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EXCAVATION OF BUILDING F OF THE Umayyad PALACE OF AMMAN

PRELIMINARY REPORT

by

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THE Umayyad STRUCTURE

Architectural Description

The central part of the Umayyad Palace of the citadel of Amman is occupied by nine independent buildings, which can be reached by means of a series of what can be considered as urban spaces (Fig. 1). Three of these buildings, known as A, B and C, were excavated between 1927 and 1933 by the Italian mission led by G. Guidi in its first campaign and by R. Bartoccini in the following campaigns. The campaigns which we have carried out between 1989 and 1995 have led to the complete disinterment of what we call building F, situated on the west side of courtyard 2. From its situation and perfect planning, this building seems to have carried out a relatively important function within the court setting, as we shall indicate further ahead.

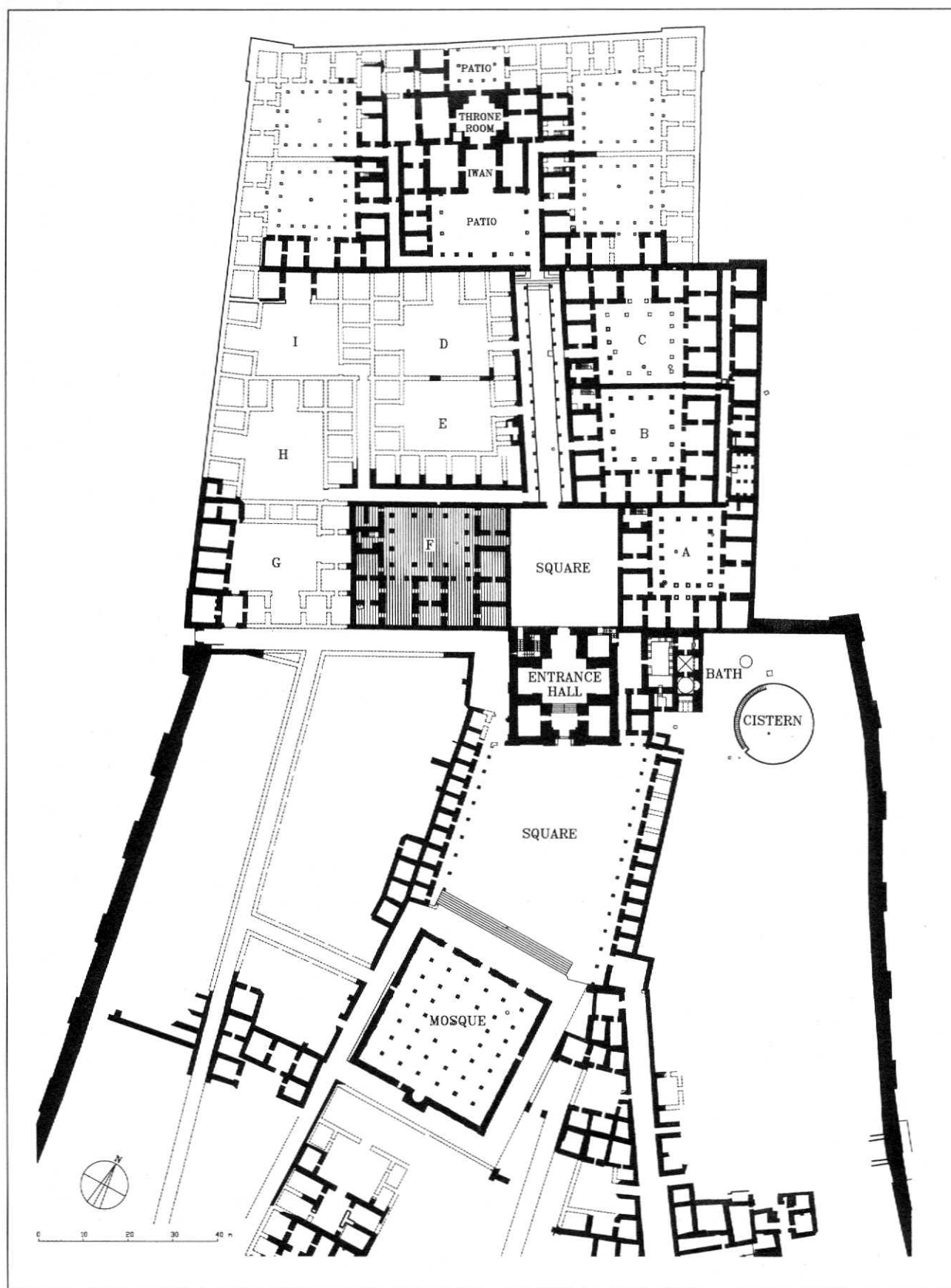
Building F occupies a rectangular area of 27 m north-south, and 35.90 m east-west (Figs. 2-5). Access to the building is through a doorway, 1.95 m wide giving onto a long space in the shape of a corridor, 2.45 m wide and 5.95 m long. At the opposite end of the corridor, there is a doorway similar to the outside one, communicating with the central courtyard of the building.

The main nucleus of the building consists of a courtyard with porticoes on all four sides measuring 20.50 m from east to west and 15.20 m from north to south (Figs. 6-7). The courtyard is placed towards the north, attached to the outer wall of that side, while on the other three sides it is surrounded by three bays. The porticoes are formed by four arches on the two larger sides and three

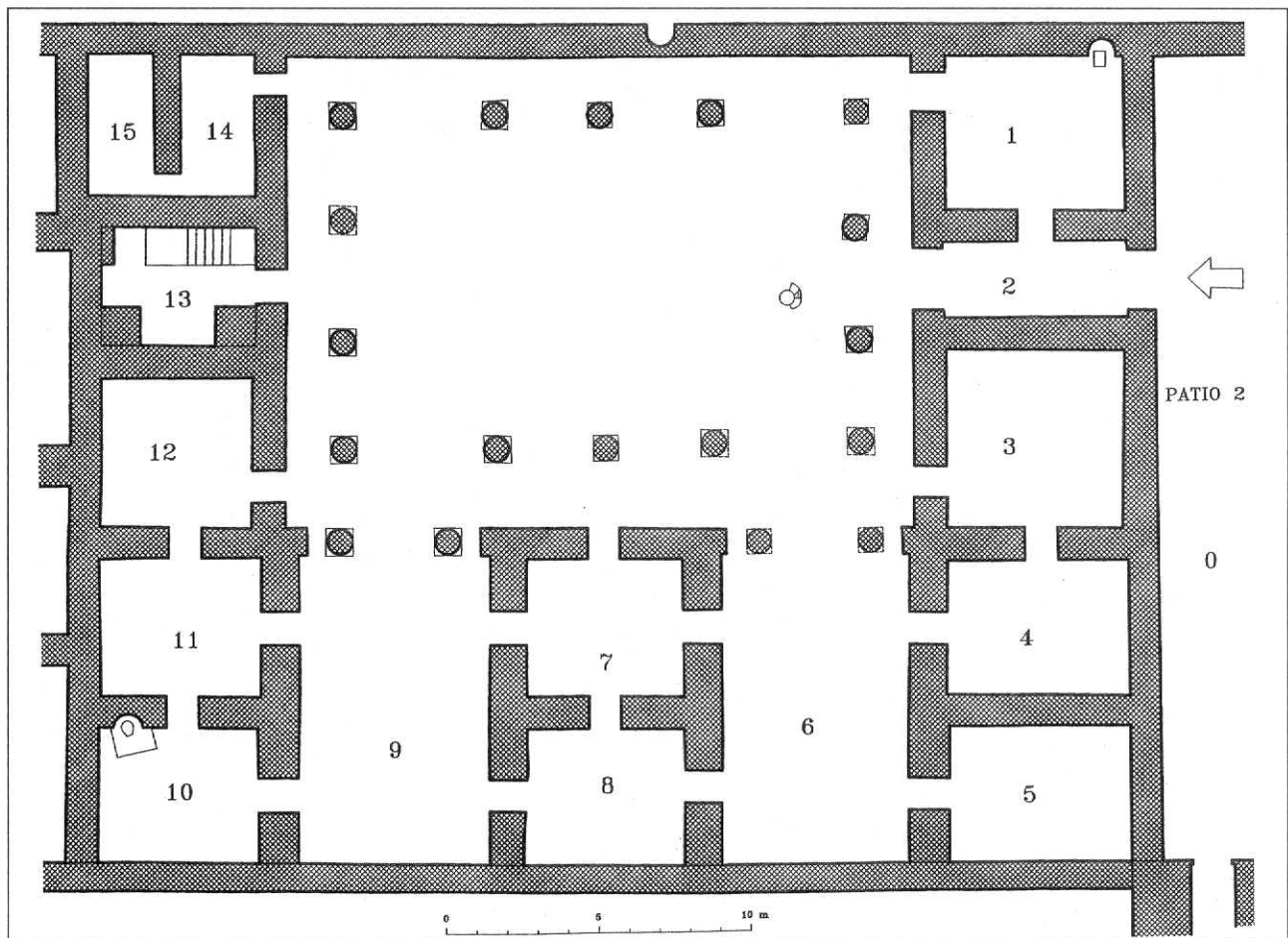
arches on the smaller two.

Undoubtedly, the most outstanding thing about the columns and arches, both of the porticoes and of the tripartite openings giving on to the *iwāns*, is their building technique and particular shape. The columns, with a plain cylindrical shaft, straight and without entasis and with no decoration, stem from a base composed of a simple plinth, 0.82 m long and 0.20 m high. The shaft, 2.35 m high by 0.80 m in diameter, was crowned by a square horizontal plane, of similar dimensions to the base, and with two arches starting from it. These had an initial vertical stretch, from the plane of the crown of the column to the starting of the arch. At this point there was a small projection from the plane of the surface of the intrados, where the concave part started. This projection could be set at two different heights, to compensate for the different span of the archways and to enable the keystones to be situated at the same height. Both the columns and the arches were built of rough masonry joined with gypsum mortar, probably mixed with some lime.

All the surfaces of the series of arches must have been plastered, or at least this must have been envisaged, although there are no remains with this finish. The front of the series of arches must have been completed with a brickwork parapet. This hypothesis is based on the appearance of a large number of bricks just under the arches, fragments of which we found in the inside of the courtyard. The appearance of the remains leads us to believe that the ruin of the building, and specifically of the arches of the courtyard happened in a sudden and catastrophic way, in all probability as a result of



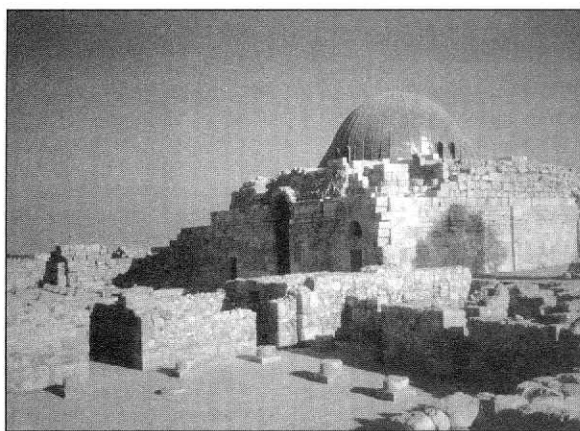
1. General plan of the north part of the Amman citadel.



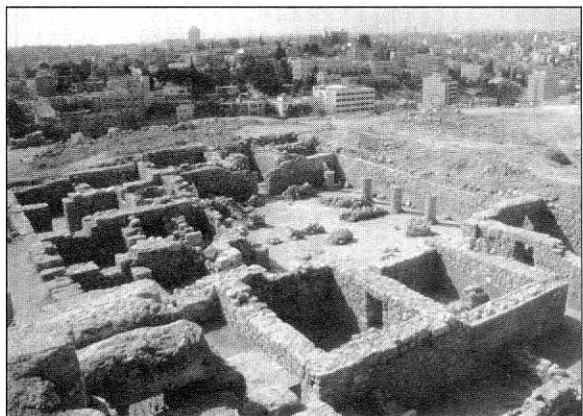
2. Plan of building F.



3. Building F from the top of the entrance hall dome.



4. Building F and the entrance hall.



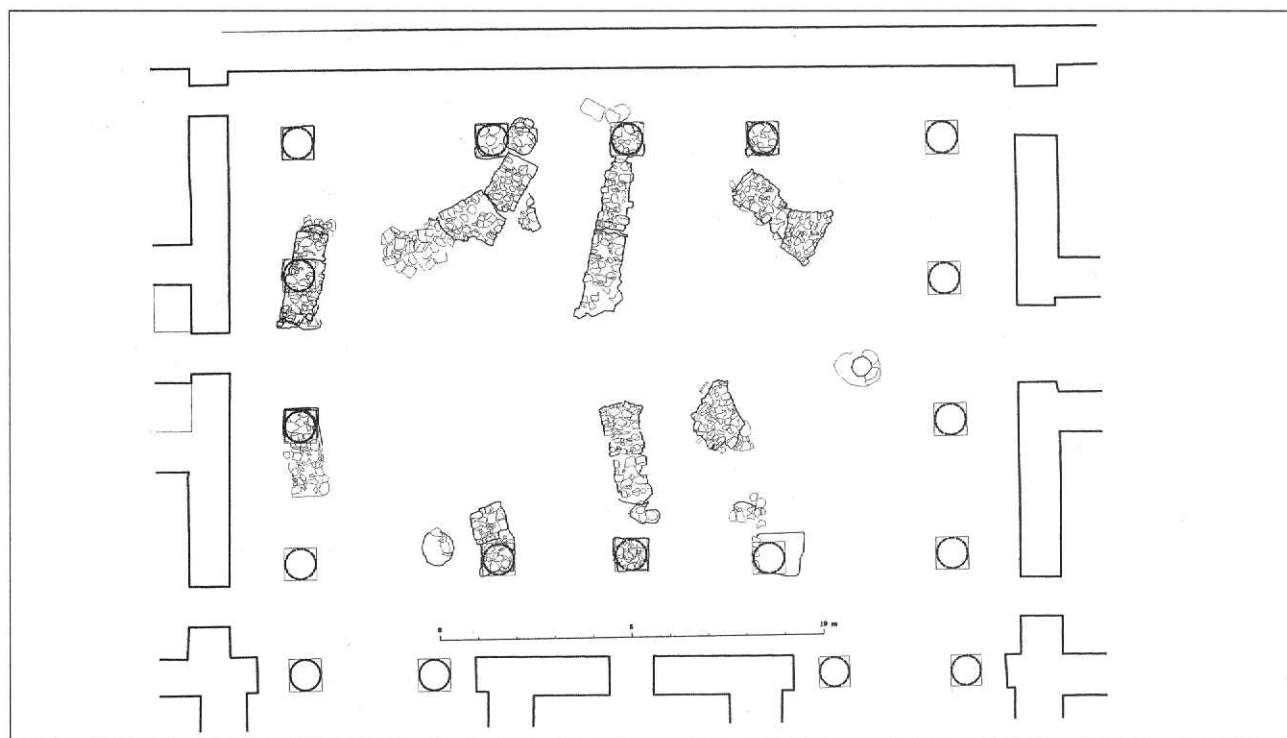
5. Building F and the courtyard with the remains of the columns and arches.

an earthquake. The corridors of the porticoes in the courtyard were covered with stone vaults formed by rough ashlar cut in the shape of voussoirs, some of which have appeared in the excavation.

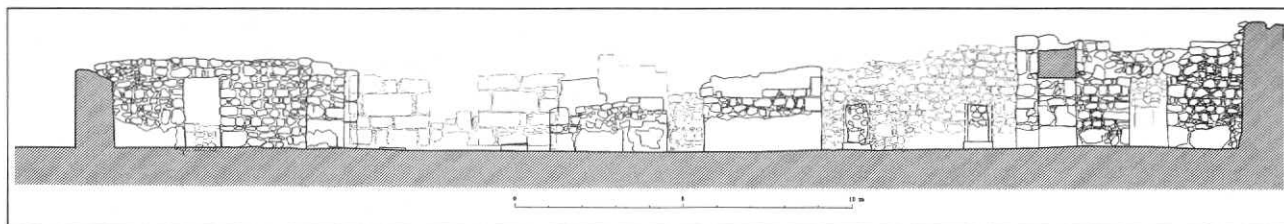
Room n° 1 (Fig. 8), situated at the north end of the eastern bay, is almost square, 4.95 m from north to south by 5.80 m from east to west. It has a doorway in the north east angle, 1.25 m wide giving access from the courtyard. There is a small niche in the eastern end of the north wall which houses the opening of a cistern (Fig. 9).

After room n° 1 is the corridor giving access to n° 2, which we have already described. The following room in this space, n° 3 (Fig. 10), is practically 5.80 m², and has communicating doors with the courtyard and the following room which we should now consider part of the southern bay. The door communicating with the courtyard is not centred, but situated in the South-east corner, so as to be in line with the southern portico of the courtyard.

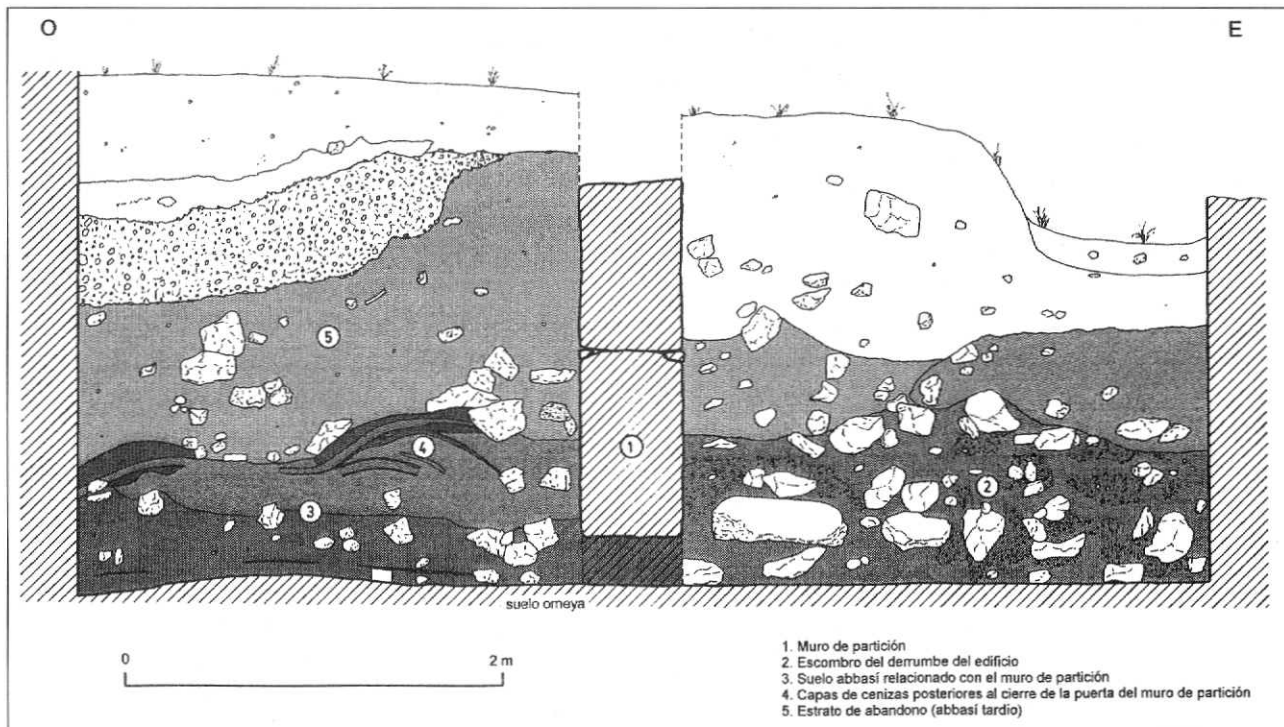
The arrangement of the southern bay, planned with almost perfect symmetry, con-



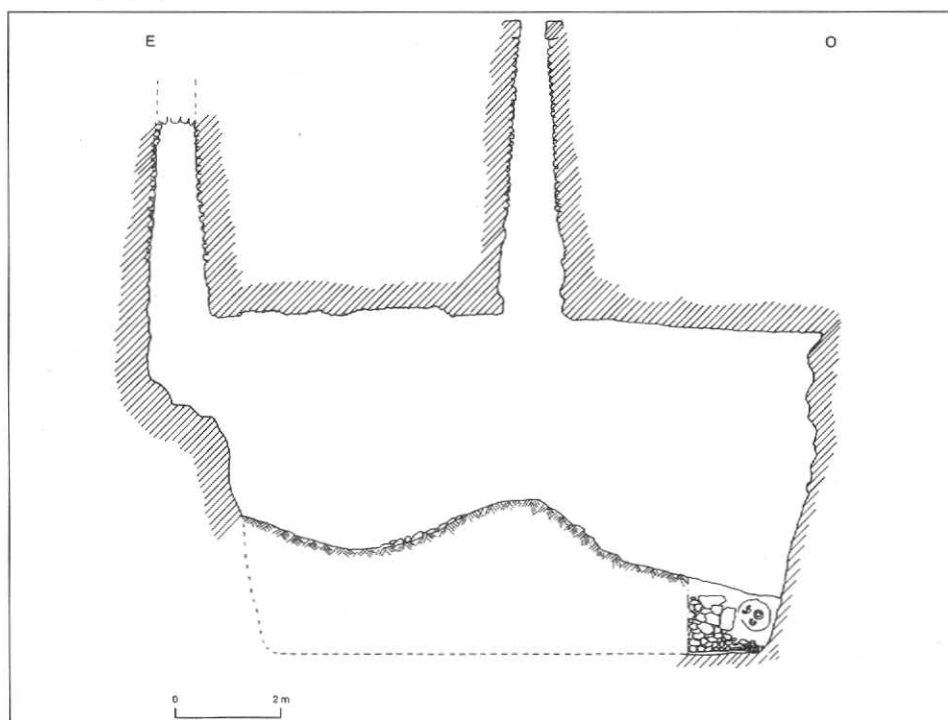
6. Remains of the arches and columns in the courtyard of building F.



7. South front of the courtyard of building F.

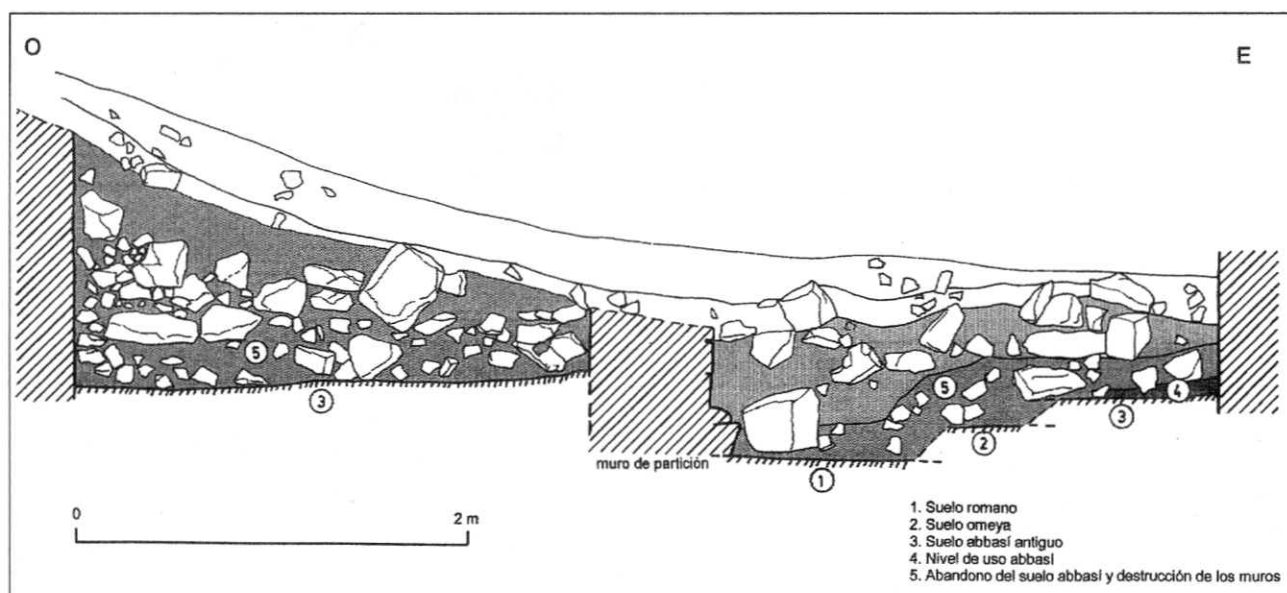


8. Stratigraphy of room 1.



9. Cross section of cistern in room 1.





10. Stratigraphy of room 3.

sists of two residential units, or *buyūt*, each one consisting of an *iwān* or main hall open on one of its shorter sides towards the courtyard, together with four rooms. The two *iwān*, rooms 6 and 9, have similar dimensions, 6.10 m wide the eastern one, and 6.30 m the western one, by 10.00 m long. To the northern end, almost the whole wall is open in the direction of the courtyard, and it has two small jambs which jut out about 0.20 m, and three arches supported by two columns which are similar in all ways to the courtyard ones. The central arch is considerably wider (2.70 m) than the side ones (0.70 m) which are hardly wide enough as a passage. The east and west walls of each *iwān* have two doors, each one of them communicating with two other rooms whose width is approximately half the length of the *iwān*, i.e. between 4.30 - 4.45 m. These rooms have inter-communicating doors similar to the previous ones, except for the rooms on the eastern side of the *iwān* on that side, which are not communicating.

The western bay turns out to be somewhat narrower than the eastern one, and indeed than the side rooms of the *iwān* of this

side. It also has three rooms. N° 12 has a symmetrical arrangement to n° 3 of the eastern side and in the same way it communicates with the courtyard and with the side room of the *iwān*. The following space, n° 13, is occupied by the stairs leading up to the terrace. This staircase is similar to the ones which existed in all the other palace buildings.¹

The last rooms on this western bay, n° 14 and 15, occupy the north-east angle and have an unusual arrangement. Access to them is through a doorway situated beside the corner of the courtyard, and it is considerably narrower than the rest of the doors in the palace. The inner space is divided into two by a north - south wall which leaves a communicating door in the southern end. In this way we have a small cubicle, room n° 15, 4.60 m by 2.15 m, reached by two doors of 0.75 m which are considerably narrower than those in the rest of the building, and which have a preceding space, n° 14, of the same length and 2.45 m wide, that sets a double bend entrance. The most logical use that we can attribute to this room is that of latrine.

1. Almagro 1983: Fig. 38-39.

Building F has three cisterns for water storage. One is in the courtyard, very near the entrance. There is another in room n° 1, and the third is to be found in room n° 10. The openings to the two latter ones are situated in niches, since they coincide with the walls of the building. In all probability they collected water from the terraces by means of vertical pipes like those which are still conserved in the Entrance Hall.² The cistern in the courtyard would collect the water which fell there. Inside the cisterns, which are excavated in the rock, there is a high quality lime plastered finish, smooth and polished to avoid any leaks. In spite of being very irregular due to the nature of the rock in which they were excavated, their section is similar to that of a fairly sharp cone. Cisterns like this are to be found in all the buildings of a similar type to F which have been excavated until now, and in many cases there are channels taking water up to their opening from different parts of the building (Almagro 1983: lam.49d). Some channels can be treated as overflow channels to take the excess water towards other cisterns. However, no channel has appeared in building F.

Construction Techniques.

Research carried out in building F has confirmed some different aspects of construction that we had noticed in our previous analyses of the palace (Almagro 1983:144-150). It is clear that there are structural forms and construction techniques following different architectural traditions.

The coexistence of such different techniques points to the evidence of participation of workmen from very different origins. Undoubtedly, the citadel of Amman is a good sign of this. We can imagine, without too many doubts, that whoever conceived and planned this court monument came from the eastern part of the Islamic world: from Per-

sia or Mesopotamia. The concept of the palace, the typology of the greater part of the buildings and larger rooms, and the structural and decorative arrangements in general are clear evidence of the origin of their author. There must have been workmen who knew the materials and ways of construction that were different to the Roman and Byzantine traditions that were dominant up until then in Syria.

Together with the local forms and techniques there coexist new forms and typologies of oriental origin. So the springs of the arches and vaults always have a slight ledge of a few centimetres, often marking a false impost much lower than the real commencement of the arches or vaults. Another difference with regard to the local tradition is the use of pointed arches, which, together with the shrinking produced by the descent of the ledges which mark the impost, are similar to the parabolic forms sometimes adopted in the Sassanian constructions.

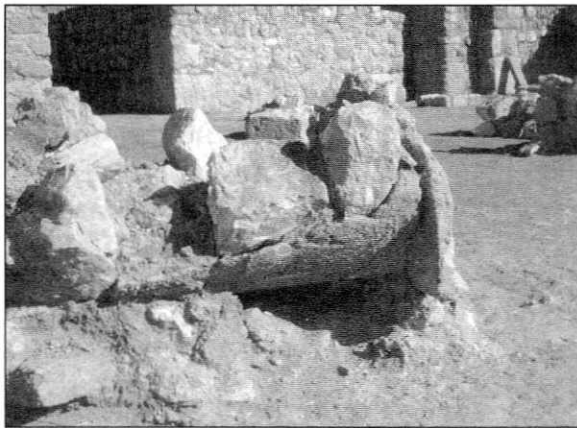
The stonework used in the construction of the walls is from local origin, the same as the plastering. In both cases a low quality lime mortar is used - with plenty of organic ashes - in the stone settlement of the walls, and of higher quality and consistency in the plastering.

In our opinion, the construction techniques of Persian and Mesopotamian origin are of greater interest. Among these, the most outstanding is the use of gypsum, used in a specific form in certain constructive elements of the palace³. Gypsum appears to have been used in elements requiring an immediate loading, as in the lintels of the doors, formed by irregular stones laid as rough voussoirs. The columns and arches of the courtyards, were also constructed with irregular masonry (Fig. 11).

Among the remains of the series of arches in building F, undoubtedly fallen in an earthquake, we have been able to make a

2. Almagro 1983:109, lam.35b.

3. Almagro 1983:144; 1995.



11. Column and capital made with rubble masonry and gypsum mortar.

clear distinction of the use of prefabricated gypsum elements. In the first place, we are dealing with 80 cm² plaques, 4 or 5 cm thick, used as capitals over the cylindrical columns, and which served as the transition of the circular section of the column to the square section of the impost of the arches. Other prefabricated items are some flat pieces with curved guidelines used to define the groins of the intrados of the arches, which carried out various functions. In the first place they defined the form of the arches while the work was being carried out, and at the same time acted as centering for the masonry that formed the arches; as this was joined with gypsum these pieces easily adhered to the surface, and in this way the whole structure could be built with the minimum of auxiliary means.

Interpretation of Building F and the Central Area of the Palace in Umayyad Times

The excavation and analysis of building F allow us to consider a more exact interpretation of the whole arrangement and structure of the central area of the palace. Building F is undoubtedly one meant for residential purposes. The fact that there are two *buyūt*, and the general arrangement of the spaces mean that we can relate it to the

whole series of residential buildings of the Umayyad period. However, it is still surprising, and even more so in this building, that there are two *buyūt* which are similar in all ways and without organisation into a hierarchy. This fact, which could be appreciated in buildings A, B and C is even more obvious here since they are arranged absolutely symmetrically and in an identical orientation.

Al-bayt that appears in these buildings does not correspond to the typical model of Syria, formed by one main hall and two or four secondary ones, intercommunicating and giving on to the outside through doors⁴. *Al-buyūt* in the palace of Amman correspond to the Sassanian or Mesopotamian types, in which the main hall is an *iwān* or room open on one side.⁵ However, it is worth mentioning a certain originality in the arrangement of these *iwāns* preceded by a portico, in such a way that the space which is completely open to the outside is considerably modified for an additional reason, the two columns with arches at the entrance of these rooms constitute a definite "filter" element separating these spaces from the courtyard and the portico. So we are faced by a model which we can consider new and original, half way between the Syrian and the Sassanian *bayt*.

We could imagine that this type of building was meant for residential purposes for several families, since it had more than one *bayt* and all of them were similar in size and shape. It may well be that we are faced by the use of these spaces by one family in the widest, almost patriarchal sense, inhabited by various family units with close links, such as married sons, brother or sisters.

The central area of the palace, with its nine buildings and eighteen *buyūt* can therefore be compared with a large camp of Bedouin tents, except that they were built as permanent structures. There is no hierarchy or

4. Creswell 1969: 515-517.

5. Creswell 1969: 518.

any signs of distinction. Not even in the four buildings in the northern part, flanking the throne room and no doubt meant for the most important people, can we find any difference in size or internal arrangement from those in the central part. Only the formal ar-ras such as the Entrance Hall or the palace doorway and the throne room with its great *iwān*-hall for public audience, have any type of established hierarchy.

From the point of view of articulation of the nine buildings, we must point out that they constitute an authentic urban configuration. Next to the square or second courtyard and the porticoed street that leads to the northern part, there is another street that emerges in the junction of the two previous spaces and leading towards the western area. This street has been excavated on the surface with the purpose of consolidating the higher part of its walls. Owing to this fact, we know that it goes around the whole of the northern side of building F and branches out on the western end. It seems that here it continues straight ahead and gives onto building H and maybe also to G, while another lane goes northwards, probably entering into building I. This plan seems similar to the one that exists in the northern part offering access to buildings 3 and 4. An entrance door has appeared in building G from the street starting in the western gates of the citadel, just beside it. This leads us to think that it may have been a building independent from the palace and with an entrance from the outside of it, although it could also have had access from the street which we have just described. Future excavations should clarify this point.

Building I also has at least one *iwān* on the northern side, which seems to mean that it was a symmetrical building with regard to building C. Therefore we can assume that buildings D, E, H and I have similar ground plans which are symmetrical with regard to those of the buildings on the eastern side, which confirms the homogeneity of the structure of all the central area of the palace.

THE EXCAVATION OF BUILDING F

Introduction

The first campaign of archaeological excavations started in 1989 in the area corresponding to Building F, inside the precinct of the Umayyad palace.⁶ The work centred on a building whose demarcation we knew beforehand, thanks to the campaign of aerial photographic data carried out by the Spanish Archaeological Mission in 1978. This information has made it possible to establish the perimeter of the six buildings situated to the west of Courtyard 2 and the porticoed street, between the Entrance Hall and the wall of the Roman temenos which delimits the most restricted area of the palace.

With the available data, it seemed advisable to disregard the traditional system of excavating by means of a grid, and instead of this we decided on an extension system, which would enable us to consider the different architectural spaces as individual units. However, prior to this we decided to draw a cruciform reference that would provide evidence for the stratigraphy along the length and width of the building which in this way would be subdivided into four large sectors.

6. That year the School for Arabic Studies (CSIC) and the Centre for Arabic and Archaeological Studies "Ibn Arabi" of Murcia joined the Spanish Archaeological Mission in Amman. Apart from the authors who have directed the excavations throughout the four campaigns, the following archaeologists have also taken part: Daniel Alonso Campoy, Juan Antonio Alonso Costa, Trinidad Castaño Blázquez, José Antonio Fuentes Zam-

budio, Isabel García-Galán Ruiz, Alvaro Jiménez Sáncho, José Domingo López Martínez, Carmen Martínez Salvador, Andrea Moratalla Collado, Fulgencio Murcia Belmonte, Alfredo Porrúa, Juan Antonio Ramírez Aguila, Maria del Carmen Sánchez García, Marùa Belén Sánchez González, the architects Ignacio Arce, Antonio Orihuela Uzal and Luis Ramón-Laca and the draughtsmen José Antonio Gil Abellán and Angel Rubio Córdoba.

In accordance with this arrangement, the most superficial level was excavated to uncover the remaining finials of the walls limiting the different rooms. This deposit contained abundant stones of irregular sizes from the most recent stages of devastation of the building. The depth varied according to the greater or lesser proximity to the courtyard, so in the areas occupied by the bays of the rooms it reached as much as 1 m, whereas in the centre of the courtyard it was hardly 30 cm. This feature was already visible from the air and even on the surface level, since the location of the courtyard was clearly seen because of a depression. Once the different spaces constituting the building were established, we were able to confirm that, in general terms, the ground plan coincided with our initial hypothesis.

After the interruption caused by the Gulf War, the archaeological campaigns were renewed in 1993; the excavation of Building F was finalised together with studies of the materials recovered in 1996. In all, four campaigns of an average duration of six weeks have been carried out.

The Violent Destruction of the Building

The majority of the most fragile structures of Building F, particularly the series of arches in the courtyard, the entrance arches to the *iwāns* and part of the roofing, were destroyed at some time near to their actual construction, because there is no previous evidence of the characteristic repairs to walls and, in particular, to paving, which is usually evidence of prolonged use of a building. The characteristics of the deep stratum of destruction affecting arches and columns give us some clues to understanding the ruin of this building. The level is composed exclusively of rubble among which it can easily be seen that the elements of construction have fallen *in situ*, and therefore they have not been brought from elsewhere. On the other hand, the fact that there is a lack of wind-deposited earth (soil ero-

sion) and that there is an overwhelming presence of broken-up gypsum mortar between bricks and masonry shows that the collapse happened suddenly and so, consequently, we are not dealing with the effects of a slow process of destruction. There is no evidence of any charred remains to show that the cause might have been a fire or action of war. If we take into account the date of the materials in the ruins, which is late Umayyad, as we shall see in the corresponding section, and the fact that in other sites in the country and in the citadel of Amman itself very similar levels of destruction to what we have found have been recorded archaeologically, and that they have been identified as the effects of an earthquake, we are inclined to believe that this was the cause of the destruction of Building F.

After the catastrophe, in Building F there were a series of proceedings of minor importance from a constructive point of view, and which represent a rather regressive process, but which provide evidence of the reuse of the space in question at a time which we believe to be immediately after the earthquake, since there are no signs that point to an intermediate period when it was abandoned. Strictly speaking, the partial reuse of the building can hardly be considered as a new constructive phase, but what is clear is that they made good use of the existing walls and spaces. At any rate, after its destruction, the building was never again used for its original purpose, as a palatial residence.

The depth of the stratum of destruction varies according to the different spaces, since some were abandoned, other cleared up wholly or partially, and it seems that in some rooms they did not even suffer the collapse of the covering. At any rate, it always coincides with the height at which the plastering materials covering the walls is conserved. In fact, this layer seems to have fallen off all those walls that were left uncovered after the earthquake, and it has

only been conserved in the parts of the walls that were buried under the rubble. In practically all the excavated areas, the height at which the layer is conserved coincides with the accumulation of rubble on the Umayyad floor.

The Courtyard

This is the space which provides the clearest evidence of the effects of the earthquake. On the paving we can find an important amount of rubble reaching a height of more than 1 m in some areas, acting as a support for the columns and arches of the portico, broken and shattered on the floor of the palace.

Among the building material, especially in the centre of the courtyard, a large number of square bricks were found, with remains of the characteristic lime mortar with ashes, identical to that of the walls they had been taken from.⁷ We are uncertain which part of the building these bricks were used in, although from their position among the collapsed rubble, and since there is no trace of them among the standing remains, we are inclined to think that they formed part of the construction over the series of arches of the courtyard, maybe a parapet. Bricks were hardly found in the perimeter corridor, between the series of arches and the walls, as they tended to fall towards the centre of the courtyard; however, a considerable number of yellowish limestone ashlar, cut in the shape of voussoirs were found, probably ones which formed part of the vaulting covering the portico. Remains of the plaster which covered the intrados were found on several of them.

The Rooms

The effect of the earthquake on the differ-

ent rooms does not appear to have been the same; some of them suffered such severe deterioration that they were considered irreparable, while others appear to have withstood the disaster.

From the former category we should point out rooms 9 and 10, in which the stratum of rubble reaches a height of 1.5 m, the same as the height of the plastering which has been conserved. In both cases it seems that we can confirm that the deposit could only be due to the collapse of the roofing and even to the upper part of the walls. The roofs of the two *iwāns* had also fallen in, which is logical enough if we bear in mind that we are dealing with the largest rooms, and therefore their roofs would be the most fragile.

In some cases, the roofs appear to have withstood the earthquake, as is the case in the hallway. On excavating this room a deep stratum was found, of approximately 1.20 m, which constituted the Umayyad floor and which was sealed by a paving of hardened earth. This deposit contained rubble which was, undoubtedly, from the ruins of the Umayyad building, judging from the presence of the lime mortar with ash characteristically used in building; however, the greater part of the stratum was formed by grey and brown earth deposited by the wind and gravel from outside. All of this indicates that we are dealing with a stratum generated by the gradual ruin of the building and not by any sudden destruction caused by an earthquake. The height up to which the plaster is conserved is also an unequivocal sign which confirms this hypothesis, since the layers of mortar have hardly been maintained a few centimetres above the Umayyad floor level here, if they have not disappeared completely. All this data indicates that the

7. They are 30.5 x 30.5 x 7.5 cm, made of coarse clay, and are yellowish or reddish in colour. Identical bricks were used in other parts of the palace, such as in the stairs of one of the residential buildings of the western part of the northern area, and

in the substructure and foundations of the warm and hot rooms of the baths situated to the east of the great hall. They are also similar to those used in Qaṣr al-Mushatta.

roofs of the hallway did not collapse with the earthquake, or that the rubble was carefully cleared away. Although we do not have unmistakable proof in one way or the other, we are inclined to believe in the first possibility, given the fact that this room was covered by the vault tectonically the most resistant of those which existed in Building F, since it had the smallest span.

The earthquake also seems to have been withstood by some rooms which, after the disaster, were partitioned by means of walls which were probably meant to support the roofs: this is the case of rooms 1 (see Fig. 8) and 12. In others, however, the construction of such interior walls must have been accompanied by the reconstruction of roofs. This must have happened, for example, in room n° 3 (see Fig. 10), because the partition wall was founded on top of a stratum of rubble from the Umayyad building.

The Reoccupation of the Building

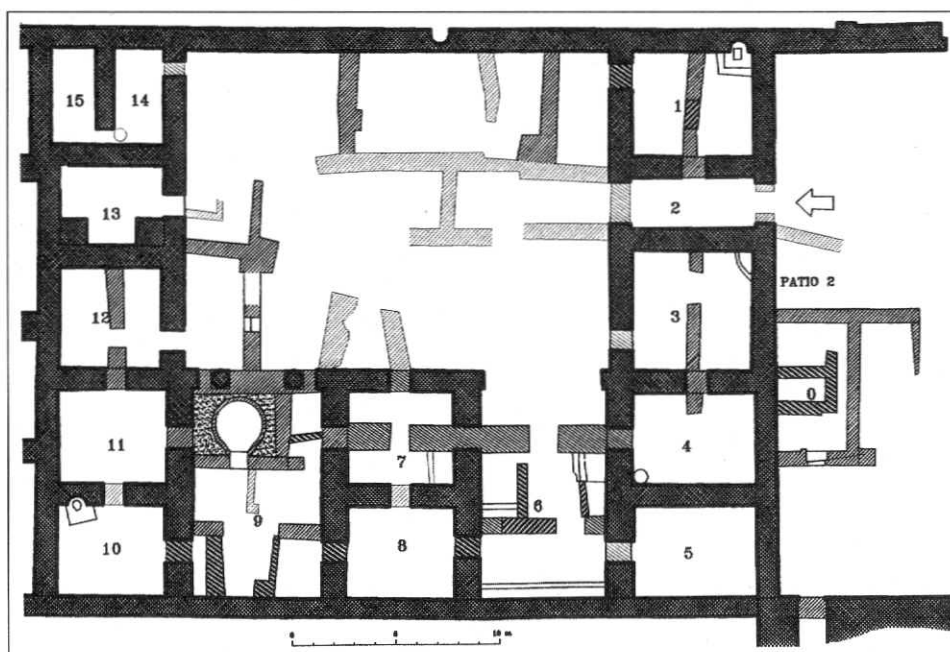
After its violent destruction, Building F was partially reoccupied (Fig. 12). Some rooms that had withstood the earthquake were partitioned and converted into domestic units, to which the adjacent part of the courtyard was added, partially cleared of

rubble and walled off. Others were cleared of rubble and completely remade, like *iwān* n° 6, after its covering had collapsed. Finally, *iwān* n° 9 was not cleared, and an oven and the corresponding workshop were situated on top of the rubble.

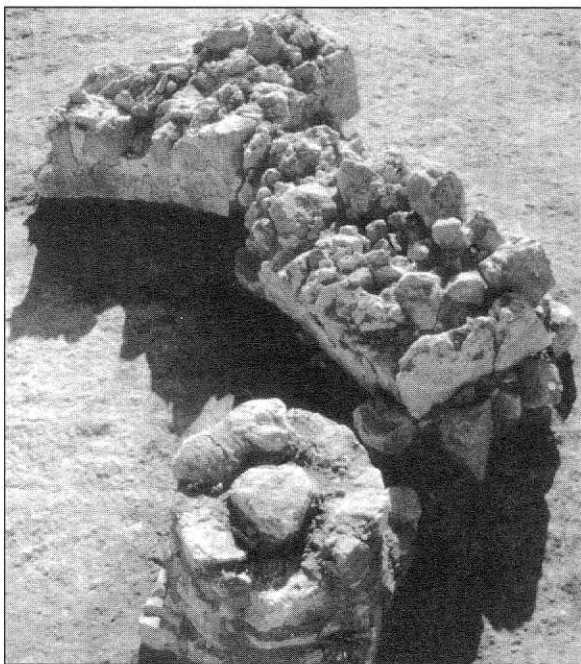
The Courtyard

The large quantity of debris covering the ground, which included the fallen archways, shows that the courtyard of Building F never regained its former splendour as a porticoed courtyard. None of the columns, including those of the *iwāns*, withstood the earthquake, and those who reoccupied the building did not rebuild them; they did not even clear the rubble from the area (Fig. 13). In fact, in spite of partially clearing some parts of the courtyard, the parts opposite certain rooms, in other parts they left more than a metre of rubble, which meant that the level of the ground varied between 40 and 50 cm from some parts to others. Part of the surface of the courtyard was partitioned by means of thick walls, creating some small, modest dwellings, maybe open to the sky.

The clearing up of the courtyard was incomplete and decreasing, so that the eastern area, that which is situated near the hallway



12. Late structures in building F.



13. Base, column and arch collapsed in the courtyard.

- which seems to have continued to be used as such - and near *iwān* n° 6, were cleared to a height of 30 cm above the level of the Umayyad paving. For this reason there are no remains of any column or arch from the east flank, and only the first line of stones survives from the bases. On the contrary, the height above ground level of the fallen structures on the western area of the courtyard, which reached as high as 1 m in some cases, shows that the new level of rooms must have been situated at this height. The difference in level between the western and the eastern areas of the courtyard was solved by means of a slight slope that can be observed both in the stratigraphy and in the height at which the mortar for the plastering of the lower part of the walls is conserved. In fact, if we observe the height in the space of the previously-mentioned plastering, it seems to bear witness to the fact that the clearing-up of rubble was carried out in a very irregular manner, since the height of conservation of the plaster on the perimeter walls in the western part of the courtyard reaches 1.20 m; however, this height decreases progressively towards the eastern side, which confirms the existence of a very slight slope

in that direction.

The Room Units

What had originally been a grand residential nucleus, articulated but unique, became converted into a set of cells of independent rooms, juxtaposed and of little significance. For this reason, certain sectors of the courtyard were closed in by badly-fabricated walls and became part of new domestic units that also comprised one or two of the old dwellings of the buildings.

The opening which communicated Room 1 with the hallway was blocked up and this room was partitioned with the construction of a N-S wall, built of treated masonry joined with clay and abundant sneck in the joints, and in which a doorway was opened up in order to communicate between the two resulting units. Access to these rooms was, of course, from the old courtyard, where a rectangular space was marked out opposite the door.

Room n° 3 was subjected to important alterations after the earthquake: the door communicating with room 4 was blocked up and it was divided in two by means of a partition wall in which a door was opened up. In the room at the back, a structure was built of a rounded arch shape, against the north-west corner, roughly fabricated using stones and clay, and which seems to correspond to a manger. The transformation carried out in the room in question appears to be roughly parallel to that executed in room 1. In both cases the space was subdivided by a wall in a N-S direction, resting against the blocking-off wall that had been built in the opening that communicated with the other room, therefore leaving only one possible entrance from the courtyard. In this way, internal circulation between the rooms was eliminated once and for all, leaving the courtyard as the true articulating nucleus of the building.

Opposite the entrance to room 12, in the SW angle of the courtyard, another rectangular space was closed off; it had similar

characteristics to the one mentioned relating to room 1. This unit, which we believe could have been without any covering, communicated with the courtyard through an existing door in the east wall. The height of the floor of this room was about 40 cm above the Umayyad one: i.e. about 50 cm lower than the level of the rubble in this section; for this reason, the walls surrounding it served at the same time as retaining walls. The difference in level must have been levelled out at the entrance by means of a step constituted by the threshold of the door. The stratigraphy of the interior of the room reveals the existence of as many as five successive room levels, the oldest of which was built directly on the fallen rubble. Room 12, in the same way as rooms 1 and 3, was divided up by a wall of masonry joined with clay in which there was a door communicating with the two rooms. The wall does not rest directly on the Umayyad floor, but rather it starts at 30 cm above the original paving.

In several of the residential buildings composing the palace, the *iwāns* have been observed to be the parts which were most seriously damaged in the earthquake, due to the fragile character of the vaults and columnar fronts. In *iwān* n° 6 there was no trace, as there was in other rooms, of the deep layer of rubble that showed the violent collapse of the covering; however, the important alterations to which it was subjected seem to prove that it was one of the parts that was most seriously affected in the disaster. The original three-way access must have collapsed and the remains were removed, because the new façade, which was considerably different, was set back with respect to the original one. The arches giving access were substituted by a strong wall made from large reused ashlar with one entrance only. This wall began from the opening, which had been previously blocked up, that communicated the original *iwān* with room 4. At the other side, it blocks also the

entrance into room 7. In the southernmost third part of the room we are dealing with, there were two pilasters face to face, made from reused ashlar which must have been the support for the base of a transversal arch designed to support the beams of the new flat ceiling that substituted the previous vaulting.

At some moment prior to the construction of the wall forming the façade of the *iwān*, which we imagine was after the earthquake, and probably for a short period of time, the original *iwān* communicated with room 4 when it had already been divided by a partition wall and isolated from room 3.

Iwān 9 underwent radical alterations in order to install an oven and the corresponding workroom in the previous state room. In the first place, communication with the courtyard was completely cut off with the construction of a wall that started from the two jambs and closed up the three existing openings (Fig. 14). This wall was based on an open foundation on the deep layer of rubble (approximately 1.20 m) proceeding from the devastation of the building. The purpose of this wall was to provide an inner space in which to place an oven, while at the same time it would constitute the retaining wall for the installation. The oven was confined to the south by a wall in an E-W direction, where its opening was set. This was placed at a height of 1 m above the floor level of the room situated to the south, with the idea of making work easier for the work-



14. The west *iwān* blocked by late structures.

men, setting the work surface at waist level of a person of normal height. These walls, together with those that separated the unit from room 11, enclosed the chamber, which had a round ground plan, culminating in a dome and constructed with bricks. So, we are dealing with an oven with one single dome-shaped compartment. To the east of the last of the walls described, there is a narrow rectangular space with access from the south by means of an opening similar to the opening of the oven. Anyway, the absence of layers of ashes inside the oven and surrounding floors, as well as the lack of a blackened surface on the inside of the bricks or other evidence of exposure to flames, leads us to believe that the oven was never used. As there were no remains of any production, it is even more difficult to know what use this particular oven was intended for. Technically speaking, it does not look like the clay or glass kilns, whether of one or two compartments, so we think we can rule out these two possible uses. It may have been intended for baking bread, although it is undoubtedly of a much larger size than would have been required for just one family.

The workshop, to the south of the oven, was also partitioned by divisions which must have supported a transversal arch, which was of a similar arrangement to that adopted in *iwān* n° 6.

Points of access to the old *iwān* were very limited. There was no longer any possibility of communication with the courtyard or with rooms 7 and 11, so access could only be through rooms 8 and 10. As the latter only communicated with the workroom and with room 11, which at the same time could only connect with room 9, we believe that access from the outside to the oven and work room must have been by passing successively through rooms 6 and 8.

Excavation of Courtyard 2

The courtyard, referred to as n° 2, situ-

ated on the east of Building F, had already been partially cleared of rubble at the time of the Italian campaign, as shown in a photograph taken in 1939, in which we can see how the two thirds of the eastern part of the area are completely cleared. However, we do not have any information on the stratigraphy or of the later structures that there may have been in this courtyard. Only the western third has been unaltered since the 1970s, when the SW corner was lowered to allow access to the heavy machines passing over room 5 of Building F, and the NW corner was completely dug out to Umayyad ground level. Therefore, when we began the excavation of Building F only the deposit adjacent to rooms 3, 4 and 5 remained unaltered, and we decided to excavate the southernmost area of it, leaving the corner opposite room 5, since this is at present still the only practicable entry for vehicles.

The excavation revealed a rectangular room of 6.10 by 3.40 m, limited on the west by the wall of the façade of Building F and on the north, south and east by walls of masonry set in clay, of 60 cm thick. The room in question opened onto a space situated to the south through an opening of 85 cm which had mouchettes set on the south end of the jambs. We are unaware of the nature of the space from which there was entry through this door into the room we have described, since, as we have said, that sector is still to be excavated. The arrangement of the mouchettes would seem to indicate that we are dealing with an open-topped space, either courtyard or street, although the difference in level with respect to the room we excavated contradicts such a theory, since we would have to admit that in the case of rain, the water would accumulate in the covered room. The wall enclosing the room on the north, is prolonged in an eastern direction, which goes to prove that the occupation reached up to the centre of Courtyard 2.

The E-W sector of the room shows how the later wall was built, in the same way as

the wall of the façade of Building F, on the Roman floor of the square. The level of the floor related with the room would be indicated by a layer of ash at about 38 cm above the Roman paving. On the occupied area there is a stratum of destruction composed of abundant masonry and lime mortar from the ruins of the wall of building F. It is obvious that this ruin took place after the construction of the later wall, and not before, since there is no evidence of any foundation ditch in the layer of rubble. On top of this stratum there were another two layers, and the higher of the two is associated with a wall of reused ashlar which runs in an E-W direction and divides up the room.

From a technical point of view, the walls built in Courtyard 2 have an identical construction technique to the dividing walls of rooms 1, 3, 4 and 12 in Building F. They are also situated at a similar height, about 30 cm above the Umayyad floor, which leads us to believe that they must be constructed in relation with this same building period. The ceramic materials associated with the level of occupation and with the level of destruction can therefore be classified generically as being of eighth century AD, so we consider that we are dealing with buildings that are probably of a residential nature, constructed after the violent destruction that we have recorded in the inside of Building F.

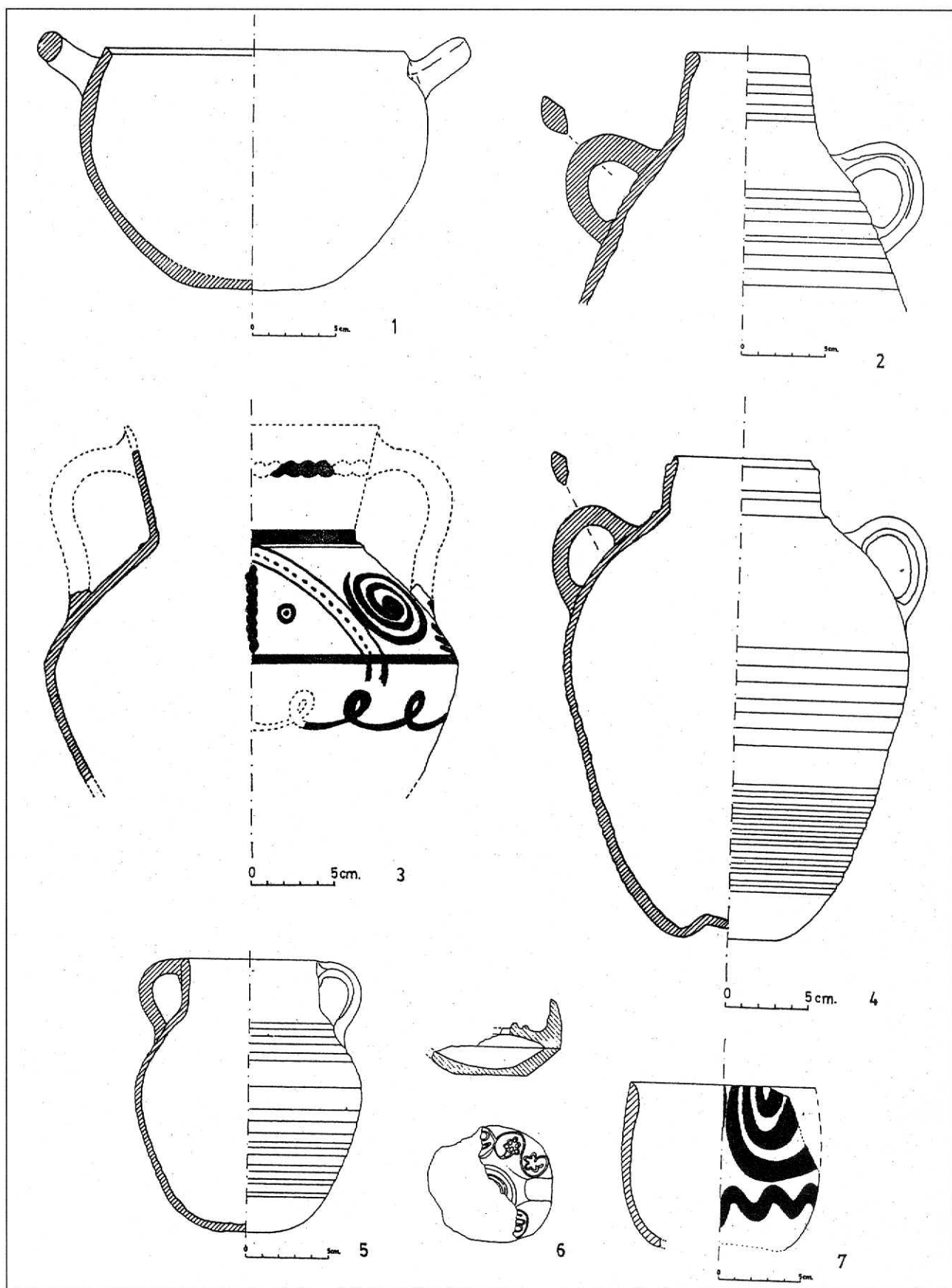
Chronology

In the sector of the courtyard and those rooms that were not cleared of rubble - 1, 2, 3, 9, 10, 11 and 14-15, there is evidence of the characteristic stratum produced by the violent destruction of the building. It is a layer which may be even greater than 1 m in depth, and which is characterised by ample building material: masonry, ashlar and even bricks in the courtyard, and particularly by the dark grey mortar and ash used in the Umayyad construction. The characteristics of the stratum in question prove that the collapse undoubtedly occurred instantaneously;

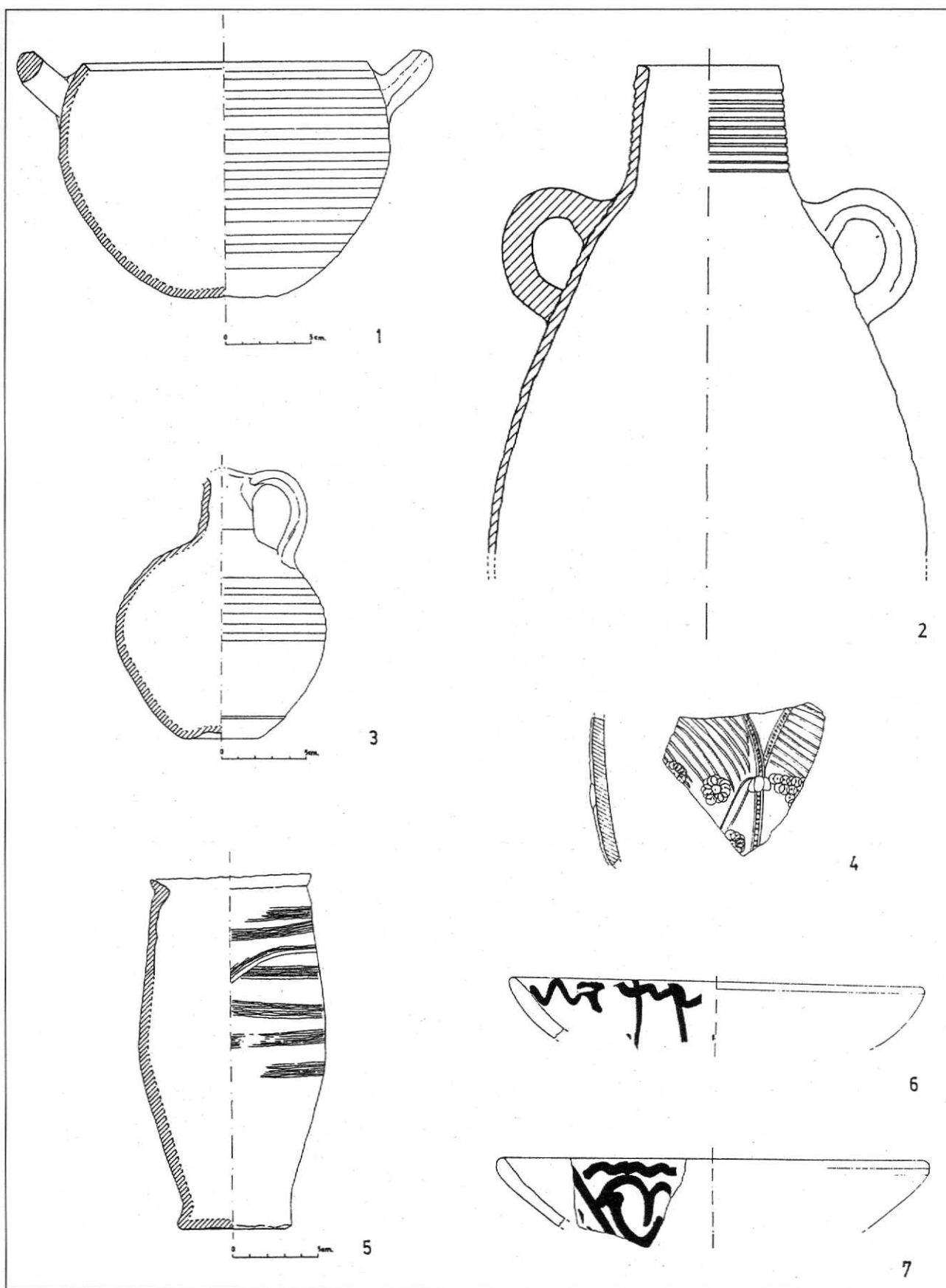
we are not in any way dealing with the slow decay of an abandoned building, but rather with the devastating effects of a natural disaster. As we shall see in the next section, there is sufficient archaeological evidence to prove that these are the results of an earthquake which has ample written documentation, as it devastated Southern Syria, Palestine and the Valley of Jordan in 749 AD. However, a thorough study of the materials found in the pertinent stratigraphical remains is fundamental in order to confirm this hypothesis.

Unfortunately, there has been no discovery of any coins or anything else which might offer an exact dating. Generally speaking, the archaeological records are very scarce with regard to objects, and only the pottery findings are of relative significance (Fig. 15-17), even though they are scarce, but they are clearly from the Umayyad period, as has been shown from a detailed study. In fact, the pottery found seems to be from the later part of the Umayyad period, which has characteristic forms such as bowls painted in red over white slip, round cooking pots, and even the undoubtedly exceptional discovery of some glazed items. This refers to a set of items closely related to others dated as mid-eighth century, for example, the oldest level of Khirbat al-Mafjar, or the destruction of the Umayyad houses excavated by Bennet and Northedge in the same citadel of Amman.

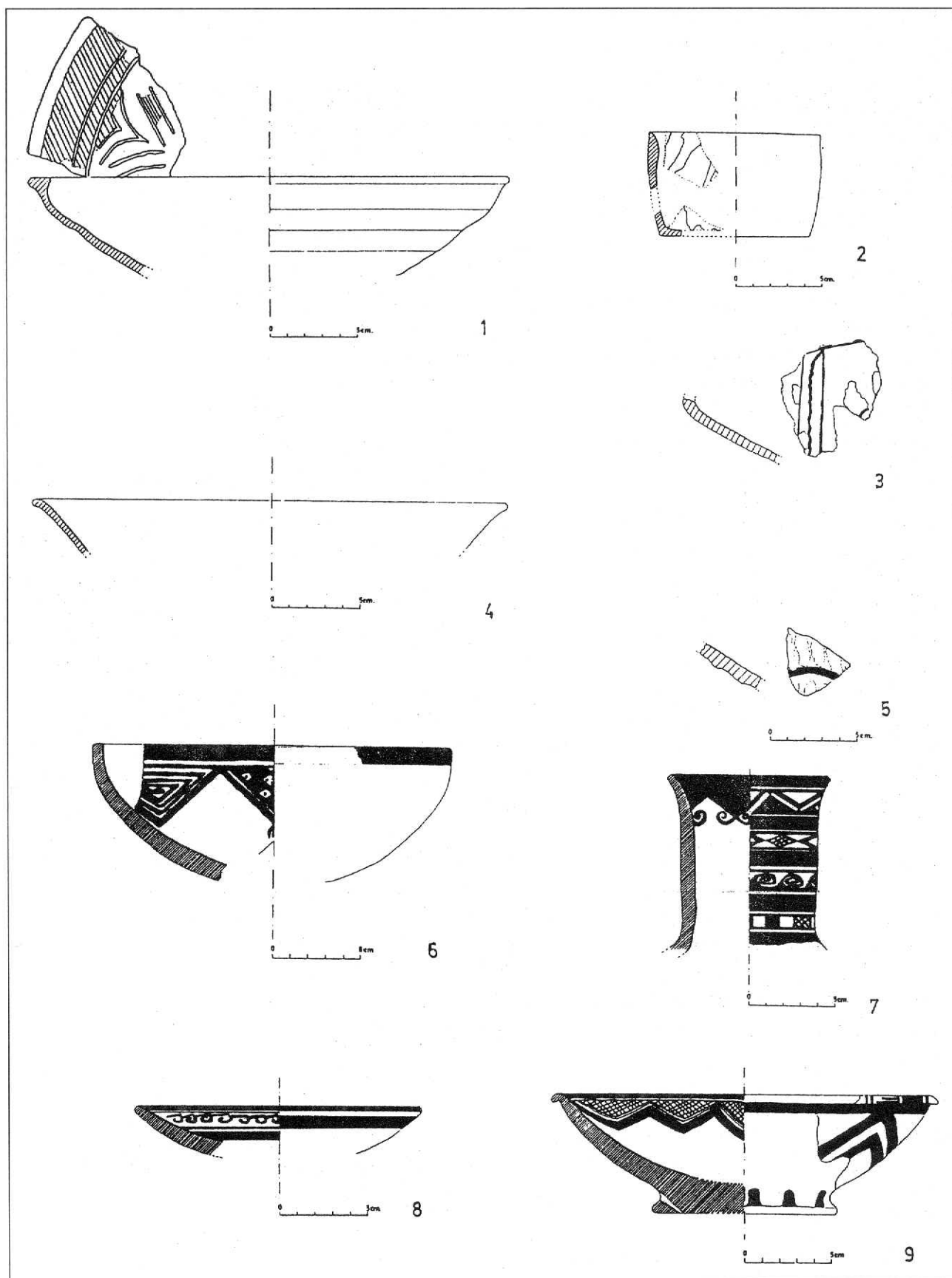
Among the kitchen items, there is a predominant amount of cooking pots rather than casseroles, although as we are dealing with fairly open objects, probably they were used indistinctively for making meals which required continuous boiling or cooking with little liquid. Almost all the cooking pots are semicircular, some deeper and some of them shallower. They have horizontal handles and a concave base. There is good documentary evidence in other sites in the area, as in Pella, Dhibān, Umm ar-Raṣāṣ, Khirbat al-Mafjar, Mount Nebo and Amman itself.⁸



15. Umayyad pottery: 1: Cooking pot; 2: Jar; 3: Painted jar; 4: Jar; 5: Small jar; 6: Lamp; 7: Painted bowl.



16. Abbasid pottery: 1: Cooking pot; 2: Jar; 3: Jug; 4: Barbotine and incised large jar; 5: Pot; 6,7: Painted plates.



17 . 1-5: Late Abbasid or Fatimid glazed pottery; 6-9: Ayyubid-Mamluk hand-made pottery.

This type of cooking pot, which began to appear at the end of the Byzantine period, seems to have gradually taken over from the pot with a short neck and spherical body, and by the end of the Umayyad period it was the most commonly used pot.⁹

Some examples of the typical lids for these semicircular cooking pots have been found, of a conical type and a knob-type handle. This is a very usual shape, good examples of which have been found among the Umayyad remains in the sites at Pella, Dhibān, Umm ar-Raṣāṣ, Amman, Khirbat al-Mafjar, Mount Nebo and Jarash.¹⁰

The jugs, jars, canteens and pilgrim flasks are made from very refined clay and the cracks are clean and straight. They are often covered with a thin layer of white slip, which offered itself to painting motifs in red; in other cases, there is white painted directly on a grey background. One of the most frequent pots is the pyriform jug, with a conical-type neck and very slightly marked shoulder where the very pronounced semicircular handles are fixed. They stem from Byzantine types, although the neck of those from Umayyad times is more developed than the former ones. They frequently appear with decorations based on simple geometrical motifs drawn with white paint on the grey background of the paste.¹¹ We were able to recover a whole jug which had the handles similarly arranged to the previously mentioned type; unlike them, the diameter at the level of the shoulder is greater than the lower third of the jug, the neck is

shorter and has a retouched lip.¹²

On some occasions, the jugs may appear profusely decorated with a variety of techniques, such as red ochre painting or incisions using a needle. Among the former there is one decorated with simple geometrical motifs: horizontal and wavy lines, spirals, semi-circular bands covered with a line of dots, etc. The pitcher in question has an inverted conical neck, where the handles are joined to the body, and a globular, slightly inclined body. Both in its shape and decoration, this piece is identical to another one found in the Umayyad levels in Jarash.¹³

The "ataifores" (dishes) which were recovered are specimens usually with a straight edge and lip which is rounded or thicker at the end. They are decorated on the inner surface with simple geometrical motifs painted in red ochre over white slip. Generally they have a ring base, although there are also flat bases.

Bowls with straight sides and flat base are one of the most characteristic shapes of the repertoire of pottery of the Umayyad period and the best represented shape as regards those which have been studied. We refer to vessels which are usually decorated on the outer surface, using red ochre on white slip. Generally speaking, the decoration is quite simple, and is characterised by thick strokes, wavy bands, concentric circles, etc. However, it is not unusual to find pieces decorated with more complex designs and finer strokes: friezes with stylised, spiky acanthus and bands of complicated motifs

8. For the variant of Fig. 15.1, see the parallels of Pella: Mc Nicoll, Smith and Hennessy, 1982: 167, n° 2; Mount Nebo: Schneider 1950: Fig. 4, n° 1; and Amman: Olávarri 1985: Fig. 17, n° 4.

9. Olávarri, 1985: 27.

10. Vid. Sauer 1986: Figs. 6 and 14; Alliata 1991: Fig. 19, n° 3; Northedge 1992: Fig. 133, n° 3 and 4; Olávarri 1985: Fig. 17, n° 7 and 8; Baramki 1942: Fig. 13, n° 21; Schneider 1950: Fig. 14, n° 1; Uscatescu 1996: Fig. 17, Group XVIII n° 1 and 2.

11. A. Uscatescu claims this, thanks to the diachronic series of Gerasa, see Uscatescu 1996: Fig. 23.

This author gives them the name of amphora. A. Uscatescu claims this and relates them with maritime commerce (p.164), which we disagree with; the reasons which lead us to believe that these examples are domestic containers are the same as those claimed by Uscatescu related to similar recipients from the Byzantine era (p. 157 and 158). Parallel to the Umayyad period are numerous other ones.

12. This item appeared in the exploration made inside the cistern in Room 1 of Building F.

13. Walmsley 1995: 663.

and very varied geometrical designs.¹⁴

Among the levels we are concerned with, we have found some fragments of an open shape covered with glaze (with a vitreous glaze), which are worth commenting on in detail, since the time when this technique extended through the Syrian-Jordanian territory is at the moment the subject of dispute. Although glazing was to be found in Iraq and Iran before the Islamic conquest¹⁵, the appearance of this technique in Greater Syria is associated with the rise to the Caliphate of the Abbasid dynasty and the consequent spread of Persian and Iraqi cultural elements. Nevertheless, some authors have considered the possibility that glazed pottery began to be used in the last years of the Umayyad dynasty¹⁶. If we take into account the early existence of glazing in Mesopotamia and the enormous amount of influence from that region on the palace which is being studied - both on the design of the ground plan and on the repertoire of decoration and even construction techniques - it does not seem surprising that some items finished in this way should have arrived prior to 749 at the citadel of Amman.

In short, the pottery items recovered show that the levels of destruction excavated

can without too much difficulty be assigned to the late Umayyad period. The kitchenware, typical painted bowls, jugs both with and without decoration, etc., have close similarity to analogous levels in other sites in the area, as has been shown. However, there are some archaic shapes to be found, particularly in some plates and cooking pots, which seem to be remains and probably were already of very restricted use. These relatively rare archaic pieces seem to indicate that we are not dealing with a very advanced date in the eighth century. On the contrary, the four glazed fragments that were recovered are proof that the date is relatively recent. All this evidence fits in perfectly with the chronology of the earthquake of 749 AD, which in all probability, from a historiographical point of view was the cause of destruction of the building concerned.

Conclusions

The archaeological study of Building F has enabled us to reach the following conclusions:

1. The building was never completely finished: construction of the walls, vaults and columns was completed, but not the plas-

14. Amr 1986.

15. Rousset 1994: 38 and following.

16. Sauer (1986: 308) considers that glazed pottery is exceptional in the Umayyad period: "If there is any glazed pottery at all in the Umayyad period (one possible sherd from Hammam es-Sarakh, several possible sherds from Tell Hesbān), it is very rare indeed." Olávarri (1985: 39), in agreement with the evidence from his excavations in the citadel of Amman, dates the introduction of glazing between 750 and 775 AD, without forgetting that between 740-750: "...this same type of polychrome glazed bowls appeared together with fragments of painted Umayyad pottery, in the levels of the first Abbasid occupation. It therefore seems convenient to state that they were already made in the initial stages of the Abbasid rule (750-775), that is, if they were not already introduced during the last years of the Umayyad period (740 - 750), which is not impossible." Grube (1994: 10) confirms the spread of glazing during the Umayyad period, according to the materials of the Khalili

collection and to their presence in the Syrian region, judging by discoveries in the mosque of Rusafa: "...it appears that archaeological documentation for an attribution of fine relief-decorated glazed pottery has now been provided by the excavations of the mosque in Rusafa, justifying early attempts to attribute such wares to the Umayyad period." In addition to Olávarri's observations related to the citadel of Amman, we should point out the discovery by the Spanish Mission of another fragment of glazed "ataifor" (dish) in a context which the discoverers estimate as late Umayyad: Olmo and Martínez, 1986, Fig. III (23/8). Northedge comments on the discovery of some glazed fragments on the lower terrace of the citadel during different excavations carried out by Zayadine, Najjar Greene, and considers them to have been imported from the east. This author stresses that these are exceptional imports in comparison with other sites in the region of Jordan and Palestine, where nothing similar has been documented (Northedge 1992: 101).

tering of the walls, only the basic plaster. The same can be applied to the buildings of the eastern sector excavated by the Italian delegation, judging by the photographs we have seen.¹⁷ In any case, we are dealing with circumstances which did not affect the possibility of inhabiting the building.

2. At the time of its destruction by the earthquake, the building hardly seems to have been inhabited, since in none of the sectors where rubble from the disaster has been excavated, have there been any signs of domestic utensils, organic remains, or even the bodies of people or animals which would normally accompany such levels in other sites and even in other parts of the citadel of Amman.
3. Immediately after the earthquake, the building was partially and marginally re-exploited; this consisted basically of clearing up certain rooms and reusing them as simple dwellings. One of the *iwāns* was even transformed into the workshop of the oven which was never put into use. This phase seems to have lasted only a short time, probably no more than some decades, and certainly it cannot date from long before the Abbasid period.

The archaeological evidence we have been putting forward shows that the building suffered the devastating effects of a natural disaster of enormous proportions. A large part of the roofing, series of arches, and even the façades of the *iwāns* collapsed, leaving huge quantities of rubble which in some parts reached a depth of more than one metre. The materials found, especially the pottery, make it possible to confirm that the event in question took place at about the middle of the eighth century, and therefore we can suppose that we are dealing with the

earthquake of 749 AD. The seismic effects were felt with great violence, not only in the palace, but also in the whole citadel of Amman, as ample archaeological evidence has borne out. The columns of the portico and the architrave of the magnificent temple of Hercules, which is a building from the middle of the second century A.D., which was already being used as a quarry, were demolished by the earthquake. In the sector that Northedge denominates "C", the remains of two houses from the Umayyad period were discovered, together with the street which separated them. The westernmost one was so seriously affected by the seismic movement that it could only be partially reused in later periods. The easternmost dwelling showed similar signs of destruction to the previous one, and of a partial reoccupation after the disaster; the human skeleton of one of the victims was discovered here.¹⁸

Written sources have left detailed evidence of the magnitude of the disaster which affected the South of Syria, Palestine and the Valley of Jordan in 749 AD¹⁹, and whose effects were felt from Persia to Egypt. The event was frequently mentioned in Byzantine, Arab and Jewish written sources. The first to describe it is Theophanes, who dates it in the sixth year of the government of Constantine V and the third year of the Caliph Marwan I.²⁰ According to the chronicler, the earthquake, which happened at about 10:00 in the morning, killed tens of thousands of people and destroyed churches and monasteries, particularly in the regions near Jerusalem. In fact, the quake affected the Holy City seriously, where it partially destroyed the al-Aqsa mosque, which had to be reconstructed some years later by the Caliph al-Manṣūr.²¹ According to the

17. Almagro 1983: Ill. 51.a. and 51.b.

18. Northedge 1992: 143.

19. Until the present day there has been no unanimity as to the date when the event took place, and different hypotheses from 747 to 749 have been considered. Nevertheless, recent archaeological dis-

coveries carried out on the site of Bet Shean seem to show unequivocally that the correct date is 749: see Tsafir and Foerster 1992: 231-235.

20. Theophanes 1883: 442.

21. Tsafir and Foerster 1992:232.

chronicle by Miguel the Syrian (twelfth century AD), the earthquake devastated Tiberiades, which was confirmed by the Hebrew text lamenting the death of many Jews in that region.²²

The archaeological evidence has been as eloquent as the texts with regard to the catastrophic effects of the earthquake in question. In fact, excavations have revealed considerable layers of destruction, generated by a sudden disaster which surprised people and animals, causing death and destroying innumerable buildings. As an example of this there are the sites of Jarash,²³ Pella,²⁴ Cafarnaum,²⁵ Hippos,²⁶ Scythopolis²⁷, the Umayyad palace of Khirbat al-Mafjar in Jericho²⁸ and Jerusalem itself.²⁹

The possibility of continuity after a catastrophe of such magnitude was even more traumatic due to the geopolitical circumstances that coincided with this event. One year after the earthquake, the last Umayyad caliph and his whole family were exterminated, giving way to a new dynasty, the Abbasids. Such an event was of enormous significance for the region, which had recently been devastated, since the change in the centre of power from Syria to Iraq meant as a consequence a social crisis which had a serious effect on the once splendid cities and finally ruined many of them.

The excavation has provided evidence that after the earthquake Building F was re-occupied and, therefore, slightly re-conditioned. The seismic movement meant the collapse of some of the vaults covering the rooms of the building, as shown by the deep layers of rubble excavated in the rooms. There is stratum of variable depth, sometimes reaching more than one metre, resting directly on the original floor. Roughly-hewn, medium-sized stones are plentiful, and there are remains of the characteristic

lime mortar with ash used in the construction of the walls and which supported the masonry of the vaults, as shown by the roofing which is conserved in one of the rooms of Building H. Evidence of such violent destruction is particularly visible in the courtyard, since a considerable part of the series of arches of the portico was found just as it had collapsed during the earthquake. Not in all the rooms can we see so clearly the ruins of the vaults covering them, either because they withstood the seism or, as was more frequently the case, the rubble was wholly or partially cleared away following the catastrophe. Similarly, large areas of the courtyard were cleaned up, to a certain extent, by those who took over the ruined building. Efforts to rehabilitate the building were not only limited to clearing up the rubble, but also, as a matter of priority, to reconstructing the covering. In order to do this, partition walls were built in many rooms, using treated masonry, similar to that used in the original construction, but joined with clay instead of lime mortar. These are walls which subdivide the original rooms, normally with an opening which allows communication between the two rooms; they are approximately 60-70 cm wide. As these walls halved the room space, it was possible to use beams that were not excessively long to support a flat ceiling. This type of construction is much simpler, from a technical point of view, than the use of vaults which do, however, permit the covering of much wider spaces like the original ones. From an architectural perspective, the new construction is a considerable impoverishment in keeping with the precarious nature indicated by, for example, the partial clearing of rubble from the courtyard.

However, the most important transformations are brought about by a new con-

22. Tsafir and Foerster 1992:232.

23. Ostratz 1989: 74-77.

24. McNicoll *et al.* 1982: 123-141.

25. Tzaferis 1988: 145-179.

26. Karcz and Kafri 1978: 237-253.

27. Tsafir and Foerster 1992.

28. Hamilton 1959.

29. Mazar 1969: 20.

cept of space: what was originally an articulated but unitary building, went on to become a juxtaposition of independent, in all probability domestic, units. This conversion can be observed in the majority of the openings allowing outer communication between the different rooms without the necessity of passing through the courtyard, the surface of which was occupied by some of the new radial domestic units. In its original concept, the courtyard was the inner area of a private domestic nucleus, but the following transformations converted it into an outer area consisting of several dwellings. That is to say, the reoccupation of the building converted the original courtyard, from a functional point of view, into a semi-public square more similar to a back lane of a clas-

sical Islamic town than to a domestic courtyard. The occupation of Courtyard 2, undoubtedly important from a point of view of protocol in the Umayyad palace, is another obvious proof that this palatial building underwent a complete transformation and was indeed disfigured under the Abbasids: no doubt it was still occupied and inhabited, maybe even to a greater extent than during the previous period, although it was no longer an organised palace, but rather had become a second-rate residential area.

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