

RECURSO 15/93

DOCUMENTO N° 17

Offprint from

STUDIES IN THE HISTORY
AND ARCHAEOLOGY OF
JORDAN
I

Edited by Dr Adnan Hadidi



Department of Antiquities, Amman
Hashemite Kingdom of Jordan

A New Umayyad Palace at the Citadel of Amman

During November of 1974 the Spanish Archaeological Mission in Jordan, while proceeding with its restoration of Qusayr Amra¹, began a preliminary documentation of the area known as the Umayyad Palace, on the citadel of Amman. This important task was offered to the Spanish Mission by the late Dr Yacoub Aweis who was then the Director of the Department of Antiquities. He is remembered by all of us with gratitude and appreciation. Dr Adnan Hadidi, who is now the Director of Antiquities, has offered us enthusiastic help and every encouragement.

The Umayyad Palace, as it is called, is the best preserved structure to be found on the citadel. It is located directly next to a great mass of ruins excavated by an Italian mission beginning in 1927. This effort was directed by Giacomo Guidi and later by Renato Bartoccini².

Our mission's first objective was to document the visible remains in the most precise manner possible, beginning with the Qasr which was the most significant and interesting element. Any other course of action would not have been possible at that time in fact, because the entire area we wished to study was occupied by the Jordanian Army. Once we had begun to work they gradually withdrew from the site.

For all documentation work on the citadel the technique of photogrammetry was used to ensure speed and precision. For this effort the Spanish Mission relied upon the valuable collaboration of the Servicio de Fotogrametría of the Polytechnic University of Madrid³.

Using this documentary basis, the excavation of the eastern side of the building was begun in 1978. The eastern side was the only area which had not been excavated previously. Dr Emilio Olavarri was in charge of the excavation, undertaken with the co-operation of the Jordanian Department of Antiquities. Further test pits were made inside the monument in order to complete the body of data on its construction. As we shall see, the digging has enabled us to document rather faithfully the building itself as well as the complex of structures of which it is a part.

During the final phases of the digging campaign, the co-operation of the Spanish Air Force made it possible to photograph from the air of the entire citadel (FIG. 1), especial-

ly the area being studied by the Mission, which was recorded in detail (FIG. 2). The result of this project was a precise plan of the area which greatly facilitated our work in the northern sector. Concurrently, we photogrammetrically drew elevations of the walls, yielding information to be discussed later on.

In 1979 excavations were carried out in two different areas. First a new trench was opened on the south west side of the building in order to connect with the area excavated under the direction of Dr Fawzi Zayadin of the Department of Antiquities⁴.

A second area of excavation was begun on the extreme northern side of the citadel where obviously important architectural remains were visible, giving rise to the idea that an important nucleus of the construction complex of the northern area of the citadel existed there.

In close collaboration with the Department of Antiquities, and even as the digging was going on, the consolidation and restoration of the whole complex was initiated.

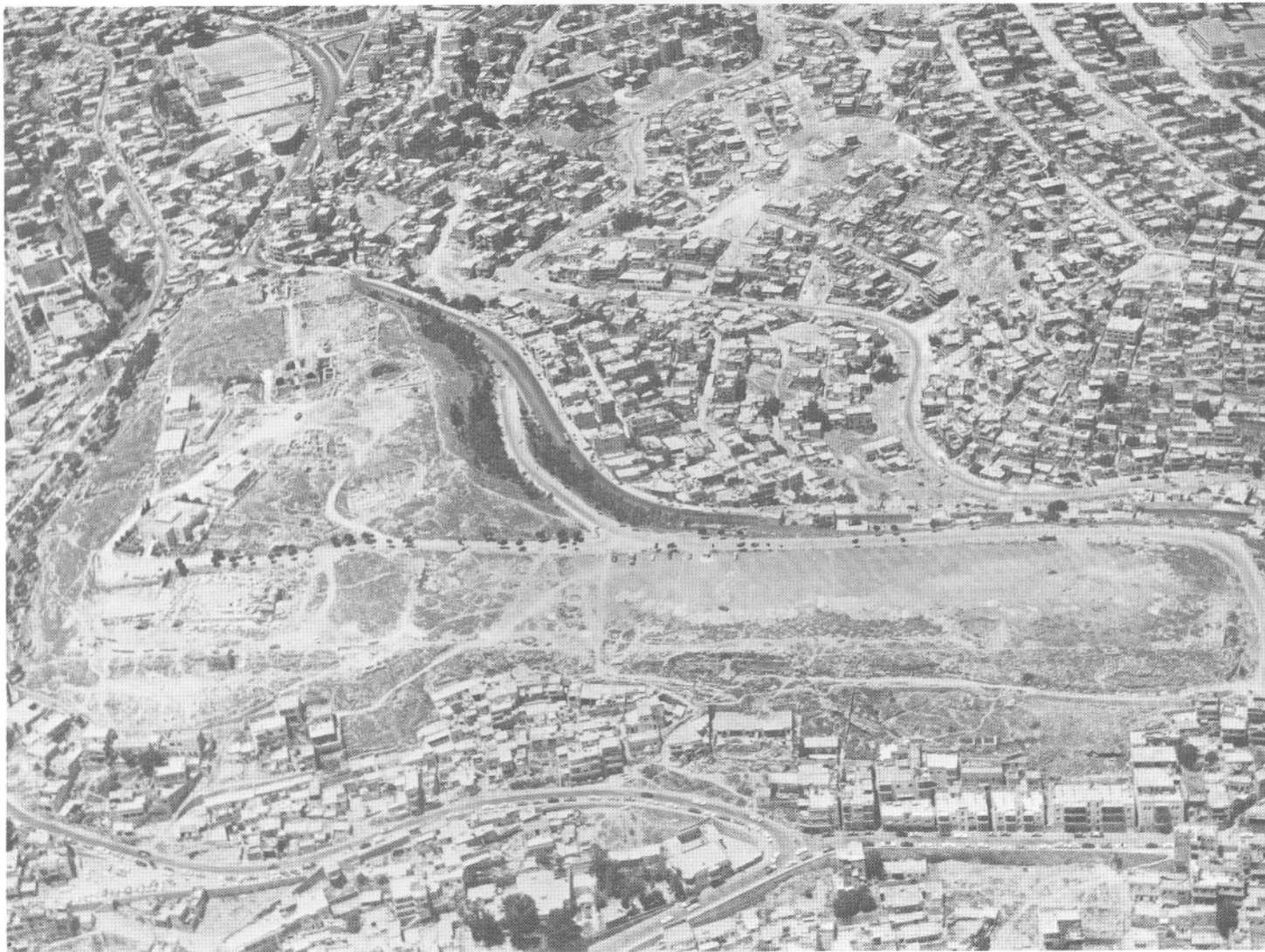
At this point in our ongoing study we have been able to establish some preliminary conclusions which, because of their special interest, we wish to make known here.

Certainly we are dealing with a splendid architectural complex of the Umayyad period which corresponds with the idea of an integrated city palace or 'Dar-al-Imara'. This complex, which was surely both the residence of an emir or governor and the seat of administration, was constructed by taking advantage of a number of pre-existing buildings. This reliance upon earlier structures determined, to a great extent, the form of the new complex although the function and prior aspect of those structures were radically transformed.

The new palace was placed at the extreme north of the citadel or Qala' on a largely artificial platform which was supported by large buttressing walls, especially on the northern and western sides. The complex has a trapezoidal form with its main side facing south, where the main entrance must have been (FIG. 3).

Within it, it is possible to distinguish three parts, perfectly outlined by the pre-existing temenos or agora dating to the Roman period which occupies a central panel extending east to west and amounting to approximately half the ground area

1. Aerial view of the citadel of Amman from the south.



of the palace. At both the north and south ends two narrower areas remain; the northern one being narrower and the southern rather wider. In the centre of this latter area stands the building heretofore known as the Umayyad Palace or 'Qasr'. In the light of our current findings it is possible to ascertain that the very well preserved building is probably a great vestibule or waiting room where people would wait to be received in audience. It is also possible that it was, in fact, a reception room. It is almost certain that there was a courtyard in front of this vestibule which communicated with the door of the main entrance.

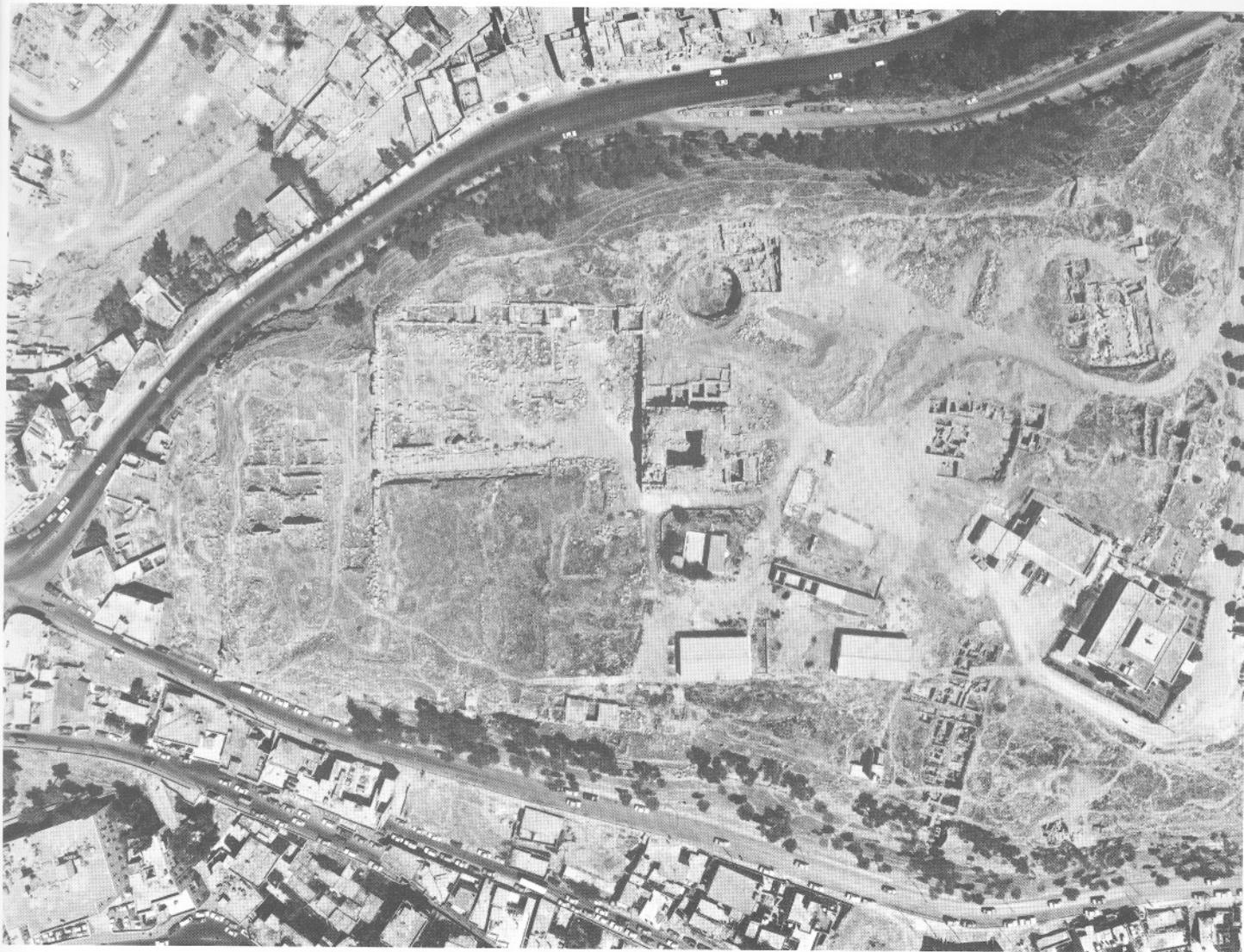
The remains of the palace are well defined on its northern, eastern and western sides. This is not the case on the southern side, where further excavation will be required in order to know its outline completely. The northern side is enclosed with a huge buttressing wall, which even today is to be seen

preserved to a height of ten metres. In the corners of this wall are small towers. The wall continues on the western side, but with a diminishing level of preservation. Near the south-west corner a door opens between two fortified towers. These towers and the rest of the perimeter walls in that vicinity are to be dated to the Roman period. It corresponds to the extreme area of the southwest corner of the temenos; the south wall of which appears as though it was intended to connect with the tower on the north side of the gate.

A large portion of the eastern side of the citadel wall is buried in ancient deposits as well as fill from the Italian excavation. On this side the wall forms three parts, corresponding to the northern area. In this last part the wall is preserved, practically buried except for a small part exposed by Dr Zayadine's digging.

On the south side the boundary of the Palace is in doubt as

2. Aerial metric photography of the palace area.



there has been very little excavation in that area. In the section excavated by Dr Zayadine there is a wall of great width, (1 m. 10 cm.) of very solid construction with its foundations in virgin soil.

In our opinion, it was used as an enclosing wall for the Umayyad compound. We hope that the next programme of excavation will clear up questions on this point and also locate the main door of the Palace.

We offer the hypothesis that between this door and the vestibule there was a courtyard or some other uncovered space which permitted a view of the building's façade.

The vestibule

The building, although simple, was not lacking in grandeur (FIG. 4).

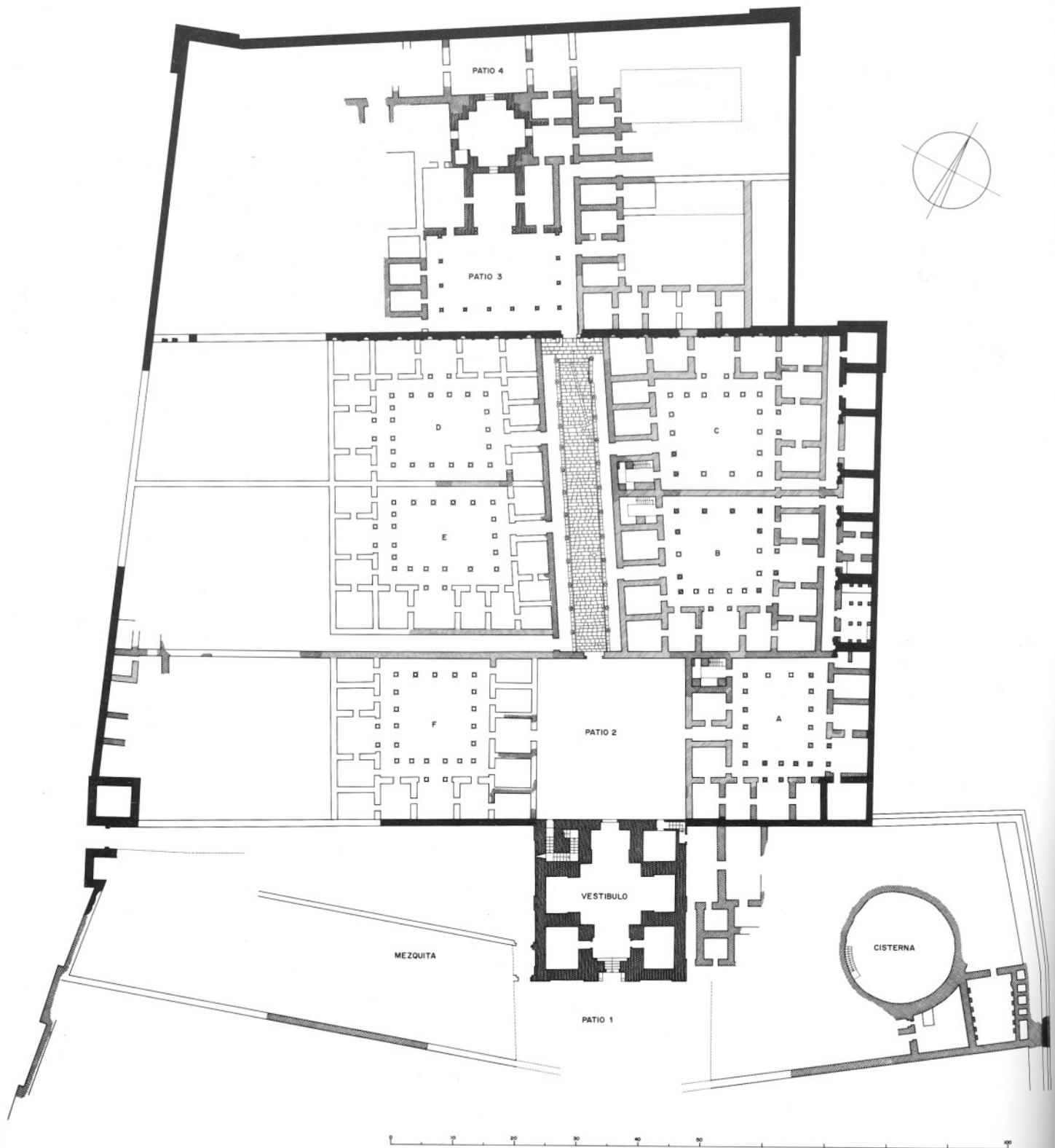
The door of this building, which I refer to as the vestibule

opens at the back of a niche which probably was spanned with a great arch (FIG. 5). This combination is often found in Early Islamic architecture. The façade presents only some slight protruberances bordering the niche of the door and the corners. The upper part, judging by the remains we found in the immediate area, must have had a cornice comprised of rolling brackets and crow feet.

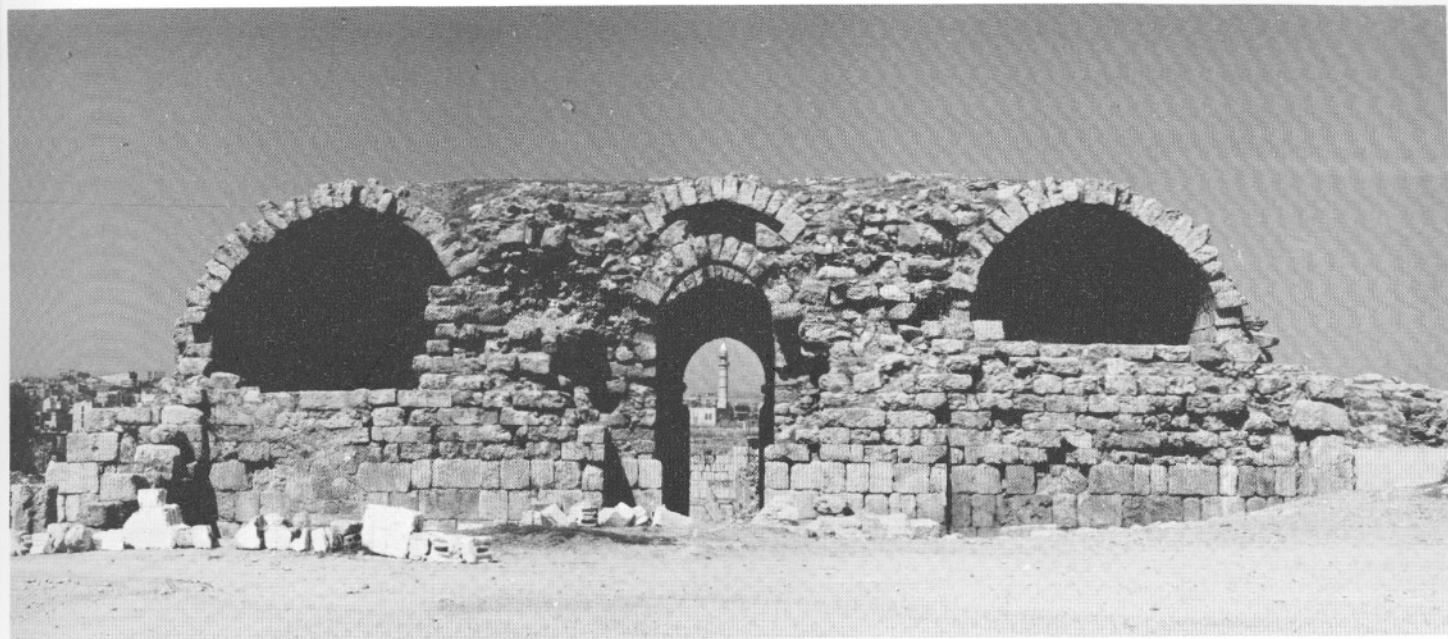
At the extreme western end of the façade a door opened which we believe may have communicated with a corridor or a street which led from the western door of the enclosure mentioned earlier, to the first courtyard. A second door, which is situated obliquely in the western façade of the vestibule must have increased the control of access to the courtyard and the Palace.

On the eastern side of the vestibule there are a series of dwellings excavated by the Spanish Mission. Their most

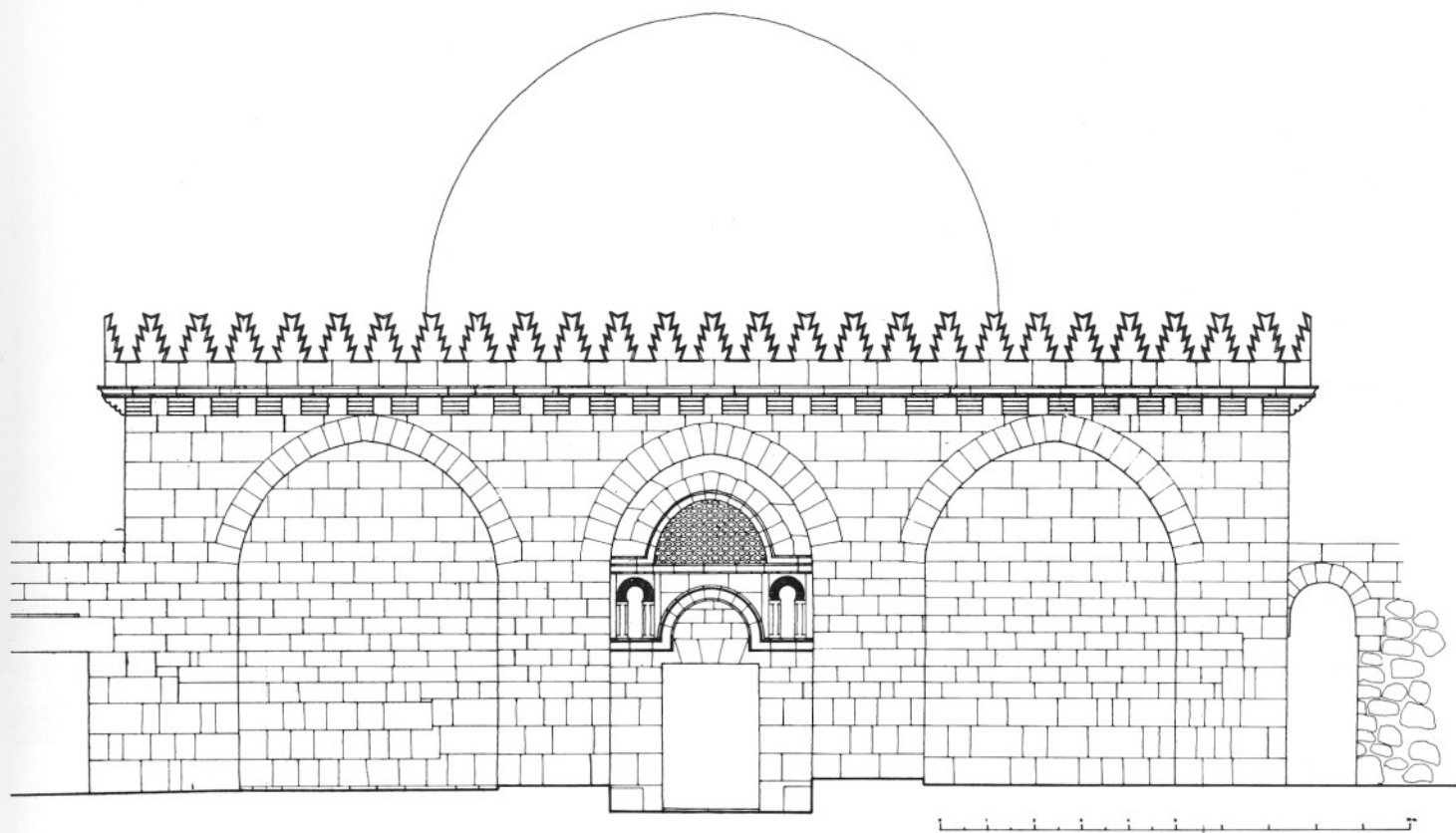
3. Reconstruction plan of the Umayyad Palace of Amman.



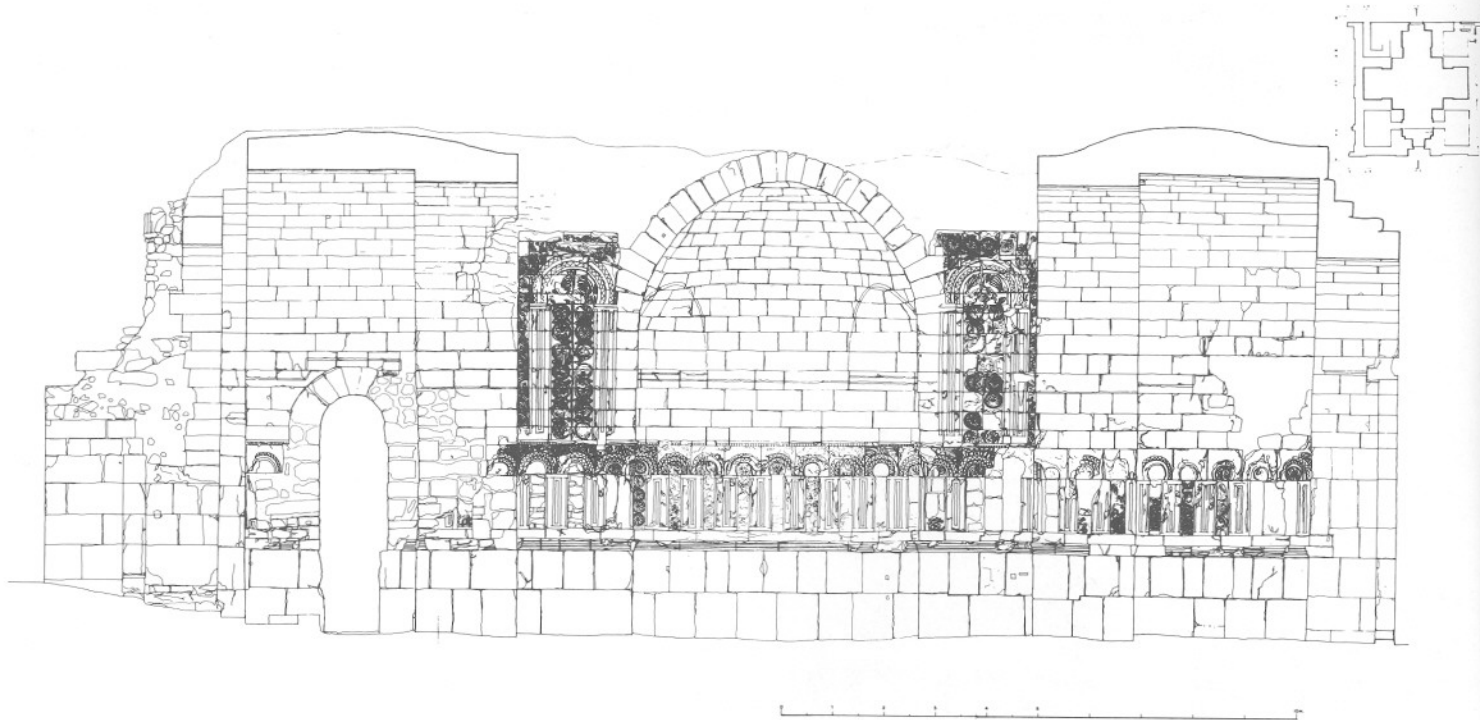
4. The south façade of the Vestibule.



5. Hypothetical reconstruction of the Vestibule façade.



6. Interior section of the Vestibule.



outstanding feature is a corridor, close to the façade, which permits access between the first courtyard and a second one, opening immediately beyond thus dispensing with the necessity of crossing through the vestibule. The interior of the vestibule (FIG. 6) is in the form of a Greek Cross which leaves four satellite circuits between the arms. The cross is formed by a central square with four radiating arms. All the arms are similar to each other, but they are not identical. The main difference between them is the way in which they are covered. The arm through which access is gained is a little deeper than the others because of an arch which is attached at the back of it.

The floor level of the vestibule is about 90 cms. lower than the original ground level of the first courtyard. There used to be a stairway connecting them, of which some steps are preserved. Several of these are earlier than the present structure, while others are contemporary.

The arm which gives access, as well as the one opposite it, through which one passed to the second courtyard, are covered by a barrel vault (FIGS 7 & 8), slightly sharpened by the lapsing of the centre of the curve by a ratio of 1:10 off dead centre. The two other arms are covered by semi-domes. Two unusual squinches fit the rounded vaults to the square room plan. In all cases the vaults mark their beginning with a double prominence.

Four great main arches define the central space. How this central space was covered, if in fact it was covered, is impossible to determine. Perhaps it was left open in the same manner as was the courtyard with which the four arms of the

7. The interior of the Vestibule or Audience Hall from the south entrance.



cross formed four Iwans. Although we favour the former suggestion, that it was covered, we wish to mention both possibilities. In the first case, we believe that the most logical form of covering it would have been a dome of stone, supported over four pseudo-squinches similar to those found on the lateral arms (FIG. 9). Possibly the base of the dome

8. The interior of the Vestibule from the north door.



would have had windows for the illumination of the interior. Another likely solution would be to imagine a cupola or covering of wood, in the Syrian tradition of roofing large spaces and used by the Umayyads in the Dome of the Rock. Notwithstanding the enormous size of the dome we consider the building to have been strong enough to have supported it.

The main interior walls are decorated with a line of small blind arches supported by small double half columns. They rest upon a basic moulding above a plain flat belt. The small columns have no base or capitel, but only a simple plinthos that serves as both a base and capitel for both columns. The small arches are of horse-shoe form decorated with 'wolves teeth'. A small moulding formed by a thin line of 'wolves teeth' decorates the edge⁵.

To the west side of the vestibule nothing has been excavated. We think that the mosque may have been located there because the palace certainly had one, as did many other such examples of early Islamic architecture.

The central area of the palace

The second courtyard is situated within the area of the former forum or 'temenos' of the Roman period. Judging from what

is visible today it must have been a big square of about 78 metres by more than 90 metres north to south and east to west, respectively. It had rooms or shops on the east side at least, as well as niches and temples on the north. The south wall seems to have been plain and the vestibule abutted it at a later date. Its interior was occupied in the Umayyad period by a number of structures which today are only partly in evidence in the eastern area. We say 'partly in evidence' because this area was excavated in the 1920's and 30's by the Italian Mission who, in their interest in uncovering Roman remains, demolished most of the Umayyad walls which marred the view of the earlier space (FIG. 10). For this reason much of our description is based upon antique photographs published by Bartocinni. These pictures enabled us to reconstruct the original plan of this area⁶.

The second courtyard was simply a wide square space, at the northern end of which an arched street commences that leads to the northern area (FIGS 11 & 12). This street was placed facing directly towards the door of the vestibule, which had an early door from the 'temenos', found displaced some five metres to the west of the entrance. Because of this the access door of the second courtyard to the street was displaced equidistantly to the axis of the vestibule.

The street is nine metres 90 cm. wide with two porticoed sidewalks which left an overhead area of five metres uncovered. Each portico had 13 columns and 14 arches resting upon them, while the last rested upon the wall, as shown by the springers of the arches in the extreme northern area.

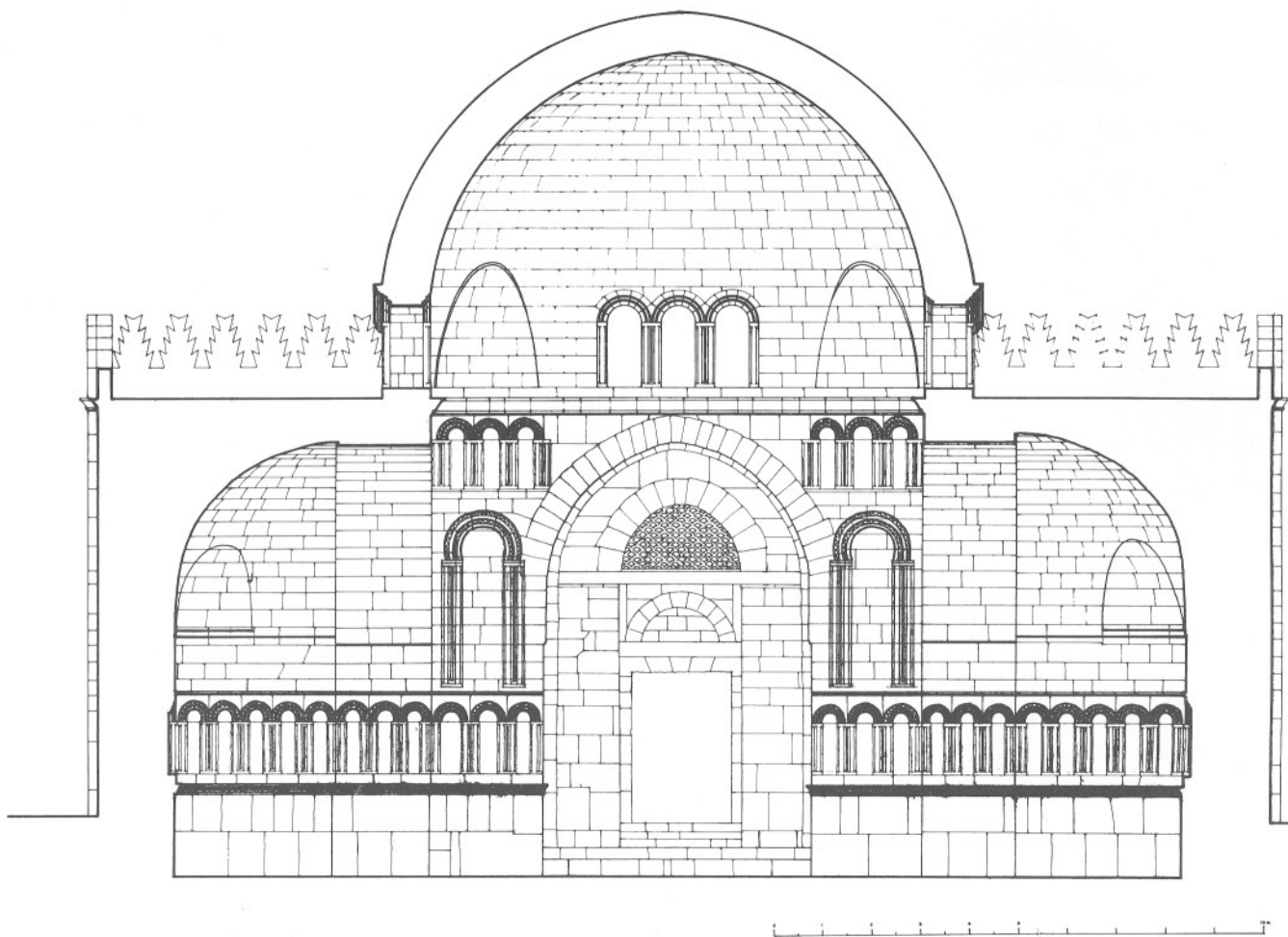
To the east of this street and of the second courtyard are the barely visible ruins of three buildings (FIG. 3). The first had a door opening on to the courtyard, while the other two had doors into the street.

The three buildings have a very similar structure around central courtyards. Those courtyards seem to have had porticos supported by columns on three sides. The only entrance is always placed on the western side. Around this patio groups of rooms are situated in Bayt patterns.

The two preserved buildings have a large room on the east side which opens on to the courtyard by offering passage between two columns. The individual doors from the surrounding rooms also open directly on to the courtyard. On the south side in both buildings are two additional large rooms that appear to have originally opened directly on to the courtyard, like Iwans. The one found in the central building gives the impression that at some later date it was closed with masonry that left only one usable access door.

On the northern side of the courtyards there were no rooms. In the central building, behind the large room of the east side, and the connecting rooms, there is a hallway that permits access to the old tabernae of the 'agora' or 'temenos' that were incorporated into the building. It appears that the case was the same with the building to the north, but its poor state of preservation made it difficult to reconstruct. It appears to have had no rooms on the south side, though there were rooms on the north. We do not believe that there were

9. Reconstruction of the interior of the Vestibule or Audience Hall.



any great structural differences between the two buildings. The only item left to be cleared up was whether the first door of the 'temenos' or forum, that had been in the north side, permitted access between this building and the northern part of the palace or if the door had been blocked off in Umayyad times.

There is practically nothing excavated of the temenos area on the western side of the porticoed street. We assume that the structure is identical to the eastern side.

The street leads to a door of the former temenos. Passing through this door and ascending steps gives access to the northern sector and the residential palace. The entrance opens on a third courtyard, which lies at a south-east angle to it. On each side of the door there were two benches which have been carved out of the pedestals of two Roman shrines.

The North Area

The third courtyard seems to have had porticoes on three sides; the south, east and west. On the north the façade was open to view (FIG. 13). The eastern wall of this patio at one time abutted against the temenos within the door frame,

which would indicate that this door was made smaller during the Umayyad period. On the north face can be seen a large hall, in the form of an Iwan with two side doors. In the most eastern part of this side, within the porticoed area, there is a doorway connecting it to a corridor.

The main hall (Iwan), is a large rectangular room with a door set in the centre of each of its three walls (FIGS 14 & 15). The walls are made of ashler masonry and were covered with a barrel vault, traces of which can be seen on its western elevation (FIG. 16). A large buttressing arch makes up the border of the vault toward the courtyard. On its jambs there were attached two double half-columns made of stucco, resting upon plinths rather than bases. They are similar to the half columns in the hall of Harrana.

The southern façade of the palace, in the lower courses, is plain. Judging from the debris of the upper courses we may confidently assume that the upper courses were decorated. Possibly the floor of the Iwan was paved with a mosaic set upon a foundation of cobbles. Going through the far door one enters a room with a Greek cruciform floor plan. Doors of equal size open from the end of each of the arms of the cross (FIG. 17).

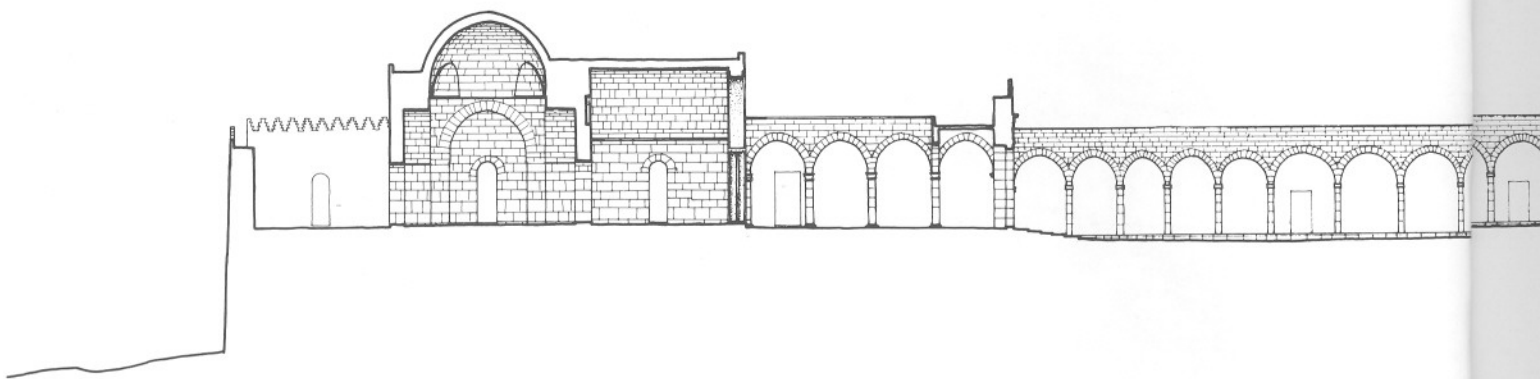
10. The temenos area with the Vestibule from the north.



11. The temenos area and the porticoed street from the Vestibule terrace.



12. Reconstructed section of the Palace.



13. The third patio and the iwan in the north area.



On the western side the wall is preserved to a height sufficient to support the arch of the door, much like the Iwan.

The walls of this room are plain, without indications of arches or decoration of any type. We believe that the room was covered by a dome supported by either pendentives or squinches, like in the vestibule.

In the south west corner of this structure, is a small square room covered with a barrel vault. The purpose to which this room was put is unknown.

This cruciform-planned room, we believe, is a Diwan in the Sasanid tradition which had a mosaic pavement with geometric designs. Traces of this mosaic have been found along the bases of the walls.

The enclosure to the north of this Diwan reaches the large

Roman buttressing wall on the north side of the Palace (FIG. 18).

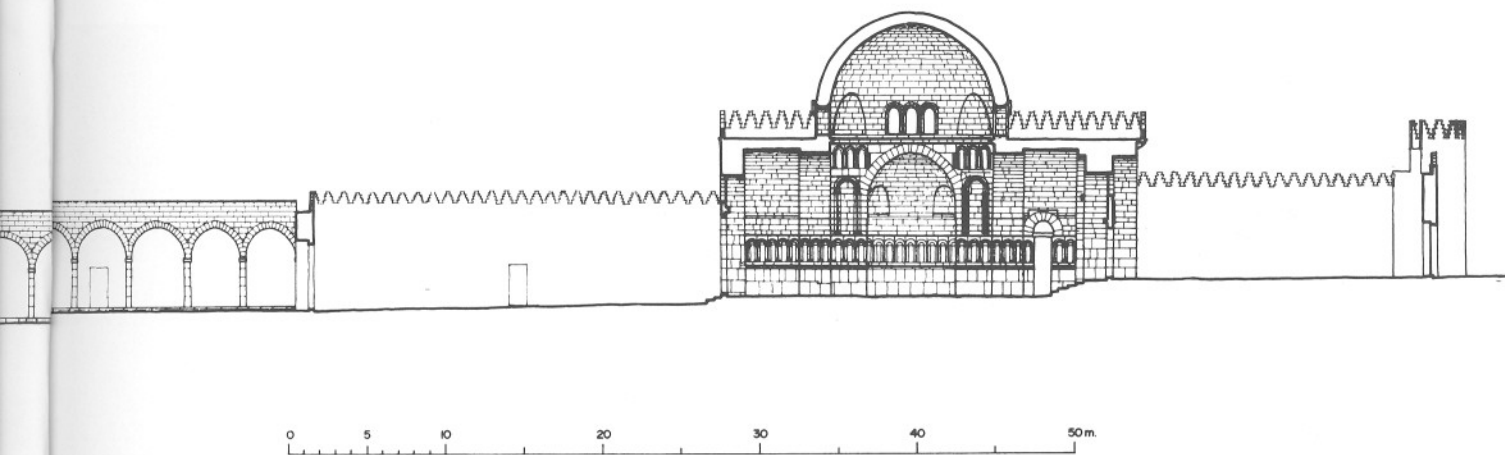
To the west of the Iwan and the cross plan room, there has been practically no excavation, and it is therefore impossible to define the outline of this side of the building. One can visualize a continuation of the Iwan with a rectangular room which probably also communicated with a courtyard and with the cross plan room as well. To the west of the courtyard there are three rooms and what appears to have been a corridor next to the enclosure wall of the Temenos.

The east side of this northern section of the palace is completely excavated but badly deteriorated. Directly next to the Iwan is a long room with doors connecting it to the Iwan as well as to the courtyard. There are also doors to a room

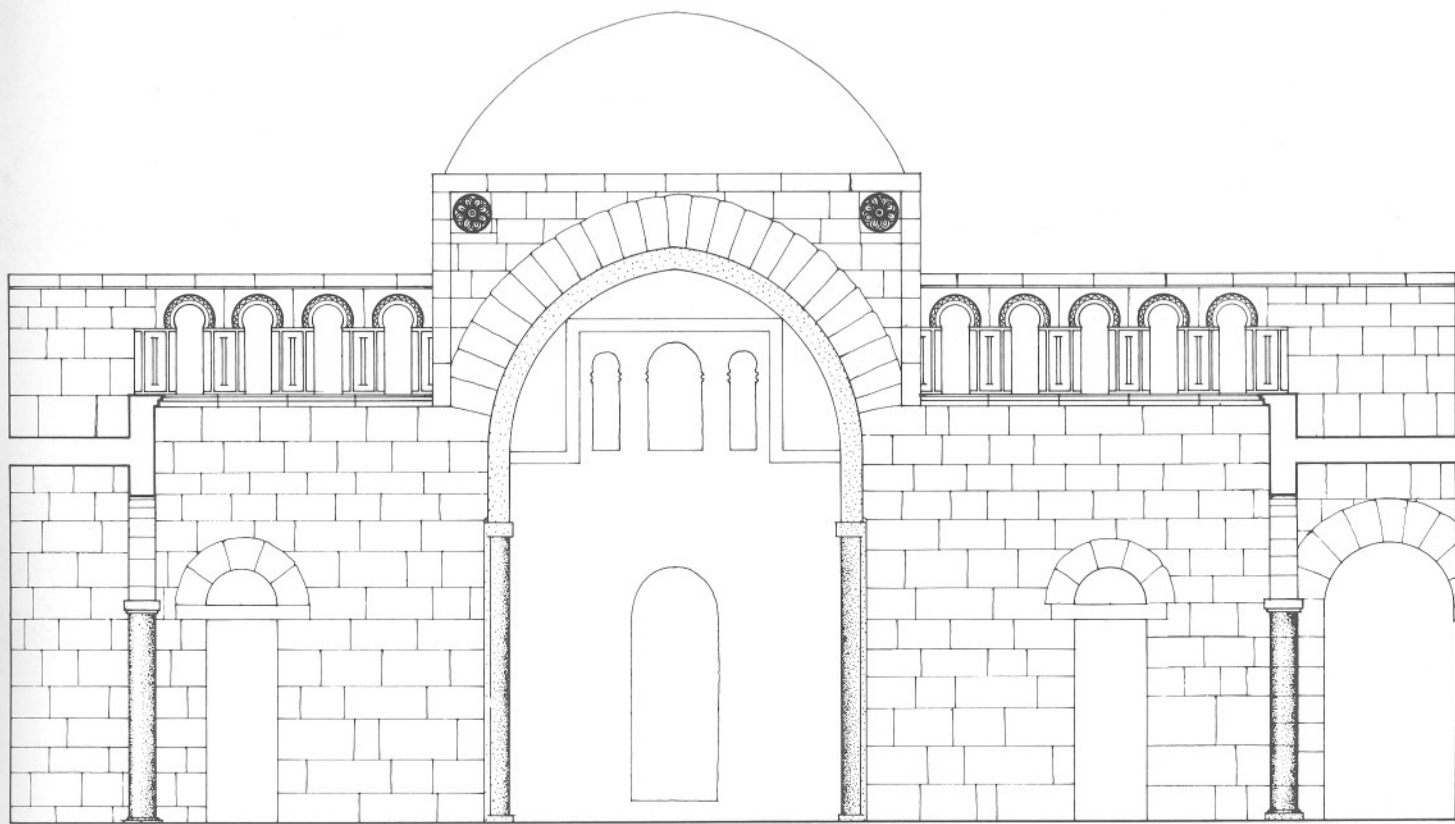
14. T



adja
other
those
seem
prot
Th
a gro
and
first



14. The façade of the iwan in the north complex.



adjacent to the Iwan. Somewhat to the north there are two other rooms which extend as far as the large Roman wall. All those rooms adjacent to the Iwan and Diwan had vaults. It seems probable that these served as areas of administration or protocol.

The east wall of the patio continues northward and delimits a group of buildings which appear to have been independent and which could have been entered by two doorways. The first one opens directly upon the courtyard and seems to have

communicated with yet another courtyard and surrounding rooms. Through a corridor starting from the north east corner of the third courtyard entrance was gained to this group of structures in which we again found the pattern of courtyards surrounded by rooms. Unfortunately this entire area was razed and it is impossible to say with certainty what its original form was. It seems likely that around these side courtyards structures similar to the three buildings of the temenos once existed.

15. The iwan of the north complex.



16. The west wall of the iwan.



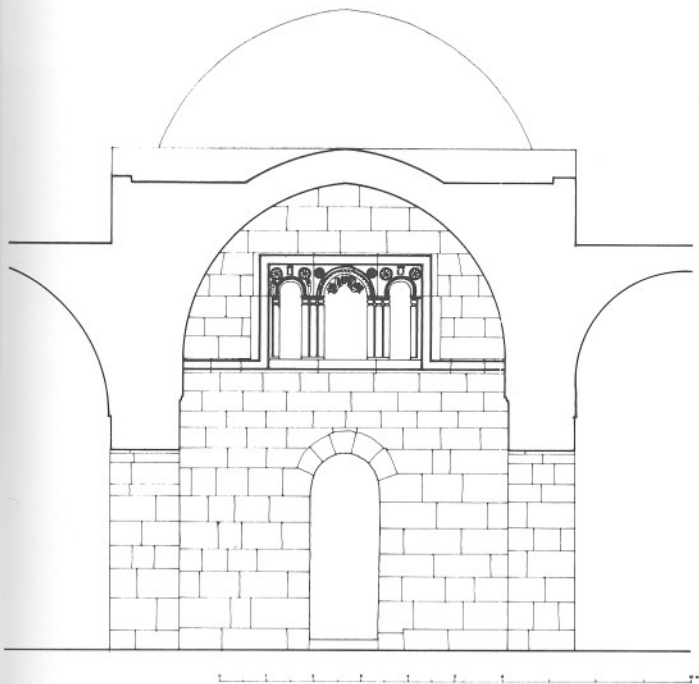
17. Th

18. Th

17. The cross-plan room from the north.



18. The north end wall of the iwan.



In addition to a mosque, the palace presumably had a baths complex which were standard in this type of structure. The mosque is thought to have been to the west of the vestibule, an area easily accessible from the palace. The baths, on the

other hand, were probably in the western part of the northern enclosure, close to the residential area and the throne room of the Emir or Governor.

Conclusion

To complete this architectural description we wish to say that the structures on the citadel of Amman constitute a palacial complex in which three separate areas can clearly be distinguished. To the south lies a large vestibule or waiting room, which could perhaps also be interpreted as a large public reception hall. We assume that the mosque was close to it, as well as servants' quarters, the guards' residence, cistern, warehouses, etc.

In the second area, which lies around a porticoed walk-way and courtyard, a group of buildings of residential type were to be found. These we believe were the housing areas for dignitaries or might even have had some administrative function.

Lastly, in the northern area, a residence of some size and importance is found, interpreted as the residence of the Emir or Governor, since entry was restricted, making it more private.

From this description it is possible to trace parallels between this palace and other similar complexes of the Umayyad and Abbasid periods of the 8th century. One of the most striking features is the three-fold division we observe in the compound. This reminds us of similar schemes to be found in Mushatta and Minya⁷. The disposition of the vestibule, the throne room and Bayts which surrounded it and the peripheral rooms at Mushatta express the same composite theme. From this point of view Ujaidir represents an equally significant parallel; most of all, especially if we compare such details as the Iwan and the throne room which seem to follow a Sasanid scheme more directly than does that of Mushatta, though without doubt it is more developed. Yet other parallels are found at the Dar al Imara of Kufa⁸, especially in the Iwan open to the courtyard and in the Greek cruciform room covered with a dome.

If we move from parallels of structural groupings to more singular elements we can appreciate the great similarities between the buildings that occupied the temenos area at Amman and the Medina of Qasr-el-Hair-al Sarqui⁹. There are a great many parallels of detail. For example, the vestibule door in the small shrine reminds us of the scheme of the doors at Minya, Jirbet el Mafyar, Ujaidir, Harrana, etc.

From the plan of the vestibule, faithfully corresponding to a Byzantine pattern, we derive a number of additional parallels. The Greek Cross plan, more or less elaborated, is a well known architectural feature of the Byzantine period in this area. From the praetorium of Al Mundir in Rusafa¹⁰, through the praetorium at Umm al Jimal, closer to Amman, there is a clear typology of audience rooms along these lines. In the immediate vicinity of Amman the funerary monument of Nuweijis, of the late Roman Period, is an example of the long and strong tradition of this form in the Syrian region.

The closest parallel is doubtless that of Harranah, which we believe to be contemporary with the palace at Amman¹¹. The arches and little columns which decorate the first floor of the former are very similar to those of the latter. Also, the supporting columns and arches of Harranah are very similar to those at the Iwan of Amman. This includes the decorative motif of rosetas, to be found in both structures.

The motif of small blind arches was also found in the Jebal Sais area in the south of Syria; in the two castles of Qasr-el-Hair and even at Ujaidir and is surely of a Sasanian origin.

More singular decorative elements are the rolling brackets very often used in Islamic and post-Islamic architecture in Spain, and which origin was unknown until now.

There are abundant parallels for the crow steps in much oriental architecture, especially during the Umayyad Period. They appear at Mafyar, Qasr-el-Hair al Garbi, Samarra, etc. and their survival is apparent in Western Islam. The crow steps of Amman are original. They are not in horizontal steps as elsewhere, but have steps set at an angle close to being a fish spine form.

The decorative motives in Amman had been influenced by both Byzantine and Sasanid architecture.

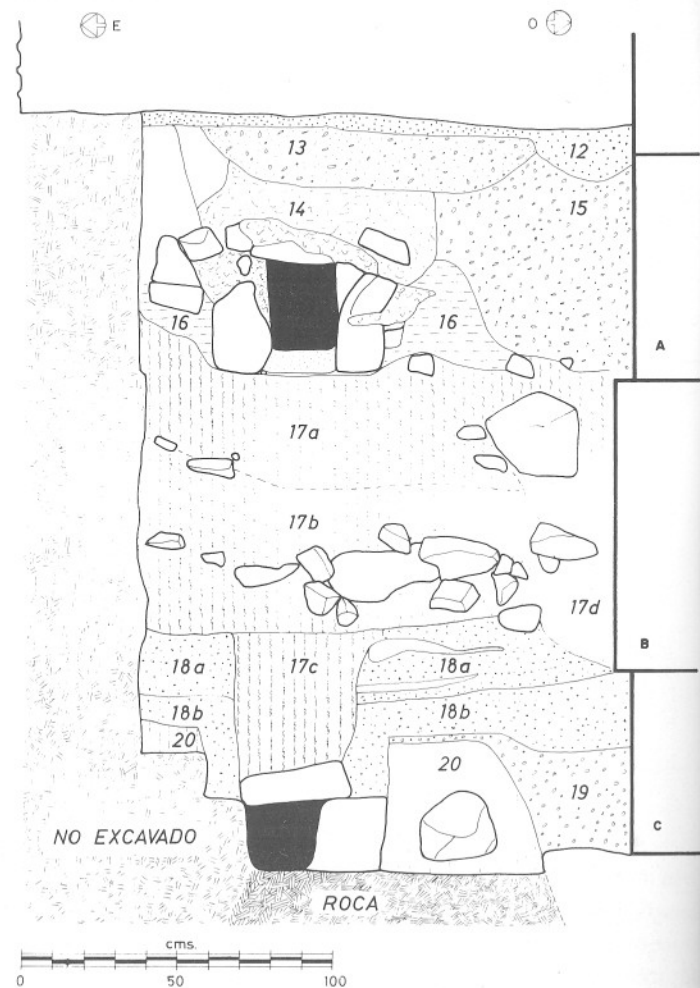
19. General view of the area excavated adjacent to the eastern façade of the Vestibule.



The excavation and date of the Umayyad Palace

When the Spanish Archaeological Mission in Jordan agreed to consolidate and restore the Palace situated in the Citadel of Amman, it was first considered necessary to solve the problem of the dating of the structures by archaeological soundings. Scientists have dated the vestibule to different periods. At the end of the past century, Conder¹² thought that it was built in the Abbaside era by the Calif Mamun, just before his death in 833 AD. On the other hand Creswell¹³ and before him Brünnow^{13 bis} dated it in the 'ghassanide' period (end of the 6th century) claiming the likeness of its design and decoration to de Pretorio in Rusafa in northern Syria built by King Ghassanid Al-Mundir¹⁴. Recently J. Warren¹⁵ attributed its construction to the Persians during their short time in political control of Palestine and Jordan (from 611 to 629 AD). H. Gaube¹⁶ has written that he came to the conclusion after comparing the structure and decoration of the vestibule with certain other Umayyad structures, that this building of the Citadel of Amman as well as the castles of Qastal and Harranah, are certainly the work of the last Umayyad Califs of Damascus.

20. South section of the trench open in the passage close to the east wall of the Vestibule.



21. View of the trench open in the passage close to the east wall of the Vestibule.



22. The south side of the trench in the east passage.



In the summer of 1978 we opened three trenches adjacent to the wall of the Eastern façade of the vestibule (FIG. 19), the only area not touched by the Italian Mission. We have been able to verify stratigraphically three periods of occupation with their corresponding structures.

1 Early Byzantine Period

During our excavation, when we reached the exterior contemporary ground-level of the present palace, we opened two small trenches next to the East wall to verify and study the foundation trench, one in the passage close to the East wall and the other in the north-east angle of the building.

In the section drawn (FIGS 20, 21 & 22) of the South sector made in the passage, one can observe three foundation trenches:

—The one on Level 19 that goes with the interior of wall C which is an unidentified late Roman structure, and whose existence we have only been able to verify in this south-eastern angle of the Palace.

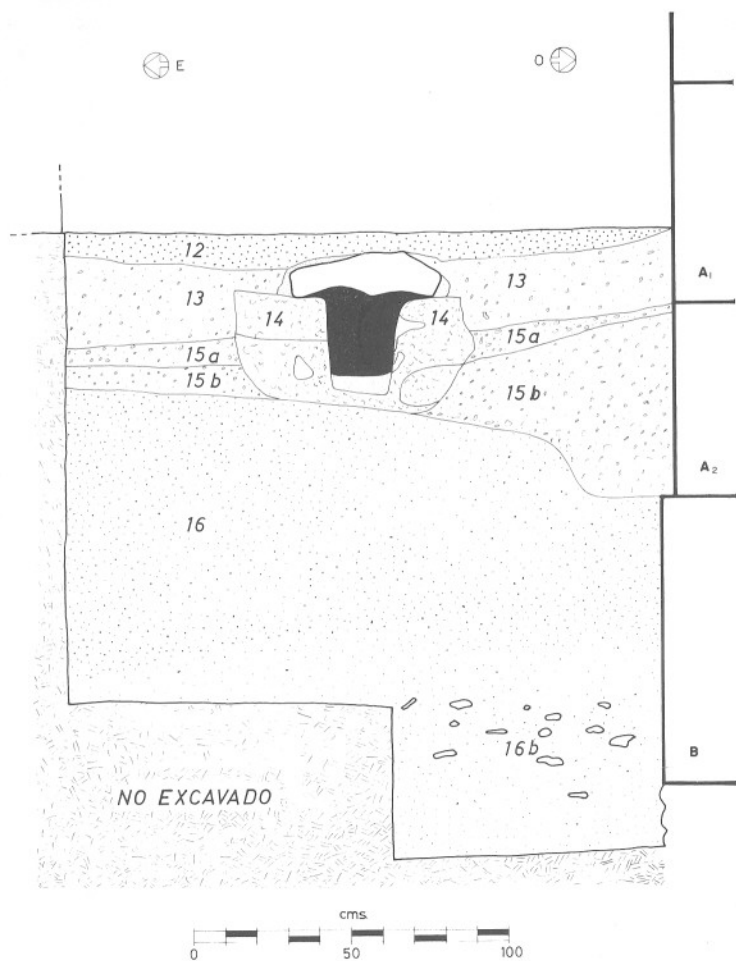
—The one on Level 17, that goes with wall B, foundation trench excavated on Level 18 or exterior ground level of the previous building.

—The one on Level 15 that belongs to wall A which is the lower edge of the present building.

Wall B is the foundation of a square structure, 24 by 26 metres, whose perimeter coincides with the present vestibule.

We found the exterior ground level of this building at Level

23. South section of the trench open in the north-east angle of the Vestibule.



16. We have been able to verify wall B in two other sites: on the Southern façade of the vestibule, in a trench made by the Italian Mission and on the testing of angle NE of the building (FIG. 23). The coins and ceramics that give the date to this building come from Levels 16 and 17, and belong without doubt to the late Roman and old Byzantine eras. It is in fact, a monumental gate built in the second half of the 4th century or first half of the 5th century AD following the structural pattern of the late Roman castles so amply attested to in Transjordan in the 'limes' of Diocletian. To this building belong the three steps of the staircase that we have left visible in the South door of the vestibule.

II The Umayyad Period

As can be observed in the sections (FIGS 20 & 23), the Byzantine Level 16 has been cut by Level 15, in order to excavate a foundation trench, or better still was robbed to place the first row of the present visible building (Wall A). Levels 15 and 13 (small stones with calcium) are the filling on which the exterior ground level of the Vestibule, Level 12, is built. In the final phase of construction of the building a new

trench was opened, at Level 14, for the construction of a canal which collects the water off the roof of the vestibule and pours it into the great cistern situated some 20 metres to the east. The discoveries that date the present building come, obviously, from Levels 15 and 13. In the ditch at Level 15, very close to wall A in absolutely undisturbed stratigraphic context, we have found a 'post-reform' Umayyad coin that certainly gives us the date of the Palace. Therefore, its construction took place between 720 and 750 AD. This date was later confirmed while consolidating the staircase of the north-west angle of the vestibule, when we analysed the ceramic fragments utilized in the cement of the building and found that all of it is Umayyad, except some sherds which are Byzantine and Roman.

III Post-Umayyad Period

During the Abbasside (750–969) and Fatimid (969–1071) periods the Palace deteriorated progressively and some of the fallen stones of the vestibule were used in remodelling the exterior rooms where very poor living conditions prevailed. In the untouched filling of these places, plenty of Umayyad, Abbasside and Fatimid ceramic has appeared. The Umayyad ceramic is all of the late era (740–750).

References

- 1 M. Almagro, L. Caballero, J. Zozaya, A. Almagro, *Qusayr Amra, Residencia y baños omeyas en el desierto de Jordania*, Madrid, 1975.
- 2 R. Bartoccini, 'Ricerche e scoperte della Missione Italiana in Amman', *Bolletino dell'Associazione Internazionale per gli Studi Mediterranei*, a.i, 1930, nr.3, pp. 15–17.
Scavi ad Amman della Missione Archeologica Italiana a.III 1932, nr 2, pp. 16–23, a.IV, 1933–34, nr. 4–5, pp. 10–15, 19–27.
'La terza campagna di scavi sull'Acropoli di Amman', *Bolletino d'Arte del Ministero dell'Educazione Nazionale*, 1934, pp. 275–285.
A survey of this excavation has been done by A. Northedge, *A.D.A.J.* xxii, 1977–78, pp. 5–13. Recently Mr Northedge has published a new work on the area in which the Spanish Mission has been working since 1974. In any case we consider this action fruitless for having interfered in the area of study where other colleagues are already working, that results in doing the same work twice. Principally when there are many places and zones still to be studied.
- 3 A. Almagro, 'La campaña de documentacion fotogrametrica en la Ciudadela de Amman y otros monumentos de Jordania', *Catalogo de la Exposición de Arte Nabateo*, Madrid 1979.
- 4 F. Zayadine, 'Excavation on the Upper Citadel of Amman. Area A (1975–1977)', *A.D.A.J.* xxii, 1977–78.
- 5 A first study of the decoration can be seen in H. Gaube, 'Amman, Harane und Qastal. Vier frühilamische Bauwerke in Mitteljordanien', *Zeitschrift des Deutsche Palastina-Vereins*, 93 1977, pp. 52–86.
- 6 R. Bartoccini, 1930 *Tav IV*, 1. 1932 *Tav III*, 4. 1933–4 *Tav IV*, 8, 12 and photographs from the archive of the Department of Antiquities.
- 7 K. A. C. Creswell, 'Early Muslim Architecture Vol 1', pp. 384 and 581.
- 8 Creswell, *op. cit.*, p. 49. *Sumer XIX*, pp. 40–41.
- 9 O. Grabar *et al.*, *City in the Desert*, Harvard 1979.

- 10 J. Sauvaget, 'Les Ghassanides et Sergiopolis', *Byzantion* 14, 1939.
- 11 H. Gaube, *op. cit.*, pp. 85.
- 12 C. R. Conder, *The Survey of Eastern Palestine Vol. 1*, The Adwan Country, 1889.
- 13 Creswell, *op. cit.*, pp. 637.
- 13 bis. R. E. Brünow-A. Domaszewsky, *Die Provincia Arabia*, 2, 1905.
- 14 J. Sauvaget, *op. cit.*, pp. 120.
- 15 J. Warren, 'A Sasanian Attribution for Two Buildings in Jordan', *Art and Archaeologie Research Papers*, xi, 1977.
- 16 H. Gaube, *op. cit.*, pp. 84-85.