

TELL ES-SA'IDIYEH 1987: THIRD SEASON INTERIM REPORT

by
Jonathan N. Tubb

The third season of excavations at Tell es-Sa'idiyeh in the Jordan Valley took place between March and June 1987. As in previous seasons, the excavations were directed by the writer (British Museum), with Peter Dorrell (Institute of Archaeology, London) as associated director. The staff consisted of Maria Andersson (University of Göteborg) — area supervisor AA; Jodie Benton (University of Sydney) — area supervisor BB; Ann Bomann (Egypt Exploration Society) — draftsman and area supervisor AA; Joan Brasnett (Oxford County Museum) — registrar; Alan Clapham (Institute of Archaeology, London) — archaeobotanist; Sarah Collins (Liverpool University) — area supervisor DD; Alan Hills (British Museum) — photographer; Christopher Kirby (University of Birmingham) — draftsman and area supervisor AA; Louise Martin (Institute of Archaeology; London) — archaeozoologist and area supervisor BB; Janie Miller (A.U.B.) — area supervisor GG; Robert Miller (Wellcome Institute) — area supervisor GG; Hans Piena (University of Amsterdam) — area supervisor EE; Constantine Politis (Institute of Archaeology; London) — senior area supervisor AA; Barbara Pritzkat (U.C.L.A.) — surveyor; Dianne Rowan (Liverpool University) — area supervisor BB; Ahmed Shishtawi (Oxford County Museum) — area supervisor HH; Sandra Smith (British Museum) — conservator; Trevor Springett (British Museum) — photographer; Petra Stanton (Middlesex Polytechnic) — grave illustrator; Sharon Steadman (U.C.L.A.) — area supervisor BB and Monique Vilders (Leiden University) — area supervisor EE. The Department of Antiquities representative was, for the first part of the season, Sa'ad al-Hadidi, and for the second part, 'Ali Sa'idi who also worked as a supervisor in area AA. The expedition was joined for a short period by Nancy Lapp,

who gave invaluable assistance with the processing of the pottery from area AA.

The third season of excavations at Tell es-Sa'idiyeh was sponsored and funded by the British Museum, with additional generous support from Royal Jordanian, Aramex International Courier, Agfa (U.K.) Ltd., and Bronica Cameras Inc. A particular debt of gratitude is due to Gerry Martin who designed and provided the highly sophisticated photographic mast responsible for the overhead plan photographs seen in Pls. I,2; III,1; III,2; V,1 and VI. The device was operated in the field by Louise Martin, and the high quality of the results are due to her expertise. Thanks are especially due to the Department of Antiquities of Jordan, and in particular to its former Director General, Adnan Hadidi, for his unfailing enthusiasm and support for the project. Finally, the expedition is grateful to the British Institute at Amman for Archaeology and History for all its help and hospitality during the excavation season.

Results of the 1987 season

Four areas, AA and EE on the upper tell and BB and DD on the lower tell, were continued from the previous season. In addition, two new areas were initiated, GG in the area of Pritchard's staircase on the north side of the upper tell, and HH on the saddle between the two mounds (see Fig. 1 for location of excavation areas).

Excavations on the Upper Tell

Area AA

The main objective in area AA this season was to isolate completely the stratum XII destruction level which had been exposed in a limited sounding in AA 100 at the close of the previous season (see Tubb 1986: p. 116). This involved initially the

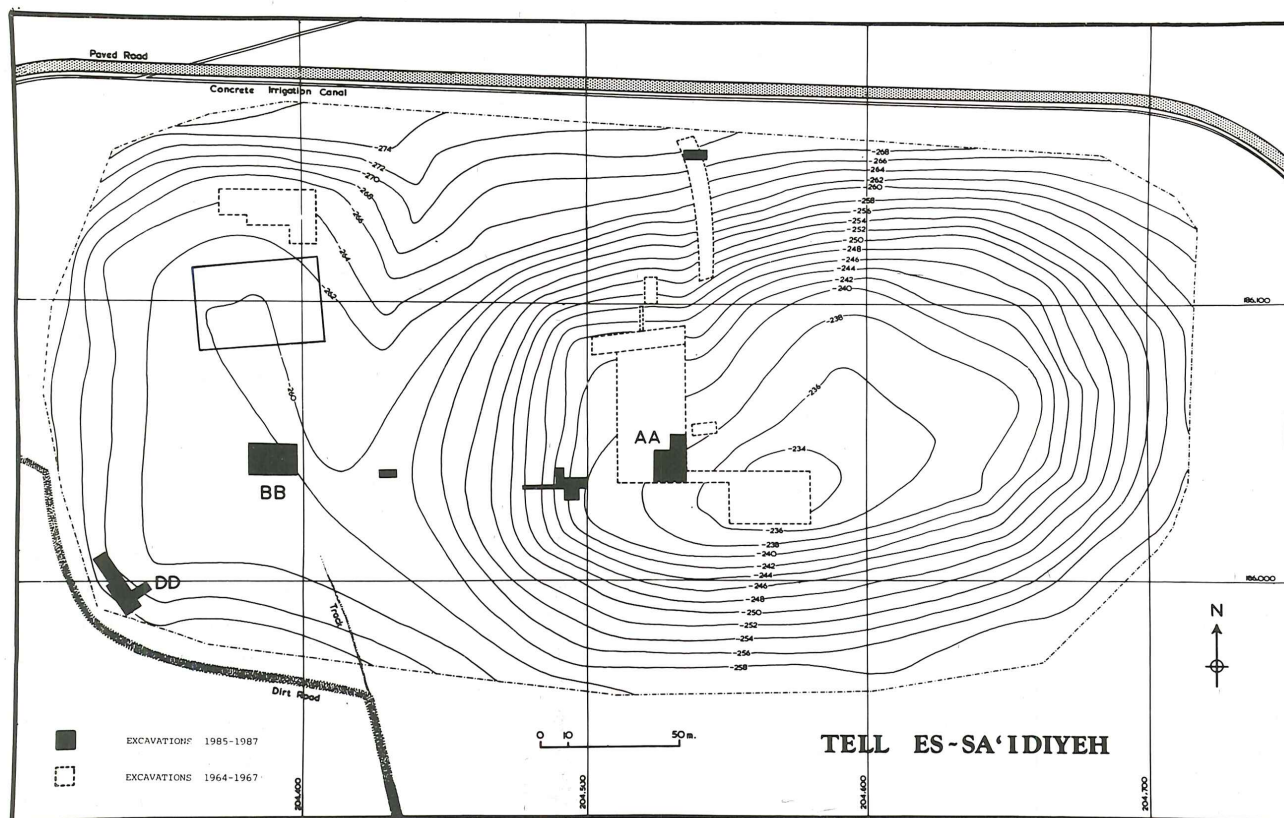
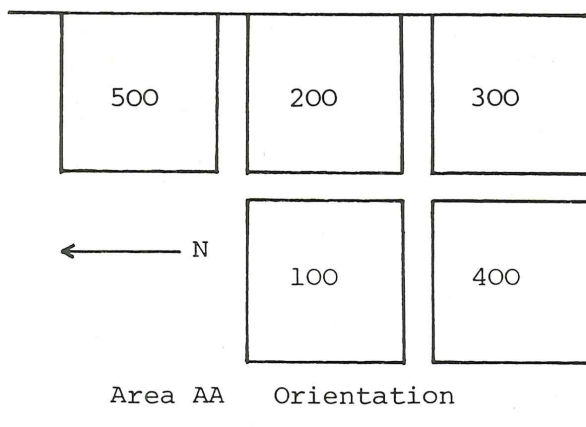


Fig. 1. Contour plan of site showing excavation areas.



completion of excavation of stratum X in AA 400, followed by the definition and excavation of stratum XI in AA 200, 300, 400 and the northeast part of 100. Further information relating to strata IX, X and XI was obtained, during the course of the season, by the stratigraphic reduction of the cross-baulks subdividing the area.

Stratum IX

The removal of the cross-baulks allowed a slight correction to be made to the stratum IX-X sequence. As found in

the previous season, the stratum IX courtyard, which extended over AA 200-300, exhibited two phases of construction. It became clear this season that these two courtyard levels should be related to the two construction phases of the associated walls to the west, and that the underlying stratum X courtyard had, in fact, no related walls within the area of excavation. Stratum IX will, therefore, be seen to be subdivided into IXA (upper) and IXB (lower) in all future reports.

Stratum X

The character of stratum X became much clearer this season, especially with the excavation of AA 400. Within the area exposed, it was seen to consist of an open courtyard without associated walls. Sunk into the cobbled courtyard at intervals were a number of stone-lined depressions, roughly rectangular in plan with a circularity at one end. Associated with these "structures" were quantities of animal bones including a high proportion of pig.

Further, the entire area was covered with a deposit of reddish silty material which, under microscopic examination, suggested the presence of decayed manure. It seems possible, therefore, that stratum X represents a period during which animals, perhaps pigs, were being kept, the stone-lined depressions being best interpreted as forms of pens.

Stratum XIA

In 1986 only one wall of stratum XI (A) had been revealed in AA 100, extending into 400. Further excavation in 200, 300 and 400 this season uncovered further walls and surfaces which, when added to the results of 1986, produce a coherent plan of an impressive building (see Fig. 2). The building is rectangular (approximately 10m x 6m), divided into two rooms. As observed last season, the walls are well-laid on two courses of substantial foundation stones. The floors were paved with uniform mud-brick slabs, and were almost clean of pottery. The rear (north) wall had a plastered bench running along it, and towards the east end was found a semi-circular niche extending into the wall. The niche had at its base a flat circular stone. In front of the niche was a burnt area, and extending from this was a channel leading to a circular depression towards the west end. In front of the burnt area was found a basalt incense burner (Pl. I,1). From these details, it would not be unreasonable to suggest that the stratum XIA building represents a form of temple.

Stratum XIB

Since stratum number XII had already been assigned in 1986, in order to avoid any confusion, the recognition of a phase intermediary between XI and XII, only apparent in AA 200 and 300, and hence only revealed this season, has necessitated the addition of an XIB to the sequence. This phase, however, bears no architectural relationship to XIA: indeed it is separated from it by a massive levelling of pisée and rubble fill. Instead, it is more directly related to stratum XII, and must be inter-

preted as an ephemeral phase of squatter occupation within the destroyed ruins of that stratum. Only observed within two of the better preserved rooms of stratum XII, surfaces were found above the XII floor levels, associated with fire-places and grinding stones. The pottery from XIB appears to be identical with that of stratum XII, suggesting an immediate occupation following the destruction, and should be similarly dated to the late 12th century B.C.

Stratum XII

The 1987 season concluded with the isolation of the destruction level, stratum XII, over the whole of the main area of AA (100-400). The plan is best illustrated from the overhead photograph (Pl. I,2). Even within the relatively small area excavated, it shows a tightly packed complex of rooms, streets and stepped passageways. The well constructed mud-brick walls had been laid on a construction surface of 15-20 cm of pisée, and, had in places been built as pairs with channels in between, presumably for drainage. The destruction appears to have been extensive and the firing intense. Nearly all of the walls were heavily burnt, and in places where doorways had been blocked with stones, these have cracked with the heat of the burning (Pl. II, 1).

Although many pottery vessels were found in the destruction debris, most appear to have been broken previously, and the impression gained is that the inhabitants of the city had had time to escape, taking with them their more precious items. Much charred material was recovered, including sections of wooden stair treads, roofing timbers, wooden spindle whorls, and even a reel of cotton.

The pottery from stratum XII is predominantly early Iron I in date, and is consistent with the material from the casemate defensive wall in area EE, and the final phase of usage of the lower tell cemetery. However, there are elements within the repertoire which clearly anticipate Iron II, especially with regard to the

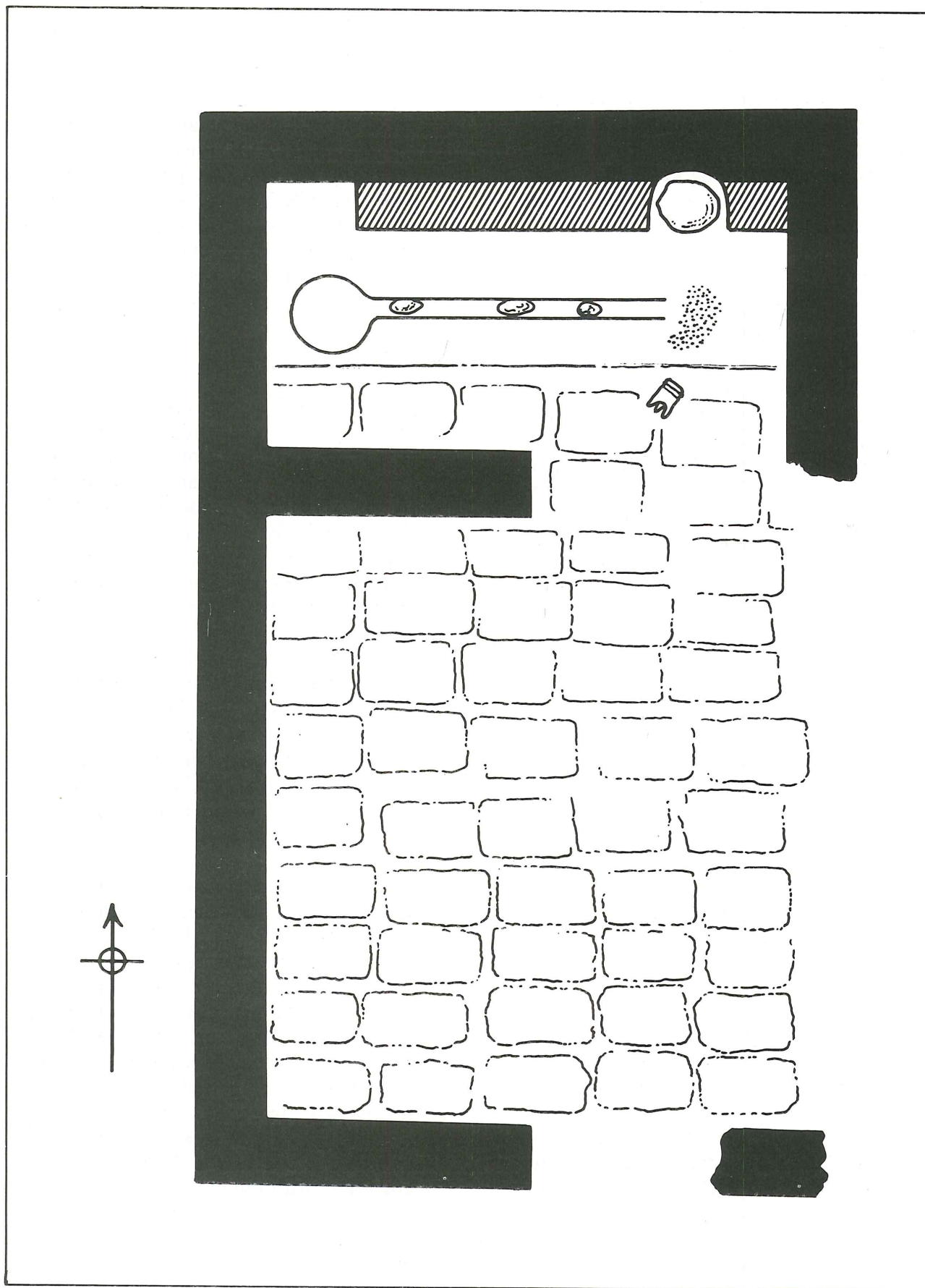


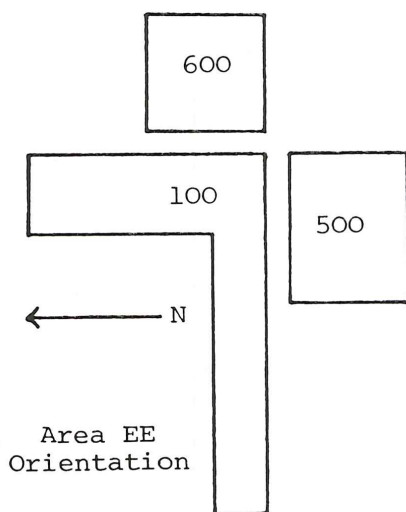
Fig. 2. Schematic plan of Stratum XIA temple in area AA.

cooking pots and juglets, and yet still others which reflect the final traditions of the Late Bronze Age, particularly the painted wares, and again, some of the cooking pot types.

Area EE

Area EE was further expanded this season, both to the south (EE 500) and to the east (EE 600) in order to reveal any possible defensive structures which succeeded the destruction of the stratum XII casemate wall.

As suspected last season, the results confirmed that on this side of the tell no defensive walls had been built after the destruction. Instead, clear evidence was found of stone-built terracing, associated with strata VII, VI and V, behind which was found occupation typical of the character of these strata as distinguished in area AA (see Tubb 1985, 1986).



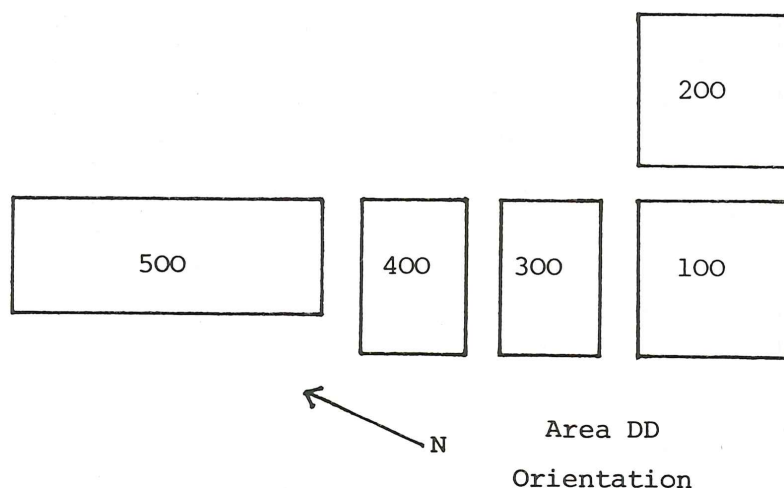
Interestingly, no remains of strata VIII, IX and X were found at this point on the tell, the stratum VIIB occupation lying directly over the levelled-off casemate wall of stratum XII. Although it is just possible that the levelling for and construction of stratum VII had removed all traces of VIII, IX and X, it seems more likely that these strata did not extend to this part of the mound, indicating a contraction of settlement after stratum XII.

The expansion of area EE to the south

(EE 500) allowed for further investigation of a plaster-lined bin, cut deeply through the casemate system, a small part of which was revealed in 1986. Stratigraphically, the bin, which cuts through one of the cross-walls and its adjacent fill to a depth of nearly two metres, was dug after the destruction of stratum XII and prior to the construction of stratum VII. In view of the finds recovered from the base of this bin (see below), it seems most likely that it should be attributed to stratum XIA. The bin contained two basalt incense burners and a large square basalt altar (Pl. II,2). Typologically, the incense burners are strikingly similar to that recovered from the stratum XIA temple in area AA (see above), and it seems probable that the bin represents a type of *favissa* for obsolete or broken religious vessels, perhaps deriving from that temple. The bin itself was provided with a low bench on the west side, and appears to connect with another similar bin lying further to the west by means of a low tunnel. These last two features could not be investigated this season.

The rear wall of the casemate system was revealed this season in EE 500. It is just over one metre in width, and behind it was found destruction debris overlying a surface, similar in every respect to the situation encountered in area AA.

The removal of the plaster-lined bin in EE 500 clarified a further point with regard to the casemate wall system. As mentioned in the 1986 report (Tubb 1986: p. 119), the casemate wall was built over an earlier solid wall, also clearly defensive in nature. With the expansion of the excavation area, it became apparent that the massive boulder fill encountered within one of the casemate compartments was not, in fact, a filling for the system, but was rather a pre-constructional fill, corresponding to a gap in the lower solid wall. The casemates themselves appear to have been filled with brick rubble, and it is interesting to note that as in area AA, the walls of the system had been built on a construction surface of 15-20 cm of pisée.



Excavations on the Lower Tell

Area DD

Area DD was expanded this season in order to obtain more of the plan of the stratum L2 building excavated in 1985-6, and to reveal the underlying stratum L3, on the line of which, but with a change in orientation, the later phase appears to have been built. In DD 400, the north wall of the L2 building was found, again constructed directly over an L3 wall on the same line. Lying close to the present ground surface, the wall was preserved only to its lowest course, the rest having been lost through erosion. Only a fragment of its associated surface had survived, but this showed evidence of having been plastered, and bore traces of the destruction debris which typifies the end of stratum L2 elsewhere. In DD 500, where erosion has been even more severe, traces of L2 could only be detected by the distinctive colour of its brickwork. The yellowish-green brick of this stratum, appearing in identical form in area BB (see below). As such, it is readily distinguishable from the orange-brown, chaff-tempered brickwork of stratum L3.

Beneath the L2 surface in DD 400, excavation confirmed the "pre-L2" construction build-up of pisée over wooden formers over sherd "hardcore", revealed in DD 300 during the previous season, and used to create the steps and raised floor of the L2 building (Tubb 1986: p. 122).

Removal of this constructional fill exposed the walls of stratum L3. These, when added to the L3 walls excavated in 1986 produced the plan of a rectangular room, entered on the short south side, with three stone column supports equally spaced along the centre of the long axis. The entrance is approached through a small courtyard, bounded by an irregular curving wall, and this in turn leads off a pebble street running approximately east-west. Adjoining this rectangular room to the north, there was found to be in DD 500 a further small room, entered, apparently externally, from the west.

The L3 plan described above can best be appreciated from the overhead photograph (Pl. III,1) and it is interesting to note what may be another parallel rectangular room lying to the west of that excavated, visible as a trace in the soil.

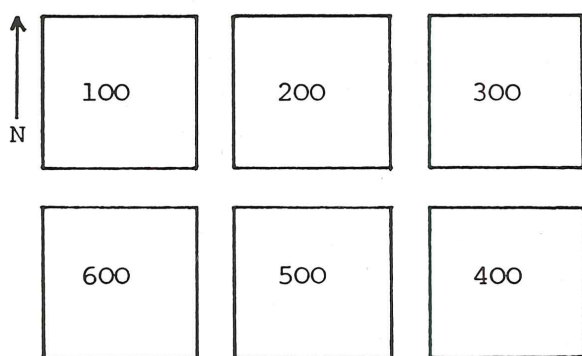
The L3 floor surfaces were of beaten earth and contained very little pottery. Sunk deeply into the floor of the main rectangular room were four large vessels most probably for containing dry materials such as grain or perhaps, in one case, salt.

The external faces of the L3 walls had been buttressed with stones on the west side to help retain the buildings on the slope. Further measures to prevent slippage were discovered in DD 500 where a complicated sequence of levelling, filling and terracing operations was revealed (see Pl. III,2). The upper terraces were extended into a level street or walkway clearing the external house walls by about

2 metres. Two major phases of this external walkway were isolated, the upper, poorly preserved but obviously originally well-paved with small pebbles and sherds, relating to stratum L2, the lower, constructed of large well laid flat stones, attributable to stratum L3.

No traces of any defensive walls assignable to strata L2 or L3 could be found and the irregular wall cut low down on the slope through street deposits of L4 should be interpreted as a form of revetment rather than anything defensive.

Below the terracing levels of strata L3/2, a wall orientated almost due north-south was found along the centre of DD 500. Composed of two parallel rows of stones separated by a gap of some 45 cm, with a superstructure of mixed mud-brick and pisée, this wall, again clearly non-defensive in nature, can be assigned to stratum L4. Virtually no pottery could be directly associated with this wall for its related interior surface had been removed by the terracing operations of strata L3 and L2, but in DD 400, where the removal of the large L3 storage vessels had exposed the underlying stratigraphy, clearly related L4 deposits yielded pottery which indicate that this phase is still well within the EB II period.



Area BB

At the close of the 1986 season, patches and remnants of Early Bronze Age occupation were starting to be isolated below and around the most deeply cut graves in BB 200, 400 and 600. The main objective this season was to excavate the remaining graves in these squares and in

BB 100 which had been left at a higher level, and to define and excavate the residual remains of the underlying Early Bronze Age occupation. Additionally, work was started on 300 and 500 so that eventually the whole 17m × 11m area of BB would be available for the study of this occupation.

Altogether, 127 graves were excavated this season. In addition, 5 which were partially excavated in 1986 were completed. Four graves (181, 184, 189 and 201) were excavated in DD 200, where it had been hoped that a small expansion of this area to the east might be accomplished without finding graves. It is interesting to note that these graves were all similar to one another, extremely narrow and only just large enough to accommodate the deceased. This was also true of grave 50, excavated in DD 200 in 1986. No associated finds occurred in any of the DD graves.

In area BB itself, the graves excavated this season were generally similar in nature to those found in 1985 and 1986, and the same diversity of burial types, practices and finds were observed.

Excavation in BB 100 and 200, and the removal of the reduction baulk between them, revealed the construction phase of the so-called "carriageway graves" (24, 32, 41, 42, 97, 172 and 188), the series of mud-brick built tombs which ran in an east-west direction across the squares in two parallel rows. It is now clear that these graves were planned in advance and were intended to be visible above ground level, for below the somewhat weathered mud-bricks of the grave walls, first recognized in 1985, were found well preserved courses of the same construction, suggesting that the former were parts of the superstructure and the latter, the subterranean elements. The grave walls at the lower level showed that they had been built of well laid and carefully bonded mud-bricks of very similar character to those of stratum XII in area AA.

The concept of a planned cemetery is enhanced by another finding this season. Previously there had seemed to be little

pattern with regard to the position or orientation of the graves. However, the deepest and probably earliest graves (since none of them had been disturbed by subsequent burials) in BB 600, 100 and 200 north of the "carriageways" appear to have been regularly positioned and consistently orientated east-west. Furthermore, a number of "graves" were found within this pattern which had never been used.

Six more examples of double-pithos burials were found, the most interesting being grave 228 in which the two pithoi were set into a mud-brick lined pit. Finds had been placed both around the pottery "coffin", and had also been included inside it with the deceased. The interment itself consisted of an articulated adult together with an infant, possibly pre-natal. A bronze dagger had been placed over and around the skull, ritually bent.

Grave 159, the burial of a single adult showed a number of interesting features. A bronze bowl had been placed over the face, and partly over this, extending over the chest, had been laid the scapula of an equid. In addition, traces of bitumen were found on the bones, a phenomenon previously recorded by Pritchard from his excavation of tomb 117 on the north side of the lower tell (1980:30).

The practice of covering the face of the deceased with a bowl (either pottery or bronze) had been noted previously. Several more instances were noted this season, but in addition, it was also observed in three cases that bronze bowls had been used to cover the genitals. This occurred in grave 246, a burial which illustrates another important aspect of the funerary customs. As noted last season, bronze objects included as grave goods tend to preserve in their corrosion products the evidence for textiles. In the case of the bronze bowl from grave 246, the textile occurred on the outside of the vessel, indicating that it had been placed next to the skin, inside the cloth. However, in the case of the fine bronze socketed javelin found over the chest (point towards throat) in grave 251 (Pl. IV,1), two different types of textile were found on either side of the

weapon, suggesting that the deceased had been buried wrapped, and had then subsequently been covered with another layer of cloth. Furthermore, the attitude of the skeleton with shoulders tightly drawn up, indicates that the deceased had not only been merely covered, but had in fact been tightly bound.

Perhaps the most extraordinary burial found in 1987 was grave 232. The body of a single adult had been placed face down in a partially mud-brick lined pit which lay directly below the substantial wall of built grave 41. The pit had not been cut into the wall; neither was there any indication that the founding of the wall had in any way disturbed the pit, and the conclusion must be that the two were contemporary, and that the wall of grave 41 had been deliberately set over grave 232 in order to seal it. On top of the back of the skull were found bones of a fish (or fishes). The arms were placed in front with the hands meeting at the pelvis, and at this point was found a bronze bowl which, as in the case of grave 246, had originally been placed over the genitals. Particularly interesting, in view of the fish bones found over the skull, was the finding inside the bronze bowl of a small bone cosmetic box in the form of a fish (Pl. IV,2).

As in earlier seasons, the finds from the graves indicate a date range within the 13th and 12th centuries B.C. for the lower tell cemetery. The correspondence of several vessel types from the graves with those from the destruction of stratum XII on the upper tell serves to demonstrate the contemporaneity of the occupation of that stratum with at least the final phase of interment in the cemetery. There now seems little doubt that the stratum XII occupation in area AA, the casemate defensive wall in area EE, the water system staircase (area GG) and the lower tell cemetery all belong, at the time of their termination, to the same chronological and cultural horizon.

With the clearance of all the graves in BB 100, 200, 400 and 600, and the removal of the reduction baulks between 100, 200 and 600, it was possible to start excavation

of the residual Early Bronze Age remains. As anticipated, the cutting of the graves had caused considerable disruption to this occupation, and the resultant terrain consisted of stubs and pinnacles containing fragments of walls and patches of surfaces which, in many cases, could not be interrelated stratigraphically.

Fortunately, however, it immediately became apparent that the sequence in area BB was identical to that in DD, for here too the final occupation phase was associated with a destruction, and the architecture, such as survived, was constructed of the same greenish-yellow mud-brick with lime temper as was found in stratum L2 in area DD. Furthermore, this phase been built directly over an earlier one on the same line which utilized orange-brown mud-brick, identical in nature to that of stratum L3 in DD. It would not be unreasonable, therefore, to apply these two stratum numbers, L2 and L3 to the sequence in BB also.

The overhead photograph (Pl. V,1) of area BB illustrates the surviving architecture as isolated and partially excavated at the end of the 1987 season. Very little of stratum L2 had not been completely destroyed by the cutting of the graves. A small fragment of wall with typically protruding foundation stones was found on the west side of BB 600, together with an associated white plaster floor, which included an *in situ* door socket. The plaster floor had been heavily burned, and was covered with a heavy deposit of ash, charcoal and burnt mud-brick debris. In BB 400, the foundation stones only of an L2 wall were found directly over an L3 wall on the southeast side of the square. Relating to this was found the pebble bedding for a plaster floor surface, a tiny piece of which had been excavated in the 1985 season (Tubb 1985: p. 138) and a residual pinnacle on the north side of the same square.

Stratum L3 was better preserved, and in future seasons, it should be possible to retrieve a reasonably coherent plan over the whole area of BB. In BB 600, a roughly square room was revealed below the frag-

ments of stratum L2. The floor of this room was constructed on two levels, stepping down to the south, where the walls were preserved to a height of over one metre. The east wall of this room included a curious arched niche, quite shallow, and extending very slightly below the floor surface. In BB 400, another roughly square room was found, again below the remnants of stratum L2.

The most interesting structure, probably but not certainly related to stratum L3, was found in BB 200. Here, a type of large rectangular platform had been constructed over a dense fill of homogenous orange silty material. The platform seems to have been about 1 metre high at the fully excavated east end where its side was supported by a heavy revetment of stones. Although greatly disturbed by the later graves, it must originally have been an impressive structure, at least 2 metres by 8 metres. The surface had been laid with slabs of orange and bluish-grey mud-brick to form a type of mosaic, and at the east end there was a carefully constructed circular pattern formed from wedge shaped bricks. The platform forms the northern boundary of a street which runs roughly east-west from BB 200 and into 100, but the relationship between this street and the north wall of the L3 building in BB 600 is not clear.

In BB 400, excavations below the L3 surface exposed two parallel walls of stratum L4. Extremely narrow, barely more than 30 cm wide, these walls appear to be partition walls rather than structural in function. North of the northern wall, a floor surface was uncovered which bore a widespread deposit of mineralized grape seeds. As in area DD, very little pottery was found associated with this small area L4 surface, but enough to demonstrate that it still falls clearly within the Early Bronze II period.

Area HH

This area was begun this season as a small (5m x 2m) sounding to investigate the topography of the site at the point of the

present "saddle" between the upper and lower tells. Nothing but washed silt was encountered until a depth of 3.25 metres below surface, when a stone paved street or roadway appeared (Pl. V,2). The small quantity of pottery recovered from the street appears to be Iron I in date. This confirms an impression that during the early part of the Iron Age, the configuration of Tell es-Sa'idiyeh was not as it appears today, an upper tell with a lower bench-like extension to the west, but was in fact composed of two quite distinct and separate mounds divided by a street or roadway. The fact that no graves were found in this area implies that this roadway (or at least separation) existed during the period of usage of the cemetery, creating a division between settlement and graveyard. The massive build-up of silt creating the present "saddle" must be related to the post-stratum XII situation when, following the destruction of the casemate wall, no subsequent defensive walls were constructed on this side of the tell, and there would have been little to prevent water erosion from the slope.

Area GG (by R. and J. Rees Miller)

One of the major undertakings of the 1987 season was the re-excavation of the stone-built staircase revealed by Pritchard on the north slope of the upper tell with the intention of continuing the excavation to the east in an attempt to complete the plan of the structure and to locate the anticipated water source. The area (GG) was excavated and studied by Robert and Janie Miller with the assistance of a fellowship from the Wellcome Institute for the History of Medicine: the following report represents a preliminary statement of their results. The expedition is grateful to the Water Authority of Jordan, and to the Jordan Valley Authority for their help in supplying data on the geology and hydrology of the area of Tell es-Sa'idiyeh.

"The 1964-67 excavations at Tell es-Sa'idiyeh revealed the existence of a monumental Iron Age staircase with a total of 95 steps descending the

north side of the tell in the direction of the 'Ain Sa'idiyeh spring bed in the Wadi Kufrinjah (Pritchard 1985: 57 ff). This stairway, which was cut below the ancient ground level, led from near the top of the tell to a landing on the lower slope. From the landing, the stairs turned east and continued further down, bounded on north and south by heavy stone walls. However, the relation of the staircase to the ancient water supply system remained unclear as the connection between the staircase and the water source was not excavated, nor was water level reached.

The purpose of the 1987 excavation of the water system was twofold: to extend downwards in the area of the west-east steps to find the nature of the water source, and to extend outwards to find the eastern extent of the water system.

In the downward extension of excavation, water level was reached at the eleventh step below the landing, more than 6 metres below present ground surface, 2.5 metres below the level of the springs in the Wadi Kufrinjah. This season's excavations revealed a total of fourteen steps, including the landing, leading to the level of the spring in the west-east leg of the stairway. The edge of the fourteenth step suggests that the stairway continues further down, under the unexcavated fill and rock tumble immediately east of this step (Pl. VI).

Beyond this unexcavated fill and rock tumble, and in the easternmost part of the trench, approximately 7-8 metres from the landing, the north wall of the west-east section of the stairway curves in to the southeast, and continues into the east baulk and under the unexcavated area east of GG. Within the curve of the wall is a platform above the east end of the steps. This platform is composed of large stones and bricky material and is 2.25 metres above water level.

At the end of the season, the southeast quadrant of the trench was still composed of large stone tumble which cannot be removed until the trench is extended to the south. Further excavation should reveal the relationship between the south wall bounding the steps and the platform to the stairway. Also, another season is necessary to discover how far down the steps go, what the size of the spring pool is, and details of the structure surrounding it.

While further excavation is needed, a number of interesting features of the ancient Tell es-Sa'idiyeh water supply system have already become clear and attest to a sophisticated cosmopolitan level of water engineering and planning at the site in the early Iron Age. A small conduit, 12 cm in diameter, leads along the south wall, beginning on the side of step 12 and carrying over the south treads of steps 13 and 14 into the unexcavated fill at the bottom of the trench. Water was reached at the level of the conduit, which suggests that the ancient water table was at the same level as at present. This may be related to an aquifer being brought to the surface at this point by the faulting identified in this area of the Ghor by Ionides and Blade (1939: p. 156). Spring flow at Ain Sa'idiyeh, while perennial, is variable, ranging from less than 20 to more than 1000 cubic metres per hour (WAJ 1986: p. 42), and it is possible that the conduit and

platform represent seasonal differences in water access for times of base and peak flow.

As drainage of the Iron Age settlement appears to have been channelled down the north slope of the tell at a point to the west of the staircase (Pritchard 1985: p. 57), it is possible that engineering access to the spring east of this outlet represents an early attempt to maintain the quality of the drinking water supply. The stream and spring flow would have flushed the intermittent sewage and stormwater run-off from the settlement down towards the Jordan and away from the spring head, especially as episodes of flow in the drainage channel may often have coincided with seasonal flooding and peak flow of Wadi Kufrinjah. Since salinity increases with the direction of groundwater flow, the siting of the ancient water supply at the east end of the spring bed could also have provided a higher quality water supply in this respect as well."

Very little pottery has been recovered from the newly excavated part of the staircase which can directly be related to its period of usage. However, the few sherds that have been found conform closely with the ceramics from stratum XII in area AA, and it seems likely that the water system belongs, in part at least, to that stratum.

J.N. Tubb
The British Museum

Appendix: Inventory of Graves Excavated in 1987 (by Dianne Rowan)

The following is intended purely as a working hand-list, and not as a final statement.

- 41 BB 200 Mud-brick walled tomb. Single, partially articulated adult. Extended (continued from 1986) W-E. *Finds*: 41.1 Amphora, 41.2 Bead, 41.3 Jug, 41.4 Sherd, 41.5 Dipper juglet, 41.6 Iron dagger.
- 42 BB 100 Mud-brick walled tomb. Six disarticulated adult skulls with a number of (continued from 1986) long bones. *Finds*: 42.1 Store jar, 42.2 Juglet, 42.3 Pyxis, 42.4 Pyxis, 42.5 Juglet.
- 93C BB 600 Pit. Single articulated adult. Extended W-E. No associated finds. (continued from 1986)
- 97 BB 200 Mud-brick walled tomb. Single(?) disarticulated adult. No associated (continued from 1986) finds.
- 153B BB 400 Pit with stone markers. Single articulated adult. Extended W-E. *Finds*: (continued from 1986) 153B.1 Bronze bracelet, 153B.2 Six bronze rings, 153B.3 One and a half bronze rings, 153B.4 Beads, 153B.5 Juglet, 153B.6 Pilgrim flask.
- 158 BB 600 Pit, partially stone and mud-brick lined. Single articulated adult. Extended NE-SW. *Finds*: 158.1 Bronze bowl, 158.2 Sherd.
- 159 BB 600 Pit with mud-brick lining and stone and mud-brick markers. Single articulated adult. Extended E-W. Traces of bitumen found on body. *Finds*: 159.1 Bronze bowl, 159.2 Iron arrowhead, 159.3 Iron javelin, 159.4 Iron javelin, 159.5 Iron arrowhead, 159.6 Iron arrowhead, 159.7 Iron arrowhead, 159.8 Beads (from wrist), 159.9 Beads (from neck), 159.10 Bronze bead, 159.11 Silver earring, 159.12 Silver earring, 159.13 Bead.
- 160 *mistake in numbering, not assigned.*
- 161A BB 100 Pit burial. Single disarticulated adult. No associated finds.
- 161B BB 100 Store jar burial (E-W). Single disarticulated infant. *Finds*: 161B.1 Store jar, 161B.2 Bowl, 161B.3 Bronze bracelet, 161B.4 Bronze bracelet, 161B.5 Bead.
- 162 BB 600 Pit, mud-brick lined. Single articulated adult. Extended E-W. *Finds*: 162.1 Bronze fragment, 162.2 Sherds.
- 163 BB 600 Double Pithos burial (W-E). Disarticulated scatter of bone. *Finds*: 163.1 Bowl.
- 164 BB 100 Pit, single disarticulated adult skull with scatter of bone. No associated finds.
- 165 BB 600 Pit, very disturbed scatter of bones. No associated finds.
- 166 BB 100 Burial placed on two mud-brick slabs. Single(?) disarticulated adult skull and long bones. *Finds*: 166.1 Lamp.
- 167 BB 600 Pit with stone markers. Single, partially articulated adult. Extended W-E. *Finds*: 167.1 Bronze earring.
- 168 BB 600 Pit. Single(?) disarticulated adult. No associated finds.
- 168A BB 100 Pit with stone markers. Two disarticulated adult skulls and long bones. No associated finds.

- 169B BB 100 Pit with stone markers. Two disarticulated adult skulls and long bones. No associated finds.
- 170 BB 600 Pit. Single(?) skull only, adult. No associated finds.
- 171 BB 100 Pit with mud-brick slab lining, roofed with mud-brick. Single articulated adult. Extended W-E. No associated finds.
- 172 BB 100 Mud-brick walled tomb, roofed with mud-brick. Single disarticulated juvenile. No associated finds.
- 173A BB 600 Pit with stone marker. Single disarticulated adult. *Finds*: 173A.1 Pyxis.
- 173B BB 600 Pit. Single articulated adult. Extended E-W. *Finds*: 173 B.1 Bronze bowl (placed over head).
- 174 BB 600 Pit. Jumble of disarticulated adult bones. *Finds*: 174.1 Beads.
- 175 BB 100 Pit. Single disarticulated juvenile. No associated finds.
- 176 BB 200 Pit with stone and mud-brick markers. Single(?) disarticulated adult. *Finds*: 176.1 Jar, 176.2 Bronze bracelet 176.3 Bronze bracelet, 176.4 Bronze bracelet, 176.5 Stone bead, 176.6 Bead bracelet.
- 177 BB 200 Pit. Single(?) disarticulated adult skull and long bones. *Finds*: 177.1 Iron bracelet, 177.2 Haematite pommel.
- 178 BB 200 Pit with partial mud-brick lining and stone markers. Single, partially articulated adult. Extended SW-NE. No associated finds.
- 179 BB 200 Pit with stone marker. Single. Partially articulated adult. Extended SW-NE. No associated finds.
- 181 DD 200 Pit. Single articulated adult. Extended NW-SE. No associated finds.
- 182A BB 100 Pit. Originally a store-jar burial(?). Single disarticulated adult skull. No associated finds.
- 182B BB 100 Pit. Originally a store-jar burial(?). Adult skull. No associated finds.
- 183 BB 600 Pit with stone markers. Single articulated adult. Extended E-W. *Finds*: 183.1 Bronze fibula, 183.2 Iron arrowhead.
- 184 DD 200 Pit. Single, partially articulated juvenile. Extended NW-SE. No associated finds.
- 185A BB 200 Pit with partial mud-brick lining. Single articulated adult. Extended W-E. *Finds*: 185A.1 Jar, 185A.2 Jar, 185A.3 Bronze dagger.
- 185B BB 200 Pit. Single(?) disarticulated adult. No associated finds.
- 186 BB 100 Pit with large painted stone marker. Single articulated juvenile. Extended W-E. *Finds*: 186.1 Bead.
- 187 BB 100 Pit. Single(?) disarticulated adult skull and bone fragments. *Finds*: 187.1 Bead.
- 188A BB 200 Mud-brick walled and possibly roofed tomb. Single articulated adult. Extended W-E. *Finds*: 188A.1 Juglet, 188A.2 Pyxis.
- 188B BB 200 Mud-brick walled and possibly roofed tomb. Single disarticulated adult. No associated finds.
- 189 DD 200 Pit. Single disarticulated adult(?). No associated finds.
- 190 BB 100 Pit. Single disarticulated long bones (crossed). No associated finds.
- 191A BB 200 Mud-brick lined and roofed pit. Single disarticulated (adult). *Finds*: 191A.1 Bronze bowl, 191A.2 Pyxis, 191A.3 Clay weight.

- 191B BB 200 Mud-brick lined and roofed pit. Single disarticulated (adult). No associated finds.
- 192A BB 400 Pit. Single, partially articulated adult. Extended W-E. *Finds:* 192A.1 Bead, 192A.2 Bead.
- 192B BB 400 Pit. Single partially articulated juvenile. No associated finds.
- 193 BB 200 Pit. Single articulated adult. Flexed on right side N-S. No associated finds.
- 194 BB 600 Mud-brick lined pit with mud-brick slab on floor. No associated bones or finds.
- 195 BB 600 Pit. Single articulated adult. Extended W-E. No associated finds.
- 196 BB 400 Store jar burial. Single disarticulated adult. *Finds:* 196.1 Lamp.
- 197 BB 200 Pit. Single articulated adult. Extended W-E. *Finds:* 197.1 Pilgrim flask.
- 198A BB 100 Pit. Single disarticulated adult. *Finds:* 198A.1 Bowl, 198A.2 Jug, 198A.3 Juglet, 198A.4 Beads. Equid leg present in burial.
- 198B BB 100 Pit. Single disarticulated juvenile. Associated finds those of 198A.
- 199 BB 200 Pit. Single articulated adult. Extended (on front) W-E. *Finds:* 199.1 Jar, 199.2 Beads, 199.3 Beads.
- 200 BB 400 Pit. Single disarticulated adult. Partially covered by sherds. No other associated finds.
- 201 DD 200 Pit. Single, partially articulated adult. Extended on right side NW-SE. No associated finds.
- 202 BB 600 Pit. Mud-brick lined and floored. No associated bones or finds.
- 203 BB 100 Pit. Single articulated adult. Extended on back W-E. *Finds:* 203.1 Lamp.
- 204 BB 100 Store jar burial (W-E). Single disarticulated adult. *Finds:* 204.1 Store jar (container), 204.2 Bronze bowl.
- 205 BB 200 Pit(?). Very disturbed fragments of adult burial. No associated finds.
- 206 BB 100 Pit with stone and mud-brick markers. Single disarticulated adult skull. *Finds:* 206.1 Bead.
- 207 BB 200 Store jar burial set against mud-brick. Single, partially articulated adult. Legs W-E. *Finds:* 207.1 Bead.
- 208 BB 600 Pit (disturbed). Single disarticulated adult. *Finds:* 208.1 Pilgrim flask.
- 209 BB 400 Store jar burial set in pit. Single disarticulated juvenile. *Finds:* 209.1 Gold earring, 209.2 Jug, 209.3 Jug, 209.4 Iron anklet, 209.5 Bronze toggle pin.
- 210 BB 200 Pit. Single articulated adult. Extended on back W-E. No associated finds.
- 211 BB 200 Pit. Single, partially articulated adult. Extended NE-SW. No associated finds.
- 212 BB 100 Pit(?). Single articulated pair of adult arms (on right side). No associated finds.
- 213 BB 100 Pit. Single articulated adult. Extended on back W-E. *Finds:* 213.1 Bronze bracelet, 213.2 Beads.
- 214 BB 200 Pit. Articulated pair of adults. Extended on top of each-other E-W. No associated finds.
- 215 BB 100 Pit. Partially mud-brick lined. Single partially articulated juvenile. Extended on back SW-NE. No associated finds.

- 216 BB 100 Store jar burial. Single articulated adult (upper torso only). Extended on back W-E. *Finds*: 216.1 Jug, 216.2 Pyxis, 216.3 Pilgrim flask.
- 217 BB 400 Pit. Single partially articulated adult. Extended (legs only) on back W-E. *Finds*: 217.1 Bead.
- 218A BB 100 Pit, partially mud-brick lined. Single articulated adult. Extended on back W-E. *Finds*: 218A.1 Bowl, 218A.6 Bronze bracelet.
- 218B BB 100 Pit, partially mud-brick lined. Single articulated adult. Extended on back SW-NE. *Finds*: 218B.2 Bronze anklet, 218B.3 Bronze anklet, 218B.4 Stone bead, 218B.5 Juglet.
- 219 BB 400 Pit. Cut into Early Bronze Age wall. Single articulated adult. Extended on back SW-NE. *Finds*: 219.1 Bowl, 219.2 Store jar.
- 220 BB 400 Pit. Single articulated adult. Extended on back SW-NE. No associated finds.
- 221 BB 100 Pit. Single disarticulated adult skull. No associated finds.
- 222 BB 600 Pit, partially stone and mud-brick lined. Single articulated adult. Extended on back W-E. *Finds*: 222.1 Bronze bowl, 222.2 Lamp, 222.3 Jug, 222.4 Jar, 222.5 Stirrup jar.
- 223 BB 100 Pit with no human remains. *Finds*: 223.1 Strainer jug.
- 224 BB 400 Pit. Single articulated adult (skull missing). Extended on back W-E. No associated finds.
- 225 BB 400 Pit. Single, partially articulated adult skull and long bones. *Finds*: 225.1 Beads.
- 226 BB 300 Store jar burial. Single disarticulated infant. *Finds*: 226.1 Beads, 226.2 Jar, 226.3 Jug (fragmentary).
- 227 BB 100 Pit, partially lined with stones and sherds. Single articulated adult. Extended on back SW-NE. *Finds*: 227.1 Painted crater sherd.
- 228 BB 600 Double pithos burial in mud-brick lined pit. Single articulated adult (upper torso only). Extended W-E. *Finds*: 228.1 Bowl, 228.2 Bowl, 228.3 Bronze dagger, 228.4 Bronze bowl, 228.5 Bowl.
- 229 BB 300 Pit with line of stone markers. Single, partially articulated adult (very fragmentary). No associated finds.
- 230 BB 400 Pit. Cut into Early Bronze Age wall. Single articulated adult. Extended on back. *Finds*: 230.1 Bronze chisel fragment.
- 231 BB 400 Pit. Single disarticulated adult skull and long bones. No associated finds.
- 232 BB 200 Pit. Mud-brick lined and cut into Early Bronze Age wall. Covered by wall of tomb 41. Single articulated adult. Extended on front W-E. *Finds*: 232.1 Bronze bowl, 232.2 Beads, 232.3 Bone/Ivory box.
- 233A BB 100 Pit. Single articulated juvenile. Extended on back W-E. No associated finds.
- 233B BB 100 Pit. Single disarticulated juvenile (legs only). No associated finds.
- 234 BB 100 Pit, partially stone lined. Single articulated adult (legs only). W-E. No associated finds.
- 235 BB 400 Pit. Single articulated adult. Extended on back W-E. *Finds*: 235.1 Calcite pyxis, 235.2 Pyxis.
- 236 BB 300 Pit. Single, partially articulated juvenile (skull and ribs only). Extended on back W-E. *Finds*: 236.1 Beads.

- 237 BB 300 Pit. Single disarticulated juvenile (fragments of skull only). *Finds*: 237.1 Scarab, 237.2 Beads.
- 238 BB 100 Store jar burial. Single disarticulated juvenile. No associated finds.
- 239 BB 500 Pit with stone markers. Single articulated adult (legs and feet only). Extended on back SW-NE. No associated finds.
- 240 BB 400 Pit, stone lined. Single articulated adult (pelvis and legs only). Extended on back W-E. *Finds*: 240.1 Scarab, 240.2 Scarab.
- 241 BB 200 Pit. Single articulated adult (skull missing). Extended on back W-E. *Finds*: 241.1 Pyxis.
- 242 BB 300 Pit. Single, partially articulated juvenile. Extended on back E-W. *Finds*: 242.1 Bronze earring, 242.2 Necklace, 242.3 Beads, 242.4 Bronze earring, 242.5 Juglet, 242.6 Bronze clasp.
- 243 BB 300 Store jar burial (E-W). Single, partially articulated infant. *Finds*: 243.1 Bead, 243.2 Basalt quern, 243.3 Basalt grinder.
- 244 BB 600 Pit. Single articulated adult (lower legs only). Extended on back E-W. No associated finds.
- 245 BB 400 Pit cut into Early Bronze Age wall. Single, partially articulated juvenile (ribs, vertebrae and a few long bones only). Extended on back(?). *Finds*: 245.1 Beads, 245.2 Bronze earrings (2).
- 246 BB 400 Pit, partially mud-brick lined and originally roofed with mud-brick. Single articulated adult. Extended on back W-E. *Finds*: 246.1 Bronze bowl.
- 247 BB 300 Pit. Single, partially articulated juvenile (hands and lower legs missing). Extended on back W-E. *Finds*: 247.1 Necklace, 247.2 Bronze bracelet, 247.3 Bronze bracelet.
- 248 BB 300 Pit with stone markers. Single, partially articulated infant (skull missing). Extended on back E-W. *Finds*: 248.1 Bronze ring.
- 249A/ BB 100 Pit. Burial covered with sherds. Single, partially articulated adult. Extended on back SW-NE. *Finds*: 249.1 Lamp.
- C
- 249B BB 100 Pit. Burial covered with sherds. Single articulated adult. Extended on back W-E. *Finds*: 249B.2 Bronze ring, 249B.3 Stone beads.
- 250 BB 100 Pit. Single articulated adult. Extended on right side W-E. *Finds*: 250.1 Bead.
- 251 BB 100 Pit. Single articulated adult. Extended on back W-E. *Finds*: 251.1 Bronze javelin, 251.2 Store jar, 251.3 Bowl.
- 252 BB 500 Pit, partially mud-brick and stone lined. Single articulated adult (lower legs and ribs only). Some infant bones present also. Extended on back NW-SE. No associated finds.
- 253 BB 300 Pit. Partially articulated adult. Extended on back SW-NE. No associated finds.
- 254 BB 300 Pit, partially stone lined. Partially disarticulated juvenile. On left side NW-SE. *Finds*: 254.1 Bronze earring, 254.2 Bronze earring.
- 255 BB 300 Pit, partially stone lined. Single, partially articulated juvenile. Extended on back NW-SE. *Finds*: 255.1 Bronze bracelet, 255.2 Iron bracelet.
- 256 BB 300 Tomb. Stone and mud-brick built. Single articulated juvenile. Extended on left side E-W. No associated finds.
- 257 BB 500 Pit. Single articulated juvenile (upper torso only). Extended on back

- W-E. No associated finds.
- 258 BB 100 Pit. Single disarticulated adult (mandible and long bones only). No associated finds.
- 259 BB 500 Pit. Single articulated juvenile. Extended on back W-E. No associated finds.
- 260 BB 100 Pit. Single articulated adult. Extended on back SW-NE. No associated finds.
- 261 BB 300 Pit. Single disarticulated adult. No associated finds.
- 262 = 209 (mistake in numbering)
- 263 BB 500 Pit. Single(?) very disturbed long bones only. No associated finds.
- 264 BB 300 Pit. Burial covered with sherds. Single articulated adult. Extended on back W-E. *Finds*: 264.1 Calcite pyxis.
- 265 BB 300 Tomb. Stone and mud-brick built, with stone capping across lower torso. Single articulated adult (legs missing). Extended on back W-E. No associated finds.
- 266 BB 500 Pit with stone marker. Single articulated adult (skull and upper torso only). Extended on back W-E. *Finds*: 266.1 Pyxis.
- 267 BB 500 Pit. Single articulated adult. Extended on back W-E. No associated finds.
- 268 BB 300 Pit. Single(?) adult (mandible only). No associated finds.
- 269A BB 100 Pit, partially mud-brick lined. Single articulated adult (skull missing). Extended on right side W-E. No associated finds.
- 269B BB 100 Pit, partially mud-brick lined. Single articulated adult. Extended on back W-E. No associated finds.
- 270 BB 300 Tomb. Stone and mud-brick built. Single articulated infant. Flexed on right side W-E. *Finds*: 270.1 Jug.
- 271 BB 300 Pit. Single disarticulated adult. No associated finds.
- 272 BB 400 Pit. Single articulated adult. Extended on back W-E. *Finds*: 272.1 Store jar.
- 273 BB 100 Pit. Single disarticulated adult (skull and long bones only). *Finds*: 273.1 Bronze pin.
- 274 BB 300 Tomb. Stone and mud-brick built. Single disarticulated adult skull. No associated finds.
- 275 BB 300 Pit. Single disarticulated juvenile legs and feet only. No associated finds.
- 276 BB 300 Pit. Single disarticulated adult skull and long bones. *Finds*: 276.1 Bronze bracelet.
- 277 BB 300 Store jar burial. Single disarticulated juvenile. No associated finds.
- 278 BB 500 Store jar burial set into pit, partially mud-brick and stone lined. Single, partially articulated juvenile. Extended(?) NW-SE. *Finds*: 278.1 Jug.
- 279 BB 200 Pit. Directly below north wall of T188. Single articulated adult (skull missing). Extended on back W-E. No associated finds.
- 280 BB 300 Tomb, partially stone built. Single, partially articulated adult. Flexed on left side NW-SE. *Finds*: 280.1 Pyxis.
- 281 BB 300 Pit with stone marker. Single, partially articulated adult skull and upper torso only. Extended on back E-W. *Finds*: 281.1 Pyxis.

- 282 BB 300 Tomb. Mud-brick and stone built. 7 adult and juvenile burials in various conditions of articulation, orientation and preservation (all contemporary). *Finds*: 282.1 Pyxis, 282.2 Iron knife, 282.3 Calcite pyxis, 282.4 Pyxis, 282.5 Jar, 282.6 Jar, 282.7 Iron knife, 282.8 Store jar, 282.9 Beads and pendants.
- 283 BB 300 Pit. Single disarticulated adult. No associated finds.
- 284 BB 300 Pit. 4 disarticulated adult skulls and long bones. No associated finds.
- 285 BB 100 Pit. Single disarticulated adult (skull and long bones only). No associated finds.

References

Ionides, M.G. and Blake, G.S.

- 1939 *The Water Resources of Transjordan and Their Development*. London: Government of Transjordan.

Pritchard, J.B.

- 1980 *The Cemetery at Tell es-Sa'idiyeh, Jordan*. University Museum Monograph 41. University of Pennsylvania, Philadelphia.
- 1985 *Tell es-Sa'idiyeh: Excavations on the Tell, 1964-1966*. University Museum Monograph 60. University of Pennsylvania, Philadelphia.

Tubb, J.N.

- 1985 Preliminary Report on the 1985 Season of Excavations at Tell es-Sa'idiyeh, Jordan. *ADAJ* 29: p. 131-140.
- 1986 Tell es-Sa'idiyeh 1986: Interim Report of the Second Season of Excavations. *ADAJ* 30: p. 115-130.

Water Authority

- 1986 *Spring Flow Data in Jordan Prior to October 1985*. Amman.