, 2, 3: *frons aedis doricæ in loco, quo columnae constituuntur dividatur, si tetrastylus erit, in partes XXVII, si hexastylus XLII. Ex his pars una erit modulus, qui graece ἐμβάτης dicitur, cuius moduli constitutione ratiocinationibus efficiuntur omnis operis distributiones*), or ἐμβάτης (MSS: *embates*) is an error in copying for *embater*. Since ἐμβάτης is said to signify the concept of a modulus (i.e. to be synonymous with the term ποσότης: *quantitas*, Vitr. I, 2, 2), *aut triglypho aut etiam embatere* in the former quotation would logically mean "by the triglyph (width) or also by a modulus". But this interpretation does not agree with the rest of the latter quotation, where Vitruvius says that the modulus (*embates*) of the Doric order equals the triglyph width (*supra epistylum ... triglyphi ... lati in fronte unius moduli*). Apparently Vitruvius was either not quite logical in applying a particular sense to *embatere*, or he was misled so as to infer an unwarranted general sense from the particular sense, which may have been used in his Greek sources.

ἐμβάτης is an ambiguous word, but it is hardly to be found in an architectural connection, except pos-

The dimensions of the crosswall seem to have been calculated independently of these symmetries; we suggest, here, a probable method.

The length of the crosswall was equal, theoretically, to the width of the crepidoma minus two toichobates, i. e., $32\frac{1}{2}$ feet minus 5 feet, which equals $27\frac{1}{2}$ feet. The center-to-center spacing of the central piers of the crosswall was 10 feet, thus leaving a dimension of $8\frac{3}{4}$ feet from the center-line of each pier to the interior faces of the toichobates. The architect, having settled upon the widths of the central piers as 3 feet, or 12 palms, and the width of the side-wall piers as $1\frac{1}{2}$ feet, or 6 palms, thus left himself a width of 7 feet for the central doorway ($10' - 2$ half-piers of 6 palms each = $7'$), and a width $5\frac{3}{4}$ feet for each of the minor doorways ($8\frac{3}{4}' - 2$ half-piers of 6 palms each = $5\frac{3}{4}'$).²¹

Since the ratio, $5\frac{3}{4} : 7$, is a surd, it was necessary that the architect, in order to obtain uniform proportions for the three doorways, use multiples of $5\frac{3}{4}$ feet and 7 feet as dimensions of height. He chose, therefore, to make the heights, from the top of the sill to the top of the moulded frames of the lintels, $11\frac{1}{2}$ feet for the minor doorways and 14 feet for the central doorway. The width of the moulded frames of the lintels was calculated as 6 palms, which was also the calculated width of the moulded frames of the jambs, as well as the width of a half-pier; deducting this width of 6 palms from the heights of $11\frac{1}{2}$ feet and 14 feet, we find that heights of 10 feet and $12\frac{1}{2}$ feet were left for the doorways proper.

So far we have tried to restore the basic design. At this stage the architect had made the fundamental choices and the rest was detail work: the fixing of minor proportions by independent judgment and by the adaptation of architectural custom.

On the crosswall, the doorways were framed with carved mouldings and the jambs were tilted inwards. The moulded frame of the central doorway retained the theoretical width of 6 palms on the lintel, but widened towards the bottom of the jambs; the frames of the minor doorways were reduced, approximately, in the ratio

sibly on a fragment of a 4th century expense account concerning the Temple at Nemea (*I. G. IV 481*), where the second line reads ... ΟΝΣΕΜΒΑΤ ... (probably ΤΟΝΣΕΜΒΑΤΟΝΕ or ΕΜΒΑΤΗΡΑΣ). It may mean "a boot" — but why should an architect use a boot as a module instead of a foot? As for *embater*, however, Hesychius says: ἐμβατήρ. παρὰ τοῖς ἀρχιτέκτοσι τόπος. Thus, rather than relating ἐμβάτης to, for instance, στυλοβάτης, we may compare ἐμβατήρ with such words as βατήρ (threshold of a doorway) and εὐθυνητήρ (euthynteria block, see Ebert, *Fachausdrücke des griechischen Bauhandwerks*, p. 11 and 20) and interpret the exact meaning of ἐμβατήρ as "a stepping stone" or rather "the tread of a step" (cf. ἐμβάλω).

Vitruvius may perhaps have read about the ἐμβατήρ used as a module in the description of some building of a 4th century date. Is it a mere coincidence that in the Temple of Athena at Priene the height of

column + architrave (42'), the width of the column plinths (6') and the axial column spacing (12') are all multiples of the tread of the crepidoma steps ($1\frac{1}{2}'$)? Vitruvius may of course also have drawn information from purely theoretical treatises such as Philo's *de aedium sacrarum symmetriis* (Vitr. Praef. VII).

It may be objected that, in his formulas, Vitruvius never uses the tread of a step as a module (in III, 4, 4, he says, only, *retractiones autem graduum nec minus quam sesquipedales nec plus quam bipedales faciendae videntur*). However, Vitruvius tells a good deal about architecture that is of an historical, rather than a practical, character.

²¹ The width of pier I or pier IV, added to a half of the orthostate-width, should be the same as the sum of a theoretical half-pier-width plus a half-toichobate-width. The latter sum is 89.9 cms., or $1\frac{1}{2}' + 1\frac{1}{4}'$; and the former sum is, in fact, 89.5 cms., or 58.5 cms. + 31 cms.

of $5\frac{3}{4} : 7$. By this process, the tops (the backbands) of the moulded frames of the lintels were kept in line with the theoretical height of $11\frac{1}{2}$ feet, and, by the narrowing of their frames, the actual height (to the lintel-soffits) of the minor doorways surpassed the theoretical height of 10 feet.²²

The crosswall was elevated upon a sill, 14 dactyls high, which equals the combined heights of the plinth (7 dactyls) and the disc (7 dactyls) of the column bases. And a cornice, 5 palms high, including a crowning cavetto, 7 dactyls high, was placed over the south lintel of the central doorway.

The exterior façades, after having been worked out in detail, could be described in the following simple terms:

- 1) The combined height of column and architrave was $3/5$ ($18'/30'$) of the center-to-center spacing of the antae.²³
- 2) The height of the architrave was $1/12$ of the combined height of column and architrave.²⁴
- 3) The center-to-center spacing of the columns was $5/9$ of the combined height of column and architrave (the normal column-spacing of an hexastyle front was $1/3$ of this height).²⁵
- 4) The lower width of the antae (30 dactyls) was $1/16$ of their spacing, center-to-center ($30'$); whereas the lower column diameter (29 dactyls) was 1 dactyl less than the anta width, and the width of the plinth (39 dactyls) was 1 dactyl less than the stylobate width (40 dactyls, or $2\frac{1}{2}'$).²⁶
- 5) The combined height of the dentils, the horizontal cornice and the sima ($7 + 7 + 5$ dactyls) equalled the combined height of the plinth, the disc and the torus, of the column bases.²⁷

²² The calculated height of the central doorway is 408.5 cms. (exactly $12\frac{1}{2}'$) and the central lintel (K 16) is c. 49 cms. high ($1\frac{1}{2}'$). It is clear that the calculated height of the minor doorways, viz. 336.5 cms., + the height of a lintel reduced exactly on a scale of $5\frac{3}{4} : 7$, viz. 40.2 cms. or 19.7 dactyls, would make up a total height of $11\frac{1}{2}'$. Actually, however, the minor lintels (K 7) were 43 cms. high (i. e., 21 dactyls, which allow a division, into a backband and three fasciae, of $3 + 8 + 6 + 4$ dactyls), and this may explain why the height difference between the tops of the central and the minor lintels was not exactly $2\frac{1}{2}'$ (81.8 cms.), but only c. 78 cms. (K 10 + K 16).

²³ It is noteworthy that this ratio can be obtained by using the same number of rectangles in width and height, just as in the Arsenal at Piraeus (cf. Fig. 28).

²⁴ This proportion applies also in the Temple of Athena at Priene, see p. 44.

The method of proportioning the architrave to the height of the column is handed down by Vitruvius (III, 5, 8), who recommends that the height of the architrave be $1/13$ or $1/12\frac{1}{2}$ or $1/12$ (regulations

which would satisfy Hellenistic rather than mid-4th century taste).

²⁵ Cf. the Temple at Priene, where the axial spacing of the columns ($12'$) is $2/7$ of column + architrave ($42'$).

²⁶ In other words, the corner supports were emphasized so as to look thicker than the intermediate columns, a common feature in Greek architecture. The lower column diameter is no simple fraction of the restored column height (264 dactyls), but only approximately $1/9$ (as in the Temple at Priene, where the dimensions are 70 and 616 dactyls). The method of proportioning the column diameter to the column height, which is prescribed by Vitruvius (III, 3, 10), may have been unknown in the 4th century B. C.

²⁷ From this arrangement and from the proportion $3 : 5$ of the front, one may conclude that in the eyes of the architect, column + architrave was the basic member of the order, the upper parts of the entablature being a non-integral or merely ornamental addition, like the column base.

Other proportions are found in the Temple at

- 6) The treads and risers of the steps were as 5 : 3 (in palms).
- 7) The dentil frieze was divided into dentils, 5 dactyls wide, and interstices, 3 dactyls wide, thus creating the rhythmic proportion, 3 : 5.
- 8) The spacing of the lion's-head spouts on the sima (c. 58 cms.) was *not* related to the center-to-center spacing of the columns, but was adapted to the longitudinal division of the roof into twenty courses of tiles.

Amongst the theoretical calculations, it might seem reasonable, at first sight, to include a distinctive feature that is found in both Propylaea, i. e., the gradually increasing width of the paving slabs from the crosswalls to the fronts. This looks rather subtle, but a closer study reveals that the increments are irregular and without mathematical progression (cf. the dimensions on Pls. XVII—XVIII). The architect may have wished to make the porticos look deeper than they really were, by the use of false perspective (cf. the experiments of the Italian Renaissance architects).

The East Propylaea

We have no right to assume, a priori, that the same foot-unit was used in both Propylaea; but whatever the unit was, the East Propylaea has some features which cannot possibly be fitted into a simple net-work, such as that applied to the South Propylaea. These features — and there may have been more than the material enables one to show — are as follows:

- 1) The crepidoma is 1083 cms. wide, instead of 1063 cms.; and the center-to-center spacing of the crosswall piers is c. 333 cms., instead of 327 cms.
- 2) The risers of the crepidoma steps are c. 21 cms. high, instead of 24.5 cms.; and the treads are c. 38.5 cms. wide, instead of 41 cms.

These divergences suggest two possibilities: 1) that the South Propylaea was a theoretical revision of the East Propylaea; 2) that the East Propylaea was a modified copy of the South Propylaea. If we had definite evidence of the relative dates of the two Propylaea (cf. n. 12), we could decide which of these alternatives was the more probable. As it is, we can only guess. But, in favour of the latter alternative, we may advance the argument that the low and more convenient steps and thresholds (sills) of the East Propylaea are best understood as practical adaptations of the higher steps and very high thresholds of the South Propylaea. If this is true, the central doorway was widened from 229 to 249 cms., possibly to be in proportion to the minor doorways, 187 cms. wide, in the simple ratio, 3 : 4 (instead of the surd, $5\frac{3}{4} : 7$, of the South Propylaea). The widened crepidoma, then, probably was a direct consequence of this amendment, which in turn required that the pitch of the pediments be lower (1 : 5.3, instead of 1 : 5).

At any rate, the designs of the two Propylaea certainly reflect a conflict between strict theoretical methods and practical accommodation.

Priene, where the column base is 45 dactyls high 56 dactyls (see Wiegand & Schrader, *op. cit.* p. 92 and
(plinth + disc + torus = 16 + 16 + 13 dactyls), 101).
whereas dentils + cornice + sima = 13 + 23 + 20 =

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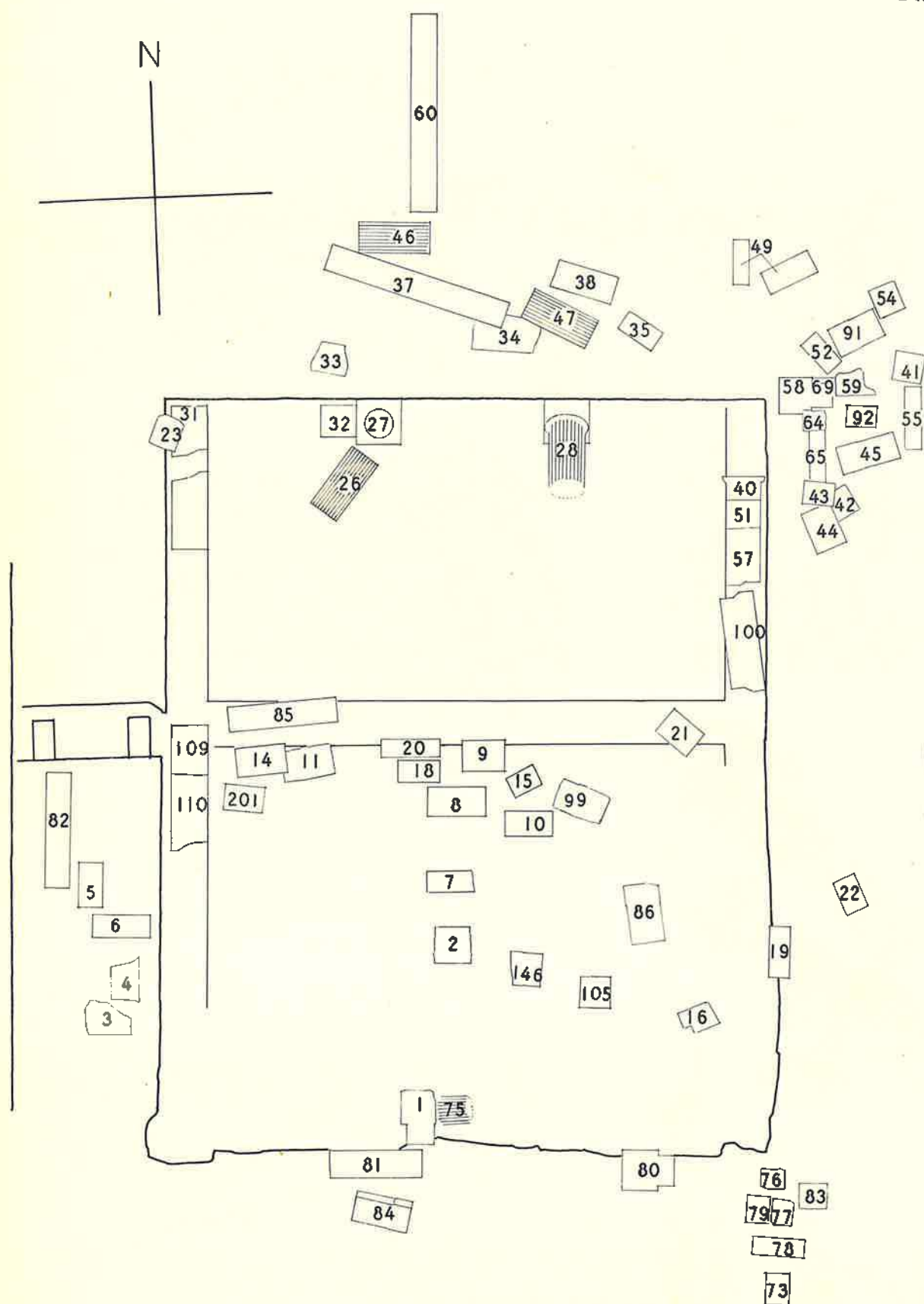
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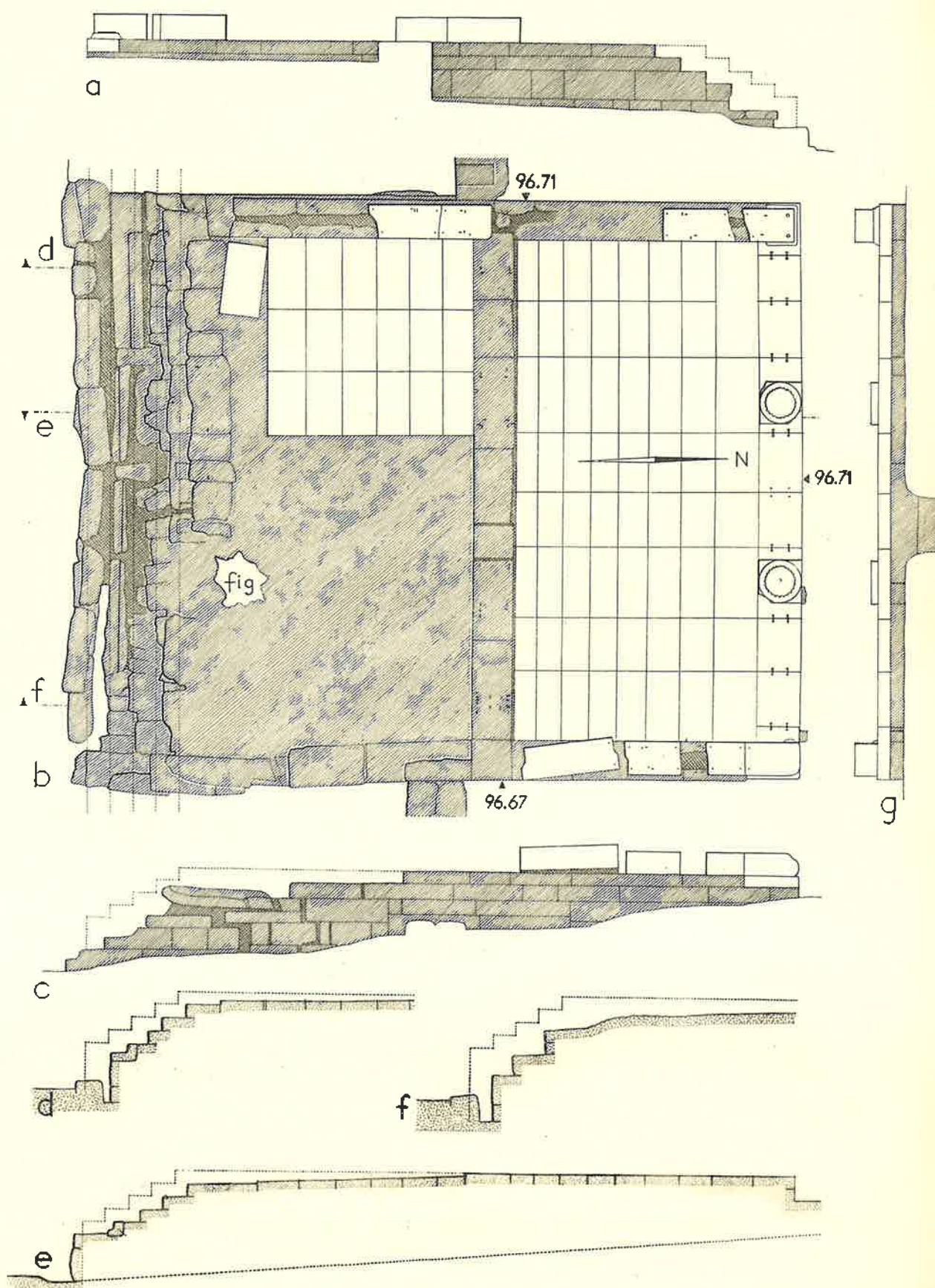
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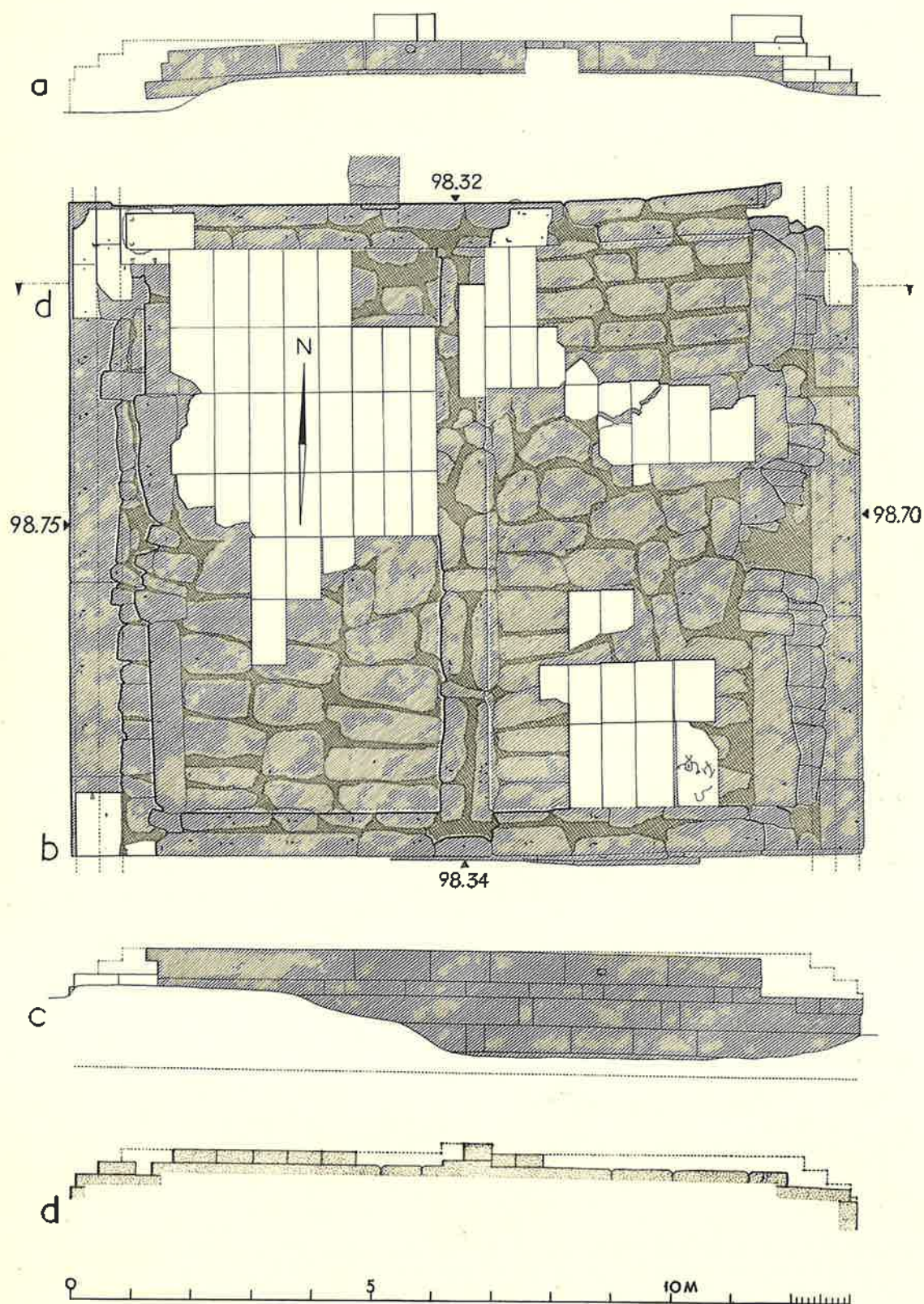


Find-spots of the most important marbles of the South Propylaea
(from a plan by T. I. Dahlén).

Pl. II

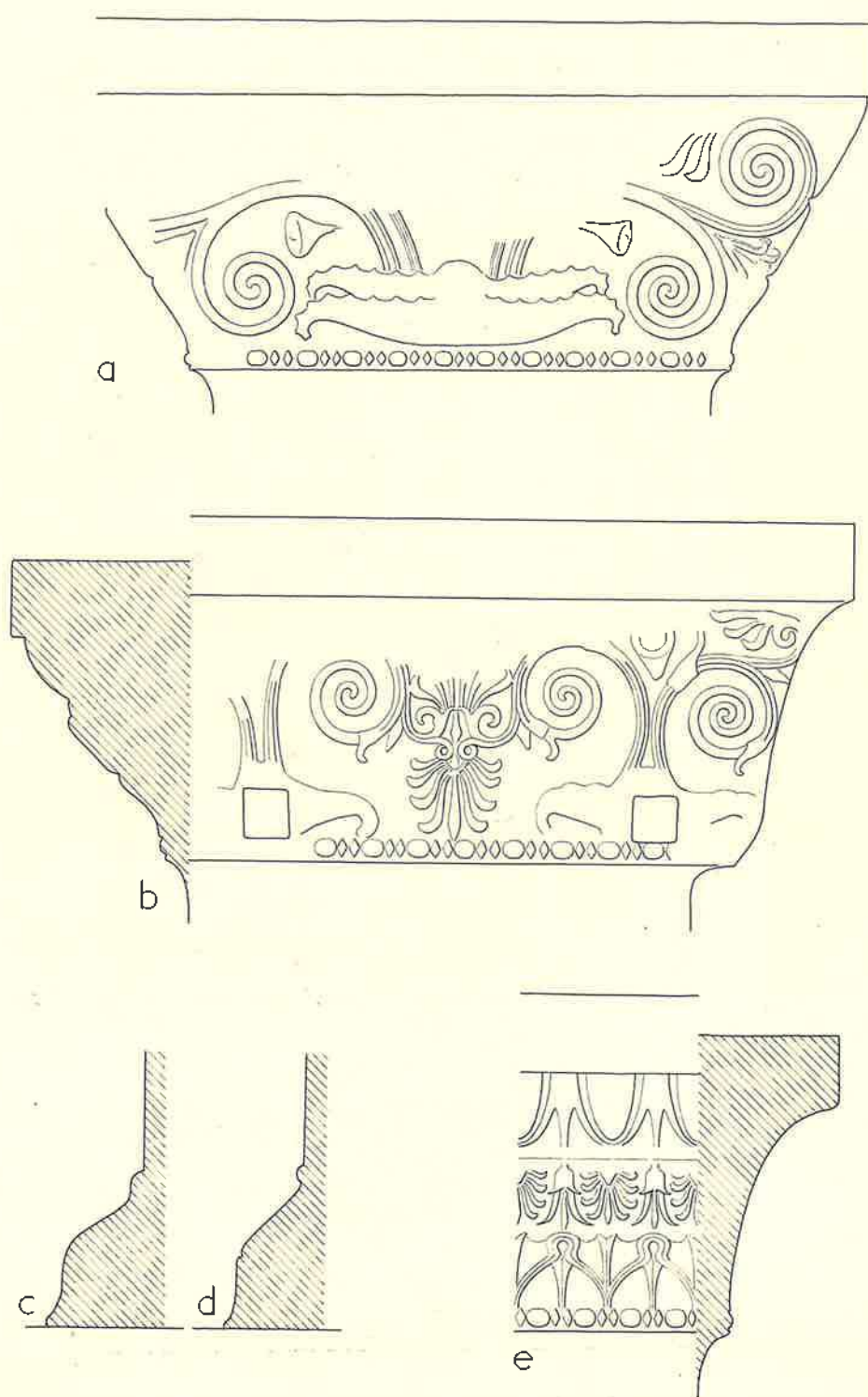


Actual state of the foundation of the East Propylaea; a: North side; b: Plan; c: South side; d: Section. Scale 1 : 100. (K. J.)

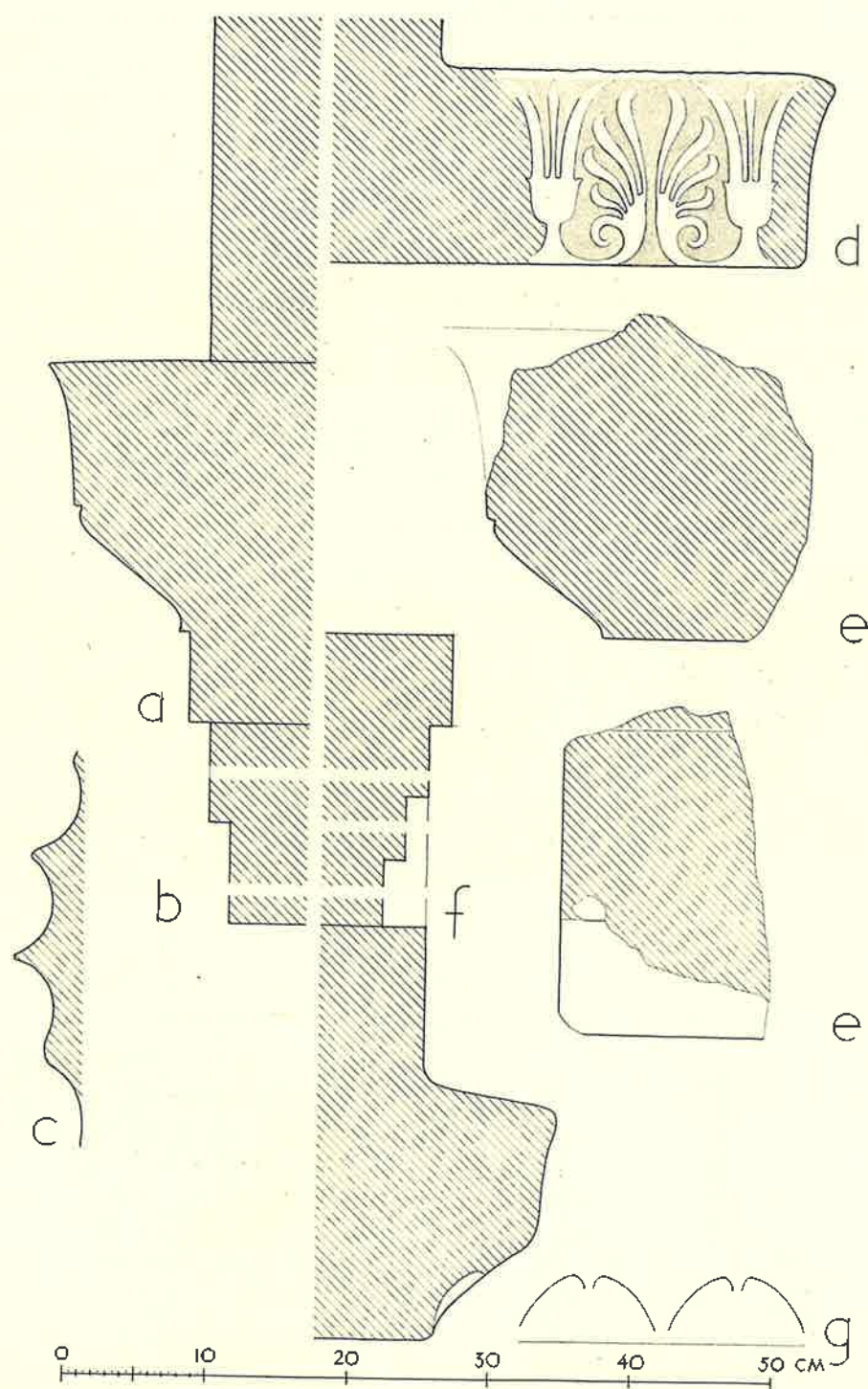


Actual state of the foundation of the South Propylaea; a: West side; b: Plan; c: South side; d—f: Sections; g: North side. Scale 1 : 100. (K. J.)

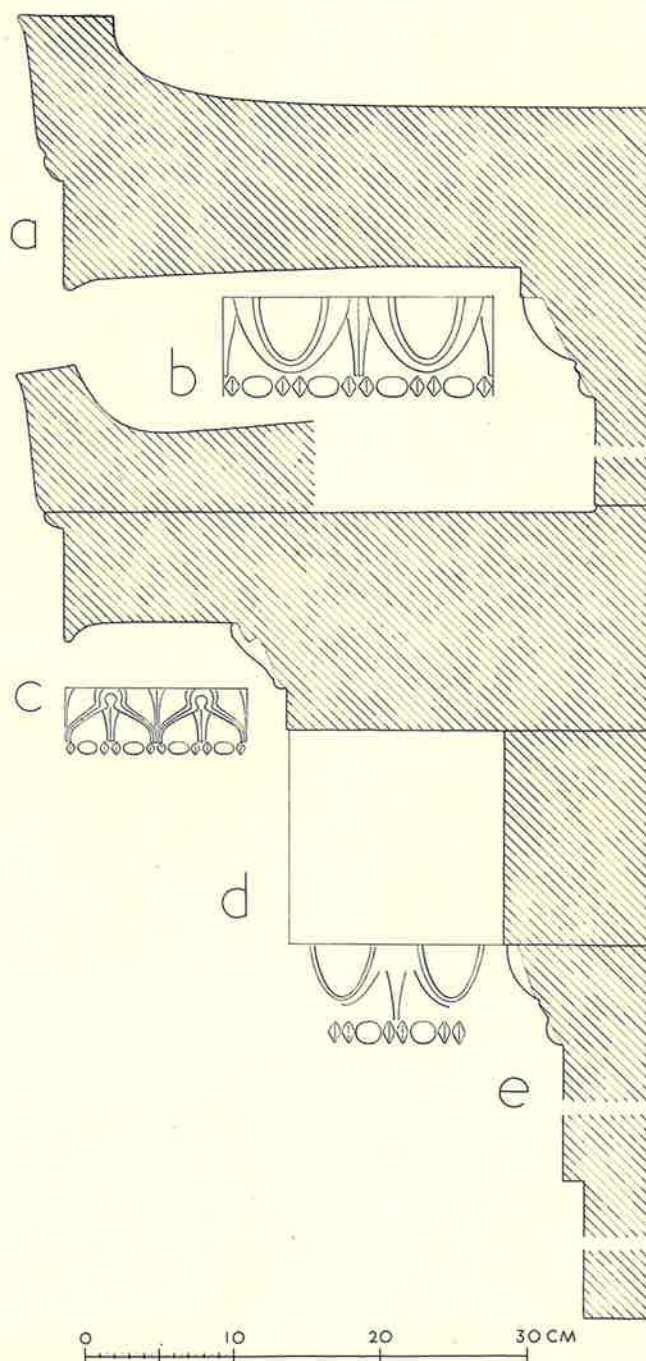
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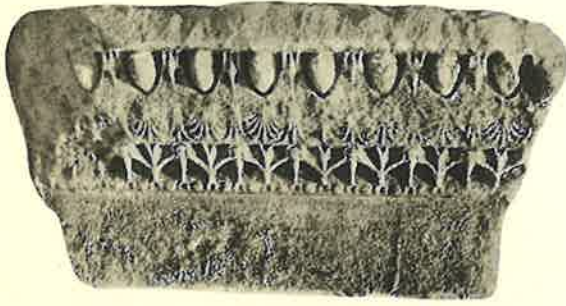
Details of the antae of both Propylaea; a: Side of anta capital H 18 unrolled; b: Side of anta capital K 1 unrolled and section of the main face; c: Anta base of K 31; d: Anta base of H 17; e: Pattern of the main face seen at right angles and section of the side of K 1. Scale 1 : 5. (K. J.)



Sections from the crosswall of the South Propylaea; a—b: North cornice (K 18) and lintel (K 7) of the central doorway; c: Section of the column flutes of the South Propylaea; d, f: South cornice (K 200) and lintel (K 16) of the central doorway; e—e: Section and main face of cornice fragment from the East Propylaea (cf. Pl. IX, 5); g: South cornice (K 10) of the minor doorways. Scale 1 : 5. (K. J.)



Sections of the entablature of the South Propylaea; a: Raking cornice; b: Bed-moulding of raking cornice; c: Horizontal cornice; d: Dentils; e: Architrave. Scale 1 : 5. (K. J.)



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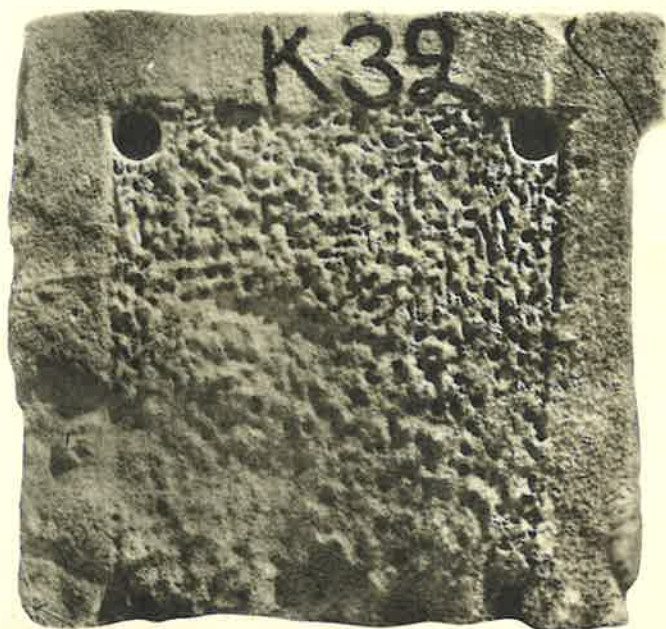


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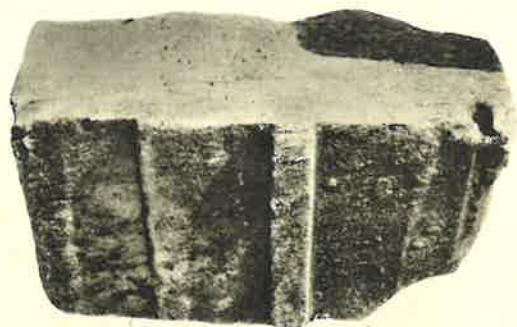
Anta capitals of both Propylaea (varying scale); 1—2: K 80, main face and side; 3—4: K 1, main face and side; 5—7: H 18, main face and sides; 8: R 9, side.



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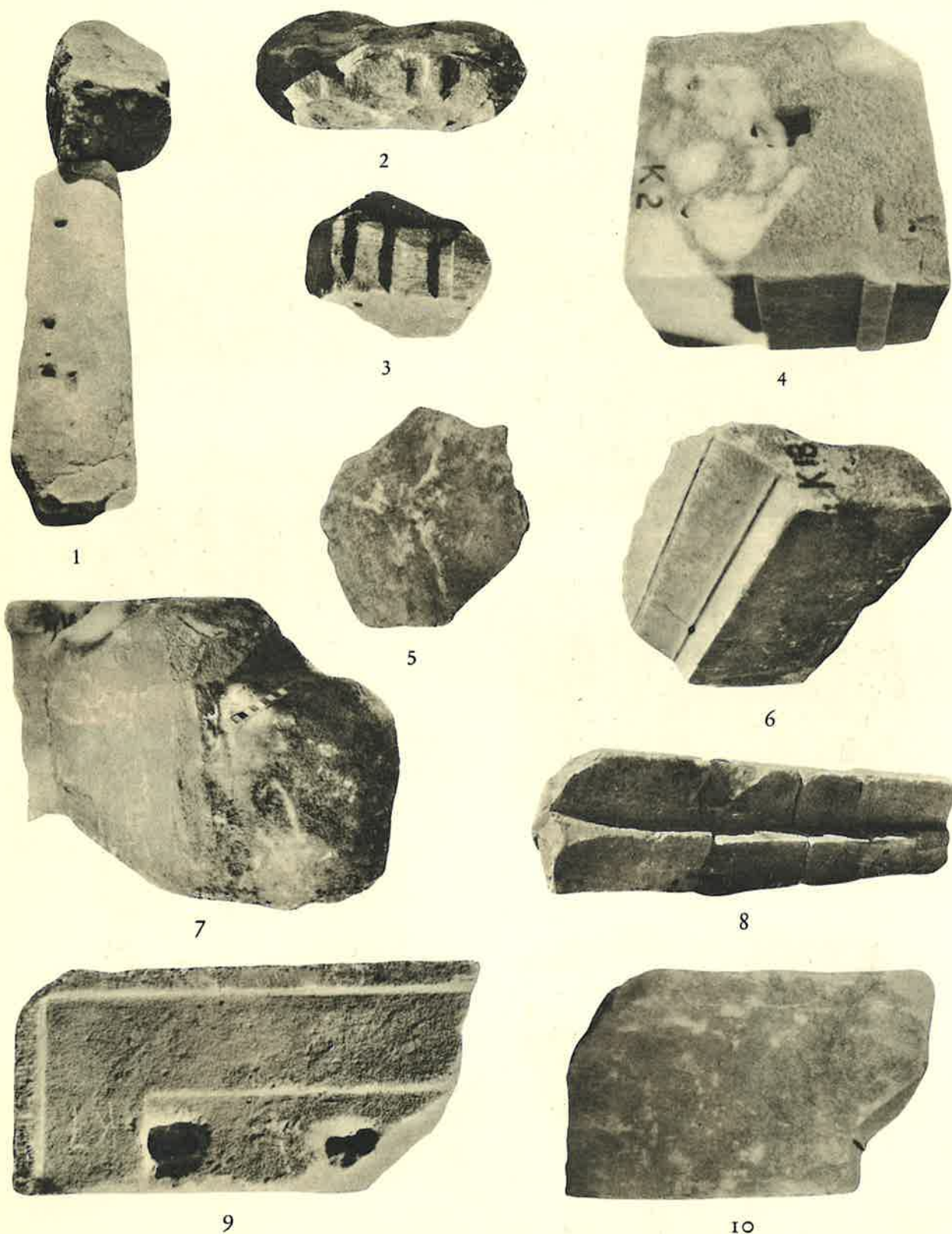


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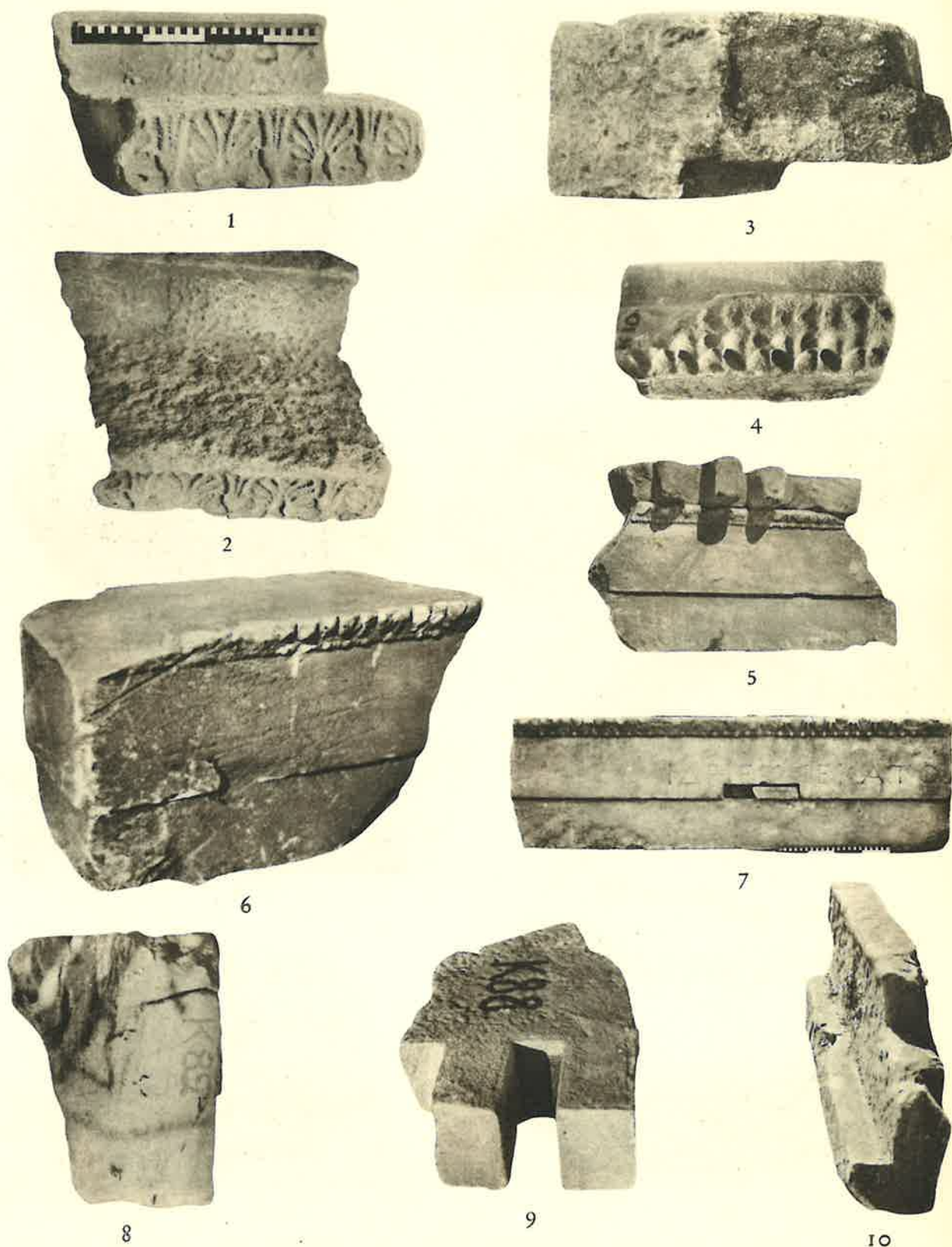


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Anta and Pier blocks from the South Propylaea (varying scale); 1: Anta block K 32; 2: Pier block K 11; 3: Pier block K 201; 4: Pier block K 21; 5—6: Pier block K 14; 7: Anta base K 31 + Anta block K 32.



Pier, lintel and cornice blocks, chiefly from the crosswall of the South Propylaea (varying scale); 1: Pier block K 14 + Sill block K 85; 2: Pier block K 99; 3: Pier block K 207; 4: Pier block K 2; 5: Fragment of cornice from one of the doorways of the East Propylaea; 6: Fragment of north cornice of central doorway K 18; 7: Fragment of south lintel of central doorway K 16; 8: Blocks from south cornice of central doorway K 8 + K 9; 9: Fragment of north lintel of western minor doorway K 7; 10: Fragment of north cornice of central doorway K 18 A.



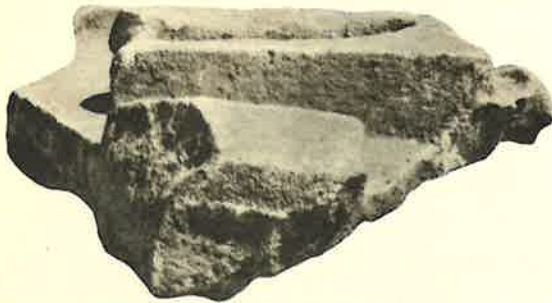
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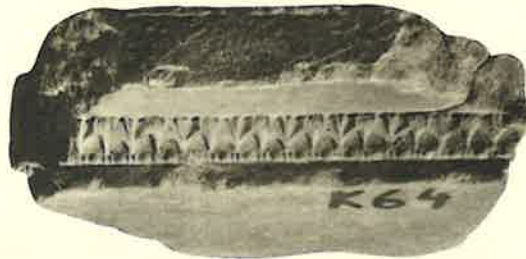
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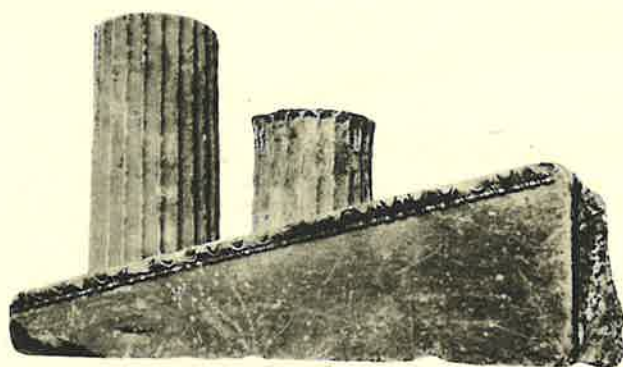


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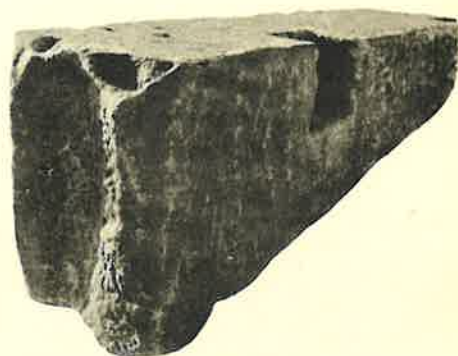


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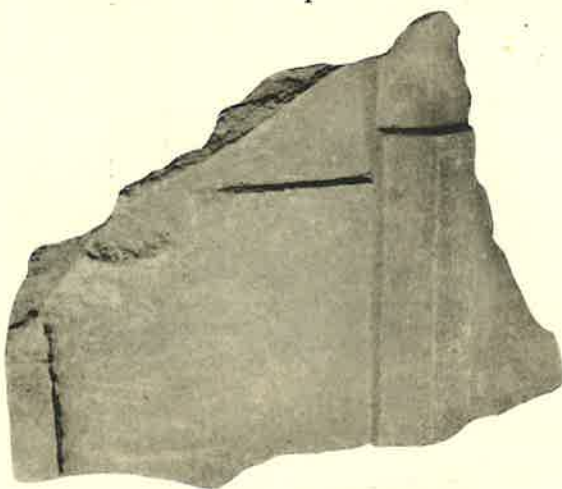
Geison and roof blocks, chiefly from the South Propylaea (varying scale); 1: Geison block H 16 (East Propylaea); 2—3: Geison corner block K 64; 4—6: Fragment of corner roof block with acroterion base K 59; 7—9: Corner roof block composed of K 69 (see Pl. XII, 3—4), K 59 and six minor fragments.



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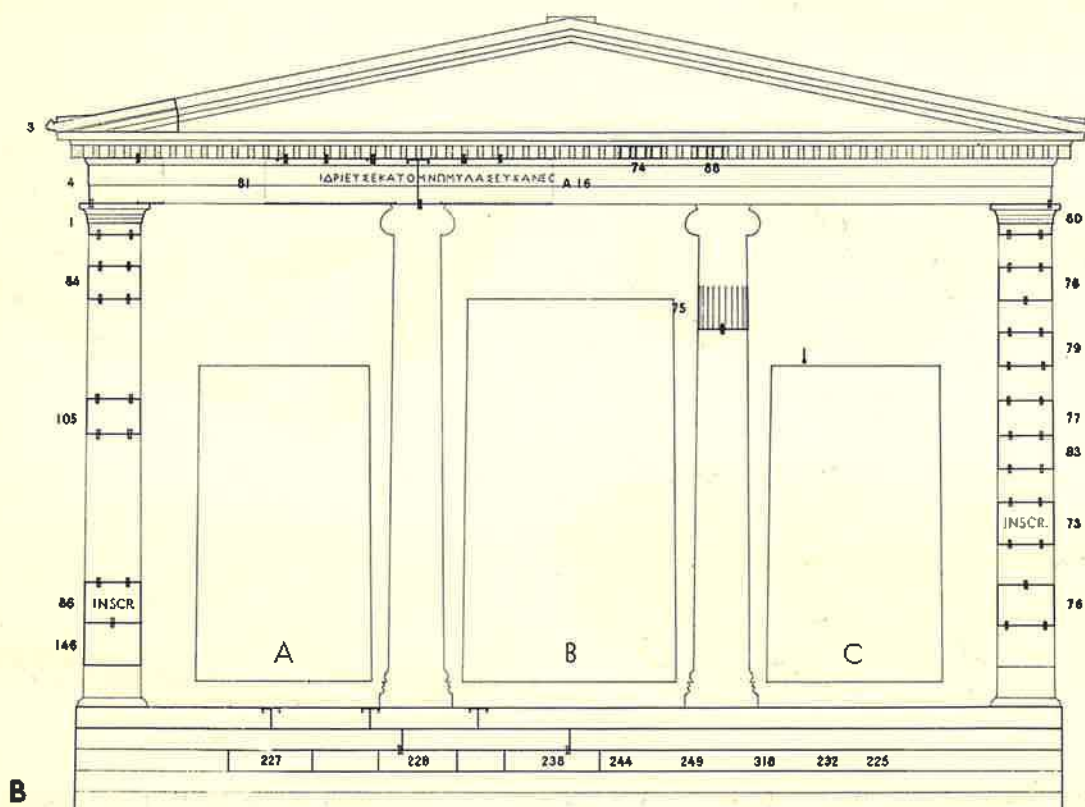
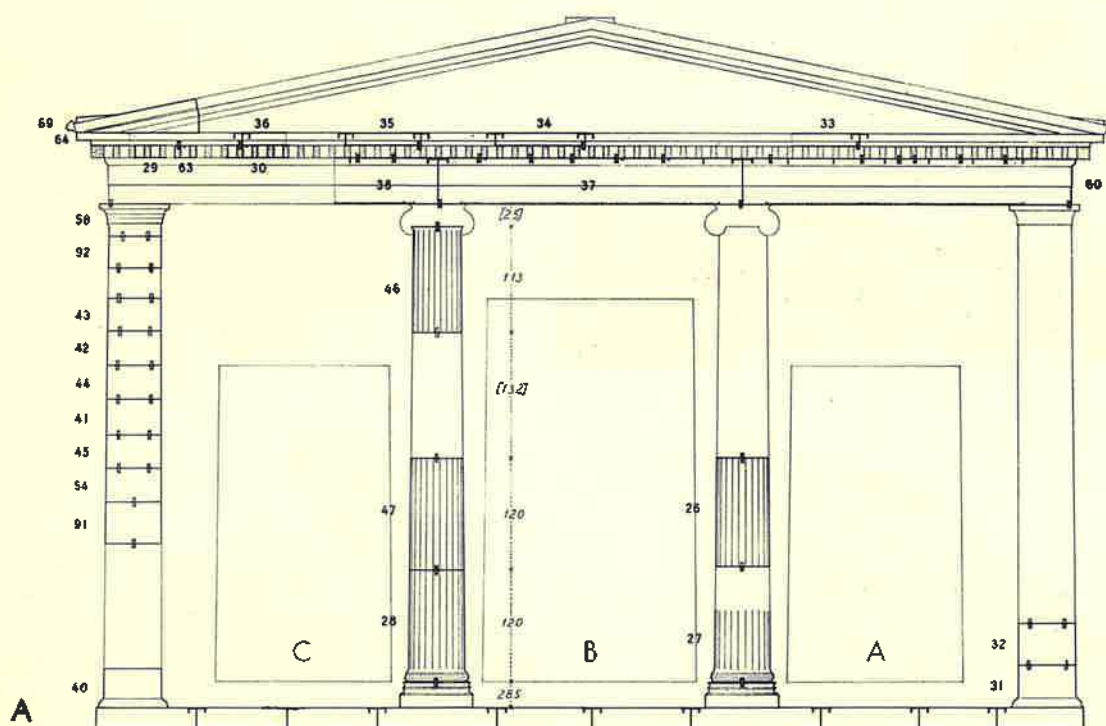


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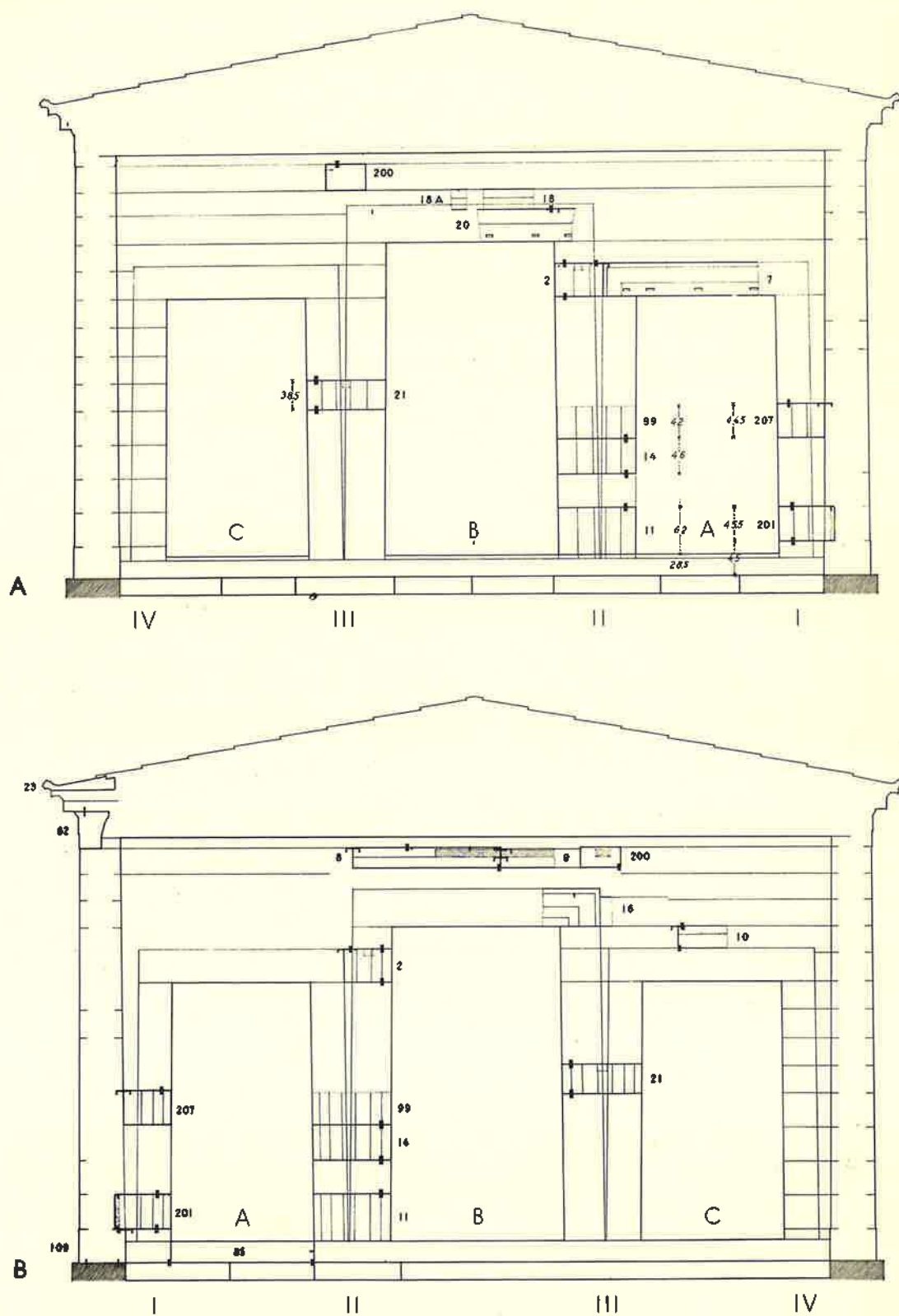


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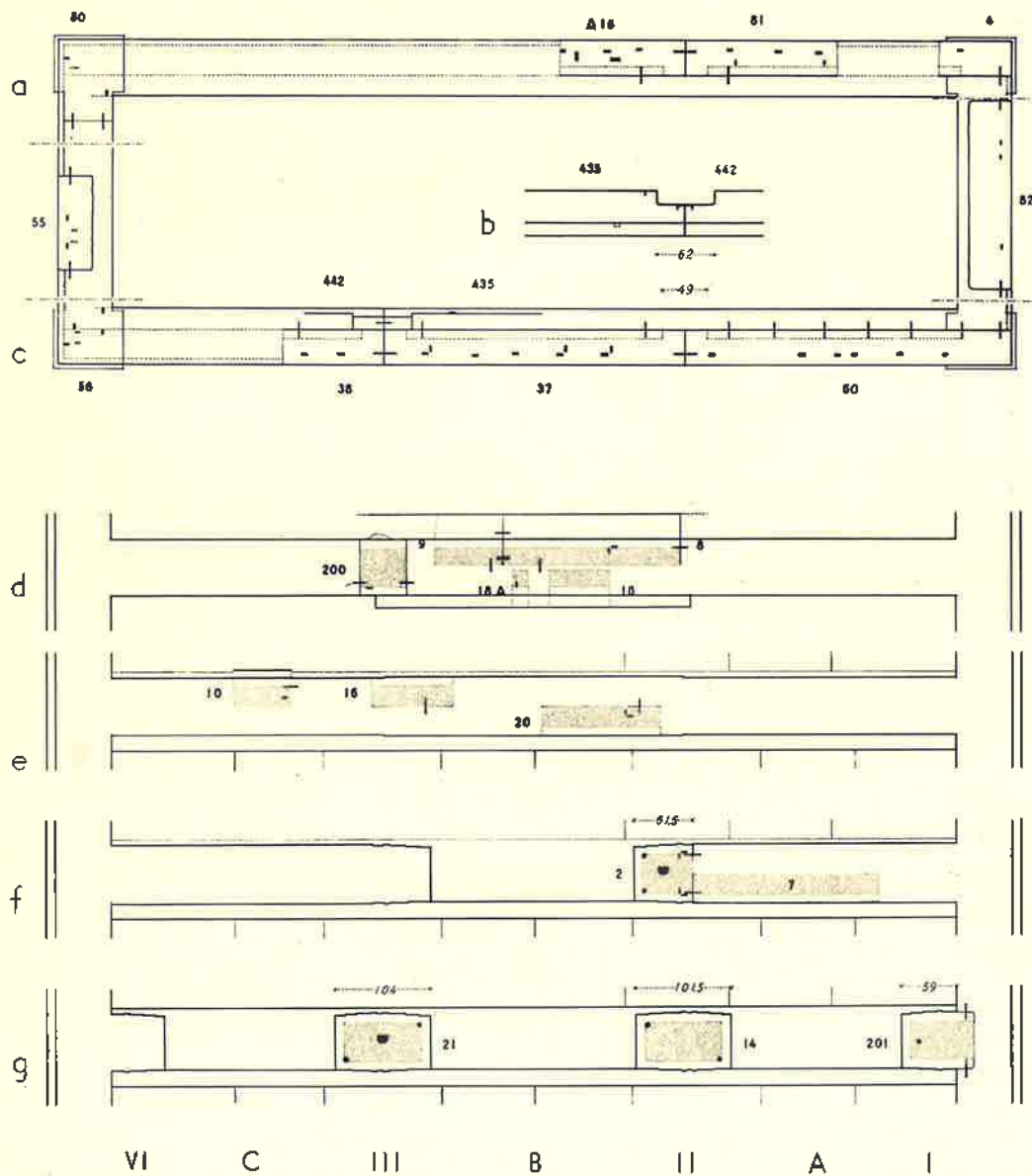
Roof blocks from both Propylaea (varying scale); 1: Tympanum block H 15 (and Column drums H 51 and H 52); 2. Back of same; 3—4: Fragment of corner roof block K 69 (cf. Pl. XI, 7—9); 5: Fragment of raking cornice from the South Propylaea; 6: Fragments of eaves tiles K 23 and L 119 (the latter found on the Great Stairway, Pl. XXII, BC, bc); 7—8: Fragment of corner roof block K 3.



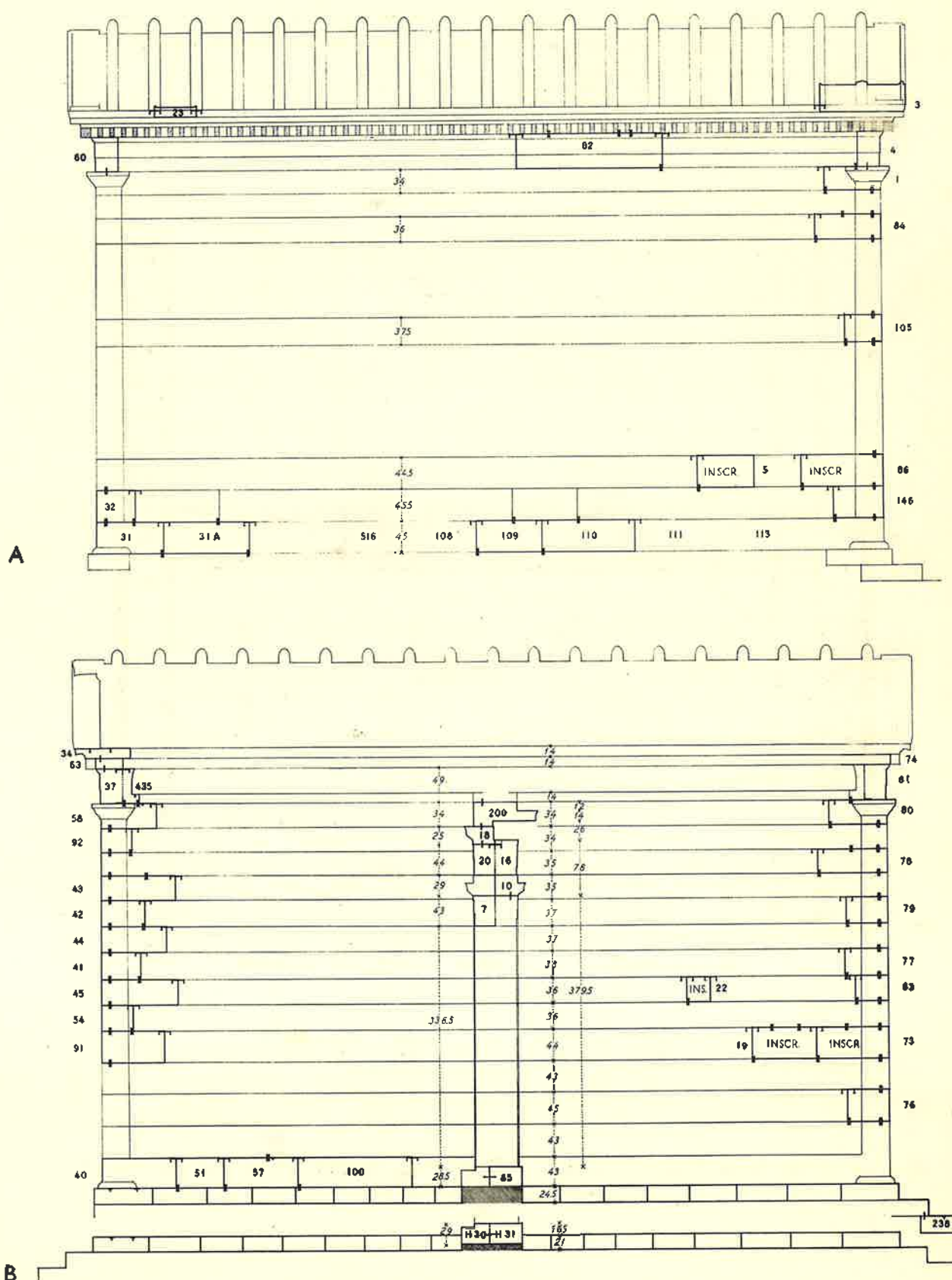
Diagrams of the South Propylaea (scale 1 : 80); A: North front; B: South front.



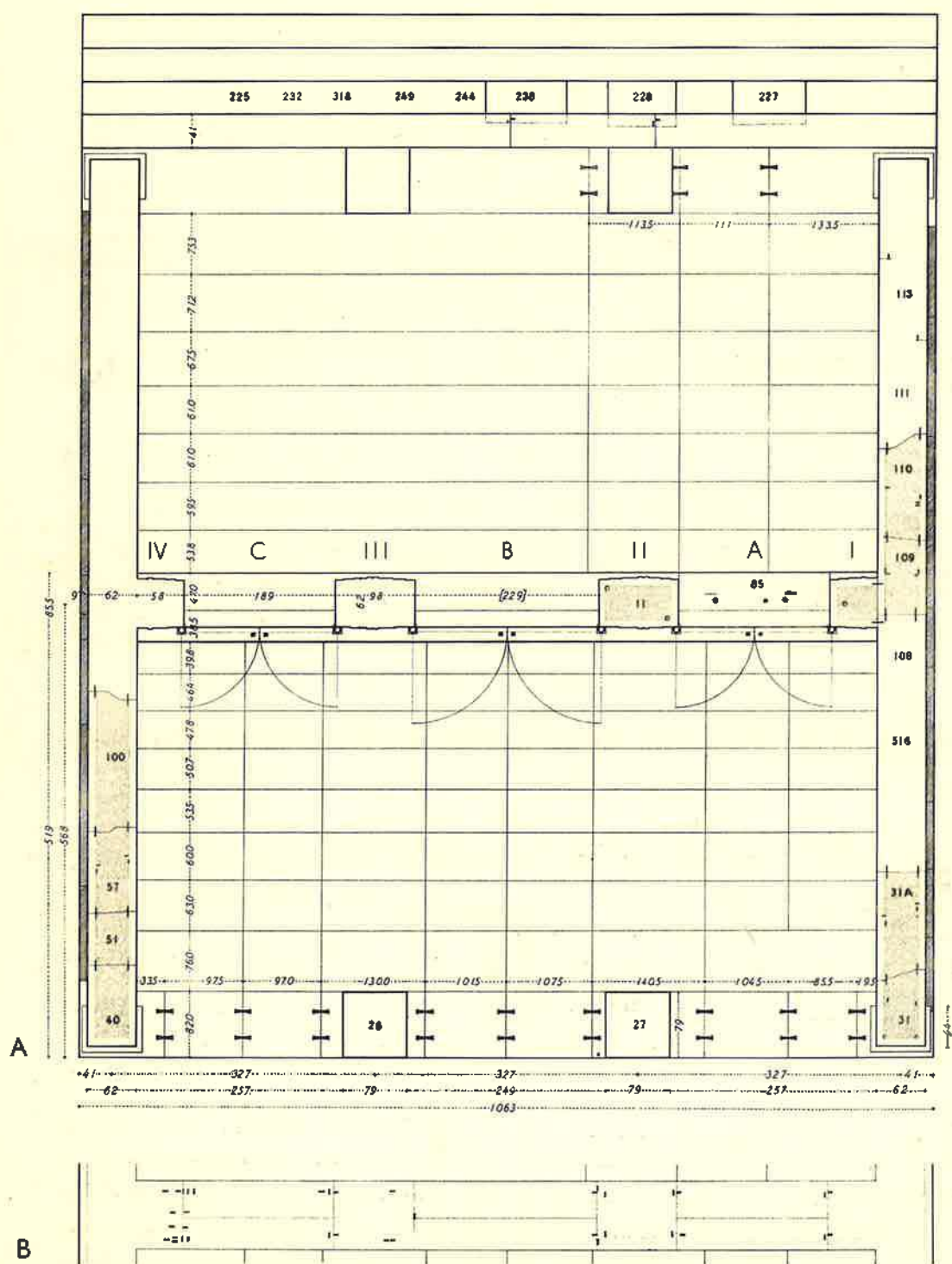
Diagrams of the South Propylaea (scale 1 : 80); A: North facade of the crosswall; B: South facade of the crosswall.



Diagrams of the South Propylaea (scale 1 : 80); a, c: Architrave and antithema blocks seen from above; b: Backs of antithema blocks K 435 and K 442; d—g: Blocks from the crosswall seen from above.



Diagrams of the South Propylaea (scale 1 : 80); A: West facade; B: Longitudinal section and inner facade of the east side-wall; inserted below: Longitudinal section of the pavement of the East Propylaea.



Diagrams of the South Propylaea (scale 1 : 80); A: Plan; B: Dowel-holes and pry-cuttings in the *toichobate* of the crosswall.

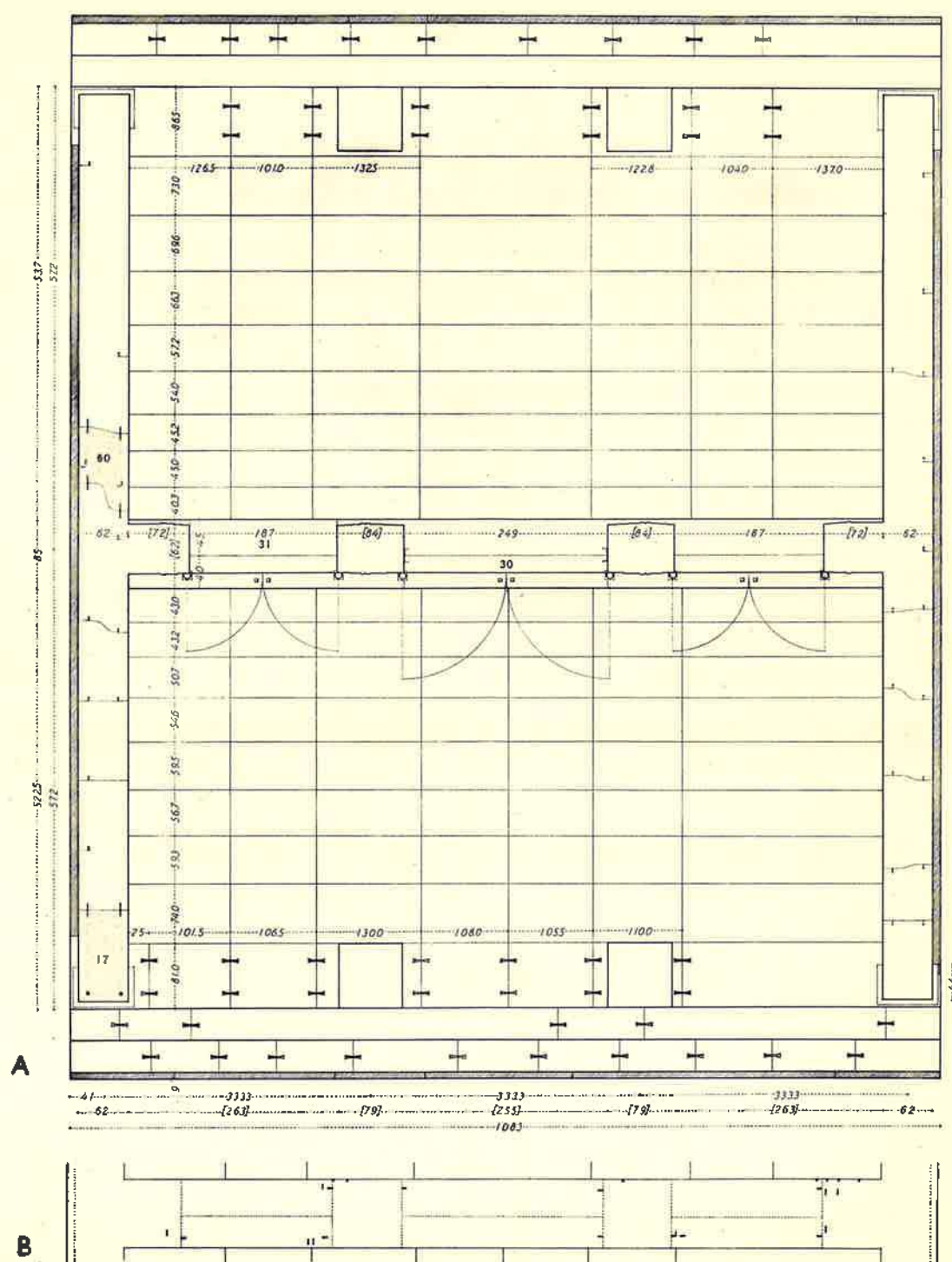
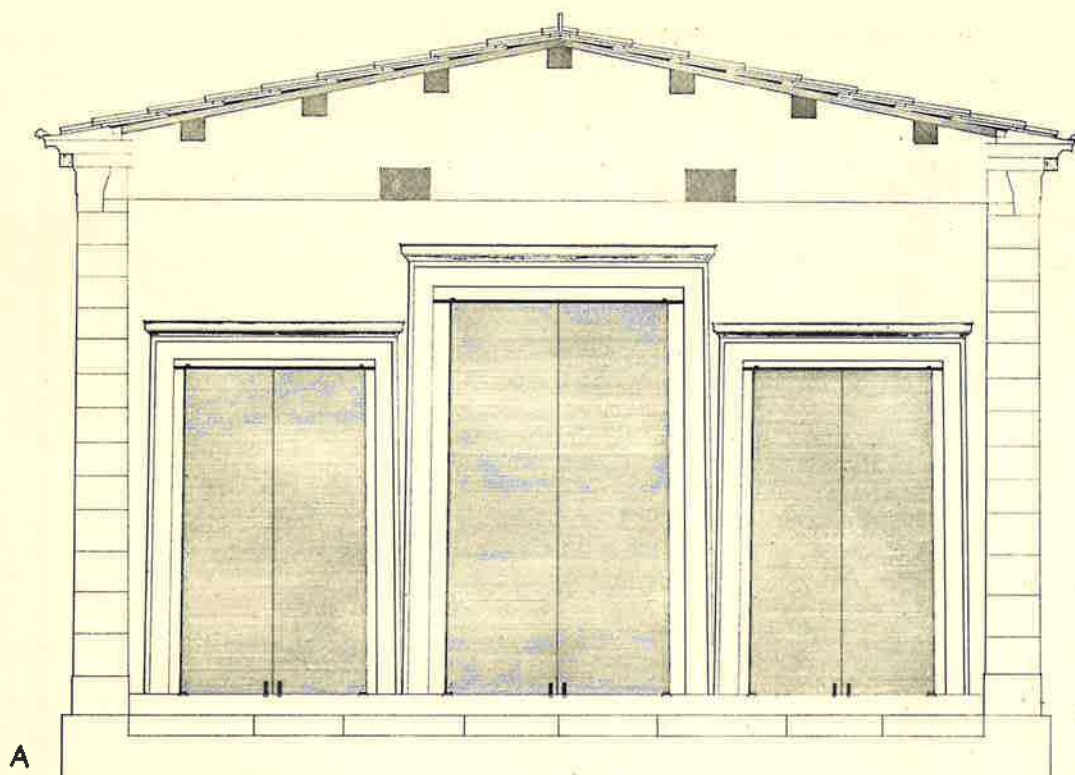
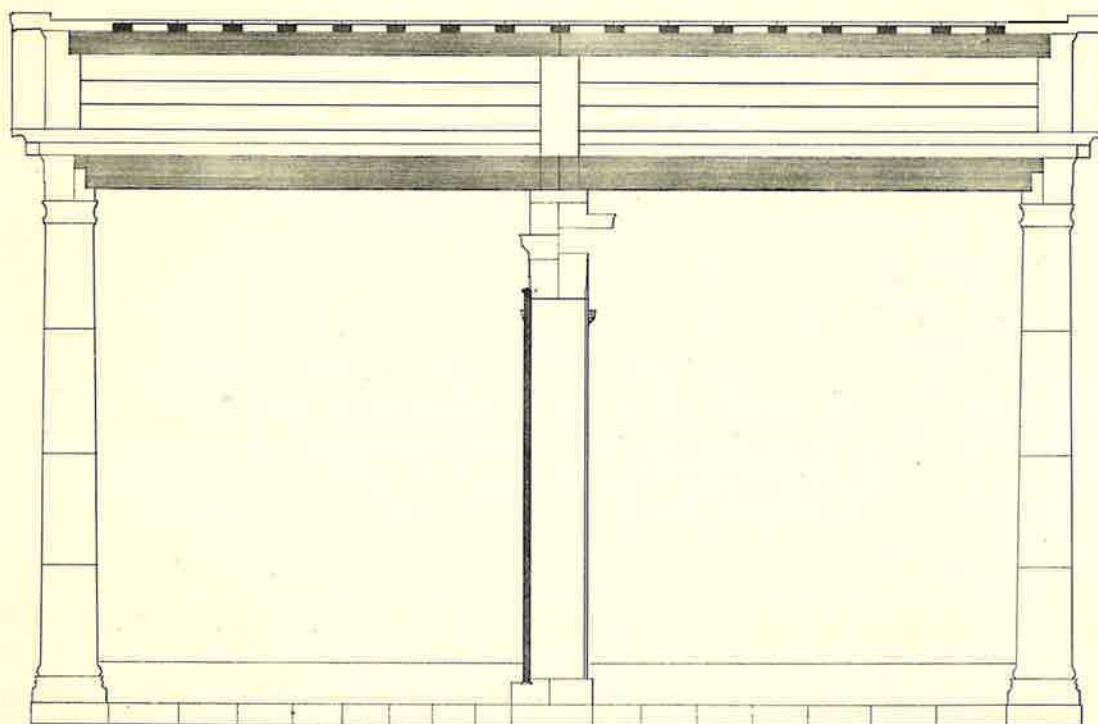


Diagram of the East Propylaea (scale 1 : 80); A: Plan; B: Dowel-holes and pry-cuttings in the toichobate of the crosswall.

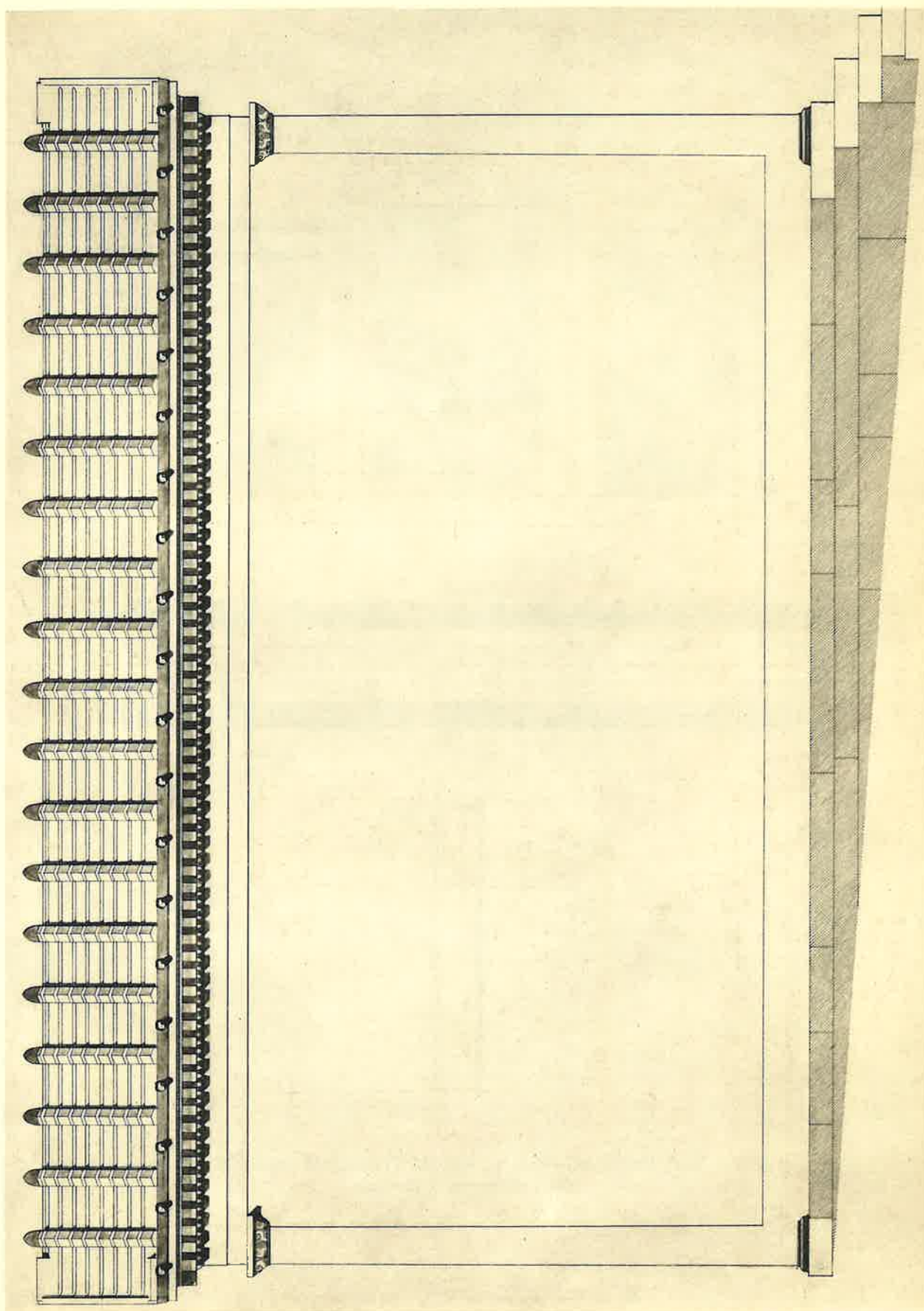


A

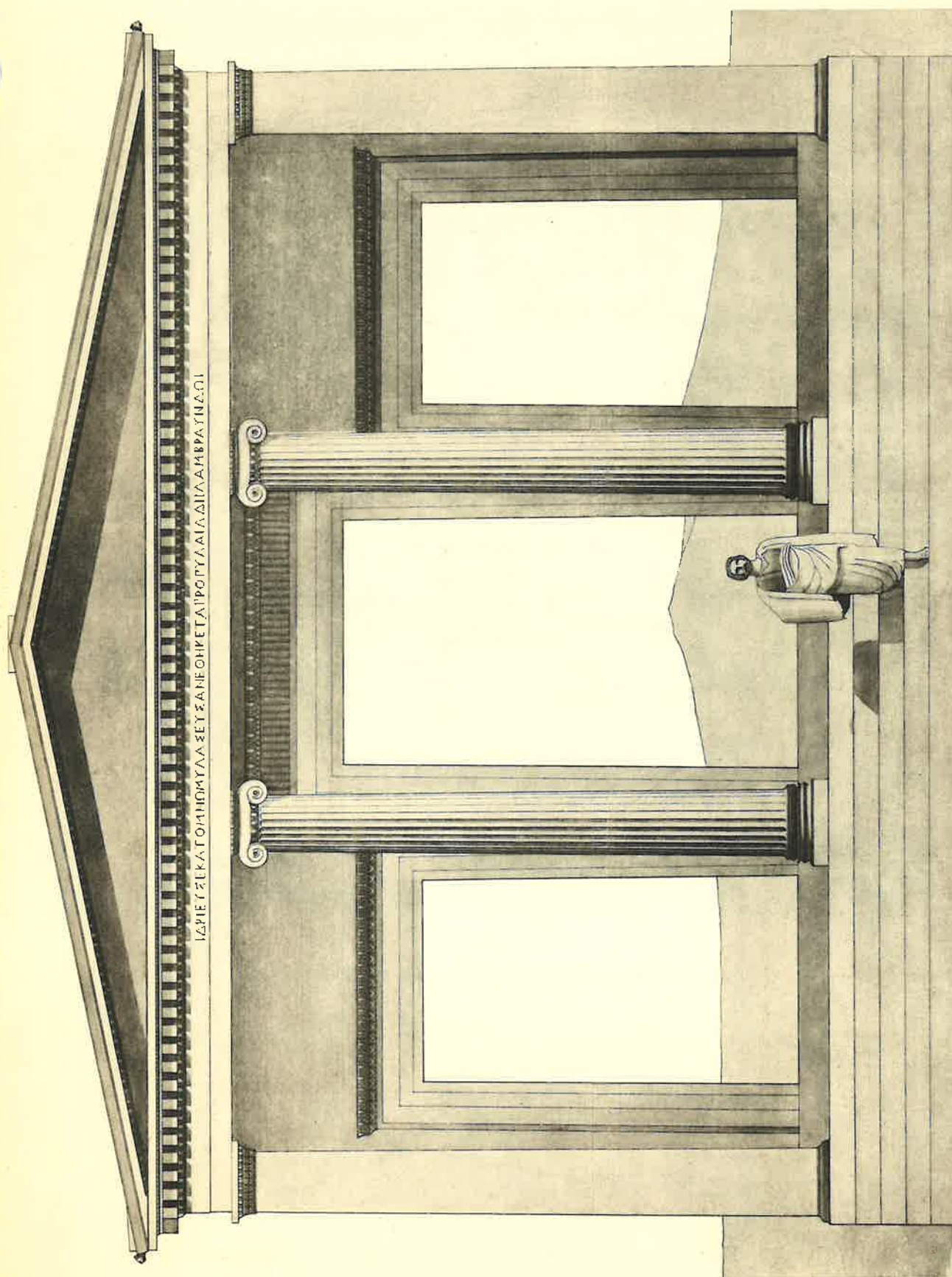


B

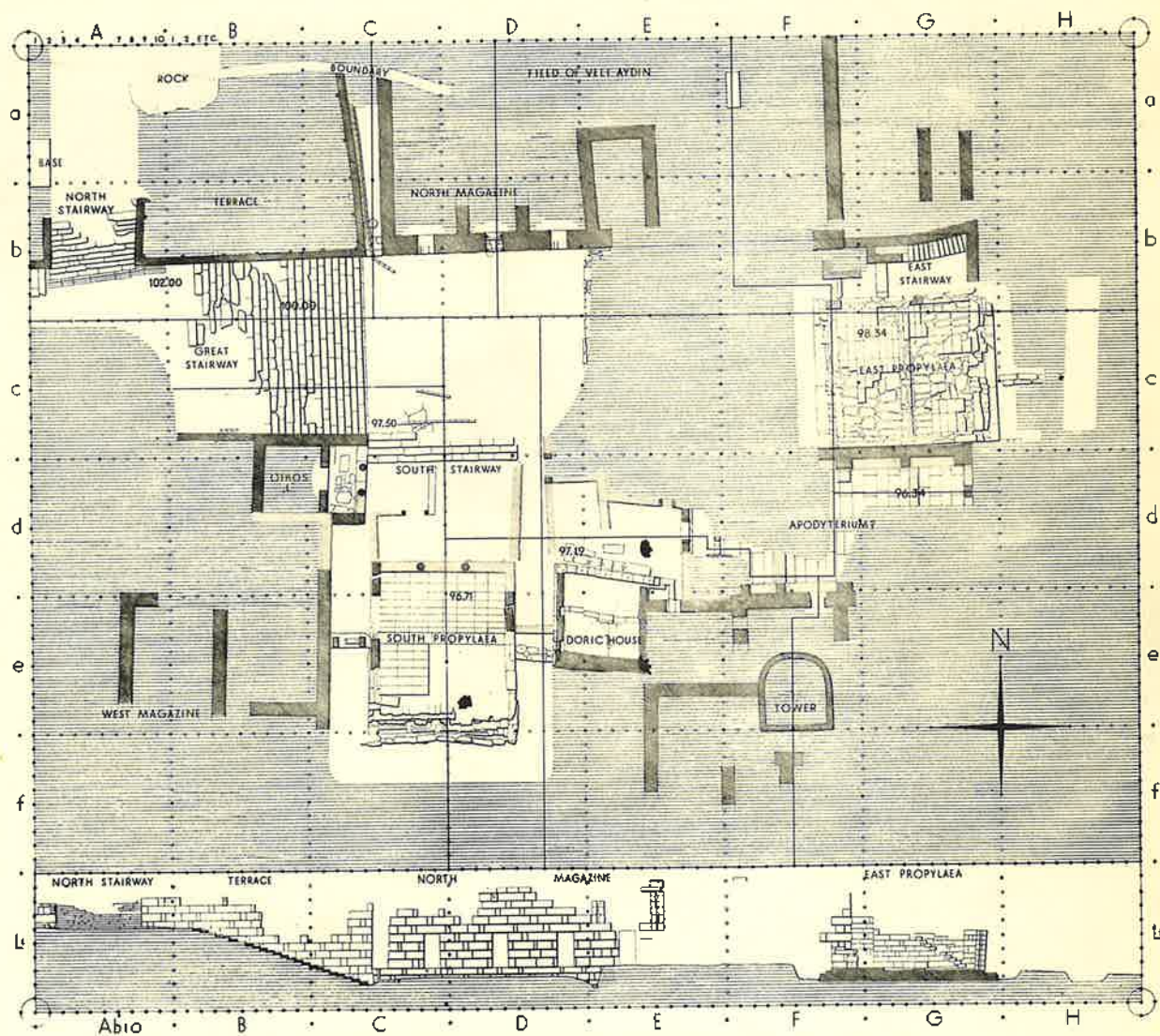
Restoration of the South Propylaea (scale 1 : 80); A: Transversal section of the north portico;
B: Longitudinal section.



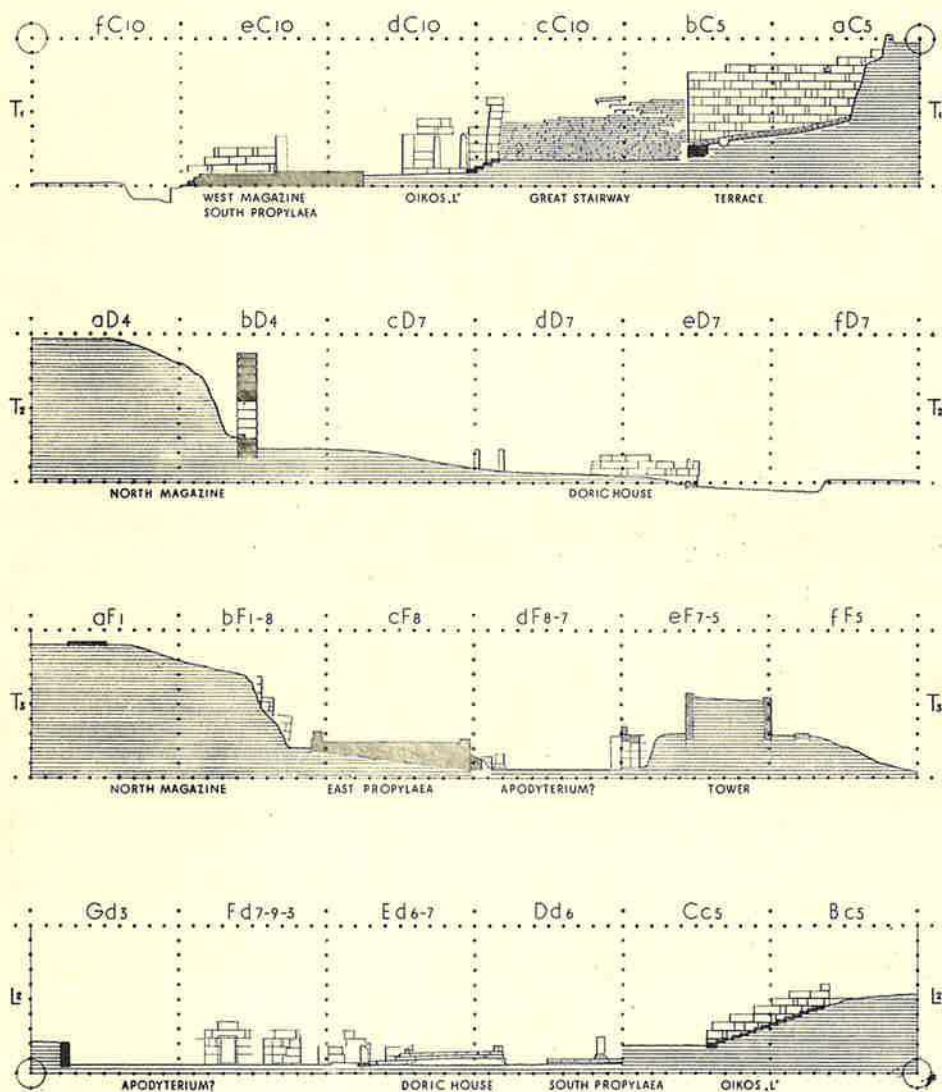
Restored west facade of the South Propylaea (scale c. 1 : 50).



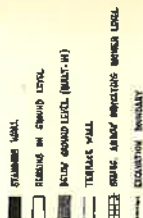
Restored front of the South Propylaea (scale c. 1 : 50).



Plan of "The enclosure of the Propylaea" (scale 1 : 500).



Sections of "The enclosure of the Propylaea" (scale 1 : 500).



PLAN OF LABRAUNDA
COMPILED FROM SURVEYS BY MESSRS. TORE HYLANDER & ALF NORDSTRÖM AND VARIOUS DETAILLED MEASUREMENTS. GÖTEBORG MAY 1855.
LARS KÄLL
ARCHITECT.

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- II OPUSCULA ATHENIENSIA, vol. I, 236 pagg. cum XI tabulis et 71 imaginibus textui insertis, 1953. Sw. Crs. 75: —
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- III OPUSCULA ATHENIENSIA, vol. II, 78 pagg. cum XI tabulis et 13 imaginibus textui insertis, 1955. Sw. Crs. 30: —
Arvid Andrén, A Greek Fifth Century Akroterion in the Milles Collection; *Paul Åström*, Une inscription d'Aigion; *Eric Berggren*, Kypriaka; *H. W. Catling*, A Bronze Greave from a 13th Century B. C. Tomb at Enkomi; *Inge Dablén*, Fragments of a Kline from Labranda; *Ludwig Schnitzler*, Vom Kleophrades-Maler; *Harald Sjövall*, Die Antiochosdarstellung der Oltoschale in Berlin; *Natan Valmin*, Spätmykenische Steinreliefs aus Messenien; *Alfred Westholm*, The Cypriote "Temple Boys".

- IV SVENSKA SYRIENEXPEDITIONEN 1952—1953. Vol. I, *Hans Henning von der Osten*, Die Grabung von Tell es-Şalihiyeh, X + 103 S. mit 45 Tafeln und 18 Textabbildungen, 1956. Sw. Crs. 50: —
- V LABRAUNDA. SWEDISH EXCAVATIONS AND RESEARCHES. Vol. I: 1, *Kristian Jeppesen*, The Propylaea, 25 pagg. with 23 plates and 30 figures in the text, 1955. Sw. Crs. 35: —

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Åke Åkerström, DIE ARCHITEKTONISCHEN TERRAKOTTEN AUS KLEINASIEN.
P. M. Fraser and T. Rönne, BOEOTIAN AND WEST GREEK TOMBSTONES.
Sture Brunnsåker, THE TYRANT-SLAYERS OF KRITIOS AND NESIOTES.

PRAEPARANTUR

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Arne Furumark, EXCAVATIONS AT SINDA IN CYPRUS.
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- I *Martin P. Nilsson*, CULTS, MYTHS, ORACLES, AND POLITICS IN ANCIENT GREECE, 179 pagg. 1951. Sw. Crs. 20: —
- II *Martin P. Nilsson*, OPUSCULA SELECTA, LINGUIS ANGLICA, FRANCOGALLICA, GERMANICA CONSCRIPTA, vol. I, iv + 456 pagg. cum 11 imaginibus textui insertis. 1951. Sw. Crs. 45: —; vol. II, viii + 628 pagg. cum 6 imaginibus textui insertis et indicibus. 1952. Sw. Crs. 55: —
- III *David Tabachovitz*, HOMERISCHE εἰ-ΣÄTZE. Eine sprachpsychologische Studie, 156 S. 1951. Sw. Crs. 20: —

SUB PRELO

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