

FIG. 116. PLAN OF SITE OF PALACE G. AFTER ORIGINAL SURVEYS BY K. BERGNER AND R. C. HAINES. SCALE, 1:300

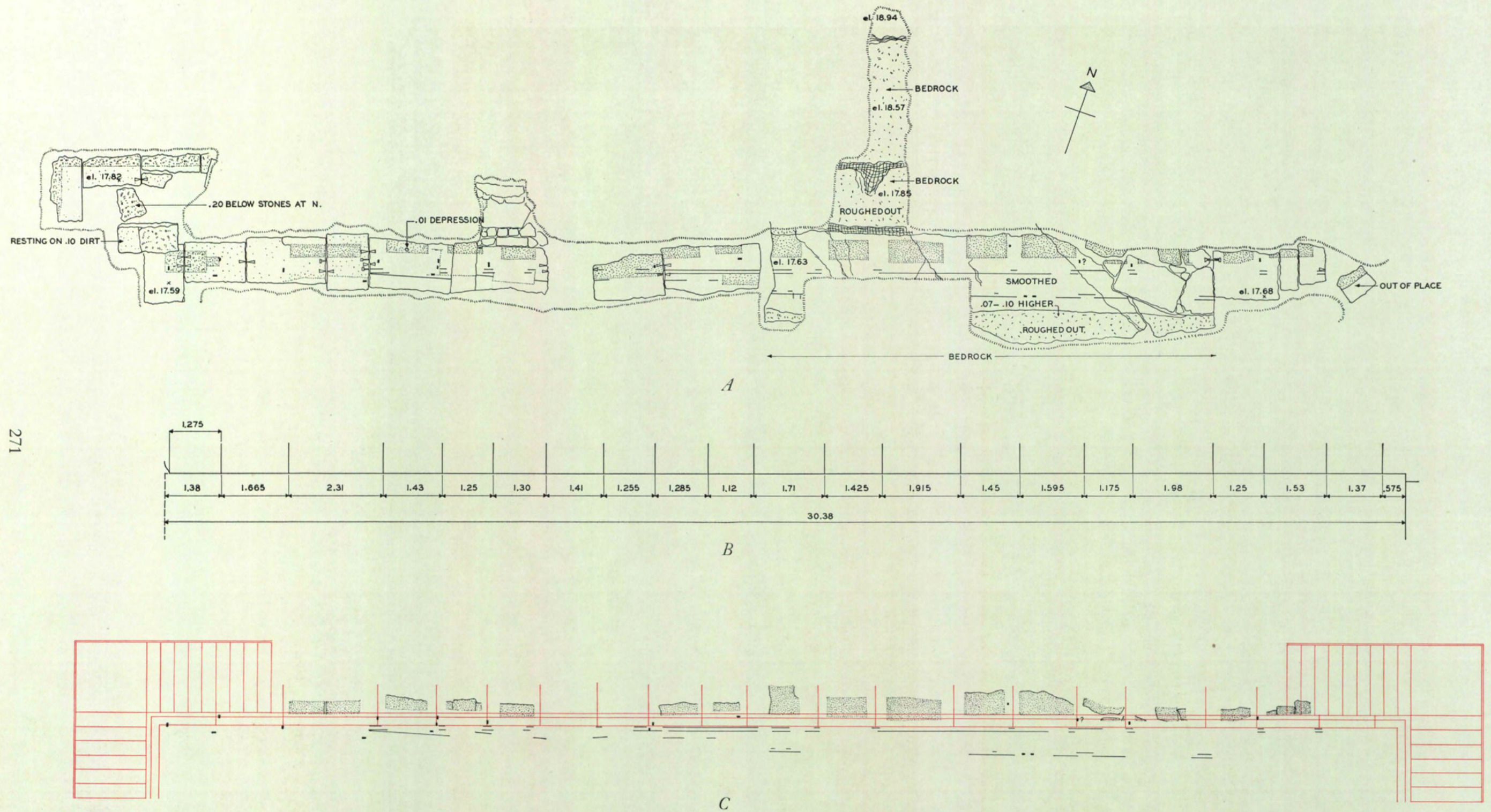


FIG. 117. PALACE G. SCALE, 1:100. A. PLAN OF AREA TESTED ALONG SOUTH FRONT OF SITE. B. SPACING OF STONES OF FAÇADE OF ARTAXERXES III (FROM PALACE H).
C. SUPERPOSITION OF B (in red) ON A, WITH RECONSTRUCTED STAIRWAY



A

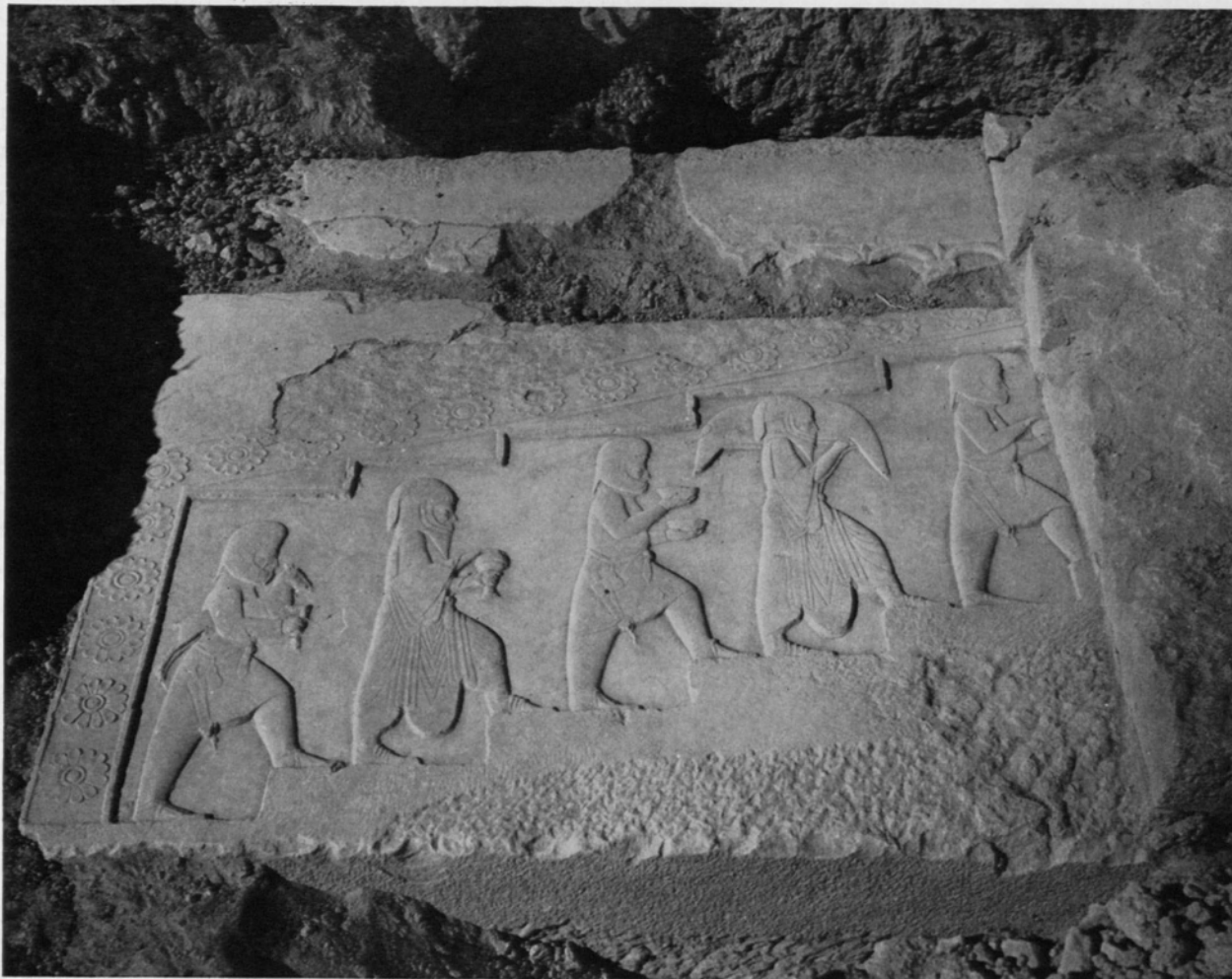


B

FIG. 118. PALACE G. *A.* RUBBLE-COVERED SITE, BEYOND COUNCIL HALL, WITH PALACES OF DARIUS AND XERXES IN RIGHT AND LEFT BACKGROUND RESPECTIVELY (*direction of view, SW*). *B.* SMALL STAIRWAY AT NORTHWEST CORNER, WITH WORKMAN AT TORSO OF BULL STATUE (*direction of view, approximately E*)



A



B

FIG. 119. PALACE G. SCULPTURED STAIRWAY FRAGMENTS WITH SERVANT RELIEFS, NEAR SOUTHWEST CORNER OF SITE (*direction of views, NNW*)

PALACE G

The foundation of this building consists largely of a core of bedrock which was cut down along its southern edge to the level of the courtyard north of Xerxes' palace. Mud-brick walls such as the niched east wall restored by Herzfeld's crew presumably bordered and buttressed the rectangular area (Fig. 116) along its northern and western edges. Low-level rooms in the northwest corner (see below) and bedrock rising from a low rock shelf at the northern edge and parallel to the latter indicate a terraced profile.

The palace area is almost entirely covered with a mass of rubble consisting mainly of stone chips of the same type as those found in the hillock on the site of Palace D (see p. 269). A knoll on the otherwise rather flat rubble mass is about 3 meters above the courtyard on the south, but the average elevation is 1–2 meters above the court and between 3 and 4 meters above the floor level of the Apadana on the north and the Council Hall on the east (see Fig. 118 A). A strip of a solid rock slope was uncovered in a sounding which extends northward from our principal test trench at the southern edge of the site (Fig. 117 A).

This mound of bedrock and rubble, rising above the level of the courtyard on the south, must be the core of the upper portion of the foundation platform, or an upper step whose retaining walls have disappeared. As far as we know, except for a drain (see below), nothing remains of the structure which once stood on the upper step of the foundation. Herzfeld uncovered near the northwest corner a small stairway of stone leading from the southern courtyard of the Apadana to two rooms which presumably were connected by further stairs with the higher level of the site. A reused fragment of a relief showing a file of walking lions and bands of rosettes above a tasseled fringe—undoubtedly a portion of the baldachin which is always found in reliefs depicting the enthroned king (cf. e.g. Pl. 99)—is a remnant of the parapet of the stairway.¹ The original location of the relief is not known. The stairway was apparently flanked by two stone bulls, fragments of which were uncovered during our subsequent excavations of the southern courtyard of the Apadana (see p. 77 and Fig. 118 B).

Soundings mentioned by Stolze² uncovered in the northwestern part of the mound a portion of a drainage canal built of reused stones, one of which has an arrow-shaped hole. A stone which was part of the roof of this drain is about 1.20 m. above the level of the courtyard on the south. It is to be assumed that the drainage channel was close to the (missing) floor of Palace G and that it was linked with a roof drain.

The most important information concerning Palace G was obtained as a result of soundings which Haines carried through along the southern edge of the rubble mound. He cleared the debris which had accumulated on top of the

leveled bedrock and on blocks of masonry here forming the floor of the courtyard. Hourglass-shaped depressions indicate that some of the floor slabs had been joined by clamps. The stone surfaces show markings which prove that they were prepared as foundations for a stone wall, that is, the façade of Palace G (see Figs. 116 and 117 A). There are V-shaped cuts marking here, as in other instances observed (see e.g. p. 81), the lengths of individual wall stones. Furthermore, there is a row of slightly chipped and depressed patches, usually rectangular, prepared to give a firm seat to the stones of the wall. In addition, Haines noticed traces of two sets of interrupted double lines incised in the bedrock and the slabs of masonry. The lines of each pair are about 8 cm. apart, and in the eastern part of the zone there is a distance of about 50 cm. between the pairs. When Haines measured the stones of the façade of Artaxerxes III at Palace H (see pp. 279–80) and superimposed the measurements of the lower course of these stones on the markings under consideration, he found that the units of the Artaxerxes III façade—if turned about to face south—coincide remarkably well with these markings (Fig. 117 B–C).³ Nine stone joints of the Artaxerxes III façade coincide with the nine preserved V-shaped cuts, and the sixteen chipped rectangles fall neatly between the joints of the façade stones. We are convinced, therefore, that the façade of Artaxerxes III at Palace H originally formed the southern front of Palace G. As to the double lines mentioned above, the northern pair appears to have been cut into the bedrock and masonry foundation to align the stones of the façade (see Fig. 117 C). Haines believes that the southern pair of grooves—observed mainly in the bedrock of the eastern portion of the area—marks the face line of an earlier structure. At the west are some lines cut at varying angles into individual foundation stones. Haines suggested that these marks may have been aligned with the southern pair of grooves at the east before the foundation stones were shifted to their present position.

A row of foundation stones extends toward the south from the western end of the façade foundation (see Figs. 116, 117 A) and partly coincides with the course of the western lower flight of the double stairway reconstructed on Figure 117 C. The turn of the west wing of this stairway appears to be marked by a chipped area beyond a line which forms a right angle on the row of foundation stones. A sculptured section of a stairway bearing reliefs of servants carrying supplies (Fig. 119 B) lies at the western end of the area tested. It is possible that this stone, as well as two more fragments of servant reliefs found near by (Fig. 119 A), belonged to the steps which were once situated at the ends of Artaxerxes III's façade. We have already stated (p. 240) that these reliefs cannot have belonged to

1. According to the records of the Oriental Institute, where the relief is on exhibition (Oriental Institute Museum No. A 24068).

2. See Stolze and Andreas, *Persepolis II*, "Bemerkungen zu den Tafeln" (3d page).

3. For the sake of comparison Haines measured the stones of the western stairs to Xerxes' palace platform and those of the southern façade of Darius' palace and found that neither construction would fit the markings in front of Palace G.

Xerxes' western stairway, located a short distance to the west. On the other hand, it should be mentioned that the rosettes in the relief on one slab (Fig. 119 *B*) differ in size somewhat from those of Artaxerxes III's façade. It may be that this slab, lying flat on the ground together with some abutting stone fragments, was reused at this spot for some unknown purpose. A section of a drainage channel extends beneath the sculptured slab.

To judge by the height of Artaxerxes III's façade, the floor of Palace G was about 2 meters above the level of the courtyard to the south and above the floor of Xerxes' palace. The double stairway which was once combined with Artaxerxes III's façade was adorned with servant reliefs (see p. 280) in the same manner as the near-by stairs leading to the residential palaces of Darius and Xerxes. The use of such servant figures on a stairway which once led to Palace G proves its residential character and disposes of Herzfeld's assumption⁴ that a temple existed at this spot. True, the façade of Artaxerxes III and its stairway may have replaced parts of an earlier structure, or

they may have been added to such a building. It would be absurd, however, to assume that a Persepolis temple—if one ever existed on the Terrace⁵—was secularized by an Achaemenid ruler.

In the section dealing with Palace H we describe the remnants of a sculptured façade of a palace which was founded by Xerxes and completed by Artaxerxes I (pp. 280–81). In the same section we mention that the area of Palace G is the most attractive of three possible sites (but see p. 281, n. 19) and that the wording of Artaxerxes III's inscription does not preclude the existence of a palace to which his façade may have been added. There is only one architectural clue which may suggest the existence of a structure antedating that of Artaxerxes III on the site of Palace G, namely the southern pair of grooves cut into bedrock and possibly indicating the face line of an earlier structure (see p. 274). There are, however, no chipped rectangular patches corresponding to those which fit beneath the stones of the palace façade of Artaxerxes III.

4. *IAE*, p. 230.

5. Cf. Herodotus i. 131.

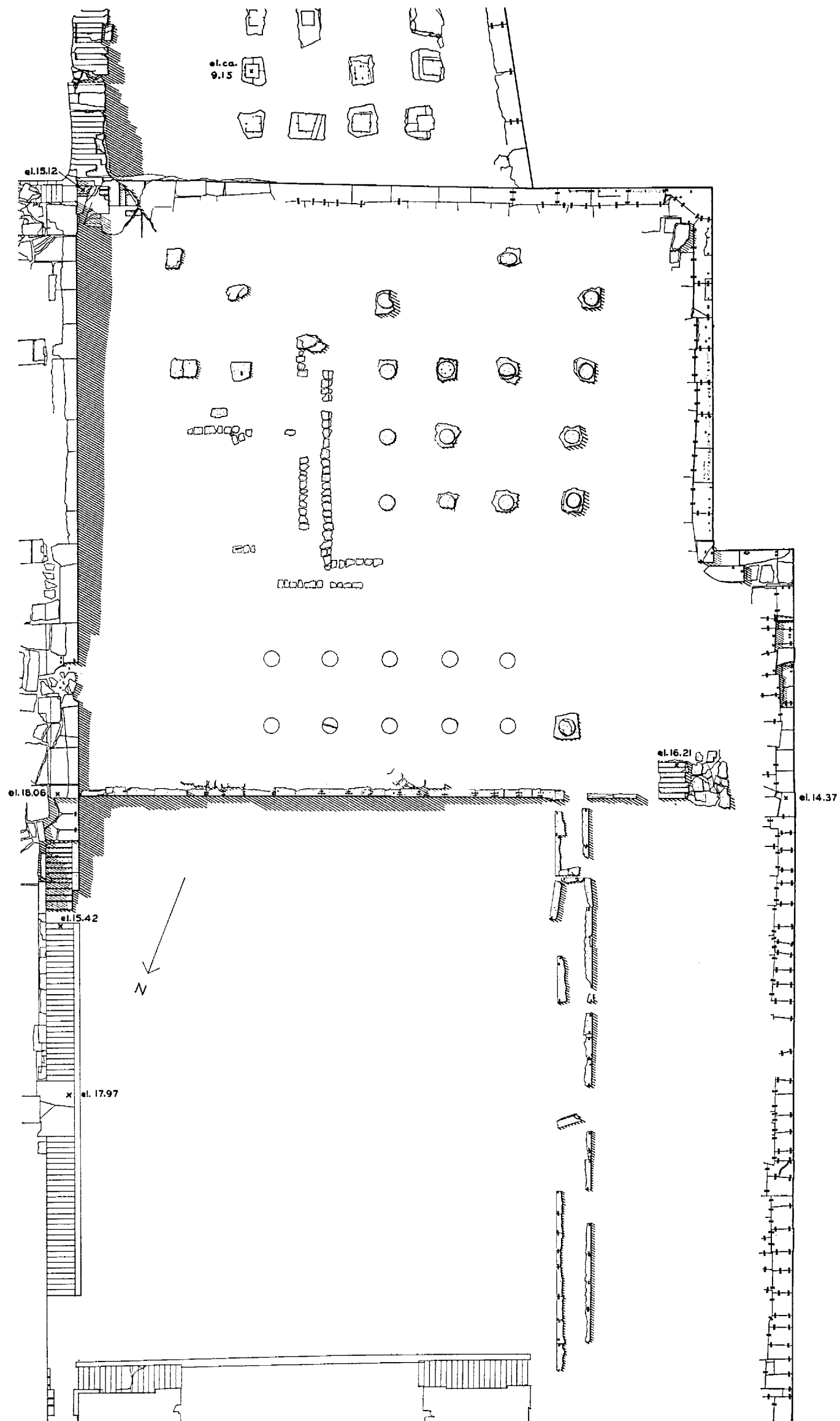


FIG. 120. PLAN OF REMNANTS OF PALACE H. AFTER ORIGINAL SURVEY BY K. BERGNER. SCALE, 1:300

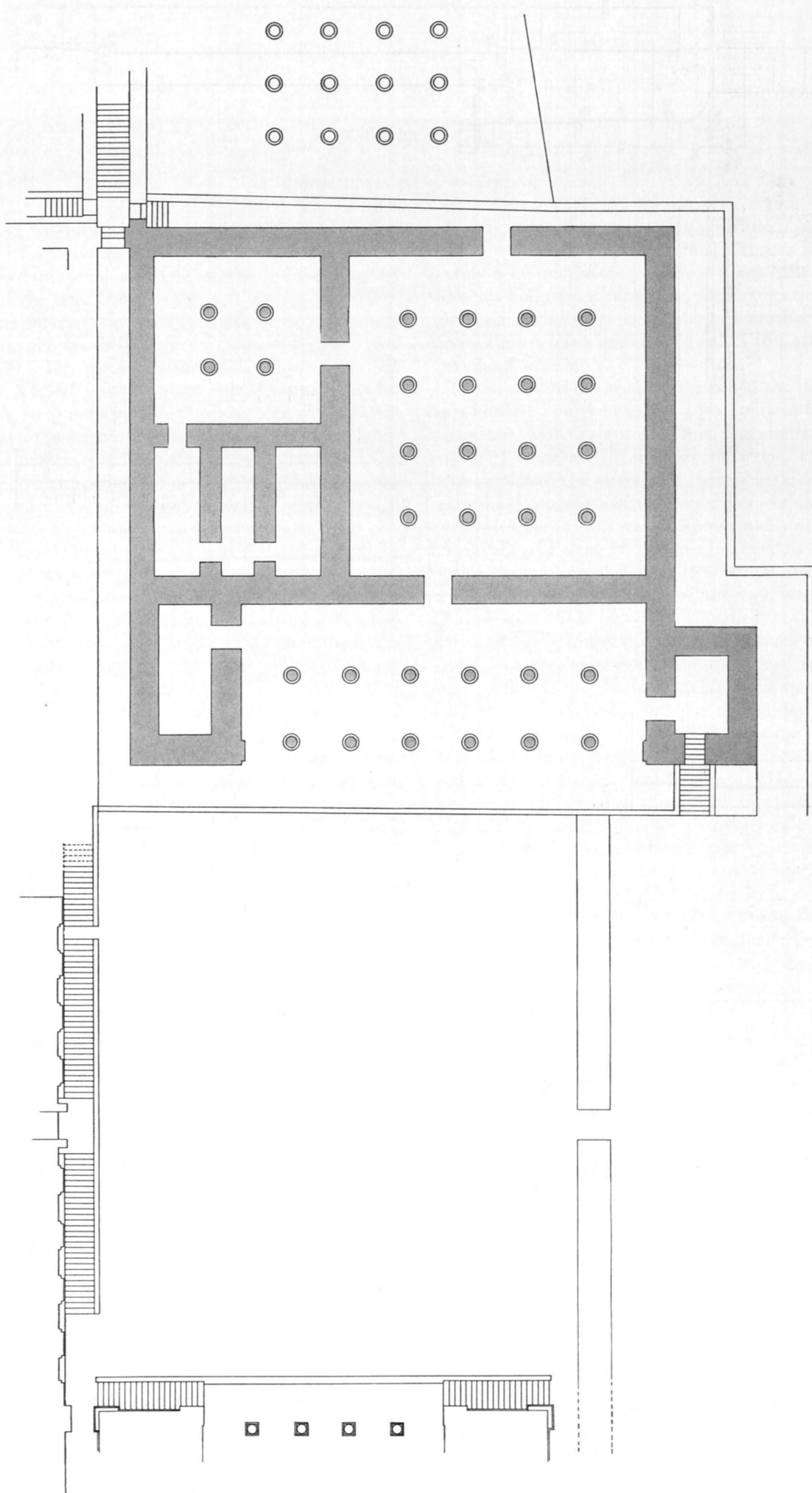


FIG. 121. TENTATIVE RECONSTRUCTION OF PLAN OF PALACE H. SCALE, 1:300

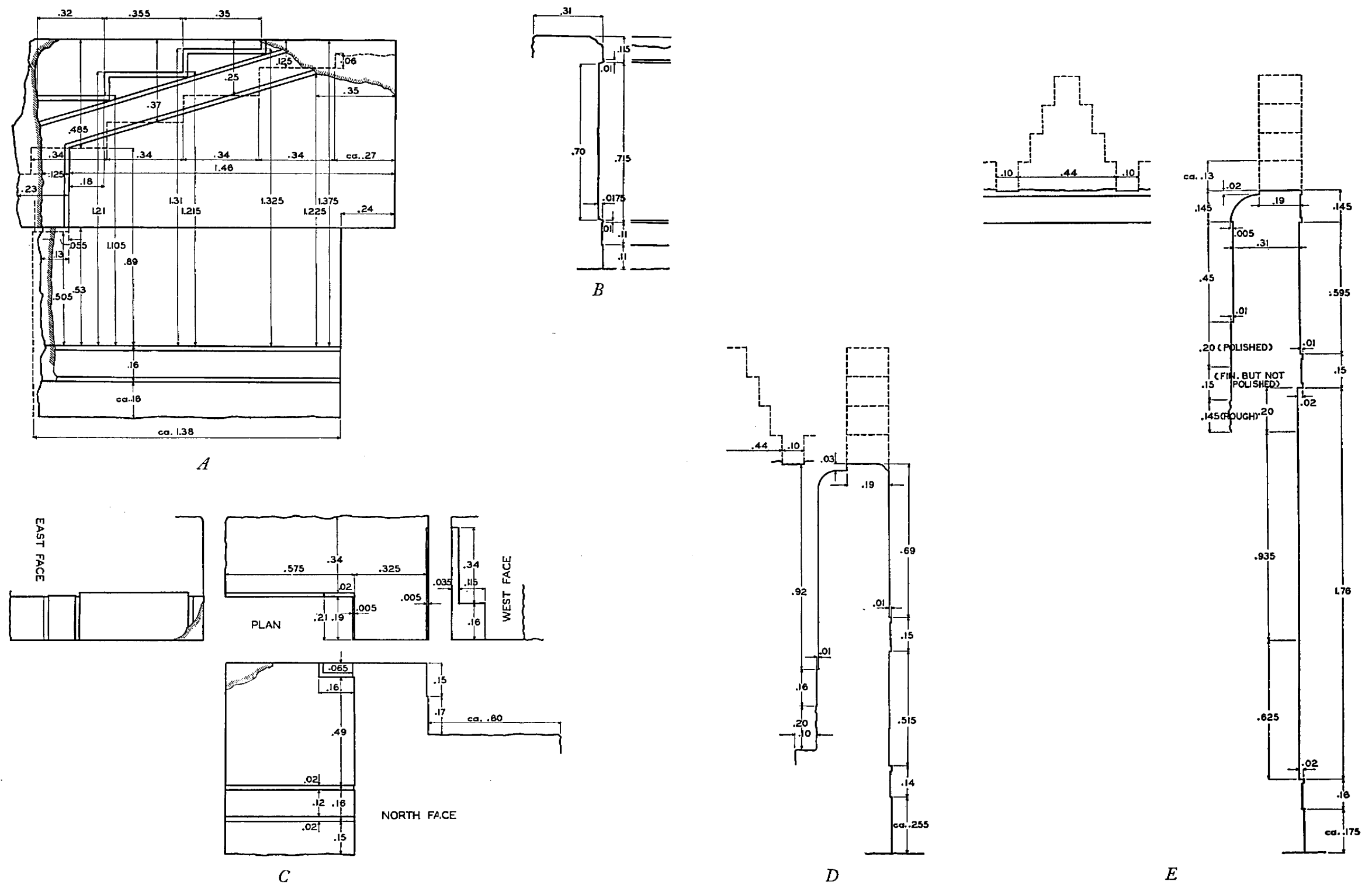


FIG. 122. PALACE H. DIAGRAMS OF DETAILS. SCALE, 1:20. *A*. NORTH FACE OF EASTERNMOST STONES OF WALL OF ARTAXERXES III. *B*. CROSS SECTION OF STONE WITH INSCRIPTION OF ARTAXERXES I. *C*. WESTERNMOST STONE OF WALL OF ARTAXERXES III. *D*. CROSS SECTION OF STONE WITH SERVANT RELIEFS IN EAST STAIRS. *E*. CROSS SECTION OF CENTER OF WALL OF ARTAXERXES III, WITH CRENELATION RECONSTRUCTED

PALACE H

GENERAL DESCRIPTION

Others, and we ourselves, formerly called this building the "Palace of Artaxerxes III." It was actually a composition of reused material and one of the least attractive structures of the site. It rose—if it was ever completed—on a platform which is now largely a flat mound of rubble buttressed on the north by the remnants of a sculptured wall (Pl. 200). The mound is somewhat lower than the platform of Xerxes' palace on the east. Column foundations, that is, irregular stone slabs whose tops were shaped into disks, and the remains of some base courses of roughly hewn stones preserve at least a portion of the plan (Fig. 120). There are indications of a main hall of sixteen columns arranged in four rows and a portico—open toward the north—whose roof was carried by two rows of six columns each. Rooms for private use were located east of the main hall: a room with four columns and perhaps, as assumed on our reconstructed plan (Fig. 121), three narrow chambers. There were probably two guardrooms flanking the portico. A remnant of a stairway of stone near the northwestern corner suggests that the building was entered through the western guardroom.

There are parts of another stairway, never completed, at the northeast corner of the platform of Palace H (see p. 282). From the landing situated at the southwest corner of Xerxes' palace (see pp. 244 and 260) some stone steps ascend northward. Apparently they led to an open passage between Palace H and the platform of Xerxes' palace. Further stone steps, descending westward from the same landing, led to a balcony which was located between the southern face of Palace H and the Terrace edge and continued along the western face of the building. The level of the balcony was considerably below that of the palace platform (see Fig. 23) and corresponded roughly to the level of the courtyard north of the building. Narrow roughened strips along sections of the western and southern edges of the Terrace (see Fig. 120) indicate that at some period the balcony had a parapet of stone, similar perhaps to that of the balcony of Xerxes' palace (see p. 244).

It is possible that the twelve-columned "pavilion" (see p. 264) which stood south of Palace H on a level approximately 6 meters below its balcony was contemporaneous with this building. At any rate, the fortification wall which once undoubtedly protected the low southern step of the Terrace must have been destroyed in this area before the "pavilion" was built.

The courtyard between Palace H and the Palace of Darius is bordered on the west by a wall undoubtedly contemporaneous with Palace H. Only fragments of the base course of stone are extant. Several stones obviously had been employed elsewhere, and there is little doubt that the entire base course consists of reused material. The missing mud-brick part of this wall was presumably not higher than the façade of Palace H. An opening may have existed opposite the landing of Xerxes' western stairway. The wall breaks off at a point west of the southern stairway of Darius' palace. It may have turned east immediately north of that stairway to abut the southwest corner of Darius' palace, or it may have continued parallel to the western face of that building as far as its western stairway. Had the wall extended beyond the western stairway to abut the southwestern tower of the Apadana (see Fig. 21), it would have covered the sculptured façade of the stairway and its inscription of Artaxerxes III.

After careful consideration of all clues we are now convinced that all the reliefs and inscriptions connected with Palace H had been removed from other locations. The manner of their piecemeal re-employment appears so haphazard and senseless that we hesitate to attribute this structure to an Achaemenid ruler, even to Darius III.¹ We rather believe that sometime after the destruction of Persepolis (though certainly prior to the Islamic era) a local ruler or governor erected (or commenced to erect) this building,² combining parts of two or more previously destroyed palaces. The western wall of the courtyard suggests that the same person made use of the Palace of Darius (I), which even now would be easily restorable.

SCULPTURES AND INSCRIPTIONS OF ARTAXERXES III

The principal portion of the palace front, extending from the western face of Xerxes' palace platform as far as the western inclosure of the courtyard (Pl. 200), consists of parts of the façade of a sculptured stairway from a palace altered or repaired and presumably inhabited by Artaxerxes III. This is indicated by three inscribed panels (Pls. 201 and 202 A), each bearing the same Old Persian text (Art. III Pers. a, c, d)³ of this ruler that is engraved on the western stairway of Darius' palace (Art. III Pers. b; trans-

lated on p. 224). All four copies of the text differ in the arrangement of the lines. In this text Artaxerxes III does not claim to have built a palace. Obviously he did not build Darius' palace, and by inference we are justified in concluding that Artaxerxes III added a sculptured stairway—or just the sculptures of the façade (depending on the meaning of *ustashanām*; see p. 224, n. 27) subsequently

1. So Herzfeld (*IAE*, p. 231)

2. A similar suggestion was made by Flandin in *Voyage en Perse ... Relation du voyage ...* II 184.

3. One inscribed fragment found in the rubble hillock of Palace D (see p. 269) fits, according to Cameron, into the fractured upper portion of the westernmost panel (Pl. 202 A). The fragment restores the words *pa-u-ça* ("son") and *a-ra-ta-xa-ša-ça-a* ("Artaxerxes") in the original lines 20 and 21. It is difficult to account for the find-spot of this fragment.

used at Palace H—to another palace constructed by an earlier ruler. We have explained that marks on the bedrock and on foundation slabs along the southern front of the Palace G area indicate the original location of the façade of Artaxerxes III and suggest the site of an earlier palace (see p. 274).

The composition of the façade reliefs is similar to that of the sculptures on the façade of the southern stairway of the Palace of Darius. Sixteen Persian guards, dressed and armed in the same fashion as those of the latter palace, stand at either side of the central inscription panel. The usual combat scene of lion and bull at either end is separated from the guards by the eastern and western inscription panels. The portico parapet, which was crowned by crenellations (Fig. 122 E), was ornamented on both faces with a continuous design of the usual palmettes on segmented stalks. The position of the extant piece (if correctly restored) indicates that there was no central motive—such as the image of Ahuramazda flanked by sphinxes—on its outer face.

Haines determined that the stairs originally located at either end of the façade consisted of an upper flight parallel to the façade, a landing, and a lower flight forming a right angle with the front of the building. Although this arrangement of stairs differs from that of the other monumental stairways of Persepolis, Haines is undoubtedly correct. The western end of the wall actually turns at a right angle and continues toward the north for a distance of 19 cm. (see Fig. 122 C). The projecting fragment of the stone shows on its eastern face the remnant of a palmette motif. If the stairs too had been transferred to the present location of the façade, their lower western flight would have coincided with the southern end of the west wall of the courtyard north of Palace H (see p. 279).

The eastern end of the façade as reused is near the corner originally formed by the eastern lower flight of stairs. Here

the panel with the lion-and-bull relief does not form a triangle (see Fig. 122 A and Pl. 200 A), as do the corresponding panels on the façade of the southern stairway of Darius' palace, where the stairs at each end are constructed in one flight parallel to the façade.

The two wings of the stairway were adorned with reliefs of servants carrying supplies for the royal table, similar to the stairway reliefs of Darius' palace and to those of the western and eastern stairs leading to the palace platform of Xerxes. On the stairway under consideration a few fragments only of the servant figures are extant. Parts of five rather carelessly executed figures of Medes and Persians, alternating as usual, are preserved on the inner (southern) face at the eastern end of the wall (Pl. 203 A). The servants are shown ascending the upper flight, which originally abutted the steps marked on the stone slabs. These figures must have been completely covered by the rubble of which the platform was composed. If the stairs proper had been transferred to this location, the bottom step of the upper flight would have run dead against the stone wall of Xerxes' palace platform. On the opposite, outer face of the wall the legs of other servant figures are preserved (Pl. 203 B). Flandin and Coste pictured the remnants of the corresponding servant reliefs at the western end of the façade.⁴ The slab which includes the upper part of the lion-and-bull panel has been further mutilated during the past century (Pl. 203 D). It was given by the Iranian authorities to the Oriental Institute and is now on permanent loan in the Museum of Fine Arts in Boston. A servant relief which was reused in the unfinished stairs at the northeast corner of Palace H (see p. 282) may once have bordered a landing of the stairway concerned. Three additional fragments with figures of servants, lying in the debris of Palace H, and the servant reliefs found near the southwest corner of Palace G (pp. 274 f.) also may have belonged to the same structure.

SCULPTURES AND INSCRIPTIONS OF ARTAXERXES I

Aligned with the façade of Artaxerxes III but located west of the western wall of the courtyard there is a portion of a palace façade of Artaxerxes I (Pls. 200 and 202 C, Fig. 122 B), including remnants of a Babylonian inscription of this king. The most recent translations of this inscription (Art. I Pers. a⁵) were made by Herzfeld⁶ and Cameron. Cameron's translation⁷ is as follows:

- (1) ⁸ . . . one among many kings,
- (2) one among many lords.
- (3) I (am) Artaxerxes, great king,
- (4) king of kings, king of lands of all tongues,
- (5) king of this great extensive earth, son of
- (6) Xerxes the king, (grand)son of Darius,
- (7) an Achaemenid.
- (8) Artaxerxes the great king says:
- (9) In the protection of Ahuramazda,
- (10) this palace Xerxes the king, who (was)
- (11) my father, . . . , afterwards I

4. Flandin and Coste, Pl. 129.

5. Bibliography in *KA*, p. XXVI.

6. *AI*, pp. 43 f. (No. 20).

7. Published by Kent with explanation of differences between Cameron's and Herzfeld's versions; see *JNES* IV 228–32.

8. Preceded by the (missing) customary formula of adoration. For parts of the text now destroyed see Flandin and Coste, Pl. 129.

(12) built (to completion).⁹ Me may Ahuramazda

(13) protect, with all the gods,

(14) and my kingdom and what I built.

One of a number of stone slabs found in the courtyard north of the façade of Artaxerxes III bears the remains of an Old Persian inscription (Pl. 202 B). Herzfeld¹⁰ attributed this text to Artaxerxes I and pointed out a certain relationship to the Babylonian inscription dealt with above. Kent and Cameron¹¹ are convinced that the Old Persian fragment is part of an inscription of which the Babylonian text is a translation. Kent completely restored the very fragmentary Old Persian text. His English translation differs in minor points only from Cameron's translation of the Babylonian inscription (see above) and does not shed any light on the wording of the important fragmentary passage in lines 10–12 (see n. 9). In any event, both inscriptions¹²

9. Kent, *op. cit.* p. 231, points out that by comparison with Artaxerxes I's foundation text from the Throne Hall ("Hundred-Column Hall") this passage clearly means "this palace Xerxes my father began and I finished," but the precise wording remains uncertain.

10. *AI*, pp. 44 f. (No. 21).

11. *JNES* IV 229.

12. There is still a possibility that an El. version and additional portions of the Bab. and OP texts will be found, perhaps in the talus of debris at the foot of the Terrace platform west of Palace H. Cameron has suggested that a fragment found in Xerxes' palace may be part of the OP text (see p. 239).

probably belonged to the façade of a monumental stairway which led to a palace the construction of which was started by Xerxes and completed by Artaxerxes I. This stairway was ornamented with reliefs of tribute-bearing delegations, as indicated by the group of figures carved on the stone slab which bears the Babylonian inscription (Pl. 202 C).

The tribute scene has been badly mutilated since Flandin copied it¹³ and since Stolze subsequently recorded it photographically.¹⁴ Herzfeld published a drawing¹⁵ which is based on Stolze's illustration. Our photograph shows the remnants of ten figures. There are three bearers of animal skins at the right end, preceded—according to Flandin's drawing combined with Stolze's photograph—by four persons, each carrying one elephant tusk on his right shoulder. The tusk-bearers are preceded, according to Stolze's photograph, by two figures, each holding one deep roughly cylindrical vessel with a conical lid. Flandin, who illustrates a total of eight persons, shows only one delegate with a vessel; Stolze's photograph does not show the tenth figure—another tribute-bearer or the leader of the delegation—whose sandaled feet only are now extant (see Pl. 202 C).

All the delegates wear a belted skirt¹⁶ reaching to the knees. The upper body and the legs are bare. The sandals have a strap across the toes and the instep and are provided with a heel guard. All headdresses are now destroyed, but the hair, neatly combed and parted on the left side of the head, is preserved on the last two figures. Herzfeld erroneously shows two of the figures wearing a domed helmet with a pointed knob to which a ribbon is attached. Flandin pictures a topknot forming a double volute on those delegates whose hair is not covered by the heads of animal skins.

None of the delegations in the great tribute procession of the Apadana resemble the group of tribute-bearers under consideration closely enough to permit identification of the latter, but there is no doubt that it belongs to our group of Indian nations (V; see p. 117). The nature of the gifts carried by the delegates in the Artaxerxes relief supports this attribution. As to dress, in the Apadana procession the skirted, bare-chested and barelegged Indians (Pl. 44), whose leader wears a similar kind of sandal, are closest to our tribute-bearers. The dress of the members of Apadana delegation No. 14—the Gandarians? (Pl. 40)—too, obviously resembles that of the tribute-bearers concerned. However, the peculiar hairdress of the figures in the Artaxerxes relief links them most closely with the assumed Sattagyedian throne-bearer in the Throne Hall (No. W11; see p. 136).

It has been suggested,¹⁷ erroneously without doubt, that two distinct nations are represented in our relief, namely that the last three tribute-bearers are representatives of the Akaufačiya¹⁸ whereas the preceding tribute-bearers rep-

resent the Sattagydians. The earlier illustrations to which we have referred (nn. 13–14) leave no doubt that our relief shows nine almost identically attired tribute-bearers, all of whom certainly represent the same nation. The tenth person—first in line—of whom the sandaled feet only are preserved, could possibly be the delegation leader.

The rest of the western portion of the façade of Palace H presumably showed additional sections of Artaxerxes I's tribute procession. A fragment (Pl. 203 C) standing in the courtyard north of the building pictures four persons whose dress and gifts (two rams and fabrics) identify them with the assumed Cilicians of the Apadana procession (cf. Pl. 34). Another fragment, found on the platform of Palace H, apparently belongs to a second relief depicting Cilicians(?). It shows part of one person and behind him the head of a ram. This fragment suggests that the palace of Artaxerxes I was ornamented with two views of the same tribute procession, composed of complementary scenes in the manner of the procession of the Apadana (see p. 82) though certainly at a smaller scale.

The site of the palace founded by Xerxes and completed by Artaxerxes I is unknown, but in our opinion there are only three possible locations, namely the areas occupied by the remnants of Palaces G, D, and H. The most attractive site would have been that of Palace G, which stood on the most elevated step of the Persepolis Terrace and formed a balanced compound with the Palace of Xerxes (see Fig. 21). We mentioned a clue which suggests the existence of a structure antedating that of Artaxerxes III on the site of Palace G (see p. 274). If Palace G was originally the palace of Artaxerxes I, it must have been embellished with reliefs of tribute-bearing delegations which were either replaced or supplemented by the façade of Artaxerxes III, showing reliefs of servant processions. The wording of Artaxerxes III's inscription permits this assumption.

In order to assign the palace of Artaxerxes I to the site of Palace D, we would have to assume that the hillock of stone chips (see p. 269) is the core of a terrace—similar to the platform of Palace H—which was buttressed along its northern front by the façade with which we are concerned. This solution is not very satisfactory, for the building marked by remains of walls, a stone sill, and two column bases would have been buried by the terrace, not to speak of the inscribed tori and so forth which belonged to the Palace of Xerxes and were found in the lower portion of the hillock.

It is possible, of course, that the palace of Artaxerxes I originally stood on the site of Palace H. The only clues suggesting this location, namely fragments of the façade of Artaxerxes I, are indecisive, because it is very doubtful that the portion of the façade aligned with that of Artaxerxes III (see p. 280) is in its original position and there is no clue as to the original location of the detached fragments which we ascribe to the palace of Artaxerxes I (see p. 280).¹⁹

19. While this volume was in press, the writer was orally informed by M. Ravanbod that tests of the Iranian Antiquity Service established the existence of a building level below the surface remains of Palace H. This increases the possibility that the palace of Artaxerxes I had actually occupied the site of Palace H.

13. Cf. Flandin and Coste, Pl. 130.

14. Cf. Stolze and Andreas, *Persepolis I*, Pl. 65.

15. *IF*, Fig. 16.

16. Or a skirt rolled at the top.

17. By Junge in *ZDMG* XCVIII = n.F. XXIII 371–76.

18. Mentioned in Xerxes' so-called "Daiva" text (see *AI*, pp. 27–35 [No. 14]), which occurs on foundation documents discovered by us in the quarters of the garrison (pp. 208–9; see Fig. 2 for possible location of Akaufaka).

THE EAST STAIRS

The northwest corner of Xerxes' palace had either been destroyed before this stairway (Pls. 204–5 and Fig. 122 D) was constructed, or it was cut away to provide room for the stairs. There is hardly a doubt that in either case the palace had been in disuse for some time. The upper part of the stairway which was meant to give access to the northeast portion of Palace H was never finished, and no steps actually led to the platform of the palace.

The stone steps appear to have belonged originally to at least two other flights of stairs, and the stairway sculptures too were taken from two different locations. A relief showing four alternating Persian and Median servants on the east side of the stairway (Pls. 204 A and 205) may once have adjoined a landing connected with the façade of Artaxerxes III (see p. 280). The opposite face of the stone slab likewise is sculptured, showing on its upper portion the same design of servants carrying supplies—a fact which proves that the slab was reused, for its eastern face is so close to the bedrock of Xerxes' palace platform that its sculptures would not have been visible after the completion of the stairs. Furthermore, the palmette pattern on the western face of the slab is partly covered by the abutting steps.

The two remaining reliefs of the stairway probably belonged to the palace of Artaxerxes I, for both show parts of tribute processions (cf. p. 281). The larger fragment (see Pl. 205), bordering the stairway on the west and standing on the floor of the courtyard, pictures representatives of two nations separated by an armed Median usher. He wears a torque and carries a staff—distinctive attributes of the ushers in the Apadana procession. However, in the relief under consideration no cypress tree separates the delegations, as in the Apadana.

The remainder of the first delegation, which may represent the Saka Tigraxauda,²⁰ consists of seven persons. The gifts carried by the three foremost delegates are long-sleeved fur(?)—trimmed overcoats. Next follow three men bearing fabric with dentate fringe. The last person leads a stallion equipped with headgear and with a tassel tied to the end of its tail. Each delegate has a mustache and a long stringy beard with scalloped outline on the cheek. The hair is bunched behind the ear flap of the conical headdress. What appear to be strips of leather, or, more probably, fur,

20. Here, however, unarmed in contrast to the members of delegation No. 11 of the Apadana (Pl. 37). See Junge, *Saka-Studien*, p. 81.

embellish the upper part of the belted short-sleeved "cut-away coat." The trousers are tied with string below the knees and seem to continue to a point above the ankles. Less plausibly, the parts below the string may represent the sagging tops of boots.²¹

There remain parts of three persons only of the second delegation, in addition to the Median usher, who holds the hand of the delegation leader. The gifts carried by the two persons behind the leader consist of lances, two of them being held by one man. Possibly the second delegate, of whom only one hand is preserved, carried further gifts in addition to a lance. The delegates wear a short-sleeved belted coat reaching to the knees. The belt is tied in front. Their backs are covered by a cape with tasseled ends reaching to the calves. Two ends (one of which is visible) of the cape were thrown over the shoulders and may have been joined by a clasp (not shown) at the chest. The heads and headdresses are missing. Legs and feet are bare. We are tentatively identifying this delegation with the Gandarians on account of the close similarity in dress and tribute to delegation No. 14 in the Apadana procession (see Pl. 40).

The second relief of tribute-bearers (Pl. 204 B) stands above the uppermost extant step of the stairway and is roughly aligned with the above-mentioned relief of servants. The stone slab with the tribute scene is probably not *in situ*—even in secondary use—considering the orientation of its figures. There are four tribute-bearers carrying coats as gifts. The badly mutilated fifth person, equipped with a staff, is a Persian usher preceding another (missing) delegation. In dress the tribute-bearers are almost identical with the group of the Apadana reliefs tentatively identified as Cappadocians (Pl. 35), and their contributions are similar. Each delegate has a mustache and a short pointed beard marked by small curls in the same manner as the hair which shows beneath the three-knobbed (felt?) hat. The ear flaps of the latter are turned up and tied at the back. Below a mantle fastened near the shoulder by means of a fibula, the delegates wear the belted coat and stiff trousers of Median type.

21. The dress of the Saka delegation pictured at the left in the lowest register of the relief of Artaxerxes III on the façade of the western stairway of Darius' palace (see p. 229 and Pl. 153 B) is almost identical with that of the tribute-bearers concerned. It is quite certain, therefore, that the two groups represent the same nation.

APPENDIX

A STUDY OF WALL PLASTER, FLOORING, AND BITUMEN

By F. R. Matson¹

GYP SUM PLASTER AND MORTAR

THE use of gypsum plaster and mortar was widespread in Egypt and the Near East in antiquity, for gypsum deposits are found throughout most of the region and the material can be prepared without too much trouble or fuel. When gypsum is heated just a little over 100° C. it loses much of its chemically combined water and becomes what is now known as plaster of Paris. This, when powdered and mixed with water, will again form gypsum, so it is a material readily adapted for use as mortars and plasters. If gypsum is calcined at too high a temperature (above 200° C.), however, all of the chemically combined water is driven off and the mineral anhydrite is formed, which will not recombine with water. It is therefore necessary to use some care in preparing the plaster of Paris, and occasionally in the ancient plasters fragments of anhydrite are found, which show that some of the material was fired too high.

Although gypsum is a fine finishing material for buildings, it has one defect—it is slightly soluble in water. This helps explain why so little plaster is found when ancient buildings are excavated, for over the millennia if there is fairly good drainage the ground waters will gradually dissolve the plaster. When fire destroys buildings the temperatures reached are usually above that at which anhydrite is formed, so the gypsum plaster will be decomposed into a friable powder and disappear.

Lucas² and Partington³ have summarized most of the information available about ancient plasters and mortars. A technical study of the plasters from Seleucia on the Tigris by Matson was abstracted by Debevoise⁴ but has not been published in full.

The specimens from Persepolis and Naqsh-i-Rustam⁵ were examined under a binocular microscope and thin sections and powder mounts of the materials were studied under a petrographic microscope. A differential thermal analysis was made of two of the pieces to check the identification of the gypsum. If the term "plaster" is reserved for

well finished smooth external surfacings and "mortar" is the designation used for the more roughly finished pieces from walls, floors, and from between bricks, then only one of the five specimens examined can be termed a plaster while the other four are mortars. The differentiation between the two is not important, especially when only small fragments are studied, for it is largely a matter of definition.

APADANA: FLOOR SAMPLE FROM ROOM 5

The specimen is 76 × 51 × 13 mm. in size with a long oval cross section. The outer face is a slightly irregular surface with an intentional depression near one end. The fragment is backed with raw brown clay in which there are numerous straw or grass impressions indicating chaff tempering. A petrographic study of a thin section of the material shows that it is composed chiefly of very fine gypsum although some grains are up to 0.5 mm. in diameter. There is considerable anhydrite present in angular grains up to 1.5 mm. in length and 0.7 mm. in width. Several clay lumps occur in the section up to 0.7 mm. in diameter with an occasional larger grain, and much fine clay is disseminated through the section, giving the mortar a dirty tan color. The texture of the mortar can be seen in Figure 123 C, in which the bright grains are gypsum and the elongated grain in the upper right area is anhydrite.

WEST WING OF HAREM, ROOM 6: PLASTER SAMPLE FROM NORTHERN NICHE IN WEST WALL

Two thin flat fragments of white plaster are each about 19 × 13 × 8 mm. in size. Both surfaces are quite smooth and parallel. A petrographic thin section shows that this is a gypsum plaster that is very fine grained, hardly any inclusions being seen in the section. In fineness of texture this sample is quite different from the others in the series. Perhaps the archeological observations will suggest a specific use for this type of material.⁶

LIME PLASTER

Calcite, the mineral from which lime is prepared, occurs abundantly as limestone in most of the same regions in which gypsum is found. When calcite (calcium carbonate) is calcined at a temperature above 800° C. it decomposes

and burnt lime is formed. This material can be slaked with water and the paste so formed may be used as a plaster, which will slowly take a permanent set as it gradually absorbs carbon dioxide from the air and becomes calcium carbonate again. A plaster thus prepared is very

1. Two of my graduate students, Messrs. Harold Stetson and Alexander Sheheen, assisted in the laboratory examinations.

2. A. Lucas, *Ancient Egyptian Materials & Industries* (3d ed., rev.; London, 1948).

3. J. R. Partington, *Origins and Development of Applied Chemistry* (London, 1935).

4. See N. C. Debevoise, "The Origin of Decorative Stucco," *AJA* XLV (1941) 48 f.

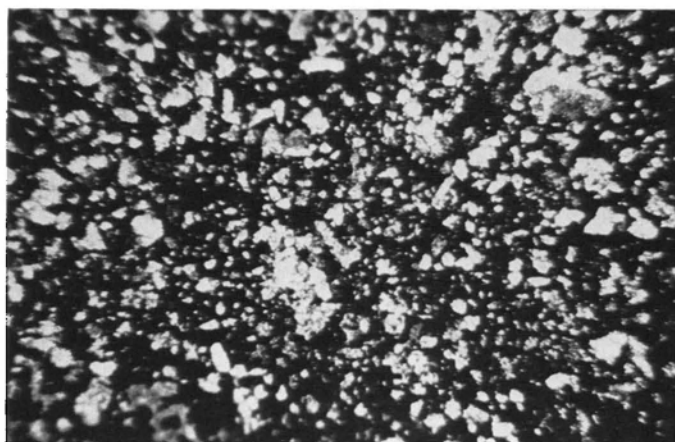
5. [To be considered in Vol. III.—E. F. SCHMIDT.]

6. [The plaster was used in repairing a niche, perhaps at a time considerably later than the original construction of the room.—SCHMIDT.]

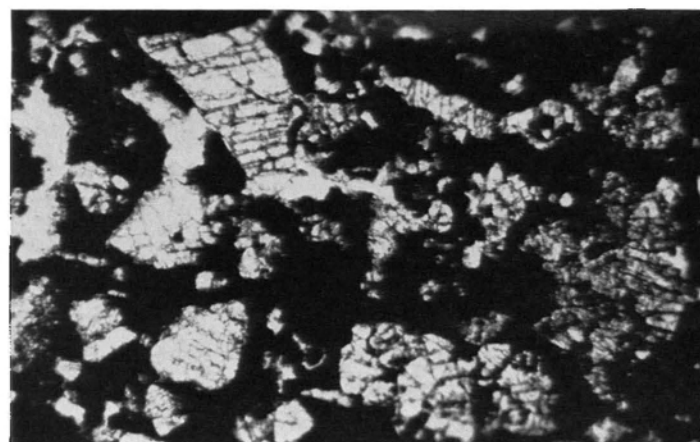
durable, but because of the cost of the fuel necessary to reach the calcining temperature it would be more expensive than a gypsum plaster in a region where there is a fuel shortage. Its slower rate of setting might also be an undesirable feature. Lucas states that he knows of no example of the use of lime in any form in Egypt before the time of Ptolemy I.⁷ Many references to lime plaster in the archaeological literature are doubtless inaccurate, the material really being a gypsum plaster. Yet it is simple to differentiate between the two by putting a few drops of dilute acid on the sample to be tested. If the acid causes it to fizz, it is a lime plaster; if there is no reaction, it is one made from gypsum. Since limestone and gypsum frequently occur to-

surface of the larger fragments is flat and is covered with a fine coating of light brown clay. The rough inner surface is also coated with a wash of clay. In order to see whether there was any surface coloration of the plaster, some of the clay was scraped off with a needle while the specimen was being examined under a binocular microscope. No color was found.

A petrographic thin section shows that this is a lime plaster. It is composed chiefly of cryptocrystalline calcite which formed from the slaked lime but also contains crystalline grains of calcite that show well marked cleavage parting throughout the grains that are up to 0.2 mm. in diameter. Larger lumps of granular calcite up to 0.7 mm.



A



B



C



D

FIG. 123. PHOTOMICROGRAPHS. A-B. BITUMEN FROM EASTERN PORTICO OF APADANA. C. GYPSUM MORTAR FROM FLOOR OF ROOM 5 IN THE APADANA. D. RED-SURFACED LIME PLASTER FROM FLOOR OF HALL 73 IN THE TREASURY
MAGNIFICATIONS, 25 TIMES (A, C, D) AND 50 TIMES (B)

gether, it is not uncommon to have a few grains of calcite mixed into a gypsum body. Occasionally the two materials were intentionally mixed when it was desirable to retard the rate of setting of the plaster so that the surface could be worked more carefully. With a little experience it should be possible to determine in the field which of the three types of plaster has been found. It would be helpful if more archeologists would use this simple acid test as an aid in sorting the plasters into types and in selecting specimens to bring home for further study in the laboratory.

TREASURY: SAMPLE OF FLOORING FROM ROOM 64

This sample is composed of several lumps of plaster, the largest of which is 25 × 19 × 13 mm. in size. The exterior

in diameter and a vein of granular material occur in the slide. Such material had not been sufficiently calcined when the lime was burned to decompose it, so it remained in its original crystalline form, the cleavage parting being caused by heat because of the difference in expansion of the calcite in two crystallographic directions. Very fine angular quartz grains 0.05–0.1 mm. in size occur very sparsely in the plaster but are abundant in the clay surfacing of the fragment. Some lumps of clay appear throughout the slide, few of which are larger than 0.4 mm. In the clay surfacing many biotite flakes occur.

Some of the plaster was powdered and treated with dilute hydrochloric acid to dissolve the calcite in order to

7. *Op. cit.* p. 93.

check on the other materials that were present. After washing and drying the residue, small lumps of unburnt clay and a few grains of quartz were found. It is not impossible that the clay was intentionally added, but this cannot be assumed because it could so easily have been included as an impurity when the plaster was made.

TREASURY: SAMPLE OF RED-SURFACED
FLOORING FROM HALL 73

This flat piece of plaster has a smooth exterior coated with red ocher and is $25 \times 19 \times 6$ mm. in size. It is tempered with dark grains of limestone, brown to black in color, that are up to 2 mm. in diameter. The petrographic thin section shows that this is a lime plaster that contains not only coarse lumps of the cryptocrystalline limestone already mentioned, but also angular grains of calcite in the

same size range that show well developed cleavage, some fossiliferous limestone, and a few chips of marble. Clay lumps occasionally appear up to 0.7 mm. in size, and a few very fine grains of angular quartz less than 0.2 mm. in diameter are present. The red ocher surfacing is 0.35 mm. thick and contains many fine grains of calcite. Figure 123 D shows a thin section of this piece of plaster. The dark red pigment layer containing fine grains of calcite can be seen at the top of the illustration and the crystalline and cryptocrystalline calcite in the body can be recognized. One of the coarse lumps of limestone appears in the lower right-hand corner.

This plaster was intentionally tempered to give it greater strength, and more than one source of lime was used. One would have to be familiar with the local types of limestone before the significance of this mixture could be discussed.

CALCITE

TREASURY: SAMPLE OF YELLOW SUBSTANCE
FROM SUBFLOOR OF ROOM 33

The sample consists of a tan lump about 19 mm. in diameter together with a quantity of very fine powder of particles less than 0.2 mm. in diameter, most of them be-

ing in the grain size range of 0.05–0.1 mm. A microscopic examination of the material showed that much of the calcite was cryptocrystalline but many good crystalline fragments were also present. The calcite could have served as a white pigment or as a raw material for lime plasters.

CLAY PLASTER

TREASURY: SAMPLE OF GREENISH-GRAY PLASTER
FROM THE EASTERN INCLOSURE

This sample consists of a gray clay plaster 9 mm. thick which served as facing for a brown clay.⁸ Both clays were unfired and chaff tempered. The greatest concentration of chaff was at the interface between the two clays, but the brown clay appeared to contain more chaff than did the gray. Both were very plastic when mixed with water; in fact, if too much water was added they became sticky, so the addition of chaff would make them easier materials with which to work. In order to compare the two clays we washed both with dilute acid to remove the calcite that was abundant in each; then, after they were dry, a differential thermal analysis was made of each of them. Such an analysis will show the type of clay minerals present in a clay and will often indicate the presence of major impurities such as chlorite, gypsum, or iron hydroxides. The calcite was removed because it interferes with the identification of the other minerals present. The two

curves obtained from the analysis were identical and indicated that the clay was of the Illite type which is very widespread in sedimentary deposits. Samples of the clays fired to 1,000° C. developed different colors—the gray clay became orange-tan, while the brown clay became brick red. Apparently the major difference between the two materials was in their iron content, which would affect their color development when they were fired.

Lucas⁹ reports that clay plaster was used in predynastic and early dynastic Egypt, often a better quality serving as a finishing coat for coarser clay plaster. At Tell el-Amarnah the walls of the private houses and palaces had painted decoration applied directly on the clay plaster (which faced the sun-dried brick) rather than on gypsum. The clay plaster from Persepolis that was examined did not have a smooth surface such as would be desired for painting, so probably it was just a protective coating on a brown clay plaster.

BITUMEN

APADANA, EASTERN PORTICO: SAMPLE OF BITUMEN
ADHERING TO BAKED BRICKS OF A
DRAINAGE CHANNEL

The sample is $76 \times 51 \times 19$ mm. in size. When it was examined under the binocular microscope a freshly fractured surface was seen to have a vitreous luster and to contain many mineral inclusions.

The petrographic thin section showed that the bitumen was abundantly tempered with angular grains of fossilif-

erous limestone that ranged in size from .05 to .5 mm. The addition of limestone to make bitumen less sticky so that it could be used as a mortar was well known in ancient Iraq according to Forbes,¹⁰ who found it present as the

8. [The brown clay is the layer of "mud plaster" applied to the wall and surfaced with the greenish-gray (called "gray" by Matson) clay coat.—SCHMIDT.]

9. *Op. cit.* p. 95.

10. R. J. Forbes, *Bitumen and Petroleum in Antiquity* (Leiden, 1936) pp. 44 f. and Table III.

filler in bitumen from Tell Asmar, Ur, and Babylon, and also in material from Mohenjo Daro. Forbes cites reports of its current use in mastic for the repair of Baghdad roads. The sample from Persepolis was certainly prepared in a manner similar to that used in other parts of the Near East and may have been used as a mortar or as a waterproof surfacing. A portion which was acid-treated to remove the calcite was found to contain besides the bitumen very small quantities of the following minerals listed in order of diminishing frequency: quartz, epidote, feldspar, chlorite, biotite, and muscovite. These grains were 0.1 mm. in diameter or smaller. A few clay lumps up to 3 mm. in size were also included in the bitumen, but very little vegetal material such as twigs was seen.

The general appearance of the limestone-tempered bitumen can be seen from the photomicrograph shown in Figure 123 *A*. The grains were quite uniformly distributed through the matrix, but occasionally narrow streaks of aligned fragments appeared that were up to 6.5 mm. in length. These probably represent the folding of the bitumen as it was mixed with the limestone, the mineral grains being sprinkled on the hot surface, which was then pulled or folded into the tacky mass, exposing fresh bitumen for tempering. Calcite (calcium carbonate) is of course the mineral constituent of limestone. The calcite in the bitumen was cryptocrystalline in form, both in fossiliferous and in plain grains. Occasionally grains were seen in the thin section that were coarsely crystalline and were fractured along the cleavage planes of the mineral. Such pieces can be seen in Figure 123 *B*. Since calcite expands five times as much in one crystallographic direction as it shrinks in another when it is heated up to 81° C., the grains would fracture when worked into the hot bitumen, which softens in the same temperature range. Such grains were certainly not calcined, and since much of the material was angular, it seems most unlikely that burnt lime was prepared for use with the bitumen. Instead, native limestones, some fossiliferous and some well crystallized, were crushed and worked into the hot bitumen.

When a four-gram sample of the bitumen was ignited it burned with a luminous flame. It was found to contain 52% mineral ash after being fired to a red heat. Another sample was treated with hydrochloric acid to dissolve the

calcite and was then dried. Assuming that all of the calcium carbonate had been changed to calcium chloride, we calculated that there was 47% calcium carbonate present in the sample. Therefore, on the basis of these two experiments, it can be assumed that the tempered bitumen contained 50–60% calcite by weight. The mastic thus prepared contained far more bitumen than is common in modern materials, 12–16% being usual according to Forbes.¹¹ He also points out, however, that because of excess bitumen present in the mastic, it could be worked and poured at lower temperatures than are used today, a consideration that was important in areas where fuel was scarce.

Abraham¹² presents an excellent discussion of the use of bitumen in antiquity. In tracing the literary references he quotes Zakariyya ibn Muhammad ibn Mahmud al-Qazvini on the manner in which bitumen was collected in ancient Persia:¹³

There are two kinds of native asphalt. First the kind that oozes from certain mountains; second we have the kind that appears with water in certain pools. When boiled with the water and as long as they remain together, the asphalt is soft; but if we separate them, the asphalt hardens and becomes hard and dry. It is collected by means of matting and deposited on the shore. Then it is placed in a kettle under which a fire has been lit, and a certain amount of sand is added and a mix prepared by constant stirring. When the mix is ready, it is poured on the ground, where it cools and hardens.

He also refers¹⁴ to Herodotus (vi. 119), who mentions Ardericca . . . 210 furlongs distant from Susa, and 40 from the well that is of three kinds, whence men bring up asphalt and salt and oil . . . what is drawn . . . goes three ways; the asphalt and the salt grow forthwith solid;¹⁵ the oil, which the Persians call rhadinace, is dark and evil-smelling.

There is much yet to be learned about the preparation and specific uses of bitumen in the construction of ancient buildings, and the collection of well documented specimens, together with native bitumen from the region, should aid in this project.

11. *Ibid.* pp. 49 f.

12. Herbert Abraham, *Asphalts and Allied Substances. I. Raw Materials and Manufactured Products* (5th ed.; New York, 1945).

13. *Ibid.* p. 16.

14. *Ibid.* p. 31.

15. [Here George Rawlinson's translation adds "while the oil is drawn off into casks."—SCHMIDT.]

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1. Professor Nabia Abbott and Dr. George C. Miles assisted with spellings of Islamic names, but as a general rule the principles established by Dr. A. A. Bruh have been followed; *see* Schmidt, *Flights over Ancient Cities of Iran*, pp. 99 ff.

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