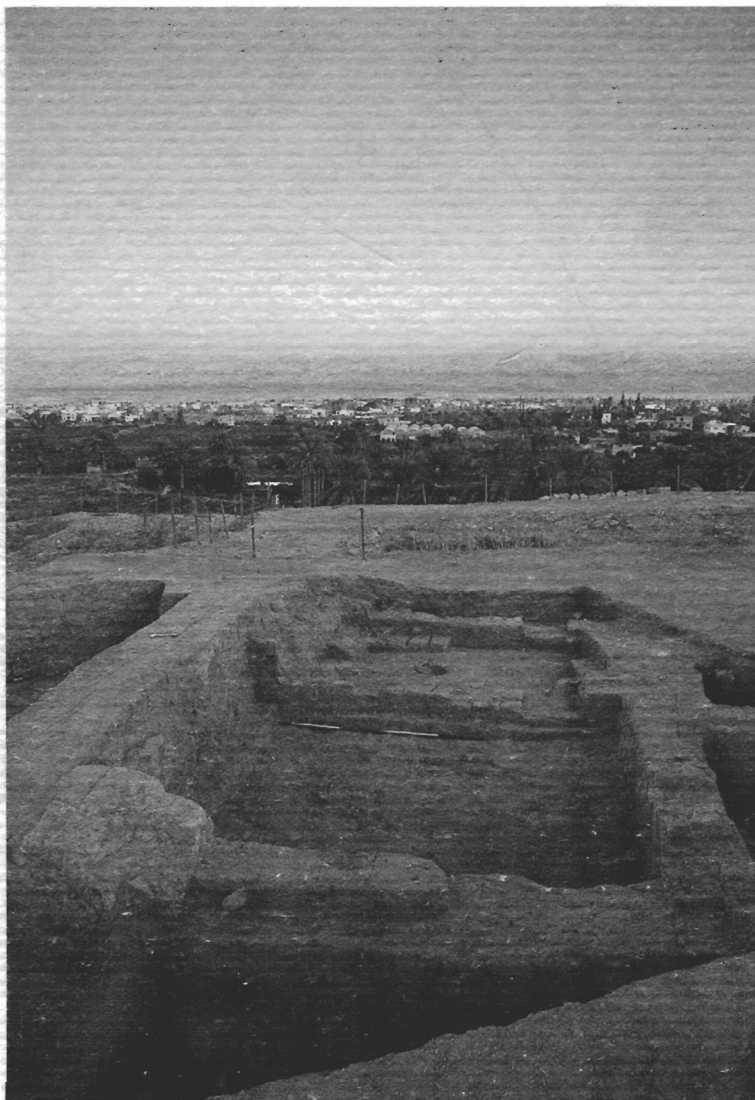


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2 (2000)



UNIVERSITÀ DI ROMA «LA SAPIENZA»

ساحلة الوطنية الفلسطينية
PALESTINIAN NATIONAL AUTHORITY



PALESTINIAN DEPARTMENT OF ANTIQUITIES

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COPIA D'USO

Excavations at Jericho, 1998

*Preliminary Report on the Second Season of Archaeological Excavations
and Surveys at Tell es-Sultan, Palestine*

edited by

NICOLÒ MARCHETTI and LORENZO NIGRO



UNIVERSITÀ DI ROMA «LA SAPIENZA»

PALESTINIAN NATIONAL AUTHORITY السلطة الوطنية الفلسطينية



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FOREWORD

Paolo Matthiae

At the beginning of 1995 the exhibition, "Ebla. Alle origini della civiltà urbana. Trenta anni di scavi dell'Università di Roma «La Sapienza» in Siria", was presented to the international press. From this event there emerged the idea of a joint archaeological effort between the Department of Historical, Archaeological and Anthropological Sciences of Antiquity of the Roman Atheneum (on the basis of the experience accumulated in decades of excavations at the prestigious Bronze Age site in Northern Syria) and the newborn Department of Antiquities of the Palestinian National Authority. The aim of this effort was to create a united Italian-Palestinian project for research and study of a significant site of Palestine, which would allow the contextualisation of an excavation of this southern area of the Levant in the historical archaeology of the Ancient Near East from the particular prospective of Syro-Palestinian archaeology.

The hypothesis was taken up with enthusiasm by the then Rector of Rome University «La Sapienza», Giorgio Tecce, who provided all the motivation and support possible to guarantee its realization, arranging the necessary financial support in time for the first campaign, while the Director General for Cultural Promotion and Cooperation of the Ministry of Foreign Affairs moved to participate in the project and in 1998 it became one of the official projects of that General Directorate; at the same time it was also incorporated in a nationally financed project of the Ministry of the University and Scientific and Technological Research. Considered on the basis of an accurate and common reflection that the celebrated site of Tell es-Sultan, ancient Jericho, could lend itself in a particularly opportune manner to be the chosen location for the first scientific co-operation between the two Palestinian and Italian institutions, the Palestine National Authority welcomed the Italian suggestion extremely positively, accepting with enthusiasm to give life to a joint Italian-Palestinian Expedition which would take up excavations and studies, as well as provide for the enhancement and protection of the site of Jericho.

The warmest gratitude goes to Dr. Hamdan Taha, Director of the Palestinian Department of Antiquities, Ramallah, for the generous and active involvement and for the spirit of brotherly cooperation which was quickly established, just as sincere and friendly recognition should be manifested to the Ambassador Nemer Hammad for the cordial help he lent at every occasion.

The most appreciative thought goes to Giorgio Tecce, to whom goes the merit of having imposed this new archaeological activity of «La Sapienza» on one of the most prestigious excavation sites of our century, asking that the co-ordination be assumed by he who planned and directed the undertaking at Ebla. Heartfelt gratitude goes as well to the present Rector Giuseppe D'Ascenzo, who, taking on the control of the Roman Atheneum, wanted to assure his full appreciation for the new initiative and his total support for the pursuit of the research.

To Nicolò Marchetti and Lorenzo Nigro this writer entrusted the full scientific responsibility of the Italian participation in the enterprise in the conviction that they could obtain further substantial progress in our understanding of an archaeological site which had already yielded great discoveries into the hands of the most famous and able researchers in the field who had worked there with such success. At the same time the other archaeologists in the Roman School should be recognized for their participation in the first two campaigns of the joint Expedition to Jericho; one should underline the total scientific autonomy of the direction of the works, of which the present report is the second fruit.

ACKNOWLEDGEMENTS

First and foremost we wish to thank our Teacher, Paolo Matthiae, who has always given us His advice and support and has trusted us with His characteristic generosity charging us with the honor of directing this project. May He find here a small token of our admiration and gratitude for the School that He has created and in which we have grown up.

We are most grateful to Hamdan Taha, Director General of the Palestinian Department of Antiquities, for his enduring friendship and support throughout the project. To our dear friends and colleagues Jihad Yasin and Mohammed Ghayada we owe the spirit of fraternal cooperation which has characterized the work of the Expedition.

We would also like to acknowledge here our debt towards the Rector of Rome University «La Sapienza», Giuseppe D'Ascenzo, who has followed with unfailing interest the Archaeological Expedition to Palestine: he immediately gave his support to the project, which was begun with Giorgio Tecce, to whom we also express our gratitude. The Directors of the Department of Historical, Archaeological and Anthropological Sciences of Antiquity, Prof. Giovanni Colonna and Prof. Mario Liverani, have always given attention and consideration to the necessities of the Expedition.

To Frances Pinnock and to the other friends of the Ebla Archaeological Expedition we are grateful for their care and participation to our needs.

The Ministry of Foreign Affairs of the Italian Republic has supported the project since its first steps, within the framework of the relationships between two friend Countries: may Minister Gianfranco Facco Bonetti, Director General for Cultural Promotion and Cooperation find here the most sincere thanking for the effective aid granted to the Expedition; Minister Eugenio Campo, head of the V Office of that General Directorate, and his successor Counsellor Stefano Maria Cacciaguerra have also represented an unfailing reference point. In that same office, the friendship and professionalism of Prof. Tina Cervone Papa cannot be overestimated. We also thank Profs. Terenzio Scapolla and Francesca Catalano Varvesi.

The Ministry of the University and Scientific and Technological Research has aided the Expedition in two fundamental ways. First, fundings have been granted to the project for the years 1998-1999, since it was included in the projects of national relevance. An archaeological study

program in Italy, signed by Rector D'Ascenzo and the Palestinian Minister of Tourism and Antiquities Mitri Abu 'Eita, has also been funded by the International Relations of that Ministry, through the enlightened interest of dr. Antonella Cammisa, to whom we would like to address our heartfelt thanks.

The Italian Consulate in Jerusalem has always reserved to the members of the Expedition a friendly and sympathizing welcome. To the Consul General Enrico Nardi and his successor Gianni Ghisi we express our deepest gratitude. Vice-Consul Gianfranco Petruzzella, and before him also Francesco Di Nitto, has also been very helpful; the secretaries of the Consulate, Mary and Margareth, have always proven themselves friendly and capable. Dr. Aldo Sicignano, Director of the Italian Office of Development Cooperation in Jerusalem, has since the beginning made every effort for matching the responsibilities of his post with the aims of the Expedition.

The Italian Ambassador in Israel, Giampaolo Cavarai, followed with interest our working seasons, as well as Counsellor Elisabetta Kelescian, to whom we are indebted for much advice and good humour, together with Adelia Rispoli, Director of the Italian Cultural Institute in Jaffa.

The Ambassador in Italy of the Palestinian National Authority, Nemer Hammad, and the personnel of the Palestinian Embassy, among which foremost M.me Leoni, have helped the Expedition in every possible way and their enthusiasm and cooperation will never be forgotten.

In Palestine a great debt is owed to the friends of the Ministry of Tourism and Antiquities. Minister Mitri Abu 'Eita and Director General Bajis Ismail deserve all our gratitude. The Director of Tourism in Jericho, Abu Omar, has also given us his constant help. The students of the Universities of Bir-Zeit and al-Quds have proven many times their keen interest in the history of their Land, through visits and participation to seminars.

In Jerusalem, the *École Biblique* and the *Studium Biblicum Franciscanum* have many times extended to us their warm hospitality; Michele Piccirillo, o.f.m., is foremost in deserving our gratitude.

The Rector and the Dean of the Pontifical Biblical Institute, Rome, must be thanked for their unfailing interest; Werner Mayer s.j. has given us his precious advice on many issues. To the Keeper of the Library, Henri J. Bertels s.j., we owe one of our greatest debts for having let us studying in

these years in such a wonderful Library, the personnel of which we also thank.

We wish to thank the Pontifical Commission for the Vatican City State, and Dr. Francesco Buranelli, Director of the Vatican Museums for the understanding that they have always had for the project, and the staff of the "Conservation Laboratory for Pottery and Metals" for its fruitful advice.

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A special debt must be here recorded towards MAPEI, the international group based in Milan which has enthusiastically accepted to develop an advanced research on mudbrick conservation. The enlightened policy of the management, foremost Giorgio Squinzi, President, Adriana Spazzoli, Marketing Director, and Pasquale Zaffaroni, and the extraordinary professionalism of Marco Squinzi and Tiziano Cerulli have guided the conservation strategy supplying materials for our on site interventions.

Cesare Mari, Ugo Capriani and Fabrizio Finotelli have given us much advice for several details concerning the restorations. To Piero Pruneti, director of "Archeologia Viva", we express once more our friendship. To Salvatore Tricoli we owe a constant help in these years.

A fundamental aid for the preparation of the present volume has come from Francesco Nigro, who has drawn the plans and the architectural sections, from Benedetta Panciroli, Sandra Antonetti, Anna Rita Lisella, Alessia Colonnelli and Monica Scardocci for the preparation of the plates, from Chiara Maria Putti for drawing and inking objects and sherds. Photos and archaeological sections belong to the authors of the single chapters.

Finally, we would like to thank our parents and brothers for their patience. Francesca and Laura, and the small Sofia and Stefano, deserve all our love and deepest gratitude.

Nicolò Marchetti and Lorenzo Nigro

Rome-Ariha, 1st may 2000

THE 1998 SEASON OF EXCAVATIONS: AIMS AND METHODS

Nicolò Marchetti, Lorenzo Nigro, Hamdan Taha

FOREWORD

We are particularly pleased to consign this second result of our joint archaeological work at Tell es-Sultan, ancient Jericho, to the printers for several reasons. First, because we can offer to the scholarly community a detailed preliminary report within a short time after the conclusion of the excavations; secondly, because in these two years we had the opportunity of participating to the really extraordinary experience of the rebirth of a Palestinian School of Archaeology, of which this represents one of the first outcomes. Furthermore, the number and quality of the Appendixes collected in this volume testify to the interest aroused by the project and to the potential that an integrated approach offers for the reconstruction of the Past. Another element of satisfaction is that the cooperation developed in the field has now been extended through a study program in Italy funded since 1998 by the Italian Ministry of the University and Scientific and Technological Research, which allows the Palestinian archaeologists to pursue their studies and participate in all the steps of the publication process, thus fulfilling the common aim of contributing to the formation of the Palestinian School of Archaeology. Finally, after two campaigns of excavations and restorations, Tell es-Sultan has already been enhanced for touristic development to an extent that has consolidated its role as one of the most significant historical sites of the National Authority of Palestine.

In dedicating this work to the Palestinian people, it must be stressed again that the cultural heritage of this Land must be studied without any preconceived idea, being aware that History knows no privileged periods for research and that they all have the same dignity, belonging as they all do to humankind as a whole.

The second season of excavations of the Italian-Palestinian Expedition at Tell es-Sultan/Jericho has taken place in the months of October and November 1998 under the auspices, for the Italian side, of Rome University «La Sapienza» and the Ministries of the Foreign Affairs and of the University and Scientific and Technological Research, while, for the Palestinian side, of the Palestinian Department of Antiquities and the

Ministry of Tourism and Antiquities. The scientific aims of the 1998 campaign, its staff and the excavation method employed are briefly described below. The enhancement of the site was also continued through restorations and the realization of touristic facilities on the tell.

SCIENTIFIC AIMS OF THE SECOND SEASON OF EXCAVATIONS

The main goal of the Expedition is represented by the investigation of the urban topography of the Early and Middle Bronze Age towns: the first season had begun to furnish important elements for the reconstruction of the urban structure of the southern part of the Early Bronze III town, in Areas B and B West, and of the Middle Bronze rampart fortifications, in Areas C and A where a Lower Town was also discovered. Within this framework the aims of the 1998 season were to prosecute the excavations of Areas A and B, while two other new areas were opened on the ground: Area F, on the northern terrace, where it was intended to explore a large domestic quarter visible on the surface; and Area E, on the south-western slope of the site, in order to explore the first rampart fortification, identified in 1997 through the discovery of a massive stone built corner in Area A. A small sounding has also been carried out in order to complete the rescue work in Area D, on the eastern side of the tell in front of the Spring of 'Ain es-Sultan.

Another main scientific goal of the Expedition is to obtain a fine periodization of the material culture in the Lower Jordan Valley seen in a historical perspective and to pursue the interdisciplinary approach set up in the first campaign. To achieve this goal a detailed stratigraphic sequence has been established in each area, according to the method described below.

Both these aims were begun to be fulfilled through the discoveries described in Chapters 1 to 5 and the materials presented there, which represent a firm basis for the reconstruction of the urban development of Tell es-Sultan, of its cultural sequence and orientation throughout various periods of its long history. A fresh study of the reports of previous excavations¹ and the results of the first two seasons have made it possible to

¹ The Italian-Palestinian Expedition is the fourth one digging up Tell es-Sultan, besides the first soundings of Charles Warren in 1868 (see in general Marchetti, Nigro 1998:

propose and substantiate a new archaeological periodization for Tell es-Sultan, which includes all the archaeological phases attested to on this site.

ARCHAEOLOGICAL PERIOD	YEARS BC	TELL ES-SULTAN PERIOD
Natufian [Protoneolithic]	10500-8500	Ia
Pre-Pottery Neolithic A	8500-7500	Ib
Pre-Pottery Neolithic B	7500-6000	Ic
Pottery Neolithic A	6000-5000	IIa
Pottery Neolithic B	5000-4300	IIb
Chalcolithic	4300-3200	(IIc)
Early Bronze I [Kenyon's Protourban]	3200-2900	IIIa
Early Bronze II	2900-2600	IIIb
Early Bronze III	2600-2300	IIIc
Early Bronze IV [Kenyon's Intermediate]	2300-2000	IIId
Middle Bronze I (IIA)	2000-1800	Iva
Middle Bronze II (IIB)	1800-1650	IVb
Middle Bronze III (IIC)	1650-1550	Ivc
Late Bronze	1550-1200	V
Iron	1200-530	VI
Persian	530-330	(VIIa)
Hellenistic	330-30	VIIb
Roman	I-III cent. AD	VIII
Byzantine	IV-VII cent. AD	Ix
Islamic	VII-XVI cent. AD	X
Ottoman	XVI-XIX cent. AD	(XI)

Tab. 1 Periodization of Tell es-Sultan (first column: in square brackets Kenyon's terminology, in brackets Albright's chronological scheme; last column: in brackets the periods scarcely attested to on the site).

22, fig. 1): the first one (1907-1909) was directed by E. Sellin and C. Watzinger, the second by J. Garstang (1930-1936) and third one lasted from 1952 to 1958 under the direction of K.M. Kenyon. All these archaeological enterprises dug extensively the site, and left behind a mass of materials and reports of various nature: the German one was a model for its times (1913), Garstang's were too preliminary and selective, Kenyon's are detailed and monumental, although they came out too late (between 1981 and 1983) to exercise the influence on Palestinian archaeology that they would have deserved.

ORGANIZATION AND STAFF OF THE ITALIAN-PALESTINIAN EXPEDITION

For one of the first times in Syro-Palestinian archaeology the Expedition is completely free from any colonialist legacy: no excavation permit has been given by the Palestinian Authority, since the expedition is working directly as a field unit within the framework of a ten-years agreement of cooperation in the field of archaeology signed by the Rector of Rome University «La Sapienza» and the Palestinian Minister of Tourism and Antiquities. The Expedition is perfectly balanced in its Italian and Palestinian members, and all expenses and duties are equally shared.

The 1998 staff was as follows:

Directors: Nicolò Marchetti (Areas A and E) and Lorenzo Nigro (Areas F, B and D), Hamdan Taha and Jihad Yasin (Area E).

Archaeologists: Francesca Zagari and Firhas Aqel (Area A), Mohammed Ghayada Shikarneh, Benedetta Panciroli and Mohammed Mustafa (Area B), Khader Khanfar and Enrico Ascalone (Area E), Sandra Antonetti, Anna Rita Lisella and Ibtihaj Abu Ghosh (Areas F and D).

Architect: Francesco Nigro.

Assistant architect: Nurhan Abu Jdey.

Draughtspersons: Chiara M. Putti, Ibrahim Iqteit.

Objects Restorer: Vincenzo Di Dio.

Mudbrick specialist: Mohammed Diyab Ibrahim.

Flotation responsible: Mohammed Mustafa.

The more than eighty workers from Ariha had, of course, a fundamental role, being furthermore engaged for the first time in an extensive archaeological excavation on a site of their own Country.

THE EXCAVATION METHOD

The excavation method has already been described in detail in the first report (Marchetti, Nigro 1998: 16-20). Here only the main features will be recalled.

The grid has been laid on the ground (the main squares are 100 x 100 m and are indicated by capital letters on the west-east axis, and roman numbers on the north-south) by Ibrahim Iqteit of Bir Zeit University and it coincides, with an error of ± 0.5 m, with the main axis of Kenyon's grid. As far as the digging procedure is concerned, a 1 m wide baulk has been left between the 4 x 4 m squares, although in almost no case baulks have been left, since they are drawn and removed with the progress of the excavation. Absolute elevations were taken from the top of the Neolithic Tower in Trench I (which was known from Kenyon 1981: pl. 244 to be 8 m). The latter measurement of Kenyon resulted from the elevation of natural bedrock in the same area which more or less corresponds to the absolute datum that she took from the modern oval pool of the spring of 'Ain es-Sultan.²

In the strictly stratigraphical method followed in the horizontal excavations, the "stratigraphic units" (*loci*), which can be a deposit of any nature, a fill, a wall, a floor or even a negative stratigraphic unit such as the cut of a pit, have been grouped in "operations", which represent a coherent grouping of *loci*, such as for example a floor and the associated walls. The latter are then grouped in "activities", which are a macrostratigraphical event, such as for example the entire life span of a building from its construction to the destruction layer sealing it. These activities are then set within the archaeological periodization of the site (for which see Table 1).³

All the aspects connected with recording, either of the excavations, and of objects and of pottery materials, are illustrated in the first report: here it suffices to recall that both objects⁴ and pottery buckets have separate

² Kenyon 1981: fig. 1. Also the previous German and British expeditions took the same datum point of the pool.

³ *Locus* numbers are progressive throughout the various excavation campaigns and they are preceded from a siglum connected with their nature: L.=Locus/floor; W.=Wall; F.=Fill; D.=Deposition; T.=Tannur/Tabun/oven; B.=Bench; S.=Silos; negative stratigraphic units are indicated by P.=Pit and C.=Cut, mainly used for wall crests; the latter, although numbered on the field, are not listed in this preliminary report for the sake of convenience. In the case of closely related stratigraphic units (e.g. two phases of the same wall), or sometimes in the case where the cut of a pit and its fill are deemed contemporary, letters can be used for distinguishing them (e.g. W.168a and later W.168b or P.309b and F.309a).

⁴ In the catalogues of the objects in Chapters 1 to 5, the entry "Period" refers to the dating of the object and not to that of the associated layer.

progressive absolute numbering within each campaign (TS.98), where the area is also indicated (A). As far as pottery buckets are concerned, they are associated with a single *locus*; the sherds kept after that they have been studied and sorted are then numbered within the bucket (TS.98.A.22/8).⁵

⁵ In the descriptive tables of the pottery included in Chapters 1 to 5 the following sigla have been used: SW=Simple Ware, KW=Kitchen Ware, PW=Preservation Ware, o.=outer, i.=inner, colors are given according to the Munsell Soil Color Chart, firing (which of course has a relative value within each class) can be low (L), medium low (ML), medium (M), medium high (MH), high (H), the inclusions are vegetal (V) and/or mineral (M). The scale of the inclusions is indicated by numbers (1=small, <1 mm, 2=medium, >1 <2 mm, 3=large, >2mm; if two dimensional groups of inclusions are present, there are two numbers together), while their frequency is small (<=1% of the volume), medium small (<=3%), medium (= 5%), medium high (>=10%), high (>=20%).

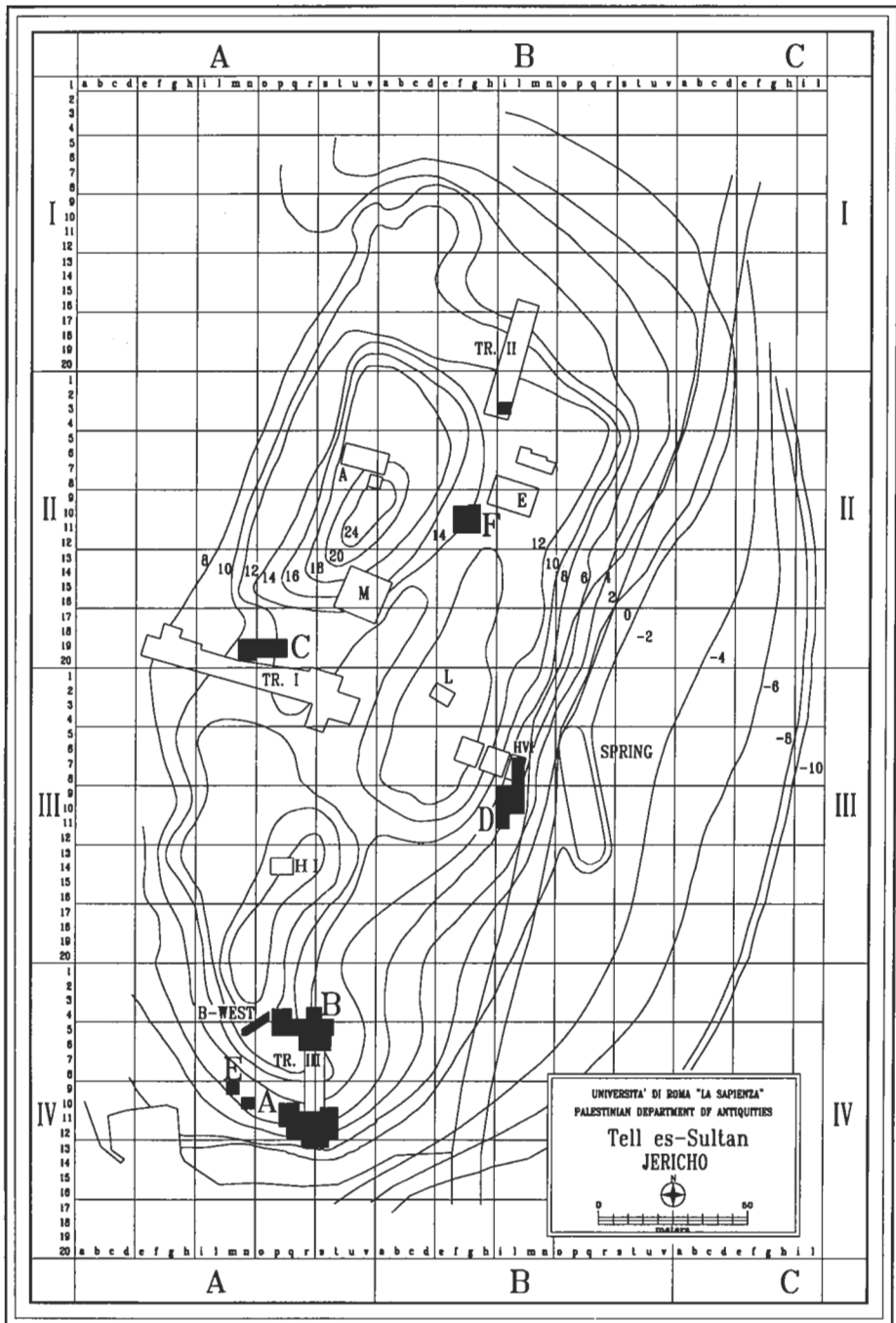




Fig. 2 The 1998 members of the Expedition photographed in a house of Area F.



Fig. 3 H.E. Mitri Abu 'Eita, Minister of Tourism and Antiquities, and Bajis Ismail, Director General of the same Ministry (to the far right), receiving a copy of the first report by Marchetti (right) and Nigro (left).

1. AREA F

AN EARLY BRONZE IIIA RESIDENTIAL QUARTER

Lorenzo Nigro

The presence of substantial mudbrick structures emerging on the tell surface in the northern plateau (fig. 1:1), an area kept safe from previous excavations just south of the wide area explored by Sellin and Watzinger in 1908 and the deep trench dug by Garstang in 1935 (fig. 1:2),¹ was noticed during the first visit to the site, on January 9th 1997. This flat terrace appeared thus suitable for excavations, because of its fairly good state of preservation (erosion had been horizontal and, apparently, not heavy), but also because not far to the north-east, the southern section of Kenyon's Squares E III-IV showed a 7 m-high sequence of superimposed structural layers (Kenyon 1981: pls. 322-323), covering the whole Early Bronze Age at Tell es-Sultan.

Area F was thus chosen for a open area excavation with the aim of investigating the Early Bronze Age layers in extension, as well as of getting a detailed stratigraphy.

Namely, the goals of the excavations in Area F can be summarized as follows: 1) to obtain more data concerning the Period IIIc town; 2) to check Sellin's and Garstang's plans and to fix more precisely the chronology of the structures excavated by them; 3) to build up a detailed sequence of stratified materials in order to attribute Kenyon's stages and phases in squares E III-IV to more general and shared archaeological periods; 4) to investigate the site history from the end of Period IIb (Pottery Neolithic B) to the beginning of Period IIIb (Early Bronze II), with a special interest towards the possible identification of the Late Chalcolithic (Period IIc) and Early Bronze I (Period IIIa) settlements.²

The first step of the program of excavation has seen the opening of four squares (BfII10, BfII11, BgII10, BgII11), with the gradual removal of the baulks, as the excavation went on.

¹ Sellin's excavations recovered a residential quarter between Area F and the northern Inner City-wall (the so-called *Hauptmauer*: Sellin, Watzinger 1913: 36-38, fig. 17. pls. 8. II), while Garstang excavated the area just to the east (Garstang 1935: pl. XXIII).

² The program thus foresees the excavation of a step trench towards the north and the east, illustrating the main occupational phases of the site.

1.1. THE STRATIGRAPHIC SEQUENCE

Since the architecture of the houses uncovered will be described below, here only the stratigraphic relationships between structures and related archaeological deposits (and their relative phasing) are dealt with.

1.1.1. Activity 6

Operation 6

The earliest structures so far reached lie in the southern part of the area (BgII11 and BfII11). These are W.318, with its foundations at elevation 12.70 m, the parallel wall W.322. and the wall linking them W.316a, a structure identified below its successive reconstruction (W.316b), ascribed to operation 5d. The floor of beaten earth exposed at the bottom of these three walls, L.319b, can be attributed to the same phase, being covered by a layer of collapsed mudbricks (F.319a, operation 5e), which possibly represents the dismantling of the existing structures, when W.316b and W.326 were built (see below). The room delimited by W.318, W.316a and W.322 is thus the earliest unit so far identified; it has been attributed to Activity 6. being clearly the last phase of this activity, the stratigraphic beginning of which has yet to be established.

1.1.2. Activity 5

Operation 5e

This operation has been detected only in the two southernmost rooms of the dwelling complex. It is represented by fillings F.323a and F.319a respectively east and west of W.322 (fig. 1:4). They contained broken bricks and discarded materials as result of the levelling operations done for the refurbishing of floors in both rooms, which took place in operation 5d.

Operation 5d

In the first building phase so far reached, which actually corresponds to the last structural reconstruction of the houses of Area F, all of the walls were rebuilt directly on top of already existing structures, without a course of stones as foundation, thus testifying to the strong continuity with the preceding phase (Activity 6). In the northern unit (House L.303), this operation is characterized by the erection of walls W.302, W.304 and W.306 the latter with an offset abutting inside the room, and facing the post-hole P.325, sunk into the floor L.303d. In the corner south of the offset a fireplace (T.312b) is located.

In the central unit (House L.305) to this phase belong L.305d, W.326, W.316a, W.330, W.328, W.324. The entrance room L.327a is in use in this phase too, as well as bench B.332. An inner buttress strengthens the north-west corner of the room. In the two southernmost rooms (L.319, L.323), W.322, first built in Activity 6, continues to be in use, as well as W.318.

Operation 5c

A distinct stratigraphic phase has been identified in both units, with intentional fillings of ashy soil laid as preparation for a new refurbishing of the floors (F.303c, F.305c). To these strata belong many pottery sherds and objects laying on the floor of operation 5d.

L.307c is the earliest paving so far exposed of the street west of W.306 running towards north-east.

Operation 5b

Operation 5b is the last building phase in the two houses, when new floors of beaten earth are laid (L.303b, L.305b), with various installations, such as a bench with two stone slabs in L.305b (B.343), and the fireplace (T.312a) in L.303b. In the latter room a column of bricks (W.336) is juxtaposed to the existing offset at the middle of the northern face of W.302 in order to create a slot for the timber supporting the roof.

A successive raising of the street has also been exposed (L.307b).

Operation 5a

This operation groups several thick fillings (up to 0.75 m) characterized by the presence of collapsed bricks, ashes, and large quantities of charred materials (seeds, animal bones, pottery vessels). They have been excavated in the central unit (F.305a), where the deposit sloped gently north-west/south-east, in the northern unit (F.303a), where it instead was leaned towards the north-east (fig. 1:22).

A destruction layer has been also distinguished over the latest paving of the street running along the western limit of the excavation area (F.307a).

1.1.3. Activity 4

Activity 4 is represented only by negative stratigraphic units, that means horizontal cuts of the standing walls and layers of Activity 5, possibly for another building occupation, and by scanty remains of a floor (L.340) in the north-western corner of L.305.

Almost no materials are associated with these features, which, however, due to their stratigraphic position, can be tentatively attributed to Period IIIc2 (Early Bronze IIIB, 2450-2300 BC).

1.1.4. Activity 3

Operation 3a

On top of W.326+306 and partly over a layer of ash of Activity 4 the western half of a circular silos (S.310) has been brought to light, paved inside (L.311), and cut by a successive pit (P.308), so that its stratigraphic location in the sequence is very clear. Some pottery sherds allow to ascribe S.310 and L.311 to Period IIId (Early Bronze IV, 2300-2000 BC).

The silos had an overall diameter of c. 3.2 m; it is built with large greyish bricks, and has a flimsy partition wall inside, made by a single row of bricks lying on their thinner side (fig. 1:13). Three greyish bricks laid on top of W.306 just north of S.310 may be also ascribed to this operation, possibly belonging to a structure related to the silos. The latter proved to have been sunk into previous layers from top, so that bricks are only the inner revetment of a circular pit. Due to the many superimpositions,³ it is preserved only for two courses of bricks, that is c. 0.3 m. Unfortunately, on its floor L.311 there were no remains to identify what the silos contain was. Its dimensions, however, suggest that it was for cereals (wheat). No traces of plaster were visible.

The pottery from S.310 and L.311

Just four diagnostic pottery fragments have been retrieved associated with S.310 and its floor L.311, TS.98.F.127/10 (fig. 1:12.19) is a body of a small jar, bearing the distinctive combed decoration with horizontal and wavy bands typical of the second part of Early Bronze IV, i.e. Sultan IIId2.⁴ TS.98.F.127/8 (fig. 1:12.20) is a large beaker of the same combed production, but made of a finer ware; TS.98.F.138/9 (fig. 1:12.21) is one of the two handles of a small jar, while TS.98.F.127/12 (fig. 1:12.22) is a fragmentary goblet, which shows part of a horizontally incised decoration, very frequent in this shape below the rim.⁵ An incised handle retrieved in L.305 (fig. 1:37.14), of a type known from some biconic Early Bronze IV beakers,⁶ should be ascribed to S.310.

³ Note that floor L.300 (Activity 2), just to the north of S.310 in BfII10, is almost at the same elevation.

⁴ A subdivision of EB IV at Tell es-Sultan into two major phases was already suggested by Prag (1986), and it seems also confirmed by the comparisons of findings from the site and the cemetery (Nigro 1999: 50-52).

⁵ Nigro 1999: fig. 5:2-3, pl. VII.

⁶ Kenyon, Holland 1983: fig. 67:3.

1.1.5. Activity 2

Operation 2d

Early in Period IVa (Middle Bronze I) a huge stone lined pit (P.309b) was excavated in the south-western corner of BfIII1, thus removing the latest layers of room L.319. The pit partially trimmed the emerging tops of W.318 and W.322, as visible in sections (figs. 1:4-5), keeping W.322 as its eastern limit.

Operation 2c

P.309b was filled partly with materials resulting from the layers it had cut, partly with reddish soil (F.309a), including cobbles, sherds and some discharged objects.

The clay figurine TS.98F.30 from F.309a

A unique find from this filling is a modelled clay figurine (TS.98.F.30), possibly representing a female subject (fig. 1:10). Its body is decorated by small circular impressions, and on the back side it shows the technique of manufacture, with a central cylindrical column, to which the other parts of the figurine were applied (fig. 1:11).

The pottery from F.309a

Apart from a few specimens, such as two hole mouth jars (TS.98.F.133/13, fig. 1:12.14; TS.98.F.127/1, fig. 1:12.15), which derive from Period IIIc strata, the baulk of materials illustrates a homogeneous Period IVa (Middle Bronze I, 2000-1800 BC) ceramic horizon. Open shapes include a hemispherical bowl with inturned rim (TS.98.F.133/1, fig. 1:12.8), a carinated bowl (TS.98.F.133/12, fig. 1:12.9), and the ring base of a large bowl (TS.98.F.127/17, fig. 1:12.6). Closed shapes comprehend small jars with simple slightly everted rim (TS.98.F.127/2, TS.98.F.139/5, figs. 1:12.10-11), the ring base of a small jar with pronounced shoulders (TS.98.F.133/10, fig. 1:12.7), which shows the early stage of development of the renown trumpet base, typical of the following period (Sultan IVb). Simple Ware jars have simple everted rim (TS.98.F.133/5, TS.98.F.133/6, figs. 1:12.2-3), or the classic double everted rim, which is a direct development of a very common Period IIIc2/IIId shape. Storage jars have a whitish fabric with many mineral inclusions and a hammer-like everted rim (TS.98.F.133/8, fig. 1:12.1). Hole-mouth jars are still in use, showing a squared profile of the rim (TS.98.F.127/19, fig. 1:12.13). A *pithos* with horizontally expanded rim and pronounced shoulders (TS.98.F.127/11, fig. 1:12.12), made of a very coarse reddish-grey fabric, exhibits a typology characteristic of Period IV (Middle Bronze Age).

*Catalogue of objects from fill F.309a***TS.98.F.30, Figurine** (fig. 1:10-11)

Material: Clay

Dims.: h. 7.0; w. 1.4 cm

Elevation: 13.68 m

Square: BfII11

Locus: F.309a

Activity: 2c

Period: IVa, Middle Bronze I

TS.98.F.142, Tool

Material: Stone

Dims.: h. 3.4; l. 0.9; w. 0.6 cm

Elevation: 13.60 m

Square: BfII11

Locus: F.309a

Activity: 2c

Period: IVa, Middle Bronze I

Operation 2b

Two successive pits cut P.309. One to the north (P.308b), which also obliterated street L.307 (Activity 5), and the western half of silos S.310-floor L.311 (Activity 3); the other in the south-western corner of BfII11 (P.302b), which follows approximately the same limits of P.309. The latter (P.302b) can in fact be interpreted as a reuse of P.309. Its fill (F.302a) is mainly constituted of pebbles, broken bricks and discharged building materials. P.308b was instead filled at least four different times (F.308a), with reddish brown soil, almost without pottery, except from a few sherds resulting from Period IIIC layers it was sunk through. Its eastern limit was against the western face of W.318-W.328.

A basalt quern (fig. 1:18, on the right), of the type common during Period IIIC, has been found against the eastern border of the pit. Various layers of compacted lime from rain wash at the bottom of the pit suggest that it was not immediately filled after its excavation.

*Catalogue of objects from fill F.302a***TS.98.F.326, Spindle whorl**

Material: Clay

Dims.: w. 6.3; h. 0.8 cm

Elevation: 13.95 m

Square: Bg+BfII10+11

Locus: F.302a

Activity: 2b

Period: IVb, Middle Bronze II

Operation 2a

This operation has been identified only in a small area in the north-west sector of BfII10, where two stratigraphic units emerged. They are a very compacted greyish clay floor (L.300), with small fragments of limestone

and some pottery sherds included in it, and a wall (W.301) preserved only in its southern row on two superimposed courses of field stones, which appeared to be the foundation of a much larger structure, lost to the north due to erosion (fig. 1:8). Both features have been interpreted as part of a house, dating, on the basis of stratigraphy and of some ceramic fragments found on the floor itself, to the beginning of Period IVb (early Middle Bronze II, 1800-1750 BC). This datum is corroborated by the findings of the German expedition, that in the area just to the north of square BfII10.⁷ over the Early Bronze III dwelling quarter, uncovered two later houses, oriented exactly like W.301.⁸

They were attributed to the "Late Canaanite Period" (actually corresponding to Period IIId, Early Bronze IV, 2300-2000 BC), which is also attested to in the area (S.310), but, on the basis of the discovery of L.300 and W.301, which lie at the same elevation and in an analogous stratigraphic position, should be instead ascribed to the beginning of Period IVb (early Middle Bronze II, 1800-1750 BC).

1.1.6. Activity 1

Operation 1b

The uppermost stratum was a shallow accumulation of sherds (F.313) discarded by previous excavators along the southern limits of squares BfII11-BgII11. In BgII11 these materials formed an almost regular surface of 2.5 x 2.0 m (L.317), and to the east they were laid directly over the emerging structures and deposits of Activity 5.

Along the northern limit of the excavation area (BfII10-BgII10) a 0.1-0.3 m thick layer of dump has been recorded below the topsoil, possibly also deriving from previous excavations. This filling, with incoherently mixed materials, is called F.342 (fig. 1:6).

Operation 1a

This is represented by the topsoil, a natural accumulation of the last centuries, which is present only in the northern east-west strip of BfII10/11 and in some spots to the south (BgII11).

⁷ In Sellin and Watzinger's Square E6.

⁸ Sellin, Watzinger 1913: 36, plan II, fig. 17 (in middle background, just below the surface), pl. 8. These structures were marked by an orange colour in the general plan of the site (Sellin, Watzinger 1913: plan I).

1.2. THE HOUSES OF PERIOD IIIc1 (EARLY BRONZE IIIA, 2600-2450 BC)

The houses of Activity 5 (and 6) represent the largest feature so far exposed in Area F. The dwelling quarter to which they belong was excavated respectively by the German expedition to the north,⁹ Garstang to the north-east, along the inner face of the Inner City-Wall,¹⁰ and Kenyon to the east.¹¹ All of the previous expeditions recorded the good state of preservation of Early Bronze Age remains in this area, and deemed the spot suitable for getting a stratigraphic sequence of this period. This was confirmed already in the first days of excavations, when the bricks of W.302 and W.304 emerged just a few centimetres below the surface (fig. 1:16). Along the southern flank of Garstang's trench, which erosion has transformed in a 20 m-large ravine, there exists indeed this opportunity.

1.2.1. *Street L.307: plan of the residential quarter*

The main urban feature so far identified - of basic importance for matching the plan of Area F with those of the nearby areas excavated by the German and British expeditions - is the street running south-west/north-east (L.307), brought to light in the north-western corner of square BfII10. Orientation and elevation of the paved surface L.307, which apparently had a long utilization,¹² fit very well those of the street visible in south-eastern corner of Sellin's square E6.¹³ a lane flanked by houses with stone foundations, curving slightly towards the north-east.¹⁴

What appears clear from the examination of the plan of this area of the Early Bronze III town is that different domestic units, even if clearly distinguished, are placed side by side, with common walls, and streets are the only dividing elements between them.

⁹ Sellin, Watzinger 1913: 36-38, pl. II.

¹⁰ Garstang 1935: 152-154, pl. XXIII; section on pl. XXVI.

¹¹ Immediately to the east of BfII11 there are the two squares excavated by Kenyon E III-IV (Kenyon 1981: 325-338, fig. 1).

¹² That means that it apparently has at least a 1.0 m-thick stratification, as visible in the edge of denudation beyond the northern limit of excavation.

¹³ Sellin, Watzinger 1913: pl. II.

¹⁴ Actually the street turns to the north east in the vicinity of a crossing (around 10 m north of the present limit of excavation), from where it continues turning decisely to the north-west. It was re-excavated by Garstang (L.120. L.134. L.116).

L.307 was paved with small sherds and stones, mainly flint chips or small cobbles. It slopes gently towards the north-east and was repaved many times.

The earliest paving so far exposed (operation 5c) is that of L.307c (fig. 1:18). It is very well preserved with small sherds and cobbles. It slopes gently to the north-east, being bounded by a raised border to the west (elevation 13.65 m to the west, 13.45 m against W.306).¹⁵ Along W.306 a shallow depression can be seen, which will become a drain in operation 5b.

In the successive refurbishing (operation 5b, L.307b) the street was raised homogeneously of c. 0.10 m (elevation 13.78 m to the west and 13.55 m against W.306).

A thick filling (F.307a) buried L.307b, possibly deriving from the violent collapse of the structures of the houses flanking the street (mainly W.306 and its superstructure) in operation 5a. F.307a was indeed composed of brown soil, with ashy lenses, broken bricks, cobbles and various objects.

L.307b is c. 2.5 m large and its sloping surface is irregularly preserved (fig. 1:17). A shallow depression uncovered along the western face of W.306 may be interpreted as a drain for preventing water to invade the whole street and eroding the basement of the wall.

Objects from F.307a and L.307b-c

Various objects have been found in the filling overlying the street (F.307a) and within its later floors (L.307b-c). A basic distinction has to be done between those from the collapse layer (F.307a), possibly deriving from the nearby domestic units, and those retrieved inserted in the street pavings, to be interpreted as discarded or lost objects.

Two incomplete stone weights (TS.98.F.76, TS.98.F.77; figs. 1:43, 1:44) should correspond to a unit of 3 shekels (c. 23.40 grams), as another specimen found in House L.305 (see below on p. 32). A group of six flint sickle blades found together may belong to the same instrument, even if flint chips are very frequent in the street paving. A flint nucleus (TS.98.F.89) is another typical piece of domestic equipment.

Few discharged flints have been found in the paving of L.307b, while five flint blades were on L.307c, where also two residual sea shells (TS.98.F.117, TS.98.F.118) were inserted in the street flooring.¹⁶

¹⁵ Due to the superimposition of L.300, no Early Bronze III remains are preserved west of L.307c.

¹⁶ For an exhaustive discussion of these shells, very common in Early Bronze III contexts at Tell es-Sultan, see below on p. 33, note 28.

The folded copper plaquette F.395

Among the objects from F.307a, a very interesting find is a folded plaquette of copper (TS.98.F.395, fig. 1:43), removed from its original slot in antiquity. It is up to now the only metal object retrieved in Area F, apparently a rare in such an early period. It has been submitted to chemical-physical analyses of the alloy (SEM - EDS). By the way, some SEM and X-ray photos have been taken in order to investigate the possibility that a decoration was incised on the metal surface, and with the aim to clarify its shape. The outcome has been that it is a roughly rectangular plaquette, with an elongated shape and tapering extremities, suggesting that it was originally enrolled around a stick. The overall length is around 12 cm, and it is folded four times.

Even if some traces of incisions have been skilfully identified with an enhanced computer image analysis by Fabio Morresi,¹⁷ the extremely mineralized state of preservation of the plaquette has hampered any attempt of unfolding it.

Summary of objects from F.307a and L.307b-c

<i>Objects</i>	<i>Loci</i>	F.307a	L.307b	L.307c
Flint blade			110	224, 228, 233, 242, 243
Flint sickle blade		78, 84, 85, 86, 87, 88	125	235
Flint nucleus		89		
Weight		76, 77		
Sea shell				117, 118
Copper plaquette		395		

Catalogue of objects from F.307a and L.307b-c

TS.98.F.395, Plaquette (fig. 1:43)

Material: Copper

Dims.: h. 1.5; th. 0.11-0.15; l. 12.0 cm

Elevation: 13.95 m

Square: Bf110

Locus: F.307a

Activity: 5a

Period: IIIc1, Early Bronze IIIA

TS.98.F.76, Weight (fig. 1:43)

Material: Limestone

Dims.: h. 4.1; l. 3; w. 1.7 cm

Elevation: 13.99 m

Square: Bf110

Locus: F.307a

Activity: 5a

Period: IIIc1, Early Bronze IIIA

¹⁷ I deeply thank Mr. Fabio Morresi and Dr. Nazzareno Gabrielli, Director of the Gabinetto Ricerche Scientifiche of the Vatican Museums, for this analysis.

TS.98.F.77, Weight (fig. 1:43)

Material: Limestone

Dims.: w. 2.9; l. 2.6 cm

Elevation: 13.89 m

Square: BfII10

Locus: F.307a

Activity: 5a

Period: IIIc1, Early Bronze IIIA

TS.98.F.78, Sickle blade

Material: Flint

Dims.: h. 4.1; l. 2.3; w. 2.1 cm

Elevation: 13.95 m

Square: BfII10

Locus: F.307a

Activity: 5a

Period: IIIc1, Early Bronze IIIA

TS.98.F.84, Sickle blade

Material: Flint

Dims.: h. 1.6 cm; l. 1.1; w. 0.3 cm

Elevation: 13.89 m

Square: BfII10

Locus: F.307a

Activity: 5a

Period: IIIc1, Early Bronze IIIA

TS.98.F.85, Sickle blade

Material: Flint

Dims.: h. 2.3; l. 1.7; w. 0.4 cm.

Elevation: 13.89 m

Square: BfII10

Locus: F.307a

Activity: 5a

Period: IIIc1, Early Bronze IIIA.

TS.98.F.86, Sickle blade

Material: Flint

Dims.: h. 1.7; l. 1.4; w. 0.5 cm

Elevation: 13.89 m

Square: BfII10

Locus: F.307a

Activity: 5a

Period: IIIc1, Early Bronze IIIA.

TS.98.F.87, Sickle blade

Material: Flint

Dims.: h. 2.4; l. 2.2; w. 0.9 cm

Elevation: 13.89 m

Square: BfII10

Locus: F.307a

Activity: 5a

Period: IIIc1, Early Bronze IIIA.

TS.98.F.88, Sickle blade

Material: Flint

Dims.: h. 2.8; l. 1.9; w. 1.0 cm

Elevation: 13.89 m

Square: BfII10

Locus: F.307a

Activity: 5a

Period: IIIc1, Early Bronze IIIA

TS.98.F.89, Tool

Material: Flint

Dims.: h. 3.4; l. 2.3; w. 0.9 cm

Elevation: 13.89

Square: BfII10

Locus: F.307a

Activity: 5a

Period: IIIc1, Early Bronze IIIA

TS.98.F.110, Blade (fig. 1:44)

Material: Flint

Dims.: h. 4.2; l. 1.7; w. 0.5 cm

Elevation: 13.85 m

Square: BfII10

Locus: L.307b

Activity: 5b

Period: IIIc1, Early Bronze IIIA

TS.98.F.117, Pendant

Material: Sea shell

Dims.: h. 2.3; w. 3.1 cm

Elevation: 13.65 m

Square: BfII10

Locus: L.307c

Activity: 5c

Period: IIIc1, Early Bronze IIIA

TS.98.F.118, Pendant

Material: Sea shell

Dims.: h. 2.0; w. 2.8 cm

Elevation: 13.25 m

Square: BfII10

Locus: L.307c

Activity: 5c

Period: IIIc1, Early Bronze IIIA

TS.98.F.125, Tool

Material: Flint

Dims.: h. 3.4; l. 0.9; w. 0.6 cm
Elevation: 13.80 m
Square: BfII10
Locus: L.307b
Activity: 5b
Period: IIIC1, Early Bronze IIIA
TS.98.F.224, Blade
Material: Flint
Dims.: h. 4.3; l. 2.1; w. 0.5 cm
Elevation: 13.70 m
Square: BfII10
Locus: L.307c
Activity: 5c
Period: IIIC1, Early Bronze IIIA
TS.98.F.228, Blade
Material: Flint
Dims.: h. 2.0; l. 1.4; w. 0.5 cm
Elevation: 13.65 m
Square: BfII10
Locus: L.307c
Activity: 5c
Period: IIIC1, Early Bronze IIIA
TS.98.F.233, Blade
Material: Flint
Dims.: h. 1.9; l. 1.2; w. 0.2 cm
Elevation: 13.70 m
Square: BfII10

Locus: L.307c
Activity: 5c
Period: IIIC1, Early Bronze IIIA
TS.98.F.235, Sickle blade
Material: Flint
Dims.: h. 2.5; l. 1.8; w. 1.9 cm
Elevation: 13.90 m
Square: BfII10
Locus: F.307a
Activity: 5a
Period: IIIC1, Early Bronze IIIA
TS.98.F.242, Blade
Material: Flint
Dims.: h. 2.0; l. 1.7; w. 0.5 cm
Elevation: 13.65 m
Square: BfII10
Locus: L.307c
Activity: 5c
Period: IIIC1, Early Bronze IIIA
TS.98.F.243, Blade
Material: Flint
Dims.: h. 3.1; l. 2.6; w. 0.7 cm
Elevation: 13.65 m
Square: BfII10
Locus: L.307c
Activity: 5c
Period: IIIC1, Early Bronze IIIA

1.2.2. The central unit: House L.305

Architecture and structural sequence

The main domestic unit so far uncovered is located in the middle of the excavated area (fig. 1:23). It has a rectangular arrangement, 8.2 m (east-west) by 5.5 m (north-south), and is subdivided into two rooms.

In Activity 5, the main entrance of the house was located in its south-east corner (L.331). It gave access to a rectangular room (3.5 x 1.9 m), paved with a beaten earth floor (L.327a), and possibly opened towards an unroofed space (L.329), as it is suggested by the presence of medium-size flat stones on its floor. The entrance is indicated by a raised threshold, consisting of a large brick (0.40 x 0.60 x 0.14 m), and by the door socket preserved in its original spot.¹⁸

The best preserved structure on the north side of the room, W.302, reaches a height of 1.2 m. A buttress was adjoined to W.302 in the north-western corner of the room during operation 5d, i.e. the first utilization of the last building phase of the house (see below). A "L" shaped bench occupies the north-east corner of the room (B.332), while the bottom of a hole-mouth storage jar is sunk into the floor in the middle of the room.

A second door (L.333), aligned with the main entry (L.331), also provided of socket (found not far from the doorjamb) leads to the central square (4.0 x 3.8 m) room (L.305). Here the stratified deposit was more than one meter high, and four different phases have been distinguished until now (operation 5d-a).

What seems clear is that almost all structures so far exposed of House L.305 actually represent the last reconstruction of an already existing building, with some changes still to be clarified. This is suggested also by the fact that no wall shows a stone foundation, being superimposed directly on top of an already existing structure.

The earliest stratum brought to light, but not yet completely excavated, is a reddish soil floor (L.305d), linked with W.302 to the north, W.326 to the west, W.316+W.330 to the south, and W.328 to the east. It has a shallow depression in the middle, varying in absolute elevation from 13.65 m in the north-west corner, to 13.35 m in the centre of the room.

Walls delimiting L.305 show different adobe arrangements, even if the building technique with large use of mud mortar and almost no plaster

¹⁸ Due to erosion, in the southern half of square BgIII walls of Activity 5 have a very low elevation.

remains the same. W.302 is made of alternating courses of yellowish and greyish bricks 0.30×0.40 m, with a buttress added in correspondence of the join with W.328. W.326 is made exclusively of greyish large size bricks ($0.4 \times 0.6 \times 0.14$ m),¹⁹ which are unfortunately badly preserved. The southern wall of the room (W.316), is a later repair of a pre-existing massive structure, consisting of two courses of bricks (0.35×0.40 m), with a inner filling of mud 0.15 m wide. On the east side, the situation is less clear. The upper surface of W.330 is extremely eroded, even if it has a noticeable width (0.80 m). The partition wall W.328 is a thinner structure with an irregular texture. The bricks used for it are of various sizes, being apparently re-employed from the dismantling of pre-existing structures.

Floor L.305d was overlaid by a 0.50-0.65 m thick destruction layer (F.305c), including ashes, charcoal, broken mudbricks and various pottery vessels and objects. This stratum possibly represents a major destruction or dismantling of the house. Actually, the large quantity of material retrieved in F.305c and its good state of preservation hints at a sudden destruction or abandonment, rather than at a simple dismantling. However, the traces of fire in this layer are relatively scarce.

The collapse layer was thus used as the preparation for the new floor. The upper surface of F.305c was razed horizontally, and a layer of hardened grey earth (L.305b) was laid over it. Here several installations were set, namely in the north-west and south-west corners of the room. In the north-west corner two small limestone slabs were placed parallel to W.302 into a short bench (B.343), while in the south-west corner a shallow circular installation (diameter 0.3 m), possibly used for food transformation, was made with a fine greyish plaster.

The last use of the house is represented by L.305a, a layer of destruction with ashy deposits, charcoal, broken bricks and large quantities of animal bones. These were mostly found smashed on floor L.305b, in the central area and in the north-west corner, near the twin slabs installation (B.343).

No direct data are available concerning the roofing of L.305, even if it is evident that it was supported by a series of wooden beams running from W.316 to W.302, since the opposite orientation (east-west) would have implied the use of W.328, a partition wall which surely was not able to support such a heavy ceiling. The exact location of each beam (there should

¹⁹ The use of ash together with straw as clay temper for these bricks is possibly responsible for their greyish colour.

have been at least four) is impossible to determine, even if a timber slot identified in the nearby L.303 (fig. 1:26) indicates a possible spot.

The pottery assemblage from House L.305

No significant changes are distinguishable in pottery materials from L.305d-c and L.305b-a. The ceramic horizon of House L.305 will be thus discussed grouping operations 5d-a.

Simple Ware bowls are mass produced on the wheel, as it is shown by string cut impressions on their flat bases, and show a hemispherical profile with thinned or inner profiled rim (fig. 1:32.1-11). The fabric employed is of a reddish brown colour, with many inclusions. In some cases a potter's mark in the shape of two parallel strokes is present (fig. 1:32.2, 4). Another common form is the barrel shaped goblet (fig. 1:32.12-14). A carinated bowl with knobs showing a dark grey slip is possibly a local imitation of Khirbet Kerak Ware (fig. 1:32.15); the shape is indeed reminiscent of metallic vessels.

Simple Ware jars of small and medium size have an everted rim. They can be distinguished according to the fabric and the diameter of the rim into two main groups: a) jars with large mouth: the diameter of the rim exceeds 15.0 cm, they are usually made of a pale brown fabric (fig. 1:32.16, 26); b) jars with rim diameter not exceeding 12.0 cm, usually made of a reddish brown paste (fig. 1:32.18-21). Sometimes a small ridge is present at the bottom of the neck (fig. 1:32.23). Other specimens are made of a light yellow fabric and coated with a light red slip, often reserved according to a cross hatched motive (fig. 1:32.24-25), or are made of a reddish brown paste refined by a horizontally burnished red slip (fig. 1:32.27-29).

Further Simple Ware closed shapes are hole-mouth jars with flat base (fig. 1:37.17-19), not higher than 30.0 cm (fig. 1:34.10, 13, 15-17). Sometimes these jars have a larger profile and a spout immediately below the rim (fig. 1:34.9, 15).

Small juglets with band handle, commonly made of a light pinkish brown fabric, are also attested to (fig. 1:37.11-12, 20-21).

One of the diagnostic types of the period is the red burnished slip bowl with inturned profiled rim (fig. 1:33). It is largely attested to, being one of the hallmarks of Sultan IIIc1 (Early Bronze IIIA). The dimensions of the diameter vary from around 15.0 cm to 36.0 cm. Surface treatments include a inner and outer (sometimes limited to the rim) reddish slip associated with horizontal burnishing. In some cases a inner radial burnishing is also present. The rim tends to expand outwards, achieving a hammer-like shape

(fig. 1:33.6-8, 11-13). This type is virtually the Tell es-Sultan counterpart to the Palestinian Early Bronze IIIA-B burnished platters, a shape almost absent at Jericho.

As regards Kitchen Ware destined to fire, it is mainly, if not exclusively, represented by hole-mouth pots with rounded bottom (figs. 1:34.1-4, 6-8, 11-12, 14, 18; 1:35.5-6, 9-11; 1:36.3, 5-7), made of a coarse reddish brown fabric. Two pot sizes may be distinguished on the basis of mouth width (maximum 15.0 or 22.0 cm), even if the large ones should not be confused with storage jars made of Kitchen Ware (fig. 1:35.13-16), which are also very common vessels. One specimen shows a peculiar decoration, with incised oblique strokes (fig. 1:36.7).

Storage jars, made of a specialized fabric (Preservation Ware), may be subdivided into three main groups: a) jars for daily deposit, which usually have small-medium size and hole-mouth (figs. 1: 35.7; 1:36.1-2, 4) or simple everted rim (fig. 1:35.4); b) jar for temporary storage and transportation, which usually have an extended everted rim (fig. 1:35.1), presumably to allow an easy sealing; c) big storage jars or *pithoi*, which also have everted rim and cylindrical neck, with a rope-like applied decoration at its bottom (fig. 1:35.2). Jars of groups b) and c) are often coated with a thick whitish slip, applied after the firing, which apparently aims at strengthening the walls and preventing evaporation of liquids. All types of jars show a flat base (figs. 1:36.10-14; 1:38) and a pair of ledge handles with vertical lips at the middle of the body (fig. 1:37.1-10).

Various fragments of Khirbet Kerak Ware have been found in L.305.²⁰ TS.98.F.148/3 (fig. 1:39.1) is a carinated bowl with thin profile, which shows the distinct red/black change of the lustrous slip below the rim, due to the different oxygenation of these portions of the vessel, which characterized the production we are dealing with, TS.98.F.148/16 (fig. 1:39.2) is a fragment of the shoulder of a jug with ridge decoration and stump base, of a well known type.²¹ TS.98.F.148/2 (fig. 1:39.3) is instead the stump base of another larger Khirbet Kerak Ware jug. A body fragment with black lustrous slip and ridge decoration (fig. 1:39.4) belonged to a large carinated krater, another classic Khirbet Kerak Ware shape.

²⁰ Few Khirbet Kerak Ware fragments were also found by Kenyon in Squares EIII/IV (Kenyon, Holland 1983: 374, fig. 147:12-13).

²¹ See e.g. Kenyon 1960a: fig. 39:2-3.

One of the distinguishing features of the Period IIIc1 pottery horizon is the large attestation of painted wares. Two kinds of painted productions are attested to in pottery assemblage from L.305. The commonest is the Simple Painted Ware, obtained decorating with reddish-brown vertical bands Simple Ware vessels; the other is characterized by crossing brown bands painted on a whitish slip (this recalls the tradition of the preceding period, with crossing strips and hatched motives).

Simple Ware bowls are often decorated by a red band on the rim outside, inside, or both (fig. 1:40.1, 3-6).²² Very common is also the decoration with irregularly crossing vertical wavy bands, which shows the very coarse character of this production. Globular bowls (fig. 1:40.8-11), sometimes with spout (fig. 1:40.10), and small and medium size jars (fig. 1:40.16, 25-27) are also common shapes of Simple Painted Ware.²³

Brown hatched bands painted on a whitish slip are attested to on a bowl with rounded walls (fig. 1:40.2), which has a striking counterpart in a specimen from Garstang's excavations today on exhibit in the Palestine Archaeological Museum (Rockefeller Museum).²⁴

Examined as a whole, the pottery assemblage from House L.305 can be ascribed to the final part of Period IIIc1 (Early Bronze IIIA), around the half of the 3rd millennium BC.

Productive and domestic activities in L.305: objects and other finds

Productive and domestic functions carried out in House L.305 are illustrated by various pieces of evidence, especially objects, tools, archaeological remains and paleobotanical finds.

Objects found in F.305c and on the floor L.305d provide several clues for inferring the productive and domestic activities which took place in House L.305. A major part of tools inventory is represented by flint blades (TS.98.F.301, TS.98.F.322, TS.98.F.327) and sickle blades (TS.98.F.156, TS.98.F.237, TS.98.F.323), the number and distribution of which match the usual mean of attestation of such implements in private houses of the period at Tell es-Sultan. Other tools were presumably used for food production, such as a worn mortar (TS.98.F.222, fig. 1:41) with its pestle (TS.98.F.320, fig. 1:43), also retrieved in this operation. A wider range of activities is instead implied by the retrieval of a flint axe (TS.98.F.195) and a burin

²² In some cases these bowls were used as lamps, as it is demonstrated by the burnt remains on their rims.

²³ Compare fig. 2:40.25-27 with Kenyon, Holland 1983: fig. 159:14.

²⁴ Display no. 582.

(TS.98.F.324). Ordinary domestic implements are also two oval shaped pebbles (TS.98.F.157, fig. 1:42; TS.98.F.321, fig. 1:43), a sea shell pendant (TS.98.F.236, fig. 1:42), and a bone pin (TS.98.F.263, figs. 1:43, 1:46). Less common are two fragments of mother of pearl (TS.98.F.163; TS.98.F.325), which were traded items, being parts of personal ornaments or of furniture decorations.

Three objects offer a further insight into the degree of economic complexity of Period IIIc1 (Early Bronze IIIA) Tell es-Sultan. A barrel-shaped weight (TS.98.F.300, fig. 1:48), corresponding to 3 shekels of 7.80 grams, a unit also known from other sites of northern Palestine and the Levant,²⁵ confirms the existence of a weighting system for computing values in exchanges. Two fragmentary clay sealings (TS.98.F.408, TS.98.F.409, fig. 1:47), apparently locking a storage-jar (the first has in fact a circular impression) and a door or a wooden box (the second instead shows a rectangular impression), testify to some control of goods storage and distribution.

Finds from operation 5d-c show that ordinary domestic activities also included exchanges of metal objets (one may here recall the copper folded plaquette retrieved in L.307, see above). Food production was limited in this phase to the daily need of the unit.

The objects found on the last floor of the house (L.305b) and in the collapse layer which covers it (F.305a) demonstrate a certain transformation of the activities performed in House L.305. In the north-west corner of the room a plea of fragmentary animal bones and some stone tools were found in the area of the working installation with the twin cutting slabs²⁶ set into bench B.343. Among the stone implements associated with this installation there are a hook shaped stone (TS.98.F.65, figs. 1:41, 1:45), possibly used for skinning big bones, as well as a flint axe (TS.98.F.69, fig. 1:45) and a flint scraper (TS.98.F.80). Other objects related to the cutting and preparation of meat for cooking are flint blades (TS.98.F.34, TS.98.F.67, TS.98.F.68, TS.98.F.82, fig. 1:42), and two smashing pebbles (TS.98.F.60, TS.98.F.66, fig. 1:41). Animal bones found in large quantity in this operation actually exceed the usual amount of food supplies of a single family, thus pointing to a more complex function achieved by L.305.

²⁵ See e.g. a specimen from Hama J3 (Fugmann 1958: fig. 93. 3F874); other weights adopting the same system have been found in Area B (see on p. 124).

²⁶ Both slabs (TS.98.F.130/b and TS.98.F.131/d) were left on their original spot.

Indeed, the variety of bones, the age and sex of animals processed, the peculiarities of cutting marks, suggests that House L.305 had become a sort of butchery. As pointed out by F. Alhaique (see Appendix B, in this volume), data from House L.305 give an exhausting interpretative picture only if compared with those from House L.303. Their discussion is thus shifted below.

Six bivalve shells,²⁷ found in the north-eastern sector of the room, were possibly beads of a bracelet, since they have pierced hinges;²⁸ a ribbed shell, found together, was possibly the central pendant (TS.98.F.64, figs. 1:42, 1:46). Since this kind of shell is surely from the Red Sea, an active commercial route towards that direction has to be surmised. To the same necklace may be also referred a bone bead (TS.98.F.120, fig. 1:42).

Two clay stoppers (TS.98.F.99, fig. 1:41; TS.98.F.95, fig. 1:42) may be ascribed to some of the medium size jars found in the destruction layer (F.350c), even if one (TS.98.F.99) can be alternatively interpreted as a loom weight, as it is suggested by its diameter, which exceeds 13.0 cm. This was in fact found together with a spindle whorl of the type made piercing a pottery sherd (TS.98.F.39, figs. 1:42, 1:46).

Archaeological materials from L.305b-a thus include personal ornaments, a few ordinary domestic tools, and a noticeable inventory of implements related to the cutting and processing of various animals, namely cattle, ovicaprines, gazelles, but also wild boars and cranes, the bones of which were found in large quantities. The correspondence between the age and sex of individuals skinned and cut in L.305b-a and those further processed in L.303a, skilfully pointed out by F. Alhaique (see Appendix B), suggests that a two stages meat transformation activity took place in the two juxtaposed architectural units during their last phase of utilization (operations 5b-a). This picture neatly differs from that of operation 5d-c, to which only few animal bones belong, as a result of daily consumption.

A certain change in the domestic and productive activities performed in House L.305 must thus be reckoned on the basis of the analysis of objects and other finds retrieved. L.305d and F.305c have provided evidence for an

²⁷ TS.98.F.56, TS.98.F.57, TS.98.F.71, TS.98.F.72; TS.98.F.136, TS.98.F.237 (fig. 1:42).

²⁸ A fascinating hypothesis, based upon the retrieval of a heap of 192 shells at Tell es-Sa'idiyeh, that such items were used as tokens in a kind of tallying system (Tubb 1998: 42, 45) typical of the Early Bronze Age sites of the Jordan Valley (where these shells are a very common find), seems however difficult to be proved.

active domestic unit, where some basic control practices were adopted, such as the sealing of containers and door locks, by means of clay lumps, and the use of small weights, which are typical indicators of a complex urban society. In the last phases (L.305b, F.305a, operations 5b-a), instead, data available show the House mainly devoted to meat transformation, in a range which seems to exceed the ordinary need of a single family.

Summary of objects from House L.305

<i>Objects</i>	<i>Loci</i>	L.305a	L.305b	F.305c	L.305d
Quern		101, 130/b, 131/d	178		
Mortar			179	222	
Pestle					320
Clay stopper		95, 99			
Stone tool		65	135		
Spindle whorl		39			
Flint blade		34, 67, 68, 82	122	162, 223	301, 322, 327
Flint sickle		28, 94, 96, 115		156, 237	323
Flint scraper		80			
Flint burin					324
Stone axe		69		195	
Weight					300
Polishing pebble		60, 66		157	321
Sea shell		56, 57, 71, 72	137	236	
Red Sea shell		64			
Mother of pearl				163	325
Bead			120		
Bone pin				263	
Clay sealing				408, 409	

Catalogue of objects from House L.305

TS.98.F.28, Tool

Material: Flint

Dims.: h. 2.2; l. 1.7; w. 1.1 cm

Elevation: 14.20 m

Square: BgII10

Locus: L.305a

Activity: 5a

Period: IIIc1, Early Bronze IIIA

TS.98.F.34, Tool

Material: Flint

Dims.: h. 4.1; l. 2.1; w. 0.5 cm

Elevation: 14.10 m

Square: BfII10

Locus: L.305a

Activity: 5a

Period: IIIc1, Early Bronze IIIA

TS.98.F.39, Spindle whorl

Material: Pottery sherd

Dims.: w. 4.5; inner diam. 0.8 cm

Elevation: 14.10 m

Square: BgII10+BfII10

Locus: L.305a

Activity: 5a

Period: IIIc1, Early Bronze IIIA

TS.98.F.56, Pendant (fig. 1:42)

Material: Shell

Dims.: w. 3.8; h. 1.2 cm

Elevation: 14.18 m

Square: BgII10/11

Locus: L.305a

Activity: 5a

Period: IIIc1, Early Bronze IIIA

TS.98.F.57, Pendant (fig. 1:42)

Material: Shell

Dims.: w. 3.6; h. 1.1 cm

Elevation: 14.07 m

Square: BgII10

Locus: L.305a

Activity: 5a

Period: IIIc1, Early Bronze IIIA

TS.98.F.130/b, Quern

Material: Limestone

Dims.: h. 8.0; l. 31.0; w. 28.0 cm

Elevation: 14.20 m

Square: BfII10

Locus: L.305a

Activity: 5a

Period: IIIc1, Early Bronze IIIA

TS.98.F.131/d, Quern

Material: Limestone

Dims.: h. 12.0; l. 32.0; w. 24.0 cm

Elevation: 14.20 m

Square: BgII10

Locus: L.305a

Activity: 5a

Period: IIIc1, Early Bronze IIIA

TS.98.F.60, Polishing pebble (fig. 1:41)

Material: Limestone

Dims.: w. 4.8; l. 3.3 cm

Elevation: 14.20 m

Square: BfII10

Locus: L.305a

Activity: 5a

Period: IIIc1, Early Bronze IIIA

TS.98.F.64, Pendant (figs. 1:42, 1:46)

Material: Read Sea Shell

Dims.: h. 4.9; l. 1.7 cm

Elevation: 14.28 m

Square: BfII11

Locus: L.305a

Activity: 5a

Period: IIIc1, Early Bronze IIIA

TS.98.F.65, Tool (figs. 1:41, 1:45)

Material: Stone

Dims.: h. 16.0; l. 5.0 cm

Elevation: 14.28 m

Square: BgII10

Locus: L.305a

Activity: 5a

Period: IIIc1, Early Bronze IIIA

TS.98.F.66, Polishing pebble (fig. 1:41)

Material: Stone

Dims.: w. 4.1; l. 2.4 cm

Elevation: 14.25 m

Square: BfII10/11

Locus: L.305a

Activity: 5a

Period: IIIc1, Early Bronze IIIA

TS.98.F.67, Blade

Material: Flint

Dims.: h. 1.6; l. 1.3; w. 0.3 cm

Elevation: 14.20 m

Square: BgII10/11

Locus: L.305a

Activity: 5a

Period: IIIc1, Early Bronze IIIA

TS.98.F.68, Blade

Material: Flint

Dims.: h. 1.8; l. 1.6; w. 0.3 cm

Elevation: 14.20 m

Square: BgII10/11

Locus: L.305a

Activity: 5a

Period: IIIc1, Early Bronze IIIA

TS.98.F.69, Axe (fig. 1:45)

Material: Stone

Dims.: h. 8.9; w. 2.1 cm

Elevation: 14.00 m

Square: BgII11/BfII11

Locus: L.305a

Activity: 5a

Period: IIIc1, Early Bronze IIIA

TS.98.F.71, Pendant

Material: Shell

Dims.: w. 1.8; h. 1.2 cm

Elevation: 14.00

Square: BgII11/BfII11

Locus: L.305a

Activity: 5a

Period: IIIc1, Early Bronze IIIA

TS.98.F.72, Pendant (fig. 1:42)

Material: Shell

Dims.: w. 3.7; h. 1.4 cm

Elevation: 14.28 m

Square: BfII10

Locus: L.305a

Activity: 5a

Period: IIIc1, Early Bronze IIIA

TS.98.F.80, Scraper

Material: Flint

Dims.: h. 2.0; l. 1.5; w. 0.6 cm

Elevation: 14.00 m

Square: BgII10/11

Locus: L.305a

Activity: 5a

Period: IIIc1, Early Bronze IIIA

TS.98.F.82, Blade

Material: Flint

Dims.: h. 2.5; l. 1.9; w. 0.5 cm

Elevation: 13.95 m

Square: BfII10/11

Locus: L.305a

Activity: 5a

Period: IIIc1, Early Bronze IIIA

TS.98.F.94, Sickle blade

Material: Flint

Dims.: h. 3.4; l. 1.9; w. 0.6 cm

Elevation: 14.05 m

Square: BgII10/BfII10

Locus: L.305a

Activity: 5a

Period: IIIc1, Early Bronze IIIA

TS.98.F.95, Stopper

Material: Clay

Dims.: w. 4.7; l. 3.6; h. 0.6 cm

Elevation: 14.20 m

Square: BgII10/11

Locus: L.305a

Activity: 5a

Period: IIIc1, Early Bronze IIIA

TS.98.F.96, Sickle blade

Material: Flint

Dims.: h. 3.0; l. 0.9; w. 0.7 cm

Elevation: 14.20 m

Square: BgII10/BfII10

Locus: L.305a

Activity: 5a

Period: IIIc1, Early Bronze IIIA

TS.98.F.99, Stopper (?) (fig. 1:41)

Material: Clay

Dims.: diam. 13.3; h. 0.7 cm

Elevation: 14.10 m

Square: BfII11

Locus: L.305a

Activity: 5a

Period: IIIc1, Early Bronze IIIA

TS.98.F.101, Quern

Material: Limestone

Dims.: h. 9.3; l. 7.8; w. 4.6 cm

Elevation: 14.05 m

Square: BfII10

Locus: L.305a

Activity: 5a

Period: IIIc1, Early Bronze IIIA

TS.98.F.115, Sickle blade

Material: Flint

Dims.: h. 1.8; l. 0.6; w. 0.2 cm

Elevation: 14.10 m

Square: BfII11

Locus: L.305a

Activity: 5a

Period: IIIc1, Early Bronze IIIA

TS.98.F.120, Bead (fig. 1:42)

Material: Bone

Dims.: w. 0.9; h. 0.4 cm

Elevation: 13.80 m

Square: BfII11

Locus: L.305b

Activity: 5b

Period: IIIc1, Early Bronze IIIA

TS.98.F.122, Blade

Material: Flint

Dims.: h. 2.7; w. 1.6; th. 0.3 cm

Elevation: 13.94 m

Square: BfII11

Locus: L.305b

Activity: 5b

Period: IIIc1, Early Bronze IIIA

TS.98.F.135, Tool (fig. 1:42)

Material: Stone

Dims.: h. 12.9; l. 4.7; w. 5.0 cm

Elevation: 13.70 m

Square: BfII11

Locus: L.305b

Activity: 5b

Period: IIIc1, Early Bronze IIIA

TS.98.F.137, Pendant (fig. 1:42)

Material: Shell

Dims.: w. 3.2; h. 1.3 cm

Elevation: 13.85 m

Square: BfII11

Locus: L.305b

Activity: 5b

Period: IIIc1, Early Bronze IIIA

TS.98.F.156, Sickle blade

Material: Flint

Dims.: h. 2.3; l. 1.6 cm; w. 0.3 cm

Elevation: 13.70 m

Square: BfII11

Locus: L.305c

Activity: 5c

Period: IIIc1, Early Bronze IIIA

TS.98.F.157, Polishing pebble (fig. 1:42)

Material: Limestone

Dims.: h. 7.4; l. 6.6; w. 5.1 cm

Elevation: 13.68 m

Square: BfII11

Locus: L.305c

Activity: 5c

Period: IIIc1, Early Bronze IIIA

TS.98.F.162, Blade

Material: Flint

Dims.: h. 5.3; l. 2.3; w. 0.8 cm

Elevation: 13.70 m

Square: BfII11

Locus: L.305c

Activity: 5c

Period: IIIc1, Early Bronze IIIA

TS.98.F.163, Inlays (?)

Material: Mother of pearl

Dims.: 1) h. 1.9; l. 0.8; w. 0.1 cm

2) h. 2.2; l. 0.9; w. 0.1 cm

Elevation: 13.60 m

Square: BfII10+BgII10

Locus: L.305c

Activity: 5c

Period: IIIc1, Early Bronze IIIA

TS.98.F.178, Quern (fig. 1:41)

Material: Basalt

Dims.: h. 12.3; l. 8.8; w. 6.8 cm

Elevation: 13.70 m

Square: BfII11

Locus: L.305b

Activity: 5b

Period: IIIc1, Early Bronze IIIA

TS.98.F.179, Mortar (fig. 1:41, 1:45)

Material: Basalt

Dims.: h. 20.1; l. 8.8; w. 7.9 cm

Elevation: 13.70 m

Square: BfII11

Locus: L.305b

Activity: 5b

Period: IIIc1, Early Bronze IIIA

TS.98.F.195, Adze

Material: Flint

Dims.: h. 4.3; l. 3.4; w. 1.2 cm

Elevation: 13.70 m

Square: BgII11+BfII11

Locus: L.305c

Activity: 5c

Period: IIIc1, Early Bronze IIIA

TS.98.F.222, Mortar (fig. 1:41)

Material: limestone

Dims.: h. 19.2; l. 15.7; w. 15.3 cm

Elevation: 13.40 m

Square: BfII11

Locus: L.305c

Activity: 5c

Period: IIIc1, Early Bronze IIIA

TS.98.F.223, Blade

Material: Flint
 Dims.: h. 4.8; l. 2.0; w. 0.5 cm
 Elevation: 13.70 m
 Square: BgII10+11
 Locus: L.305c
 Activity: 5c
 Period: IIIc1, Early Bronze IIIA
TS.98.F.236, Pendant (fig. 1:42)
 Material: Shell
 Dims.: w. 2.5; l. 2.7 cm
 Elevation: 13.70 m
 Square: BgIII1
 Locus: L.305c
 Activity: 5c
 Period: IIIc1, Early Bronze IIIA
TS.98.F.237, Sickle blade
 Material: Flint
 Dims.: h. 2.2; l. 0.7; w. 0.3 cm
 Elevation: 13.70 m
 Square: BfII10
 Locus: L.305c
 Activity: 5c
 Period: IIIc1, Early Bronze IIIA
TS.98.F.263, Pin (fig. 1:43)
 Material: Bone
 Dims.: h. 6.7; l. 0.7; w. 0.3 cm
 Elevation: 13.70 m
 Square: BfIII1
 Locus: L.305c
 Activity: 5c
 Period: IIIc1, Early Bronze IIIA
TS.98.F.300, Weight (fig. 1:48)
 Material: Limestone
 Dims.: l. 5; w. 1.5; h. 1.6 cm
 Elevation: 13.35 m
 Square: BgII10+11
 Locus: L.305d
 Activity: 5d
 Period: IIIc1, Early Bronze IIIA
TS.98.F.301, Blade
 Material: Flint
 Dims.: h. 6.2; l. 1.0; w. 0.6 cm
 Elevation: 13.45 m
 Square: BgII10
 Locus: L.305d

Activity: 5d
 Period: IIIc1, Early Bronze IIIA
TS.98.F.320, Pestle (fig. 1:43)
 Material: Limestone
 Dims.: h. 5.9; w. 3.6 cm
 Elevation: 13.55 m
 Square: Bg+BfII10+11
 Locus: L.305d
 Activity: 3d
 Period: IIIc1, Early Bronze IIIA
TS.98.F.321, Polishing pebble
 Material: Limestone
 Dims.: h. 10.0; l. 6.4; w. 2.0 cm
 Elevation: 13.35 m
 Square: Bg+BfII10+11
 Locus: L.305d
 Activity: 3d
 Period: IIIc1, Early Bronze IIIA
TS.98.F.322, Blade
 Material: Flint
 Dims.: h. 1.8; l. 1.9; w. 0.5 cm
 Elevation: 13.35 m
 Square: Bg+BfII10+11
 Locus: L.305d
 Activity: 5d
 Period: IIIc1, Early Bronze IIIA
TS.98.F.323, Sickle blade
 Material: Flint
 Dims.: h. 3.0; l. 2.2; w. 0.5 cm
 Elevation: 13.35 m
 Square: Bg+BfII10+11
 Locus: L.305d
 Activity: 5d
 Period: IIIc1, Early Bronze IIIA
TS.98.F.324, Burin
 Material: Flint
 Dims.: h. 2.6; l. 1.2; w. 0.7 cm
 Elevation: 13.35 m
 Square: Bg+BfII10+11
 Locus: L.305d
 Activity: IIIc1
 Period: IIIc1, Early Bronze IIIA
TS.98.F.325, Inlay (?)
 Material: Mother of pearl
 Dims.: h. 3.2; l. 2.4; w. 0.3 cm

Elevation: 13.50 m
Square: Bg+BfII10+11
Locus: L.305d
Activity: 5d
Period: IIIc1, Early Bronze IIIA
TS.98.F.327, Blade
Material: Flint
Dims.: h. 2.4; l. 0.9; w. 0.2 cm
Elevation: 13.35 m
Square: Bg+BfII10+11
Locus: L.305d
Activity: 5d
Period: IIIc1, Early Bronze IIIA
TS.98.F.408, Sealing (fig. 1:47)
Material: Clay

Dims.: h. 4.2; l. 1.9. w. 0.8 cm
Elevation: 13.55 m
Square: BgII10+11
Locus: L.305c
Activity: 5c
Period: IIIc1, Early Bronze IIIA
TS.98.F.409, Sealing (fig. 1:47)
Material: Clay
Dims.: h. 3.4; l. 0.8; w. 1.2 cm
Elevation: 13.55 m
Square: BgII10+11
Locus: L.305c
Activity: 5c
Period: IIIc1, Early Bronze IIIA

1.2.3. The northern unit: House L.303

Architecture and structural sequence

The northern unit has been brought to light almost completely, even if its northern limit remains unknown. An attempt to fix it has been done enlarging of 1 m the excavation area (removing baulk BgII9/10), but it was not reached. The house has a triangular plan, with its eastern wall (W.304) curving gently towards the north-west (fig. 1:24). What is still an open question is the location of the entrance, which has to be looked for in the north-west corner, north of the offset W.338 (fig. 1:25, on the right). This is, indeed, the only spot where a door could be open towards the street L.307, since south of the offset there is a fireplace (figs. 1:26-27a, on the right).

In the earliest utilization so far identified (operation 5d), House L.303 was bounded by three walls (W.302, W.304, W.306), all built directly on top of already existing structures. The main wall, W.302, is made of greyish and yellowish mudbricks of medium size (0.3 x 0.4 x 0.12 m). To the east it joins a slightly diverging wall, which partly protrudes within L.303 in its south-eastern corner. W.304 and W.306 are built according to the same technique, partly using bricks similar to those of W.302, partly with bricks of irregular size, possibly deriving from the dismantling of previous structures. An offset, consisting of a column of bricks (W.336), abuts from the northern side of W.302; another (W.338) protrudes from W.306, also delimiting the south-western corner of the room, where a stone paved fireplace is located (T.312b, figs. 1:26-27). In front of the two offsets, a stone-lined circular hole is sunk into the floor (P.335) for a wooden post supporting the roof, which covered the eastern half of the room (fig. 1:25). On top of this central pillar the two beams which must have been fixed in W.302 and in W.306 joined, leaving the south-west corner of the room with the fireplace unroofed. In the south-eastern corner of the room there was a hole (with a diameter of 0.3 m) in the floor (fig. 1:26, on the left), possibly used for food processing (grinding or pulping activities), or for a mobile installation related to weaving, since two loom weights and various pottery disks were found scattered in this area (see below).

The second and last use of the house is represented by an earthen floor (L.303b) laid over an intentional filling (F.303c), which raised the floor elevation of 0.3-0.5 m. A wooden post was added against the southern side of offset W.336, and two bricks (W.337) were placed south of it for securing its basis (fig. 1:26, centre). Starting from these two bricks a thin bench (B.323) abutted towards the middle of the room, possibly serving as a

seat for a person working in front of the fireplace, where another circular hole (P.339) had been sunk into the floor. Just in front of the bench one of the two major groups of animal bones was found, the other having been retrieved against the west face of W.304 (fig. 1:22).

The pottery assemblage from House L.303

The pottery assemblage from House L.303 is less rich than that of L.305, including very common shapes, such as Simple Ware bowls with profiled rim (fig. 1:49.1-4), with straight walls (fig. 1:49.5-6) and hemispherical body (fig. 1:49.7-13), sometimes bearing a red burnished slip (fig. 1:49.9-11). Both Simple Ware bowls and small jars are made on the fast wheel, as it is demonstrated by string cut impressions visible on their bottoms (fig. 1:49.14-15). Small jars have hole-mouth (fig. 1:49.16-17) or simple everted rim (fig. 1:49.18); they sometimes have pierced nose-lug on the shoulders (fig. 1:49.25-27). Medium size jars of Simple Ware are made of a fine brownish fabric and have either a short neck and a large mouth (fig. 1:49.21-22), or a high neck and a narrow mouth (fig. 1:49.20, 23-24). Jugs always show a lustrous red burnished slip outside (fig. 1:49.19, 28).

Notwithstanding the presence of fireplace T.312, very few Kitchen Ware vessels have been found in L.303, namely three hole-mouth pots (fig. 1:50.1, 3, 5).²⁹

The rest of the assemblage from this house consists of ordinary hole-mouth storage jars (fig. 1:50.2, 4, 6-10, 12-15, 17), which show no noticeable peculiarity, except for two fragments (fig. 1:50.11+16), which should belong to a very large specimen.

Simple Painted Ware is attested to in a noticeable percentage also in L.303. Hemispherical bowls with inner and outer reddish brown painted decoration (irregularly crossing wavy bands; fig. 1:40.13, 15, 19-21); straight walls bowls with painted decoration inside and on the rim (fig. 1:40.14); carinated bowls with short everted rim (fig. 1:40.12); small hole-mouth jars with red painted crossing bands (fig. 1:40.11), or medium size jars with reddish brown vertical bands, ending with flames on the neck (fig. 1:40.17-18), are the types attested to. A bowl has an inner decoration consisting of a red cross (fig. 1:40.20), known also from a specimen from

²⁹ This possibly suggests that hearth T.312 was not only used for cooking liquid meals, but for roasting meat, a hypothesis that is also supported by the elongated shape of the hearth, where large pieces of meat could be roasted.

Kenyon excavations;³⁰ a fragmentary bowl shows instead a peculiar decoration with crossing bands inside and vertical bands outside (fig. 1:40.21).

As in the case of House L.305, the ceramic inventory from House L.303 can be confidently ascribed to the final part of Period IIIc1 (Early Bronze IIIA), around 2500 BC.

Processing meat and waving textiles: objects and finds from L.303

The inventory of objects from L.303 consists of various groups of tools, each retrieved in a different area of the house, which thus was probably subdivided in functionally specialized domains.

In the area of the stone paved hearth a small sherd with a shallow depression in the middle (TS.98.F.288, fig. 1:52), which was possibly used for twisting a wooden bow for lighting fire, and numerous flint implements were found. The group of flint blades hints at meat cutting activities, even if the types and dimensions of these tools are different from those retrieved in L.305, suggesting a finer stage of meat dissecting and slicing.³¹ This datum is corroborated by the observations made on faunal remains, especially as regards cattle and ovicaprids. According to F. Alhaique³² the ovicaprine individuals which were first butchered in L.305, were successively prepared for cooking in L.303. It is thus not surprising to discover that cutting tools (flint and stone blades) from L.303 are smaller and finer than those from L.305.³³ A very interesting exception is represented by the retrieval of some bones of hippopotamus, an animal previously unattested to at Jericho, which apparently was not destined to consumption.

The performance of this cooking activity is also testified to by the retrieval of large quantities of debitage (fig. 1:54) together with flint blades and sickle blades, demonstrating that these tools were produced *in loco*, by chipping a nucleus.³⁴

Possibly connected with meat preparation are also two fragmentary querns of basalt stone (TS.98.F.170, TS.98.F.182, fig. 1:53), found near the central bench (B.323) on floor L.303a. Other stone tools are a shallow

³⁰ Kenyon, Holland 1983: 394, fig. 159:19; note that also this bowl shows the string cut on its base.

³¹ The vast majority of these flints has been attributed to F.303c and L.303d, even if they may also have descended from later layers through the soft soil of F.305c..

³² See Appendix B in this volume.

³³ Only an adze (TS.98.F.205) and a scraper (TS.98.F.234) were found.

³⁴ One flint nucleus was in fact retrieved: TS.98.F.36.

mortar or pulping table, of which only a segment is preserved (TS.98.F.197, fig. 1:53), a quarter of a basalt bowl (TS.98.F.103, fig. 1:53). The latter may have had multiple uses, but seems to be connected with cooking activities. A polished limestone bar (TS.98.F.192, fig. 1:53), retrieved in the central sector of L.303a might be interpreted as a fragmentary pestle.

A distinct group of objects is formed by seven clay disks (actually sherds worked in the shape of disks) of scalar dimensions (TS.98.F.40, TS.98.F.59, TS.98.F.24, TS.98.F.23, TS.98.F.29, TS.98.F.35, TS.98.F.58, figs. 1:51, 1:55). Even if these items are usually interpreted as jar-stoppers, since not a single jar with matching mouth was found in L.303. and they were grouped in the south-eastern corner of the room, where three spindle-whorls (TS.98.F.191, TS.98.F.194, TS.98.F.203, figs. 1:52, 1:54) and two loom weights (TS.98.F.187, TS.98.F.213, figs. 1:52, 1:54) were also discovered, an alternative possibility is that these disks were related to textile activities (either as loom weights, or tokens in a not yet clear tallying operation), which took place in this area.³⁵

A quern (TS.98.F.182, fig. 1:52) and some small limestone pebbles (TS.98.F.90, TS.98.F.91, TS.98.F.182, fig. 1:52) may be considered polishing tools or even weights, since they are compatible with multiples of the 7.8 grams shekel. Unique is instead a small weight (TS.98.F.155, fig. 1:52), which exactly corresponds to one shekel.

The inventory of finds is completed by a group of pierced sea shells (TS.98.F.207, TS.98.F.208, TS.98.F.209, TS.98.F.210, fig. 1:55), likely belonging to a bracelet or to the decoration of a garment.

The finds discussed above allow to distinguish two main productive activities, which were carried on in House L.303. In the first utilization of the house (operations 5d-c), available data indicate the presence of a loom, possibly placed in the south-eastern sector of the room, and, in analogy with House L.305, the adoption of a quite complex system of control of goods production and exchange, testified to by weights and other tallying units, such as, perhaps, pottery disks and pierced bivalve sea shells.

In the later phases (operations 5b-a) House L.303 was mainly devoted to meat transformation and cooking, possibly in direct succession with meat dissecting, botching and cutting which took place in L.305. However, the retrieval of some bones of hippopotamus also hints at other productive

³⁵ Similar finds are quite common in Palestinian Early Bronze contexts, but they have been never connected to some kind of goods control or tallying system.

activities involving wild and domestic animal exploitation (for getting bone, ivory, tendons, wool, skin, leather, etc.).

Summary of objects from House L.303

<i>Objects</i>	<i>Loci</i>	F.303a	L.303b	F.303c	L.303d
Quern		12, 131/d			
Clay stopper		23, 24, 29, 40, 58, 59			
Stone tool				170	
Loom weight					187, 213
Spindle whorl					197, 194, 203
Flint Blade			79, 123	158, 161, 165, 171, 172, 173, 174	185, 193, 206, 211, 219, 220, 252
Flint sickle blade			103, 109	159, 164, 167	188, 221, 239, 265
Flint scraper				234	
Flint adze					205
Flint nucleus	36				
Weight			90, 92	155	
Polishing pebble			91		182, 184
Sea shell			119		207, 208, 209, 210
Drill base					288

Catalogue of objects from House L.303

TS.98.F.12, Quern

Material: Limestone

Dims.: h. 7.0; l. 4.8; w. 2.8 cm

Elevation: 13.95 m

Square: BgII10

Locus: L.303a

Activity: 5a

Period: IIIc1, Early Bronze IIIA

TS.98.F.23, Stopper (fig. 1:51)

Material: Clay

Dims.: diam. 6.2, h. 0.8 cm

Elevation: 13.95 m

Square: BgII10

Locus: L.303a

Activity: 5a

Period: IIIc1, Early Bronze IIIA

TS.98.F.24, Stopper (fig. 1:51)

Material: Clay

Dims.: diam. 7.5, h. 0.8 cm

Elevation: 13.95 m

Square: BgII10

Locus: L.303a

Activity: 5a

Period: IIIc1, Early Bronze IIIA

TS.98.F.29, Stopper (fig. 1:51)

Material: Pottery

Dims.: diam. 5.8, h. 0.7 cm

Elevation: 13.95 m

Square: BgII10

Locus: L.303a

Activity: 5a

Period: IIIc1, Early Bronze IIIA

TS.98.F.35, Stopper (fig. 1:51)

Material: Pottery

Dims.: diam. 4.7; h. 0.7 cm

Elevation: 13.90 m

Square: BgII10

Locus: L.303a

Activity: 5a

Period: IIIc1, Early Bronze IIIA

TS.98.F.36, Nucleus

Material: Flint

Dims.: h. 4.2; l. 3.2; w. 1.5 cm

Elevation: 13.95 m

Square: BgII10

Locus: L.303a

Activity: 5a

Period: IIIc1, Early Bronze IIIA

TS.98.F.40, Stopper (fig. 1:51)

Material: Pottery

Dims.: diam. 9.9; h. 0.7 cm

Elevation: 13.95 m

Square: BgII10

Locus: L.303a

Activity: 5a

Period: IIIc1, Early Bronze IIIA

TS.98.F.58, Stopper (fig. 1:51)

Material: Pottery

Dims.: diam. 4.1; h. 0.6 cm

Elevation: 14.00 m

Distance: 13.95

Square: BgII10

Locus: L.303a

Activity: 5a

Period: IIIc1, Early Bronze IIIA

TS.98.F.59, Stopper (fig. 1:51)

Material: Pottery

Dims.: diam. 7.5; h. 1.1 cm

Elevation: 14.00 m

Square: BgII10

Locus: L.303a

Activity: 5a

Period: IIIc1, Early Bronze IIIA

TS.98.F.79, Blade

Material: Flint

Dims.: h. 4.6 cm; l. 2.6 cm; w. 0.8 cm

Elevation: 14.00 m

Square: BgII10

Locus: L.303a

Activity: 5a

Period: IIIc1, Early Bronze IIIA

TS.98.F.90, Pebble (fig. 1:52)

Material: limestone

Dims.: w. 2.7; l. 3.4 cm

Elevation: 14.05 m

Square: BgII10

Locus: L.303b

Activity: 5b

Period: IIIc1, Early Bronze IIIA

TS.98.F.91, Polishing pebble (fig. 1:52)

Material: limestone

Dims.: w. 2.5; h. 1.7 cm

Elevation: 13.99 m

Square: BgII10

Locus: L.303b

Activity: 5b

Period: IIIc1, Early Bronze IIIA

TS.98.F.92, Stick (fig. 1:53)

Material: Limestone

Dims.: h. 6.2; l. 2.7; w. 2.3 cm

Elevation: 13.95 m

Square: BgII10

Locus: L.303b

Activity: 5b

Period: IIIc1, Early Bronze IIIA

TS.98.F.103, Bowl

Material: Basalt

Dims.: h. 4.8; w. 10.8 cm

Elevation: 13.90 m

Square: BgII10

Locus: L.303b

Activity: 5b

Period: IIIc1, Early Bronze IIIA

TS.98.F.109, Sickle blade

Material: Flint

Dims.: h. 2.4; l. 1.0; w. 0.2 cm

Elevation: 13.90 m

Square: BgII10

Locus: L.303b

Activity: 5b

Period: IIIc1, Early Bronze IIIA

TS.98.F.119, Pendant

Material: Shell
 Dims.: h. 1.2; w. 2.9 cm
 Elevation: 14.00 m
 Square: BgII10
Locus: L.303b
 Activity: 5b
 Period: IIIc1, Early Bronze IIIA
TS.98.F.123, Blade
 Material: Flint
 Dims.: h. 2.2; l. 1.2; w. 0.3 cm
 Elevation: 13.80 m
 Square: BgII10
Locus: L.303b
 Activity: 5b
 Period: IIIc1, Early Bronze IIIA
TS.98.F.155, Weight (fig. 1:52)
 Material: limestone
 Dims.: h. 0.9; l. 2.6 cm; w. 0.7 cm
 Elevation: 13.63 m
 Square: BgII10
Locus: L.303c
 Activity: 5c
 Period: IIIc1, Early Bronze IIIA
TS.98.F.158, Blade
 Material: Flint
 Dims.: h. 1.4; l. 1.3; w. 0.3 cm
 Elevation: 13.60 m
 Square: BgII10
Locus: L.303c
 Activity: 5c
 Period: IIIc1, Early Bronze IIIA
TS.98.F.159, Sickle blade
 Material: Flint
 Dims.: h. 1.5; l. 0.8; w. 0.3 cm
 Elevation: 13.65 m
 Square: BgII10
Locus: L.303c
 Activity: 5c
 Period: IIIc1, Early Bronze IIIA
TS.98.F.161, Blade
 Material: Flint
 Dims.: h. 1.6; l. 1.9; w. 0.4 cm
 Elevation: 13.70 m
 Square: BgII10
Locus: L.303c

Activity: 2
 Period: IIIc1, Early Bronze IIIA
TS.98.F.164, Sickle blade
 Material: Flint
 Dims.: h. 2.7; l. 1.9; w. 0.4 cm
 Elevation: 13.60 m
 Square: BgII10
Locus: L.303c
 Activity: 5c
 Period: IIIc1, Early Bronze IIIA
TS.98.F.165, Blade
 Material: Flint
 Dims.: h. 2; l. 1.7; w. 0.3 cm
 Elevation: 13.60 m
 Square: BgII10
Locus: L.303c
 Activity: 5c
 Period: IIIc1, Early Bronze IIIA
TS.98.F.167, Sickle blade
 Material: Flint
 Dims.: h. 2.1; l. 1.4; w. 0.2 cm
 Elevation: 13.65 m
 Square: BgII10
Locus: L.303c
 Activity: 5c
 Period: IIIc1, Early Bronze IIIA
TS.98.F.170, Tool
 Material: Limestone
 Dims.: h. 15.8; l. 12.7; w. 4.6 cm
 Elevation: 13.60 m
 Square: BgII10
Locus: L.303c
 Activity: 5c
 Period: IIIc1, Early Bronze IIIA
TS.98.F.171, Blade
 Material: Flint
 Dims.: h. 1.9; l. 1.3; w. 0.3 cm
 Elevation: 13.65 m
 Square: BgII10
Locus: L.303c
 Activity: 5c
 Period: IIIc1, Early Bronze IIIA
TS.98.F.172, Blade
 Material: Flint
 Dims.: h. 2.2; l. 1.4; w. 0.4 cm

Elevation: 13.65 m

Square: BgII10

Locus: L.303c

Activity: 5c

Period: IIIc1, Early Bronze IIIA

TS.98.F.173, Blade

Material: Flint

Dims.: h. 1.9; l. 1.5; w. 0.2 cm

Elevation: 13.70 m

Square: BgII10

Locus: L.303c

Activity: 5c

Period: IIIc1, Early Bronze IIIA

TS.98.F.174, Blade

Material: Flint

Dims.: h. 1.6; l. 0.7; w. 0.2 cm

Elevation: 13.60 m

Square: BgII10

Locus: L.303c

Activity: 5c

Period: IIIc1, Early Bronze IIIA

TS.98.F.182, Pebble (fig. 1:52)

Material: Limestone

Dims.: l. 2.8; w. 1.8 cm

Elevation: 13.58 m

Square: BgII10

Locus: L.303d

Activity: 5d

Period: IIIc1, Early Bronze IIIA

TS.98.F.184, Pebble (fig. 1:52)

Material: Limestone

Dims.: l. 6.7; w. 4.9 cm

Elevation: 13.55 m

Square: BgII10

Locus: L.303d

Activity: 5d

Period: IIIc1, Early Bronze IIIA

TS.98.F.185, Blade

Material: Flint

Dims.: h. 4.0; l. 2.2; w. 0.6 cm

Elevation: 13.58 m

Square: BgII10

Locus: L.303d

Activity: 5d

Period: IIIc1, Early Bronze IIIA

TS.98.F.187, Loom weight (fig. 1:52)

Material: Limestone

Dims.: h. 6.2; l. 4.6 cm; w. 4.0 cm

Elevation: 13.58 m

Square: BgII10

Locus: L.303d

Activity: 5d

Period: IIIc1, Early Bronze IIIA

TS.98.F.188, Sickle Blade

Material: Flint

Dims.: h. 2.5; l. 1.2; w. 0.6 cm

Elevation: 13.52 m

Square: BgII10

Locus: L.303d

Activity: 5d

Period: IIIc1, Early Bronze IIIA

TS.98.F.191, Spindle whorl

Material: Pottery

Dims.: h. 0.4; w. 4.2 cm

Elevation: 13.55 m

Square: BgII10

Locus: L.303d

Activity: 5d

Period: IIIc1, Early Bronze IIIA

TS.98.F.193, Blade

Material: Flint

Dims.: h. 3.8; l. 2.2; w. 1.3 cm

Elevation: 13.58 m

Square: BgII10

Locus: L.303d

Activity: 5d

Period: IIIc1, Early Bronze IIIA

TS.98.F.194, Spindle whorl (fig. 1:52)

Material: Pottery

Dims.: h. 0.4; l. 4.5; w. 3.9 cm

Elevation: 13.55 m

Square: BgII10

Locus: L.303d

Activity: 5d

Period: IIIc1, Early Bronze IIIA

TS.98.F.203, Spindle whorl (figs. 1:52, 1:54)

Material: Pottery

Dims.: h. 0.4; l. 4.4; w. 4.2 cm

Elevation: 13.58 m

Square: BfII10
 Locus: L.303d
 Activity: 5d
 Period: IIIc1, Early Bronze IIIA
TS.98.F.205, Adze
 Material: Flint
 Dims.: h. 7.4; l. 6.6 cm; w. 1.8 cm
 Elevation: 13.58 m
 Square: BgII10
 Locus: L.303d
 Activity: 5d
 Period: IIIc1, Early Bronze IIIA
TS.98.F.206, Blade
 Material: Flint
 Elevation: 13.55 m
 Square: BgII10
 Locus: L.303d
 Activity: 5d
 Period: IIIc1, Early Bronze IIIA
TS.98.F.207, Pendant
 Material: Shell
 Dims.: w. 3.2; l. 2.8 cm
 Elevation: 13.55 m
 Square: BgII10
 Locus: L.303d
 Activity: 5d
 Period: IIIc1, Early Bronze IIIA
TS.98.F.208, Pendant
 Material: Shell
 Dims.: w. 2.8; l. 2.7 cm
 Elevation: 13.55 m
 Square: BgII10
 Locus: L.303d
 Activity: 5d
 Period: IIIc1, Early Bronze IIIA
TS.98.F.209, Pendant
 Material: Shell
 Dims.: w. 2.7; l. 2.5 cm
 Elevation: 13.55 m
 Square: BgII10
 Locus: L.303d
 Activity: 5d
 Period: IIIc1, Early Bronze IIIA
TS.98.F.210, Pendant
 Material: Shell

Dims.: w. 2.8; l. 2.7 cm
 Elevation: 13.55 m
 Square: BgII10
 Locus: L.303d
 Activity: 5d
 Period: IIIc1, Early Bronze IIIA
TS.98.F.211, Blade
 Material: Flint
 Dims.: h. 1.2; l. 0.6; w. 0.2 cm
 Elevation: 13.58 m
 Square: BgII10
 Locus: L.303d
 Activity: 5d
 Period: IIIc1, Early Bronze IIIA
TS.98.F.213, Loom weight (figs. 1:52, 1:54)
 Material: Limestone
 Dims.: w. 14.8; l. 12.6 cm
 Elevation: 13.55
 Square: BfII10
 Locus: L.303d
 Activity: 5d
 Period: IIIc1, Early Bronze IIIA
TS.98.F.219, Blade
 Material: Flint
 Dims.: h. 2.7; l. 1.6; w. 0.3 cm
 Elevation: 13.58 m
 Square: BfII10
 Locus: L.303d
 Activity: 5d
 Period: IIIc1, Early Bronze IIIA
TS.98.F.220, Blade
 Material: Flint
 Dims.: h. 2.2; l. 1.4; w. 0.4 cm
 Elevation: 13.58 m
 Square: BgII10
 Locus: L.303d
 Activity: 5d
 Period: IIIc1, Early Bronze IIIA
TS.98.F.221, Sickle blade
 Material: Flint
 Dims.: h. 1.5; l. 1.2; w. 0.3 cm
 Elevation: 13.56 m
 Square: BgII10
 Locus: L.303d

Activity: 5d

Period: IIIc1, Early Bronze IIIA

TS.98.F.234, Scraper

Material: Flint

Dims.: h. 4.1; l. 2.7; w. 0.7 cm

Elevation: 13.60 m

Square: BgII10

Locus: L.303c

Activity: 5c

Period: IIIc1, Early Bronze IIIA

TS.98.F.239, Tool

Material: Flint

Dims.: h. 2.9; l. 1.2; w. 0.2 cm

Elevation: 13.60 m

Square: BgII9+10

Locus: L.303d

Activity: 5d

Period: IIIc1, Early Bronze IIIA

TS.98.F.252, Blade

Material: Flint

Dims.: h. 2.5; l. 1.6; w. 0.3 cm

Elevation: 13.50 m

Square: BgII10

Locus: L.303d

Activity: 5d

Period: IIIc1, Early Bronze IIIA

TS.98.F.265, Tool

Material: Flint

Dims.: h. 2.3; l. 1.8; w. 0.2 cm

Elevation: 13.60 m

Square: BgII9+10

Locus: L.303d

Activity: 5d

Period: IIIc1, Early Bronze IIIA

TS.98.F.288, Drill base (fig. 1:52)

Material: Pottery sherd

Dims.: h. 4.4; l. 2.6; w. 0.6 cm

Elevation: 13.55 m

Square: BfII10

Locus: L.303d

Activity: 5d

Period: IIIc1, Early Bronze IIIA

1.2.4. The southern unit: Room L.319

Architecture and structural sequence

Along the southern limit of Area F two rooms have been excavated (L.319 and L.323), which belong to a further domestic unit, extended beyond the limits of present excavations.

The two rooms are separated by W.322 (fig. 1:28), a wall which exhibits a peculiar building technique, with two outer mudbricks curtains separated by a 0.15 m gap filled with clay lumps.

On the western side L.319 is bounded by W.318, one of the earliest structure so far identified, which represents the southern continuation of W.316. The third side of L.319 is delimited by W.316b (fig. 1:29), a structure which shows the same building technique of W.322, even if the southern curtain of bricks has been completely cancelled by P.309b.

Due to the cut of P.309b, the beaten soil floor L.319b has been found overlaid by only a filling of dismantled materials (F.319a, fig. 1:2), to be attributed to operation 5c (i.e. corresponding to F.305c and F.303c). Below this layer, which possibly represents a preparation for a further floor, now lost, the original earthen paving of the first utilization of the room has been exposed (figs. 1:28-29).

The pottery assemblage from Room L.319

On the floor L.319b a fairly representative pottery assemblage has been collected, which can be ascribe to the final phase of Period IIIc1 (Early Bronze IIIA, 2500-2450 BC).

Simple ware open shapes are illustrated by hemispherical sbows (figs. 1:57.6; 1:58.4) and a large krater with inturned rim (fig. 1:58.1). Among open shapes two types of medium size jars are attested to, the ones with narrow neck and simple everted rim (figs. 1:57.14, 16; 1:58.7), and the hole-mouth jars (fig. 1:57.3, 5, 7). Jugs and juglets are also present, usually with bar handles connecting rim and shoulders (figs. 1:57.15; 1:58.8).

Accordingly to the domestic nature of the context, various Kitchen Ware vessels have been found. Besides the widespread hole-mouth pots, some of which are also decorated by thumbled rills applied around the mouth (fig. 1:57.4, 9-11, 18), two basins with flat base have been found, also decorated by thumbled and incised rills applied below the rim (fig. 1:58.2-3).

The hole-mouth jar is also the only shape attested to among storage jars (fig. 1:57.1, 8, 13, 17). One specimens bears a potter's mark (fig. 1:57.19), thus testifying to the production in series also for these large containers.

Simple Painted Ware is widely attested to also in L.319, including fine ware bowls (fig. 1:58.5-6), small jars and jugs, usually decorated by crossing bands (fig. 1:58.8-19), and a body fragment of a large jar with a cream smeared wash (fig. 1:58.12).

Objects and function of Room L.319

L.319 has provided an ordinary inventory of objects and tools, which illustrate the typical domestic activities performed in the house it belongs. An overall interpretation of the finds, however, cannot be drawn until the excavation of the room is completed.³⁶

Among stone tools two fragmentary querns (TS.98.F.44, TS.98.F.81, fig. 1:59) show the crescent profile, which characterizes the specimens of Period IIIb-c at Tell es-Sultan; a small limestone rectangular table (TS.98.F.158, fig. 1:60) was found set into a brick on the floor. Two circular mortars (TS.98.F.168, fig. 1:59; TS.98.F.308, fig. 1:60), of scalar dimension but similar in shape, possibly were used in the same operation. A third mortar (TS.98.F.284, figs. 1:59-60), made of basalt stone, is distinguished by the presence of a pronounced knob.

A small square limestone slab (TS.98.F.152, figs. 1:56, 1:60) illustrate a kind of devices for food processing also known from other coeval contexts.

Finally, the presence of a fireplace, actually not identified, is perhaps hinted at by a pottery sherd used as a drill base (TS.98.F.398, fig. 1:59).

³⁶ For the same reason the catalogue of objects from this room is omitted.



Fig. 1:1 Area F, general view of the residential quarter from west; Period IIIc1, Early Bronze IIIA, 2600-2450 BC.

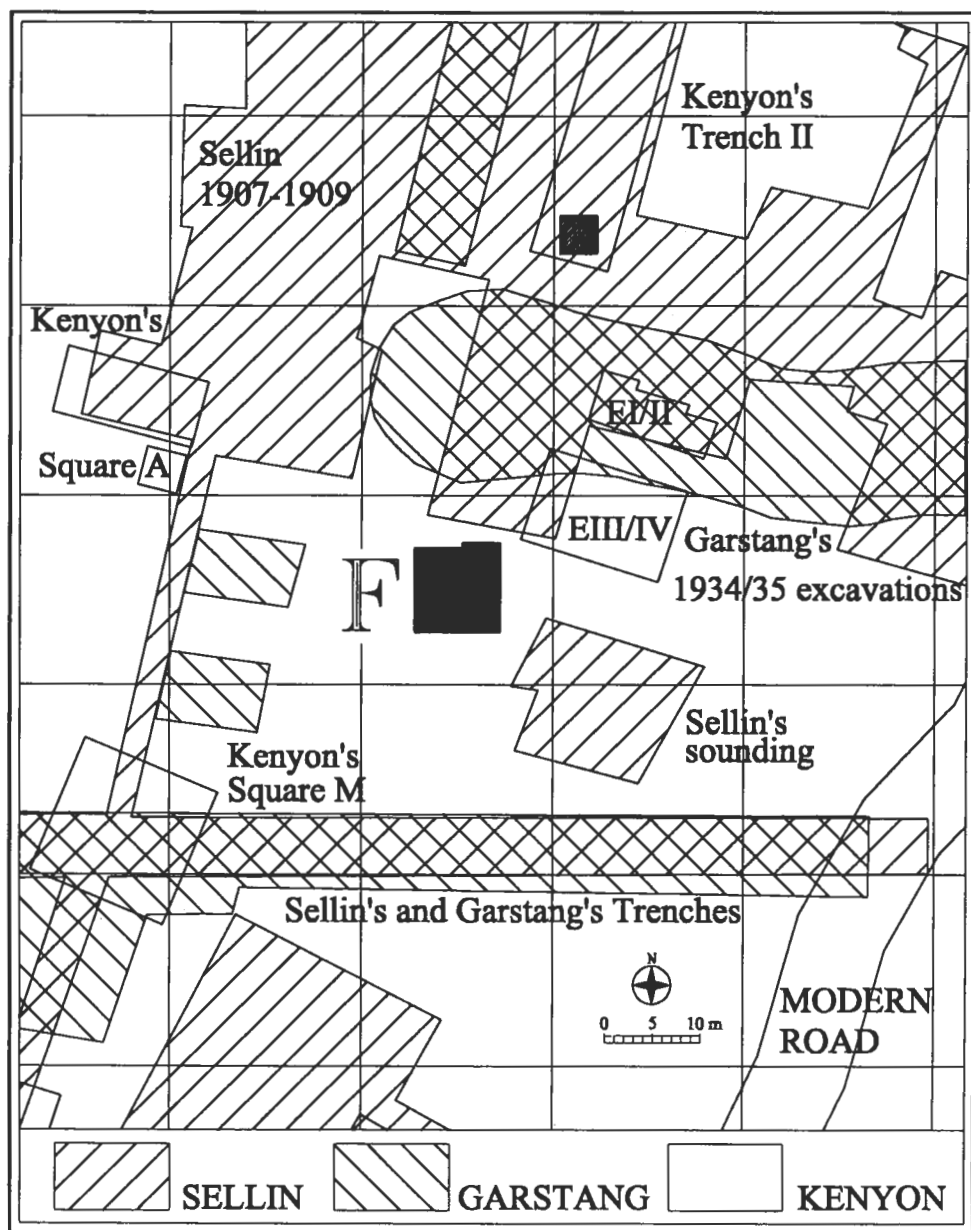


Fig. 1:2 Area F and previous excavations limits.

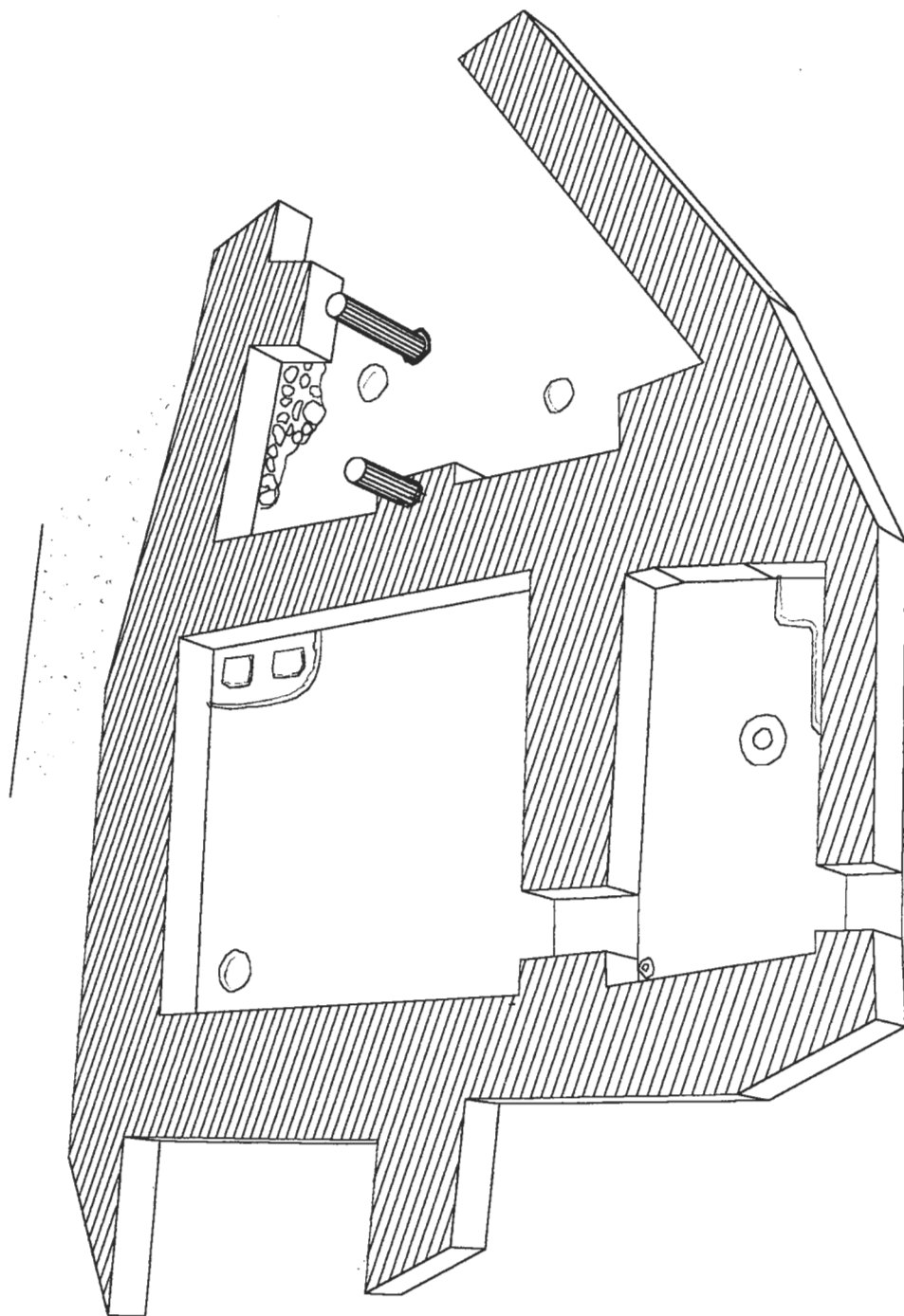


Fig. 1:3 Isometric view of Area F; Period IIIc1, Early Bronze IIIA, 2600-2450 BC.

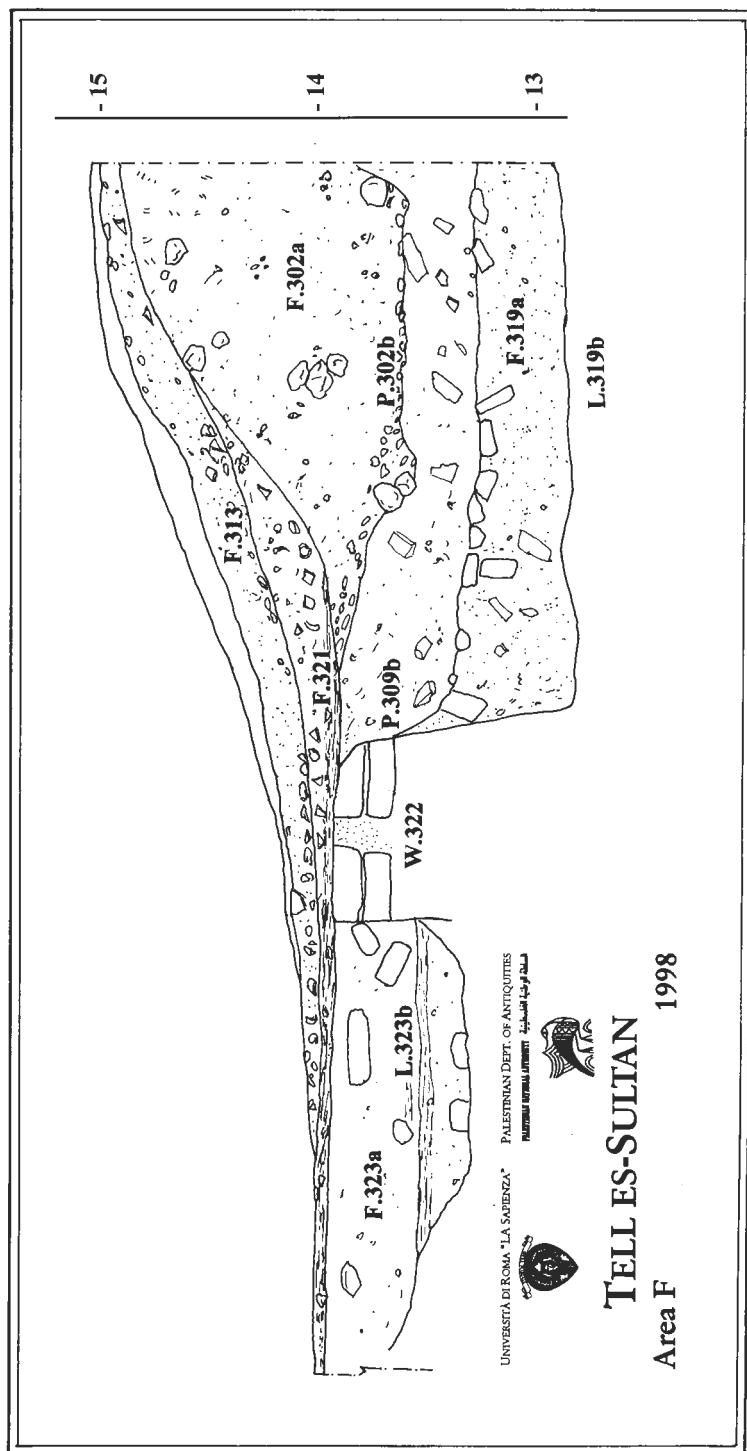


Fig. 1:4 South archaeological section of BfIII1+BgIII1.

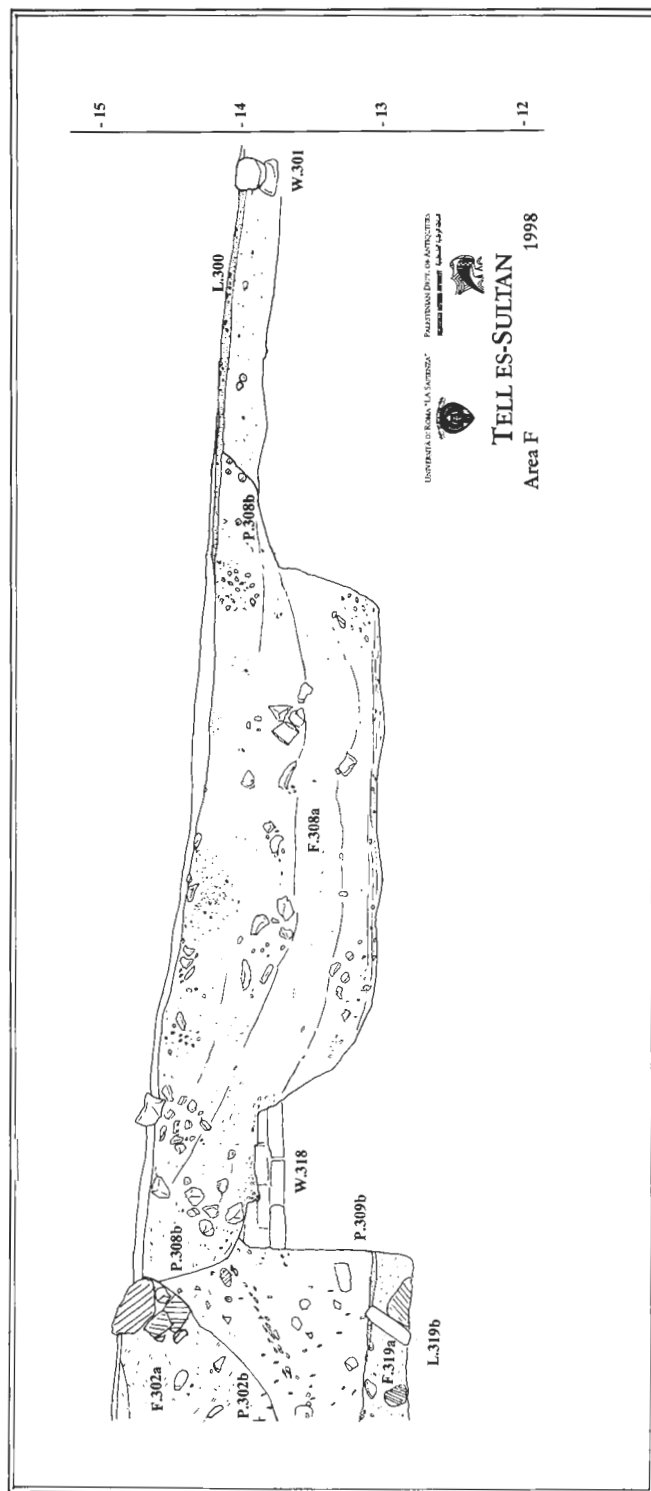


Fig. 1:5 West archaeological section of BfII10+BfII11.

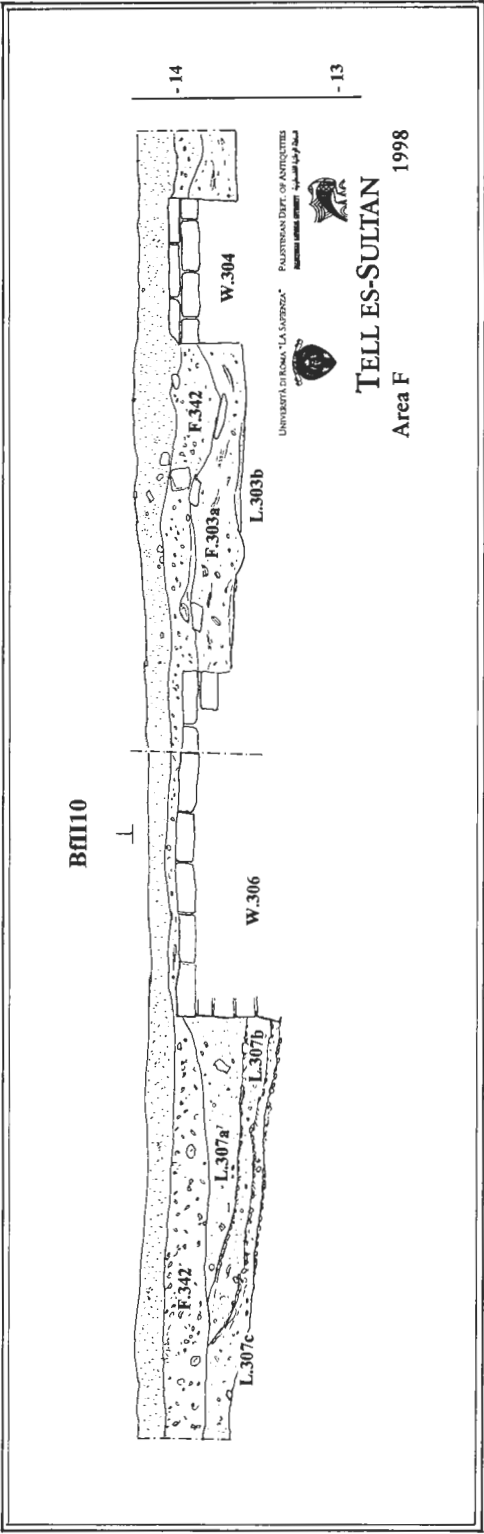


Fig. 1:6 North archaeological section of BfII10+BgII10.

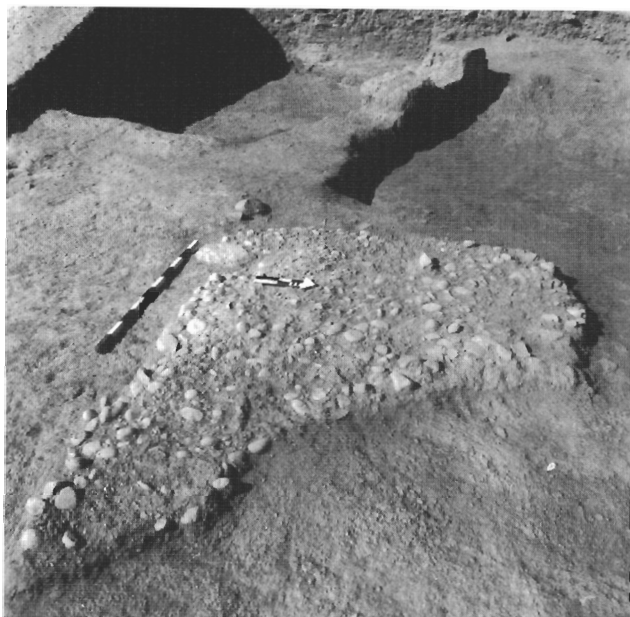


Fig. 1:7 Area F, the layer of pebbles F.313 in BgII111 from east.



Fig. 1:8 Area F, L.300 and W.301 from south; Period IVb, Middle Bronze II, 1800-1650 BC.

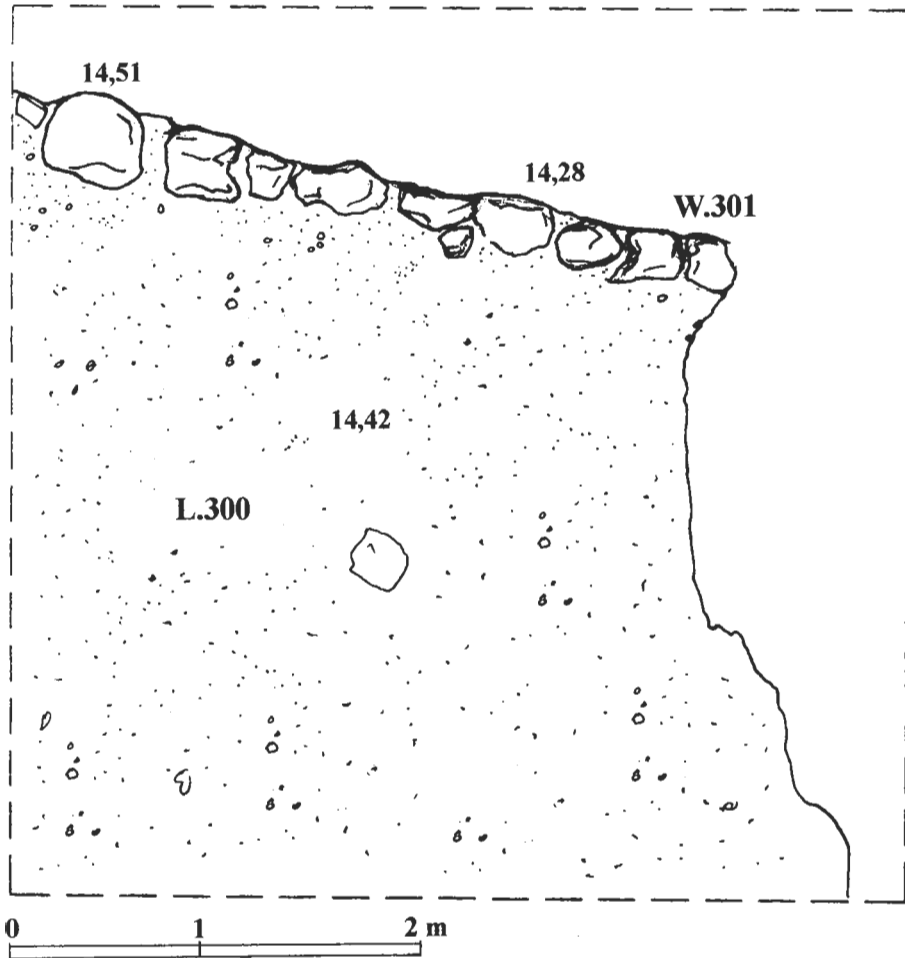
BfII10₊

Fig. 1:9 Area F, detailed plan of L.300 and W.301; Period IVb, Middle Bronze II, 1800-1650 BC.



Fig. 1:10 Area F, the clay figurine TS.98.F.30 from F.309a.

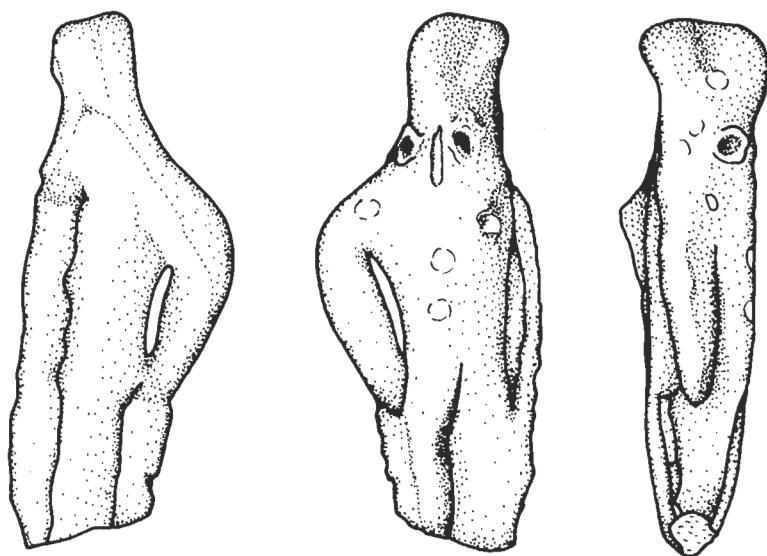


Fig. 1:11 Area F, drawing of clay figurine TS.98.F.30 from F. 309a (scale 1:1).

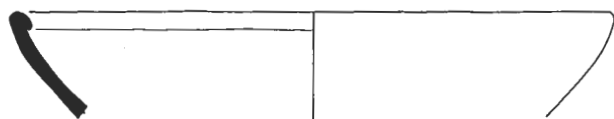
N°	Reference	Shape	Class	F. Colour	Temper	Firing	Locus
1	TS.98.F.133/8	Jar	PW	7.5YR6/2	M2-	M	F.309a
2	TS.98.F.133/5	Jar	SPW	7.5YR7/2	M1-	M	F.309a
3	TS.98.F.133/6	Jar	SPW	7.5YR7/4	M1<	M	F.309a
4	TS.98.F.133/9	Jar	SPW	7.5YR7/2	M2-	M	F.309a
5	TS.98.F.133/11	Jar	SW	7.5YR6/2	M2-	M	F.309a
6	TS.98.F.127/17	Bowl	SW	7.5YR7/6	M2-	M	F.309a
7	TS.98.F.133/10	Jar	SW	7.5YR6/2	M1-	M	F.309a
8	TS.98.F.133/1	Bowl	SW	7.5YR7/4	M2<	M	F.309a
9	TS.98.F.133/12	Bowl	SW	7.5YR7/4	M2<	M	F.309a
10	TS.98.F.127/2	Bowl	SW	7.5YR6/4	M1>	M	F.309a
11	TS.98.F.139/5	Jar	SW	2.5YR6/4	M>	MH	F.309a
12	TS.98.F.127/11	Jar	PW	7.5YR5/3	M3-	M	F.309a
13	TS.98.F.127/19	Jar	SPW	7.5YR6/6	M2-	M	F.309a
14	TS.98.F.133/13	Jar	SW	7.5YR5/6	M2-	M	F.309a
15	TS.98.F.127/1	Pot	SW	7.5YR5/6	M2	MH	F.309a
16	TS.98.F.133/7	Jar	SPW	7.5YR7/4	M1<	M	F.309a
17	TS.98.F.127/25	Jar	SW	7.5YR6/1	M2	M	F.313
18	TS.98.F.127/24	Jar	SPW	7.5YR4/1	M1-	M	F.313
19	TS.98.F.127/10	Jar body	SW	7.5YR6/6	M2-	M	S.310
20	TS.98.F.127/8	Beaker	SPW	5YR5/6	M2	M	S.310
21	TS.98.F.138/9	Lug-handle	SW	5YR7/6	M2>	MH	L.311
22	TS.98.F.127/12	Goblet	SW	7.5YR6/6	M2	M	S.310

scale 1:4

Fig. 1:12 Pottery from F.309a (Period IVa, Middle Bronze I, 1950-1800 BC); F.313 (Period IX, Byzantine, VI century AD); L.311 and S.310 (Period IIIId2, Early Bronze IVb, 2150-2000 BC).



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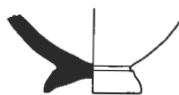
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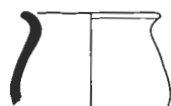
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11



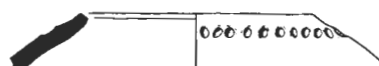
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13



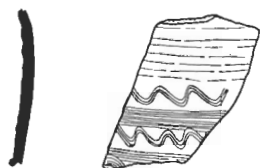
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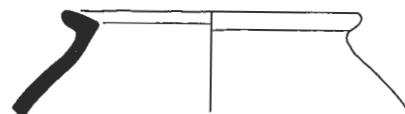
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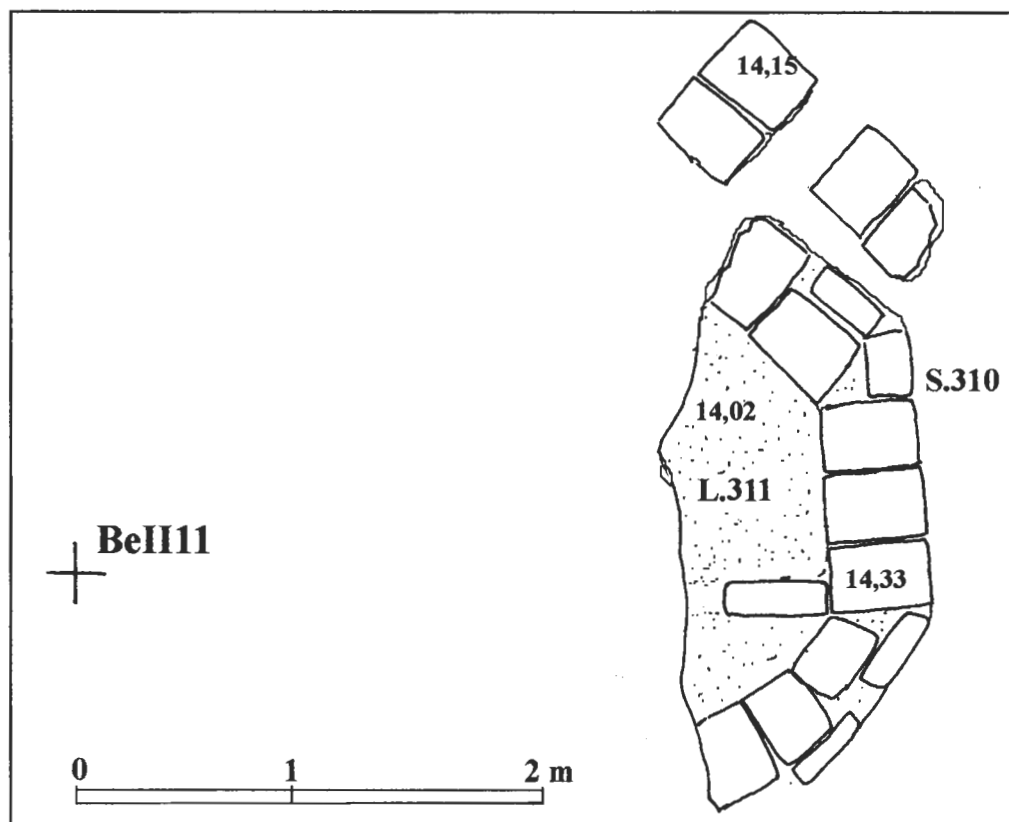


Fig. 1:13 Area F, detailed plan of Silos S.310 and L.311; Period IIId2, Early Bronze IVb, 2150-2000 BC.



Fig. 1:14 Area F, Silos S.310 and L.311 from west; Period IIIId2, Early Bronze IVb, 2150-2000 BC (a collapse layer of Period IIIc1 is also visible in background).



Fig. 1:16 Area F, in the foreground wall W.302 appearing on the ground (Period IIIc1, Early Bronze IIIA, 2650-2450 BC); in the background L.300 and, on the right, W.301 (Period IVb, Middle Bronze II, 1800-1650 BC); from east.



Fig. 1:17 Area F, the street L.307b from south-west; Period IIIc1, Early Bronze IIIA, 2600-2450 BC.

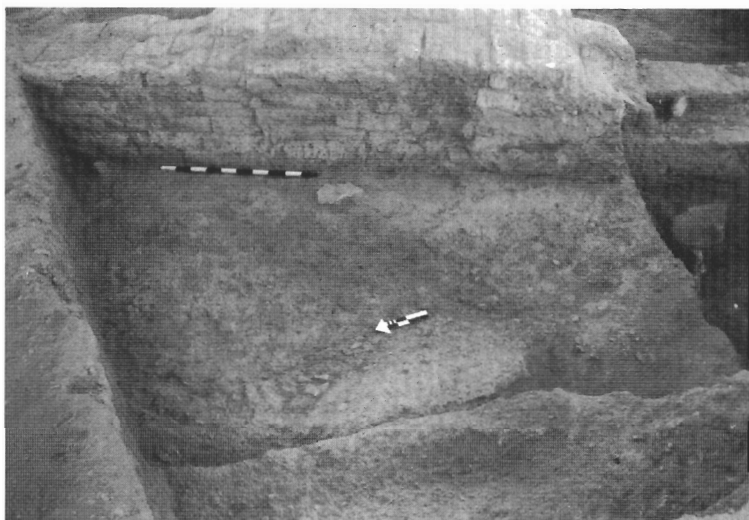


Fig. 1:18 Area F, the street L.307c from west; Period IIIc1, Early Bronze IIIA, 2600-2450 BC.



Fig. 1:19 Area F, the latest layer of collapse in House L.305 (operations 5a-b), from north-west; Period IIIc1, Early Bronze IIIA, 2600-2450 BC.

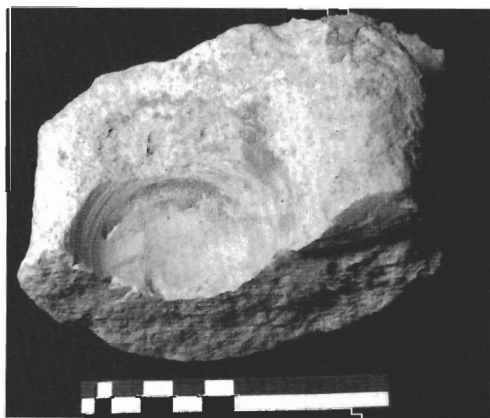


Fig. 1:20 Area F, door socket from L.333, the passage connecting L.305 and L.327; Period IIIc1, Early Bronze IIIA, 2600-2450 BC.



Fig. 1:21 Area F, collapsed bricks in F.303a, from north-west; Period IIIc1, Early Bronze IIIA, 2600-2450 BC.



Fig. 1:22 Area F, smashed pottery and burnt hippopotamus bones on floor L.303b, from west; on the right B.323; Period IIIc1, Early Bronze IIIA, 2600-2450 BC.

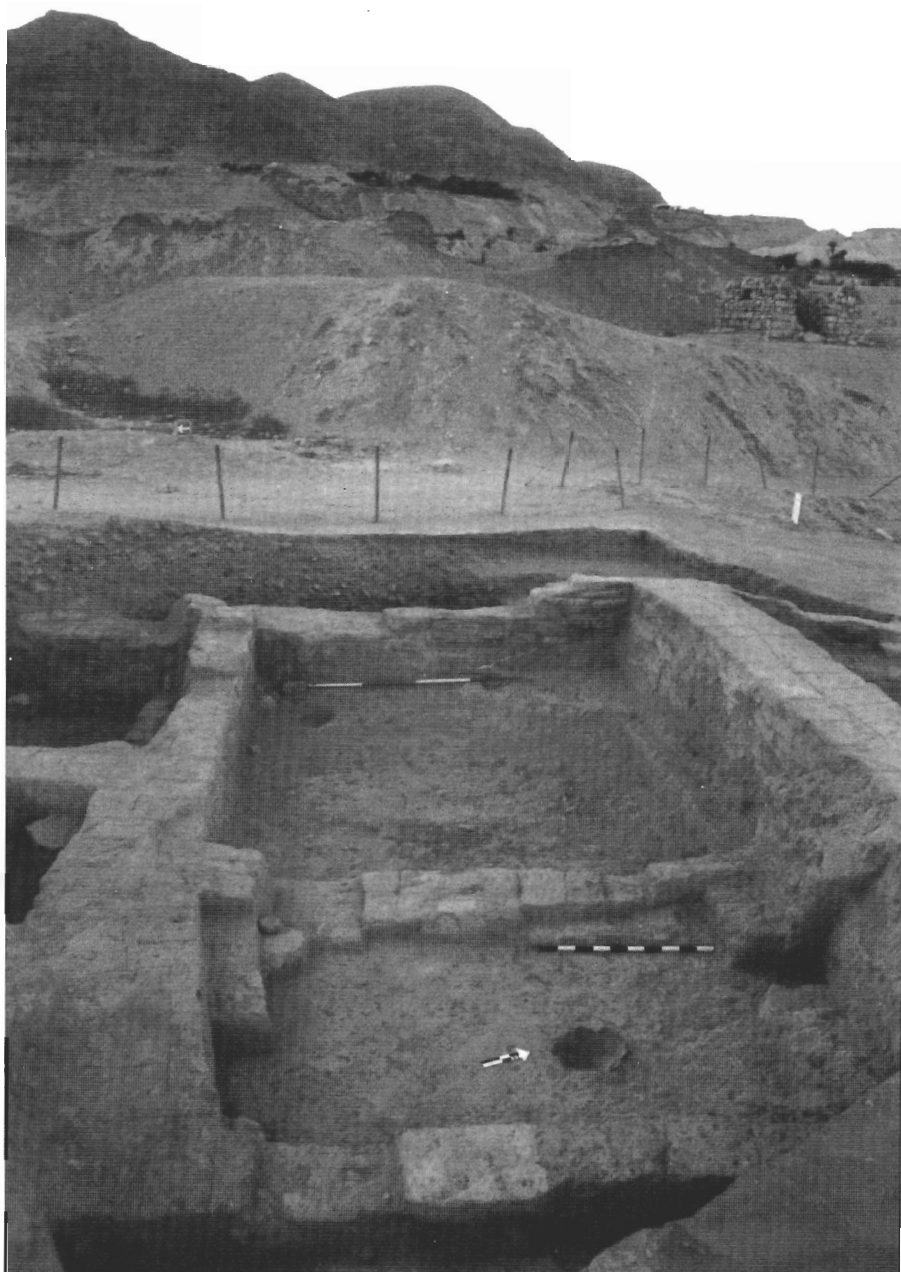


Fig. 1:23 Area F, the central unit: L.327a and L.305d from south-east; Period IIIc1, Early Bronze IIIA, 2600-2450 BC.



Fig. 1:24 Area F, general view of Houses L.305 (left) and L.303 (right) from east; Period IIIc1, Early Bronze IIIA, 2600-2450 BC.



Fig. 1:25 House L.303 from north-east; Period IIIc1, Early Bronze IIIA, 2600-2450 BC.

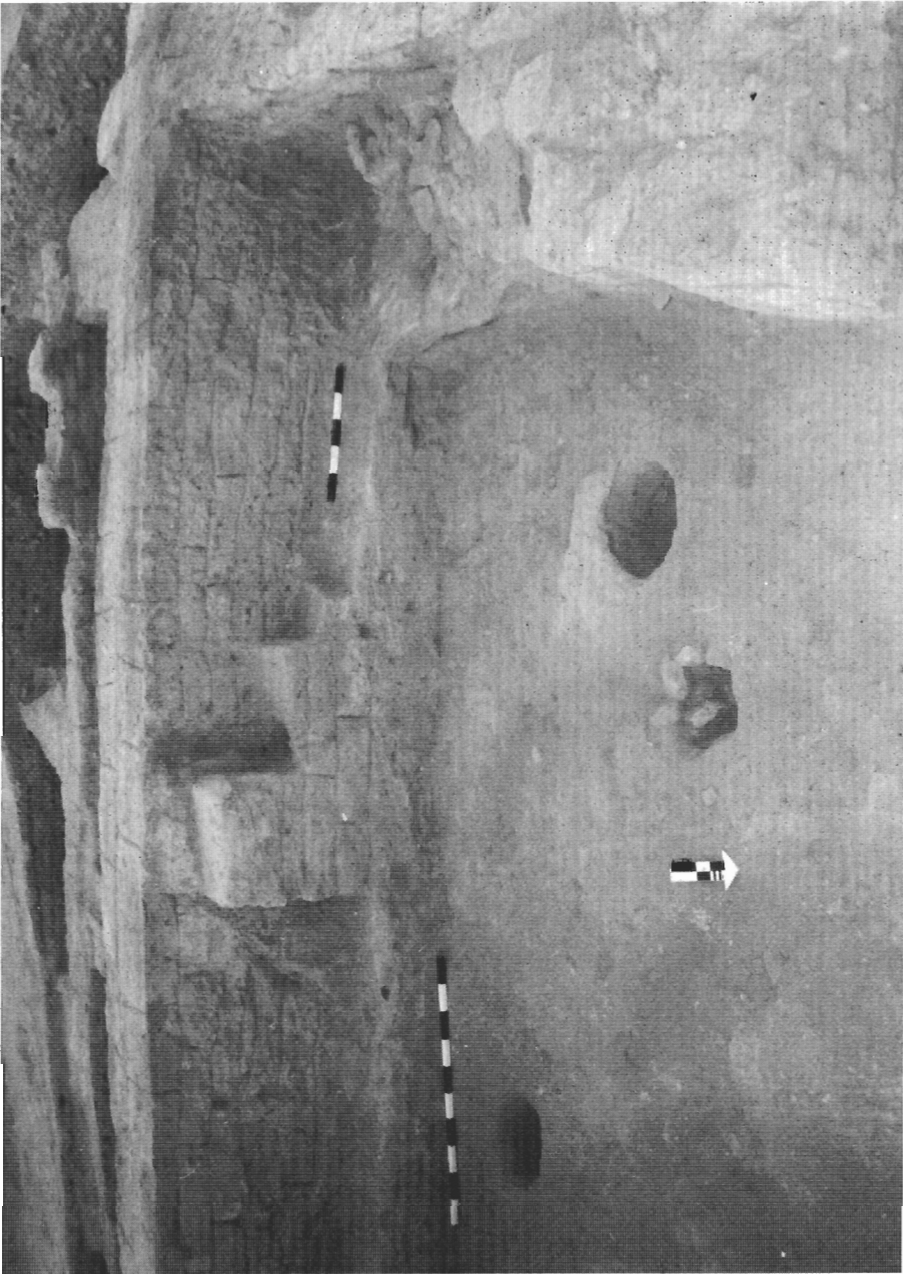
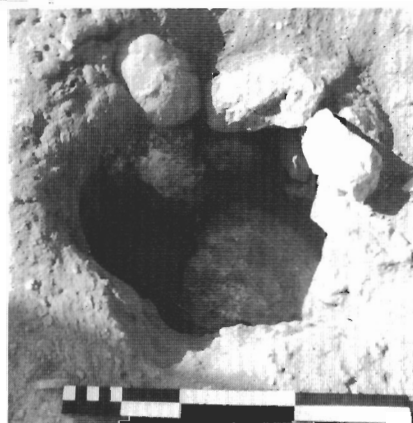
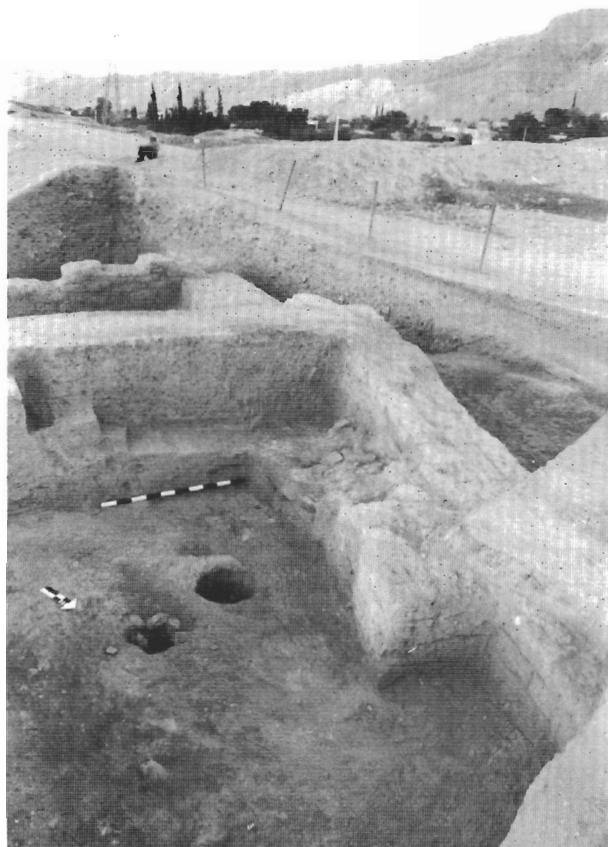


Fig. 1:26 Area F, House L.303 with fireplace T.312b from east; Period IIIc1, Early Bronze IIIA, 2600-2450 BC.



a)

b)

Fig. 1:27 Area F, House L.303: the fireplace T.312b (a); particular of the post-hole P.325 in L.303d (b); Period IIIc1, Early Bronze IIIA, 2600-2450 BC.



Fig. 1:28 Area F, L.319b from north-east; on the right W.316; Period IIIc1, Early Bronze IIIA, 2600-2450 BC.

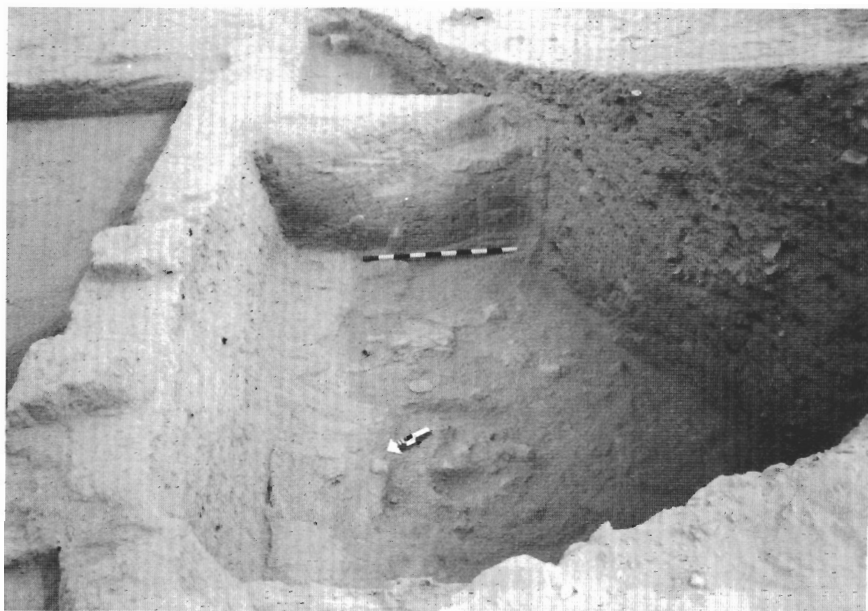


Fig. 1:29 Area F, L.319b from north-west; in the background L.323b and W.330 (on the left); Period IIIc1, Early Bronze IIIA, 2600-2450 BC.



Fig. 1:30 Area F, general view from west; in the foreground street L.307c; Period IIIc1, Early Bronze IIIA, 2600-2450 BC.

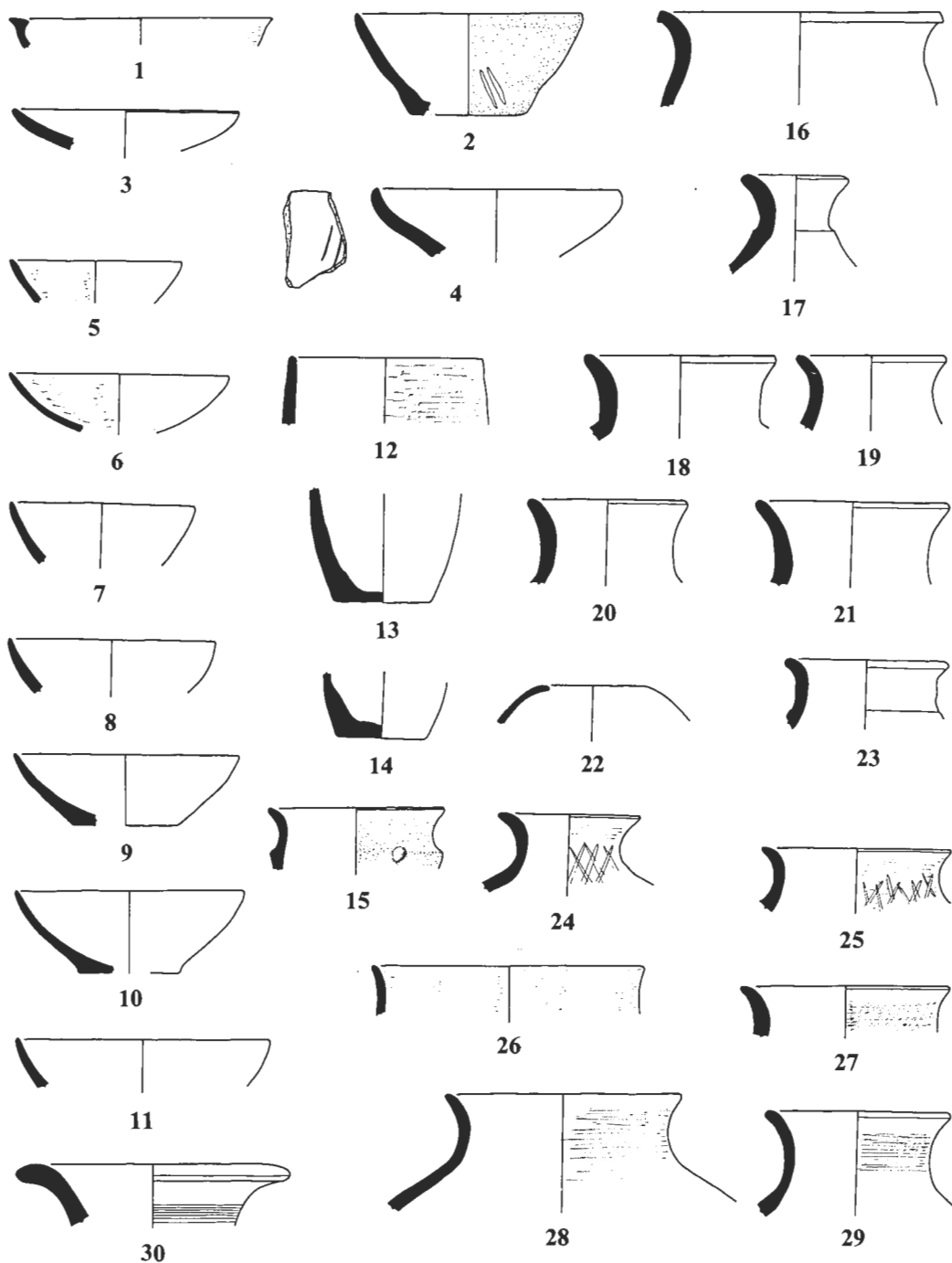


Fig. 1:31 Area F, general view from south, in the foreground L.319b and L.323b; Period IIIc1, Early Bronze IIIA, 2600-2450 BC.

Nº	Reference	Shape	Class	F. Colour	Temper	Firing	Locus
1	TS.98.F.130/17	Bowl	SW	7.5YR8/4	M1<	H	L.305
2	TS.98.F.130/18	Bowl	SW	10YR7/4	M23>	M	L.305
3	TS.98.F.205/8	Bowl	SW	7.5YR7/4	M1-	MH	L.305
4	TS.98.F.205/9	Bowl	SW	7.5YR7/4	M1>	MH	L.305
5	TS.98.F.130/20	Bowl	SW	2.5YR6/6	M1>	MH	L.305
6	TS.98.F.130/22	Bowl	SW	10YR7/4	M1-	MH	L.305
7	TS.98.F.130/32	Bowl	SW	5YR7/6	M2>	MH	L.305
8	TS.98.F.130/27	Bowl	SW	2.5YR6/6	M2>	MH	L.305
9	TS.98.F.143/5	Bowl	SW	7.5YR6/6	M2-	M	L.305
10	TS.98.F.130/19	Bowl	SW	7.5YR7/4	M2-	M	L.305
11	TS.98.F.130/29	Bowl	SW	7.5YR7/6	M1-	MH	L.305
12	TS.98.F.134/1	Bowl	SW	7.5YR7/4	M1>	MH	L.305
13	TS.98.F.143/6	Jar	SW	7.5YR6/4	M2>	M	L.305
14	TS.98.F.143/10	Jar	SW	5YR6/4	M1<	M	L.305
15	TS.98.F.140/14	Jar	SW	5YR5/3	M1<	M	L.305
16	TS.98.F.140/11	Jar	SW	10YR7/4	M1<	M	L.305
17	TS.98.F.205/16	Jar	SW	7.5YR7/4	M2>	MH	L.305
18	TS.98.F.140/7	Jar	SW	5YR6/2	M2>	M	L.305
19	TS.98.F.140/8	Jar	SW	5YR6/6	M2>	M	L.305
20	TS.98.F.140/2	Jar	PW	5YR7/6	M2>	MH	L.305
21	TS.98.F.140/10	Jar	SW	5YR6/6	M2>	MH	L.305
22	TS.98.F.134/2	Bowl	SW	7.5YR7/4	M2>	MH	L.305
23	TS.98.F.205/17	Jar	SW	7.5YR6/2	M1<	MH	L.305
24	TS.98.F.140/4	Jar	SW	2.5YR5/8	M1<	MH	L.305
25	TS.98.F.140/3	Jar	SW	2.5YR5/8	M1<	MH	L.305
26	TS.98.F.205/20	Jar	SW	7.5YR6/4	M1<	MH	L.305
27	TS.98.F.140/5	Jar	SW	5YR5/6	M1<	MH	L.305
28	TS.98.F.140/6	Jar	SW	5YR6/6	M1<	M	L.305
29	TS.98.F.140/1	Jar	PW	5YR5/6	M1>	MH	L.305
30	TS.98.F.140/15	Jar	PW	10YR7/4	M2-	M	L.305

Scale 1:4

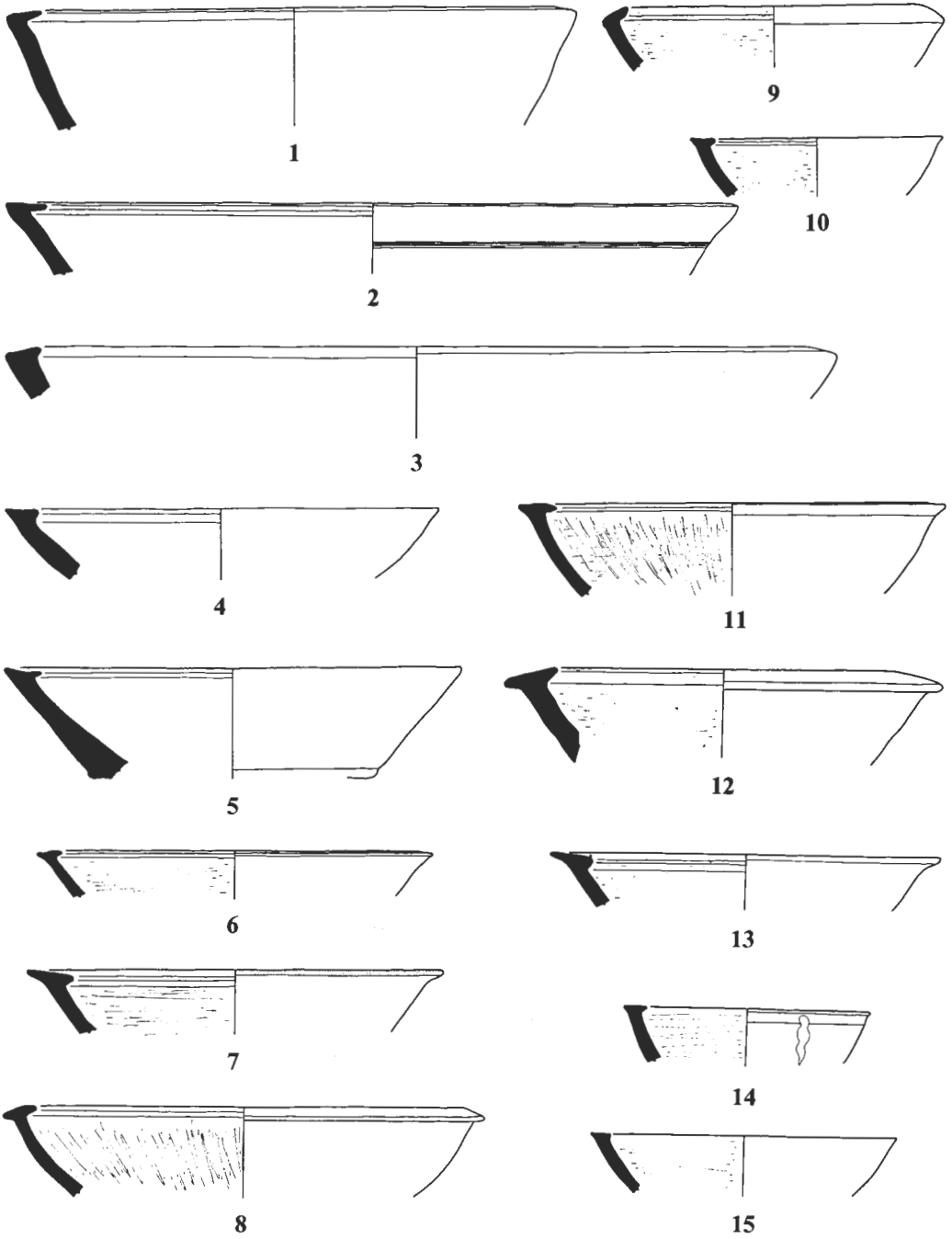
Fig. 1:32 Pottery from L.305; Period IIIc1, Early Bronze IIIA, 2600-2450 BC.



N°	Reference	Shape	Class	F. Colour	Temper	Firing	Locus
1	TS.98.F.130/2	Bowl	SW	7.5YR7/4	M2>	M	L.305
2	TS.98.F.205/12	Bowl	SW	7.5YR7/4	M2>	M	L.305
3	TS.98.F.130/10	Bowl	SW	5YR7/6	M2-	MH	L.305
4	TS.98.F.130/6	Bowl	SW	10YR7/3	M2-	MH	L.305
5	TS.98.F.130/8	Bowl	SW	5YR5/6	M1>	MH	L.305
6	TS.98.F.130/15	Bowl	SW	5YR6/6	M12>	MH	L.305
7	TS.98.F.130/3	Bowl	SW	5YR7/4	M2-	MH	L.305
8	TS.98.F.205/11	Bowl	SW	5YR7/6	M2-	MH	L.305
9	TS.98.F.130/14	Bowl	SW	5YR7/4	M1-	MH	L.305
10	TS.98.F.130/12	Bowl	SW	7.5YR7/4	2>	MH	L.305
11	TS.98.F.130/1	Bowl	SW	7.5YR7/6	M1<	MH	L.305
12	TS.98.F.130/11	Bowl	SW	5YR5/6	M2>	MH	L.305
13	TS.98.F.130/4	Bowl	SW	5YR7/4	M2-	MH	L.305
14	TS.98.F.130/25	Bowl	SPW	5YR7/6	M1>	MH	L.305
15	TS.98.F.130/13	Bowl	SW	7.5YR7/4	M2-	M	L.305

Scale 1:4

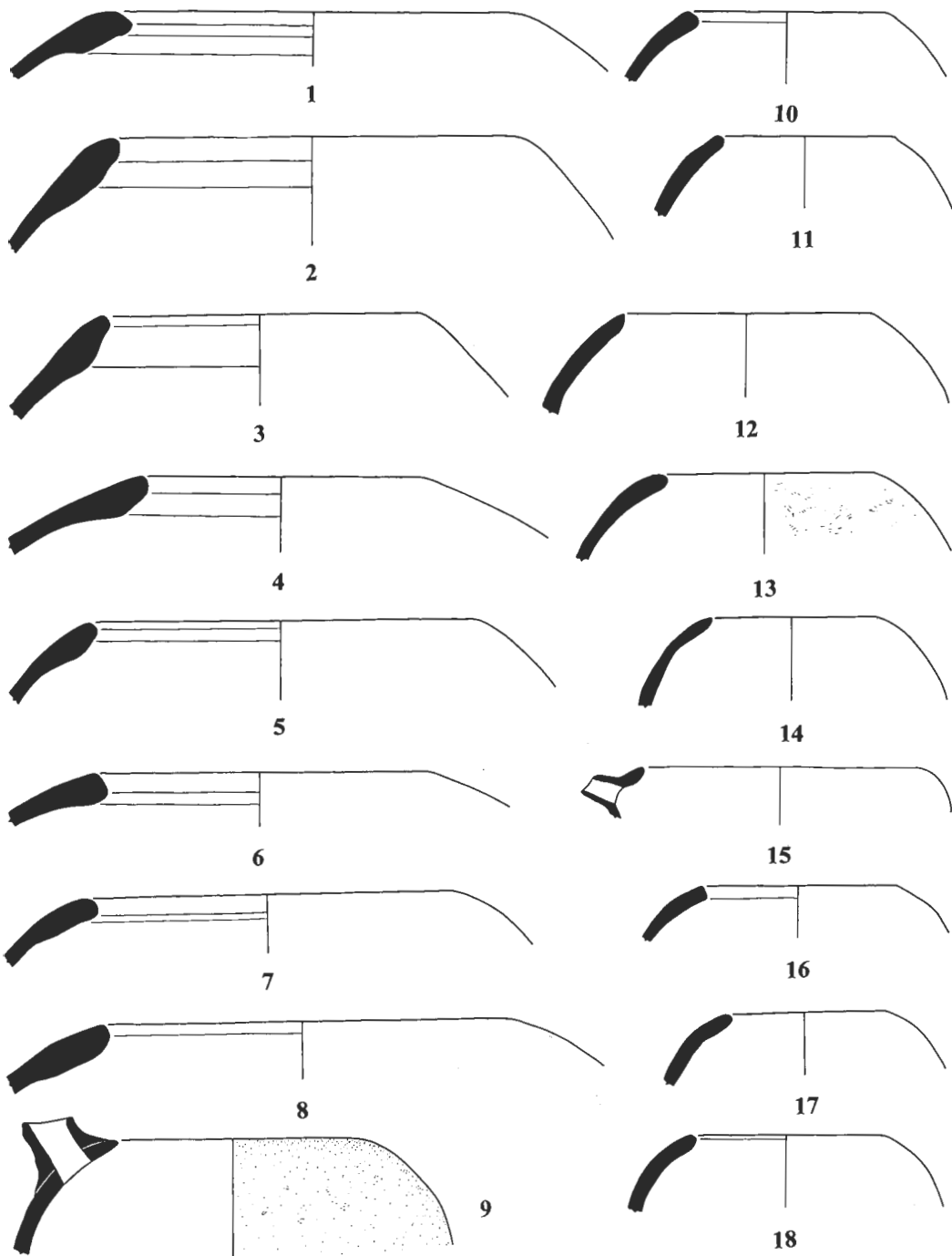
Fig. 1:33 Pottery from L.305; Period IIIc1, Early Bronze IIIA, 2600-2450 BC.



Nº	Reference	Shape	Class	F. Colour	Temper	Firing	Locus
1	TS.98.F.205/1	Hole-mouth	KW	5YR7/6	M23>	M	L.305
2	TS.98.F.126/5	Hole-mouth	KW	5YR6/6	M2>	M	L.305
3	TS.98.F.126/17	Hole-mouth	KW	5YR6/6	M2>	M	L.305
4	TS.98.F.126/13	Hole-mouth	KW	5YR6/6	M2>	M	L.305
5	TS.98.F.126/37	Hole-mouth	PW	10YR6/4	M3-	M	L.305
6	TS.98.F.126/7	Hole-mouth	KW	5YR6/6	M2>	M	L.305
7	TS.98.F.126/6	Hole-mouth	KW	5YR6/6	M2>	M	L.305
8	TS.98.F.126/11	Hole-mouth	KW	5YR6/6	M2>	M	L.305
9	TS.98.F.145/1	Bowl	SPW	5YR6/6	M1-	MH	L.305
10	TS.98.F.126/31	Hole-mouth	SW	7.5YR7/4	M2-	MH	L.305
11	TS.98.F.126/26	Hole-mouth	KW	7.5YR6/6	M2-	ML	L.305
12	TS.98.F.126/41	Hole-mouth	KW	5YR6/6	M2-	M	L.305
13	TS.98.F.126/28	Hole-mouth	SW	5YR7/6	M2>	M	L.305
14	TS.98.F.126/25	Hole-mouth	KW	7.5YR5/1	M2>	M	L.305
15	TS.98.F.146/6	Jar	SW	7.5YR7/4	M2-	M	L.305
16	TS.98.F.126/38	Hole-mouth	SW	5YR7/6	M1-	M	L.305
17	TS.98.F.126/35	Hole-mouth	SW	5YR7/4	M3<	ML	L.305
18	TS.98.F.205/7	Hole-mouth	KW	10YR6/4	M2>	M	L.305

Scale 1:4

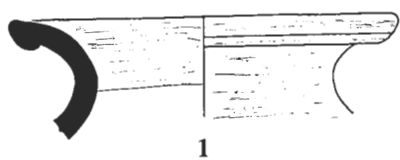
Fig. 1:34 Pottery from L.305; Period IIIc1, Early Bronze IIIA, 2600-2450 BC.



N°	Reference	Shape	Class	F. Colour	Temper	Firing	Locus
1	TS.98.F.132/1	Jar	PW	7.5YR7/4	VM23>	MH	L.305
2	TS.98.F.205/24	Jar	PW	10YR6/2	M2>	M	L.305
3	TS.98.F.140/9	Jar	PW	10YR7/2	M3>	ML	L.305
4	TS.98.F.132/7	Jar	PW	7.5YR5/2	M2-	M	L.305
5	TS.98.F.205/3	Hole-mouth	KW	5YR6/6	M23>	L	L.305
6	TS.98.F.205/2	Hole-mouth	KW	5YR6/6	M2>	L	L.305
7	TS.98.F.126/29	Hole-mouth	PW	7.5YR7/4	M2	MH	L.305
8	TS.98.F.126/32	Hole-mouth	SW	5YR6/4	M2>	M	L.305
9	TS.98.F.126/22	Hole-mouth	KW	7.5YR5/1	M2>	M	L.305
10	TS.98.F.126/4	Hole-mouth	KW	5YR6/6	M2>	M	L.305
11	TS.98.F.126/10	Hole-mouth	KW	5YR6/6	M2>	M	L.305
12	TS.98.F.126/30	Hole-mouth	SW	5YR7/6	M2-	M	L.305
13	TS.98.F.126/40	Hole-mouth	KW	5YR6/6	M2>	M	L.305
14	TS.98.F.126/3	Hole-mouth	KW	5YR6/6	M2-	M	L.305
15	TS.98.F.126/18	Hole-mouth	KW	7.5YR6/3	M2>	M	L.305
16	TS.98.F.126/9	Hole-mouth	KW	5YR6/6	M2>	M	L.305

Scale 1:4

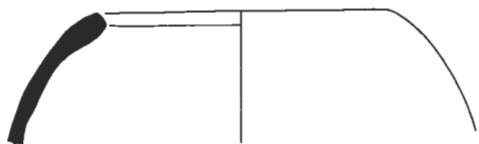
Fig. 1:35 Pottery from L.305; Period IIIc1, Early Bronze IIIA, 2600-2450 BC.



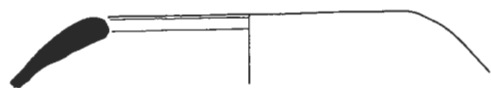
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4



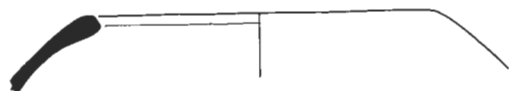
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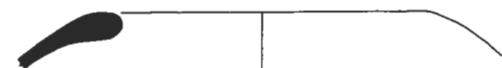
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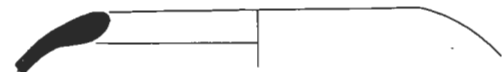
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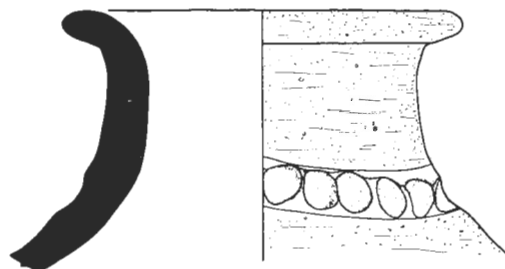
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9



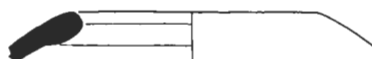
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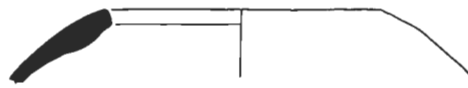
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3



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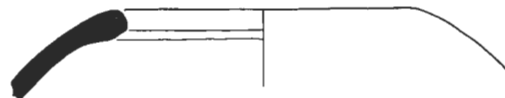
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13



14



15

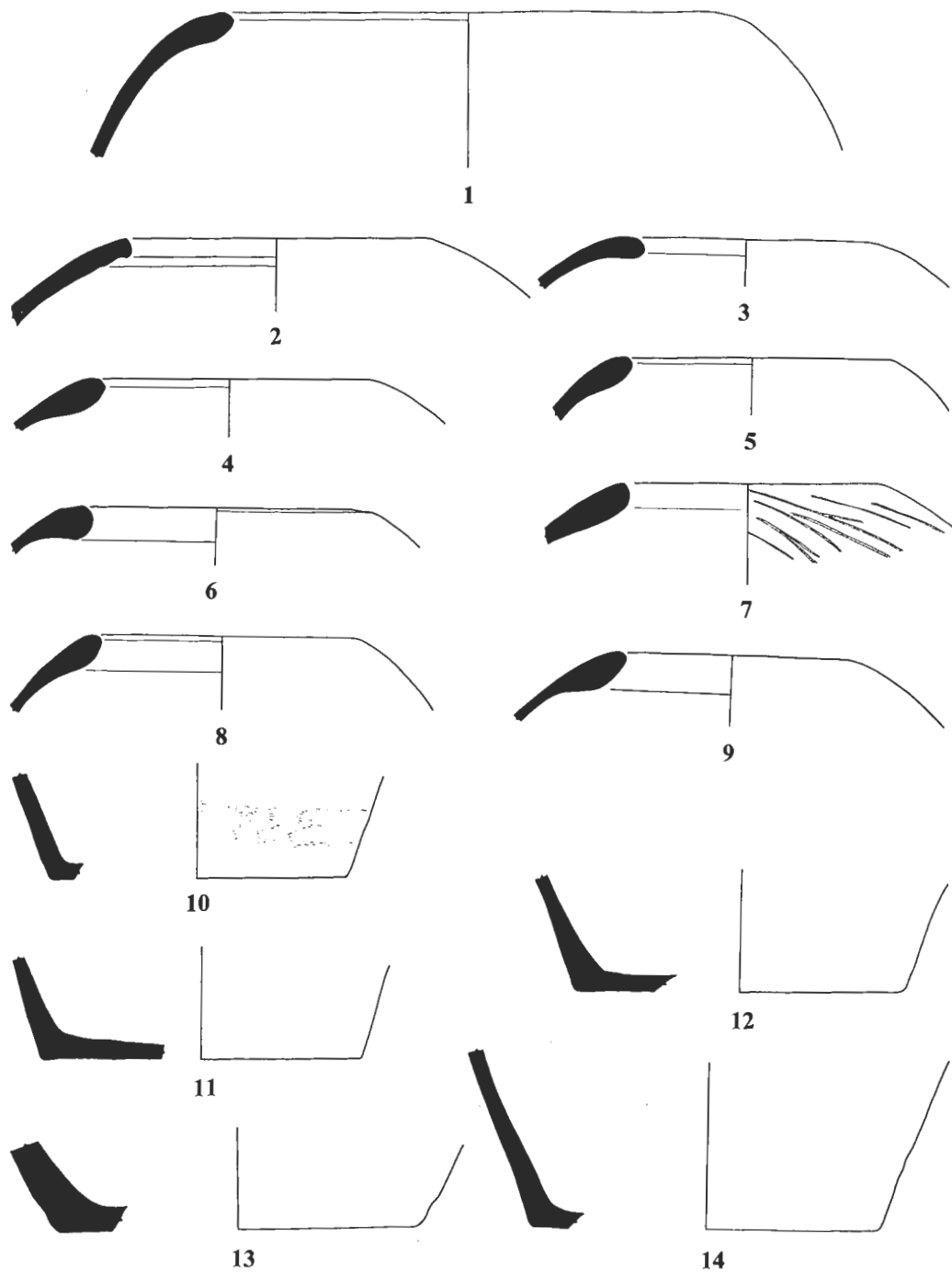


16

N°	Reference	Shape	Class	F. Colour	Temper	Firing	Locus
1	TS.98.F.126/14	Hole-mouth	KW	7.5YR6/6	M3>	ML	L.305
2	TS.98.F.205/6	Hole-mouth	KW	5YR6/6	M2>	ML	L.305
3	TS.98.F.126/20	Hole-mouth	KW	5YR6/6	M2>	M	L.305
4	TS.98.F.126/16	Hole-mouth	KW	10YR6/4	M2>	ML	L.305
5	TS.98.F.126/15	Hole-mouth	KW	5YR6/6	M2>	M	L.305
6	TS.98.F.126/8	Hole-mouth	KW	5YR6/6	M2>	M	L.305
7	TS.98.F.126/17	Hole-mouth	KW	5YR6/6	M2>	M	L.305
8	TS.98.F.125/2	Hole-mouth	KW	7.5YR6/4	M2-	L	L.305
9	TS.98.F.126/19	Hole-mouth	KW	5YR6/2	M2>	ML	L.305
10	TS.98.F.132/21	Jar	PW	7.5YR7/4	M2-	M	L.305
11	TS.98.F.132/26	Jar	PW	10YR7/2	VM3>	ML	L.305
12	TS.98.F.132/28	Jar	PW	5YR6/6	M3>	M	L.305
13	TS.98.F.132/27	Jar	PW	10YR6/2	M2>	ML	L.305
14	TS.98.F.132/35	Jar	PW	7.5YR7/6	M2>	M	L.305

Scale 1:4

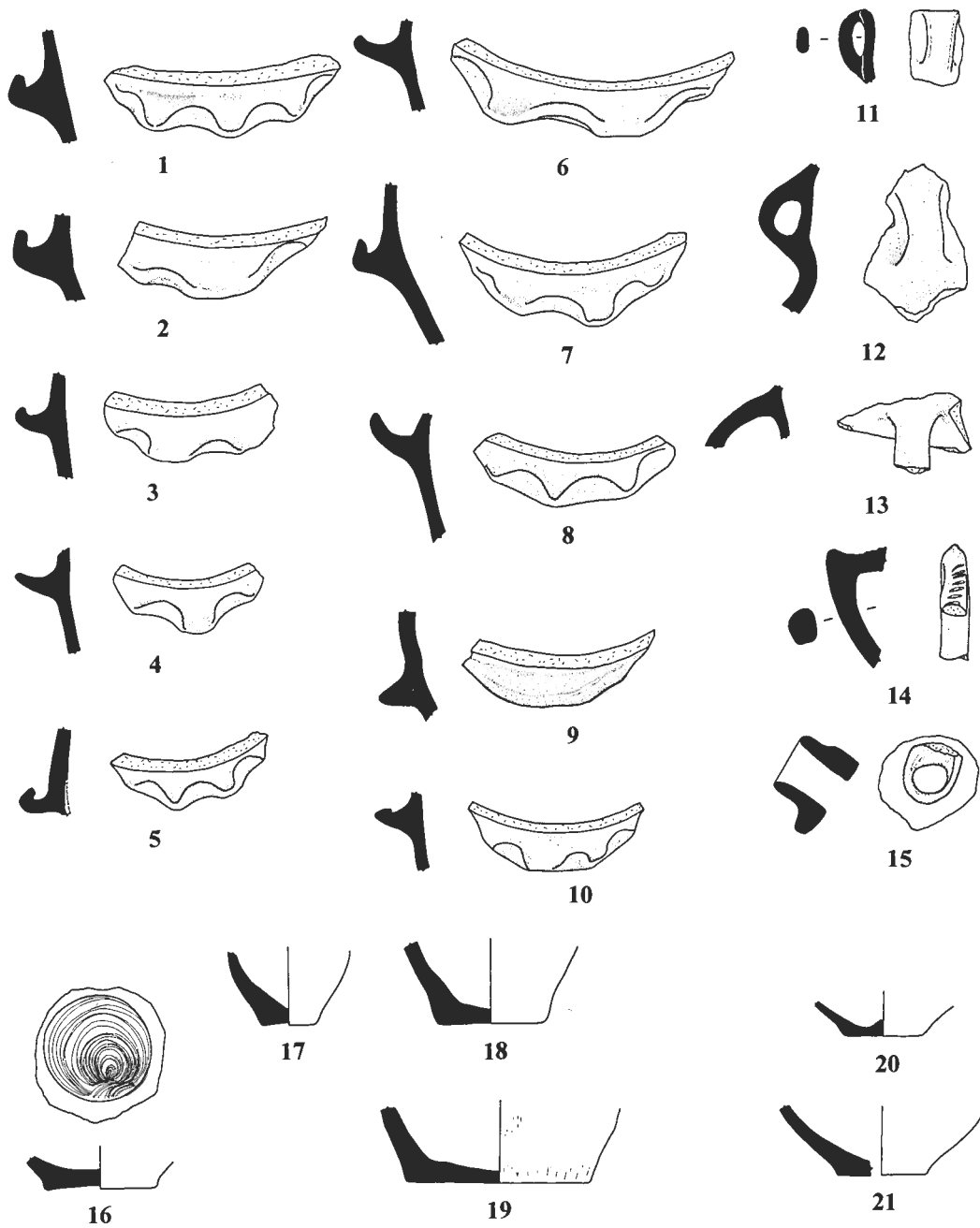
Fig. 1:36 Pottery from L.305; Period IIIc1, Early Bronze IIIA, 2600-2450 BC.



N°	Reference	Shape	Class	F. Colour	Temper	Firing	Locus
1	TS.98.F.132/2	Jar	PW	5YR5/4	M2-	MH	L.305
2	TS.98.F.132/4	Jar	PW	5YR6/6	M1<	MH	L.305
3	TS.98.F.206/1	Jar	PW	5YR6/3	M1-	MH	L.305
4	TS.98.F.206/3	Jar	PW	5YR6/3	M2-	M	L.305
5	TS.98.F.132/11	Jar	PW	7.5YR6/4	M2-	M	L.305
6	TS.98.F.132/9	Jar	PW	7.5YR6/4	M2>	M	L.305
7	TS.98.F.132/5	Jar	PW	7.5YR6/6	M1-	MH	L.305
8	TS.98.F.132/12	Jar	PW	10YR6/2	M2>	MH	L.305
9	TS.98.F.132/14	Jar	PW	5YR6/4	M2>	M	L.305
10	TS.98.F.132/16	Jar	PW	7.5YR6/4	M2>	ML	L.305
11	TS.98.F.205/15	Handle	SW	7.5YR6/4	M2>	ML	L.305
12	TS.98.F.134/12	Handle	SW	10YR7/6	M2-	M	L.305
13	TS.98.F.148/1	Handle	SW	10YR7/4	M2<	M	L.305
14	TS.98.F.200/5	Handle	SW	10YR7/3	M2>	MH	L.305
15	TS.98.F.146/2	Jar	SW	10YR7/3	M2-	M	L.305
16	TS.98.F.143/8	Jar	SW	5YR5/6	M12>	M	L.305
17	TS.98.F.143/11	Bottom	SW	10YR5/3	M123>	M	L.305
18	TS.98.F.143/3	Jar	SW	10YR6/3	M1<	M	L.305
19	TS.98.F.134/10	Jar bottom	SW	10YR7/6	M2-	M	L.305
20	TS.98.F.134/3	Bowl	SW	5YR6/6	M2-	M	L.305
21	TS.98.F.143/4	Jar	SW	10YR6/4	M2-	M	L.305

Scale 1:4

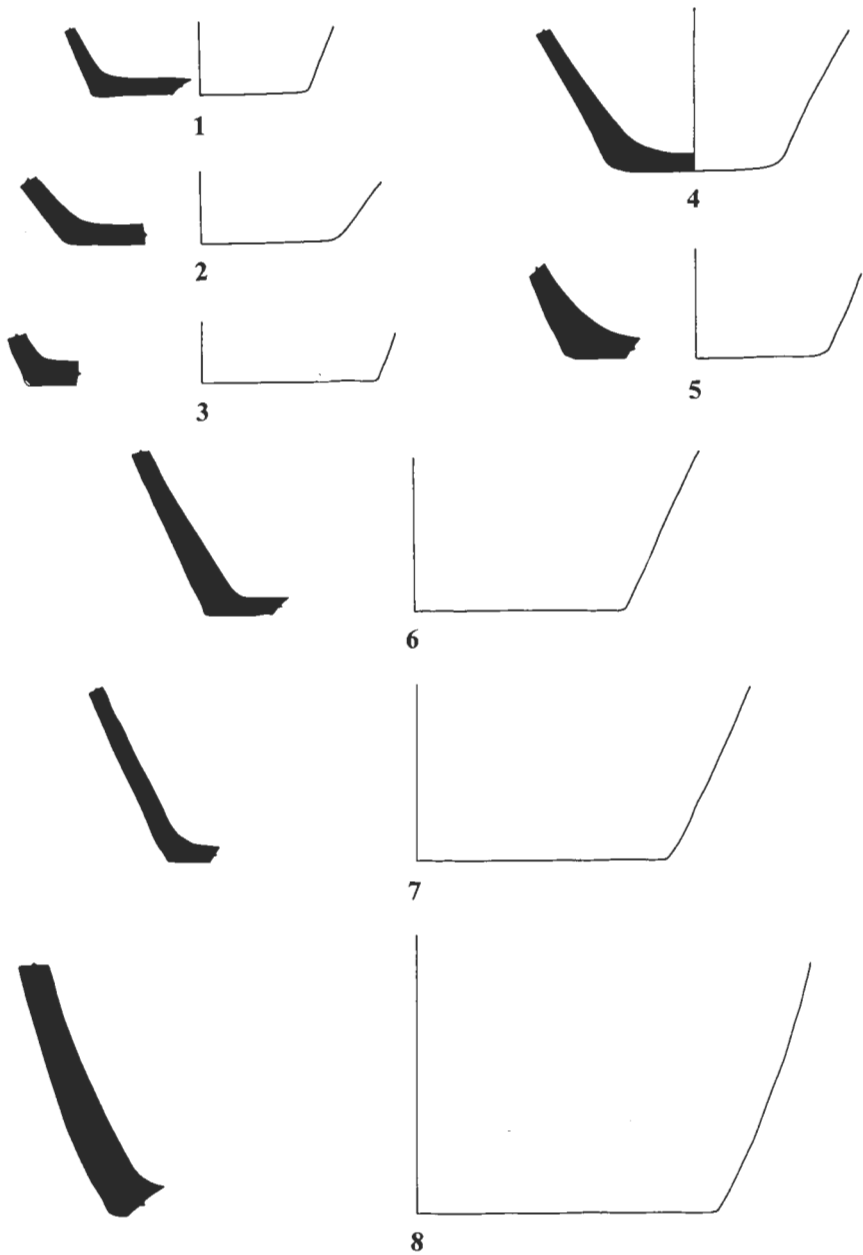
Fig. 1:37 Pottery from L.305; Period IIIc1, Early Bronze IIIA, 2600-2450 BC.



N°	Reference	Shape	Class	F. Colour	Temper	Firing	Locus
1	TS.98.F.143/2	Jar	PW	7.5YR6/3	M1-	M	L.305
2	TS.98.F.143/1	Jar	PW	10YR6/3	M1<	M	L.305
3	TS.98.F.132/37	Jar	PW	5YR5/6	M1<	MH	L.305
4	TS.98.F.132/31	Jar	PW	7.5YR7/6	M1-	M	L.305
5	TS.98.F.132/18	Jar	PW	10YR6/2	M2-	MH	L.305
6	TS.98.F.132/33	Jar	PW	10YR6/2	M2>	ML	L.305
7	TS.98.F.206/8	Jar	PW	10YR6/1	M2>	M	L.305
8	TS.98.F.206/7	Jar	PW	5YR6/4	M2-	M	L.305

Scale 1:4

Fig. 1:38 Pottery from L.305; Period IIIc1, Early Bronze IIIA, 2600-2450 BC.



Nº	Reference	Shape	Class	F. Colour	Temper	Firing	Locus
1	TS.98.F.148/3	Bowl	KKW	10YR6/2	M1<	H	L.305
2	TS.98.F.148/1b	Jug Body	KKW	10YR6/2	M1<	H	L.305
3	TS.98.F.148/2	Jug Bottom	KKW	10YR5/1	M1-	MH	L.305
4	TS.98.F.148/4	Krater	KKW	2.5YN3/	M1-<	MH	L.305

Scale 1:4

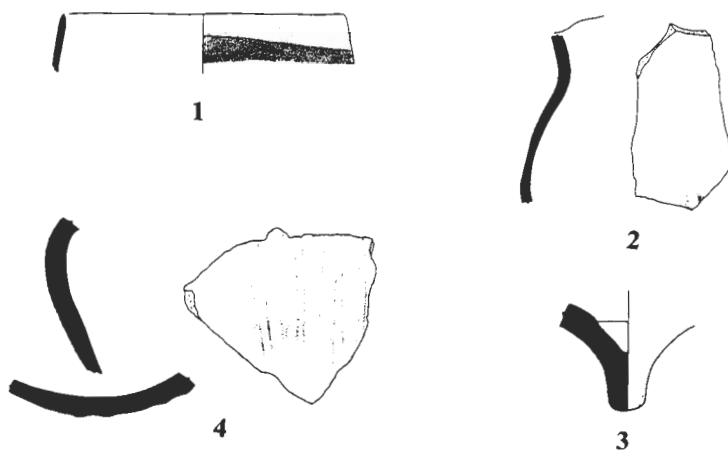
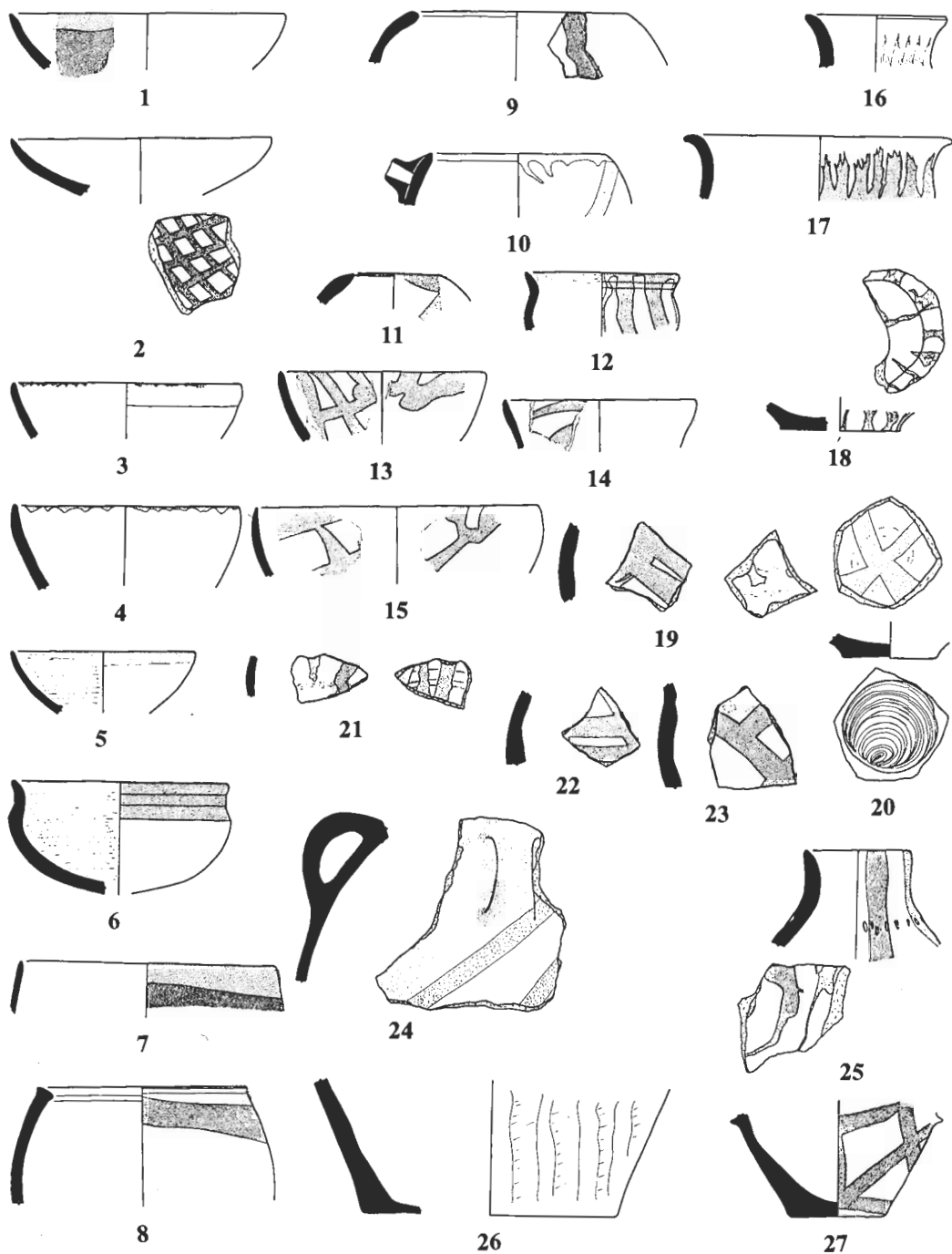


Fig. 1:39 Khirbet Kerak Ware fragments from L.305; Period IIIc1, Early Bronze IIIA; 2600-2450 BC.

N°	Reference	Shape	Class	F. Colour	Temper	Firing	Locus
1	TS.98.F.200/1	Pot	SW	7.5YR6/3	M1>	MH	L.305
2	TS.98.F.147/4	Bowl	SW	7.5YR6/1	M2-	M	L.305
3	TS.98.F.130/21	Bowl	SW	2.5YR5/6	M1-	MH	L.305
4	TS.98.F.130/28	Bowl	SW	5YR7/6	M2-	MH	L.305
5	TS.98.F.130/26	Bowl	SW	5YR5/6	M2>	MH	L.305
6	TS.98.F.130/24	Bowl	SW	5YR7/6	M1-	MH	L.305
7	TS.98.F.148/3	Bowl	MW	10YR6/2	M1<	H	L.305
8	TS.98.F.205/21	Jar	SPW	5YR6/4	M2-	M	L.305
9	TS.98.F.147/3	Jar	SW	5YR6/6	M2-	M	L.305
10	TS.98.F.146/5	Bowl	SPW	7.5YR7/4	M1<	MH	L.305
11	TS.98.F.203/2	Jar	SPW	7.5YR7/6	M1<	MH	L.303
12	TS.98.F.203/7	Jar	SPW	5YR7/6	M1-	M	L.303
13	TS.98.F.203/6	Bowl	SPW	7.5YR7/6	M2<	M	L.303
14	TS.98.F.203/9	Bowl	SPW	7.5YR7/4	M2>	M	L.303
15	TS.98.F.203/5	Bowl	SPW	7.5YR7/4	M3<	M	L.303
16	TS.98.F.205/19	Jar	SW	2.5YR5/6	M2>	MH	L.305
17	TS.98.F.131/7	Jar	SW	10YR5/8	M1-	MH	L.303
18	TS.98.F.203/12	Jar	SPW	7.5YR7/4	M2>	MH	L.303
19	TS.98.F.203/3	Jar	SPW	5YR5/6	M1-	MH	L.303
20	TS.98.F.143/9	Bowl	SPW	5YR6/6	M2-	M	L.305
21	TS.98.F.203/8	Bowl	SPW	7.5YR7/4	M3<	M	L.303
22	TS.98.F.203/4	Jar	SPW	5YR5/6	M1-	MH	L.303
23	TS.98.F.203/14	Jar	SPW	5YR5/6	M2-	M	L.303
24	TS.98.F.134/11	Jar with han.	SW	5YR6/6	M2>	MH	L.305
25	TS.98.F.205/18	Jar	SPW	10YR7/8	M1<	MH	L.305
26	TS.98.F.132/39	Jar	PW	7.5YR7/4	M2-	MH	L.305
27	TS.98.F.147/1	Jar	SW	5YR6/6	M2>	M	L.305

Scale 1:4

Fig.1:40 Painted pottery from L.305 and L.303; Period IIIc1, Early Bronze IIIA, 2600-2450 BC.



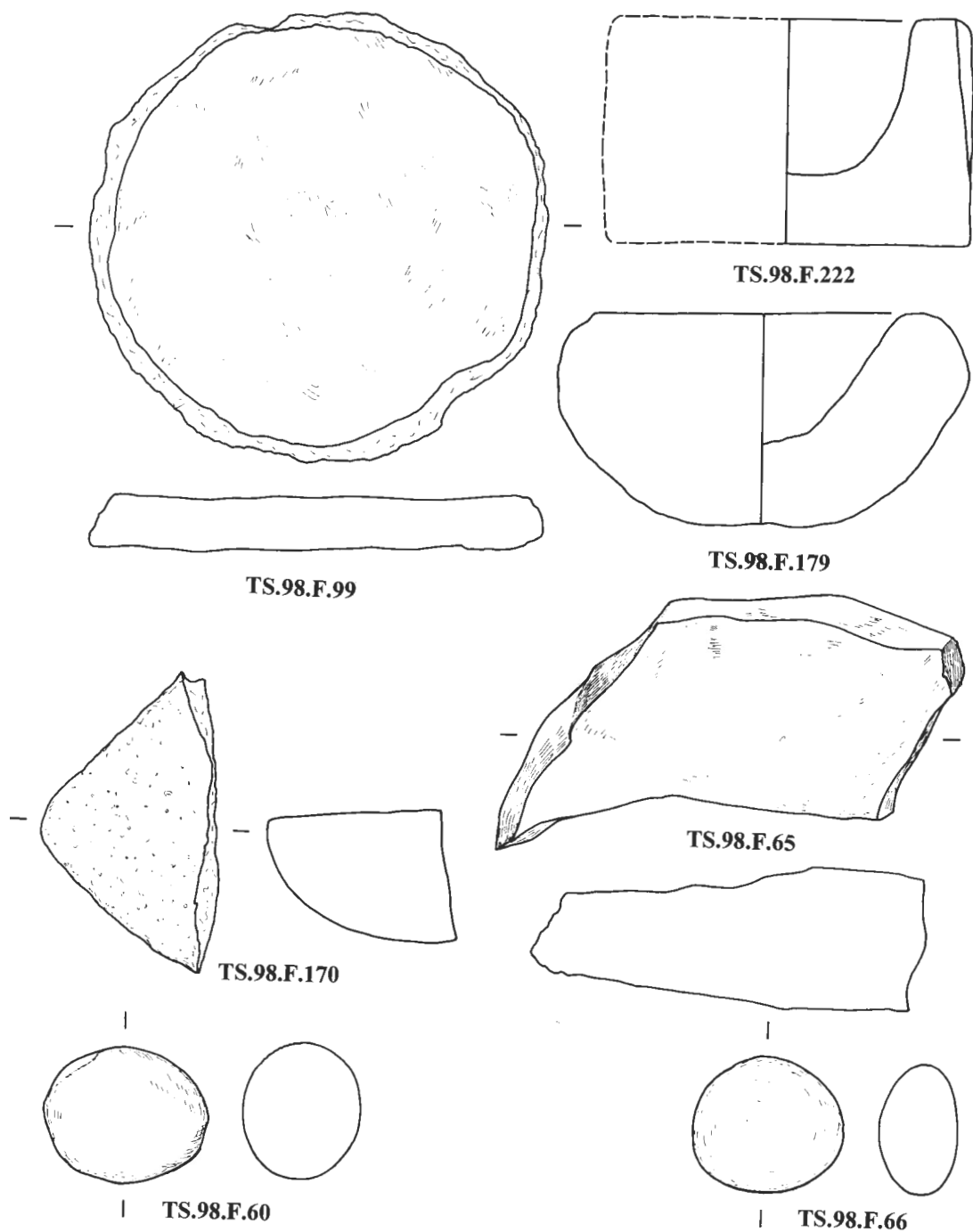


Fig. 1:41 Objects from L.305; Period IIIc1, Early Bronze IIIA, 2600-2450 BC.

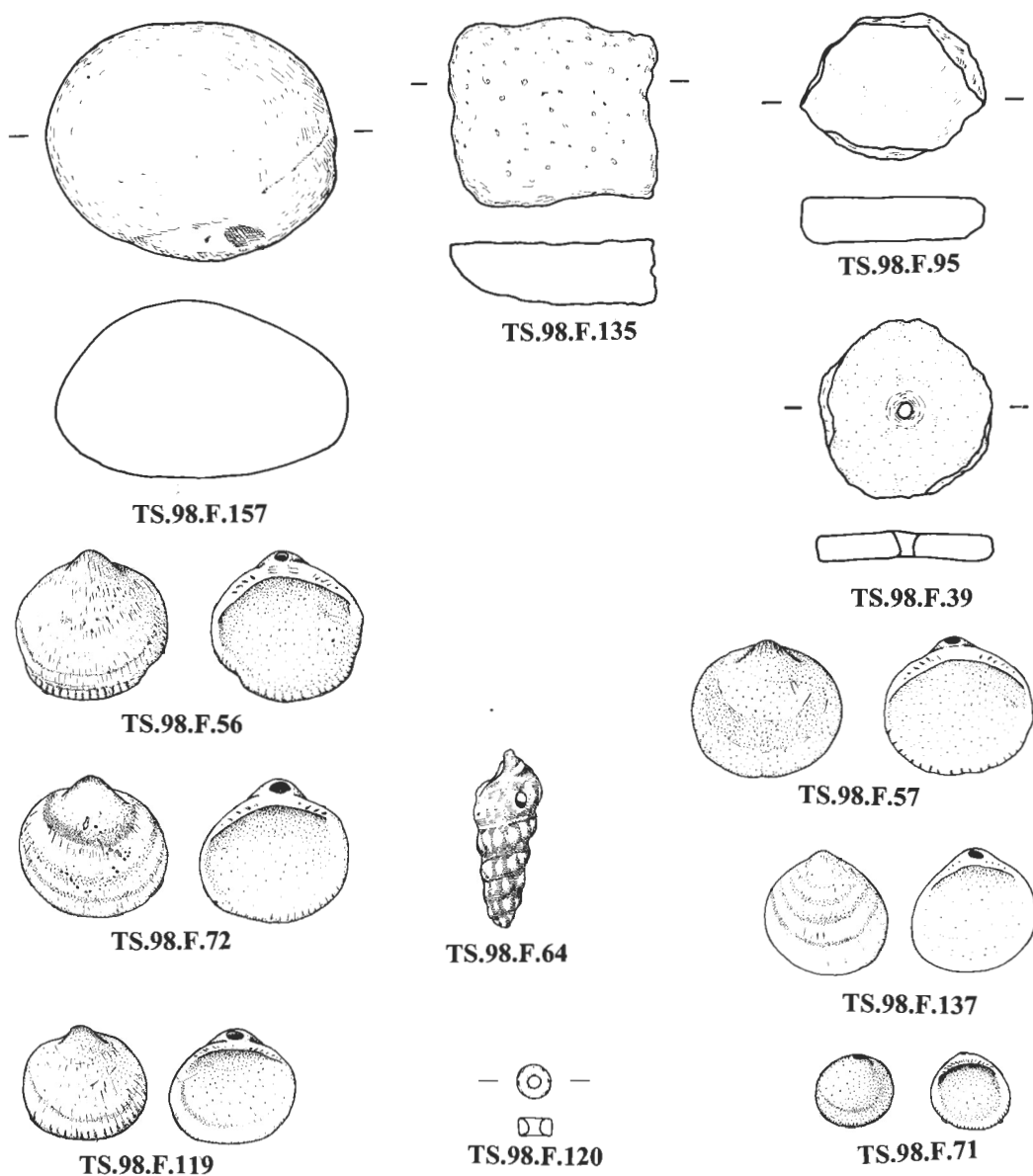


Fig. 1:42 Objects from L.305; Period IIIc1, Early Bronze IIIA, 2600-2450 BC.

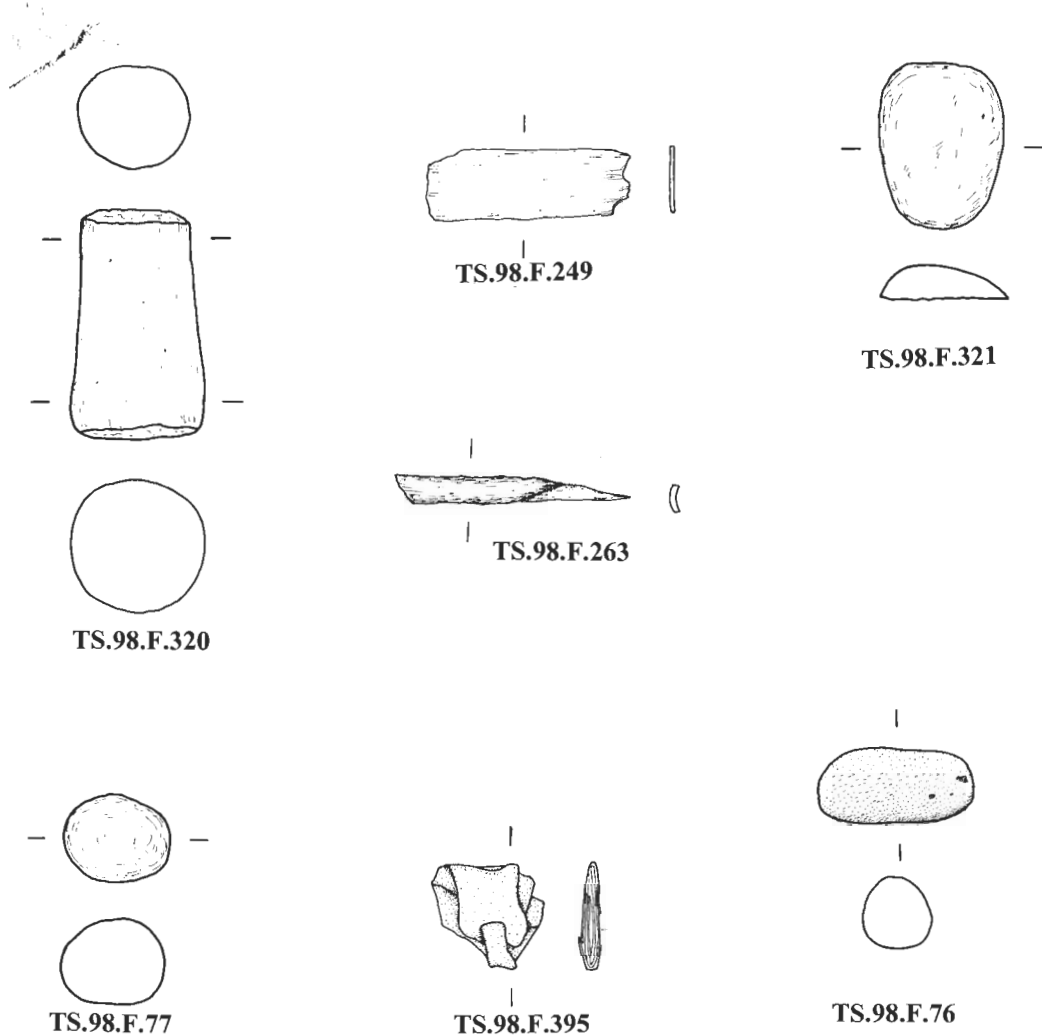


Fig. 1:43 Objects and tools from L.305 and L.307; Period IIIcI, Early Bronze IIIA, 2600-2450 BC.

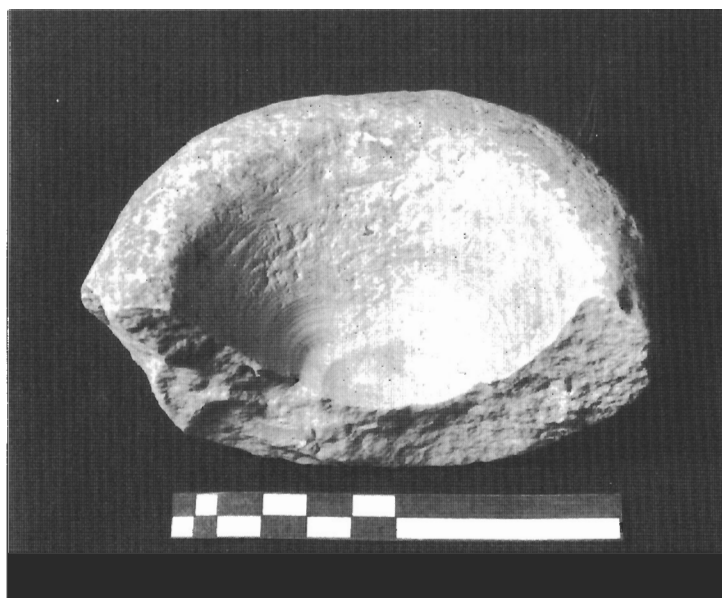
**TS.98.F.76****TS.98.F.110**



TS.98.F.65



TS.98.F.69



TS.98.F.179

Fig. 1:45 Area F, objects from L.305; Period IIIc1, Early Bronze IIIA, 2600-2450 BC.



TS.98.F.263

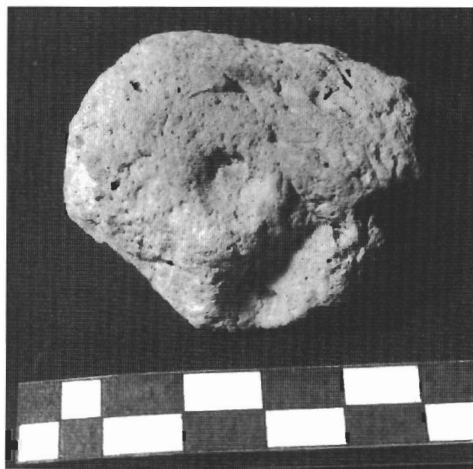
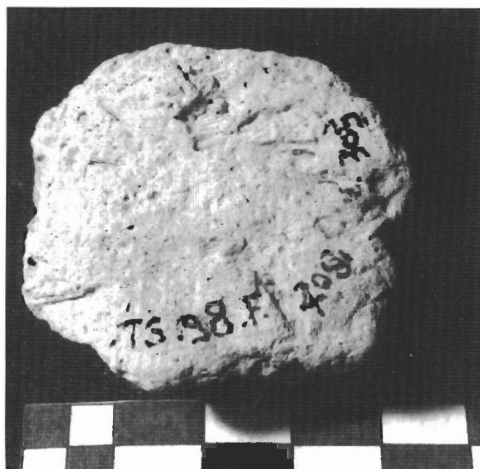


TS.98.F.39



TS.98.F.64

Fig. 1:46 Area F, objects from L.305; Period IIIc1, Early Bronze IIIA, 2600-2450 BC.



TS.98.F.408



TS.98.F.409

Fig. 1:47 Area F, sealings from L.305; Period IIIc1, Early Bronze IIIA, 2600-2450 BC.

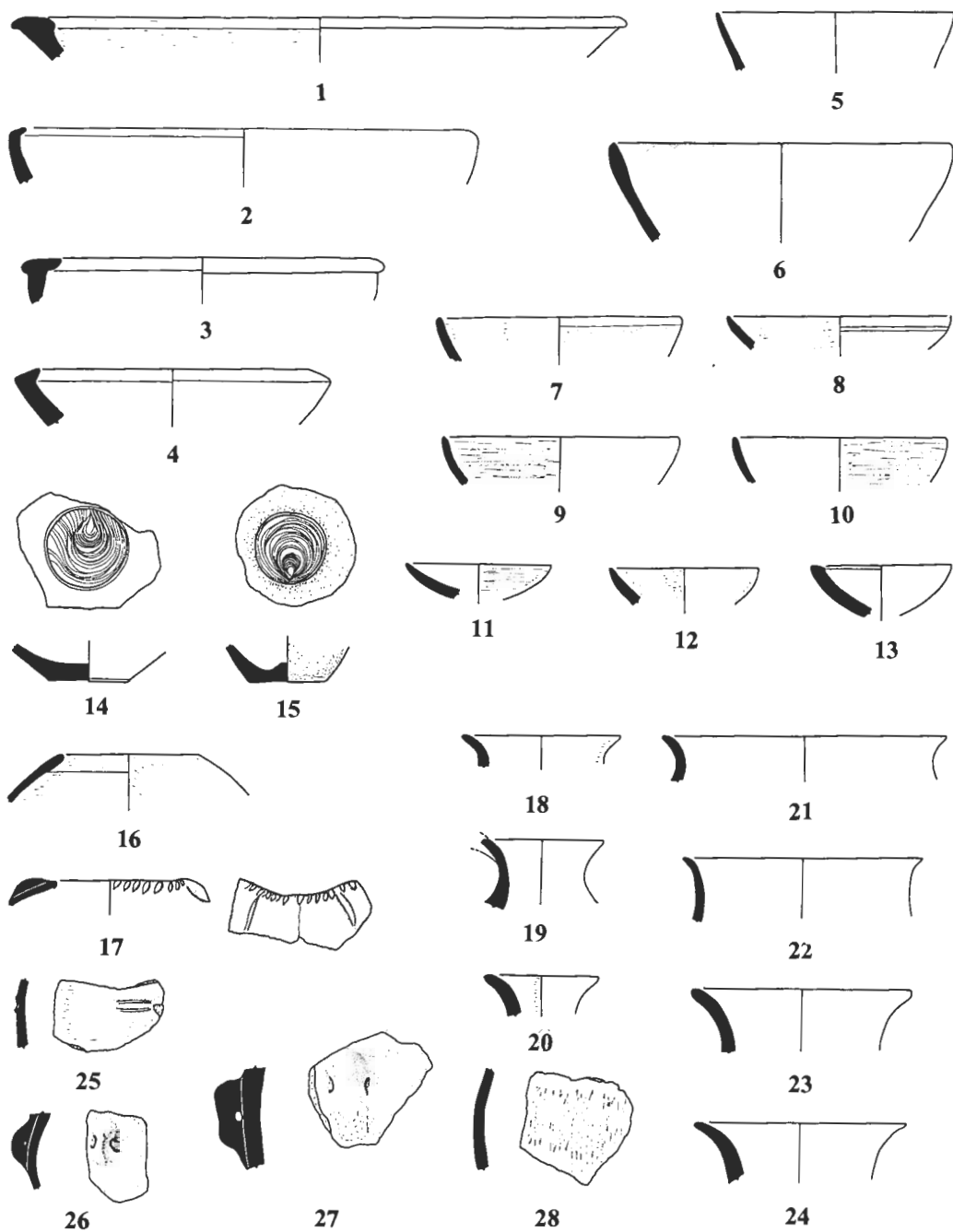
TS.98.F.300⁷

Fig. 1:48 Area F, weight from L.305; Period IIIc1, Early Bronze IIIA, 2600-2450 BC.

N°	Reference	Shape	Class	F. Colour	Temper	Firing	Locus
1	TS.98.F.122/3	Bowl	SW	10YR6/4	M1<	MH	L.303
2	TS.98.F.122/5	Bowl	SW	10YR6/4	M1-	MH	L.303
3	TS.98.F.122/2	Bowl	SW	7.5YR7/4	M1-	M	L.303
4	TS.98.F.122/4	Bowl	SW	5YR6/4	M2-	M	L.303
5	TS.98.F.135/5	Bowl	SW	7.5YR7/4	M2>	MH	L.303
6	TS.98.F.122/10	Bowl	SW	5YR5/6	M2>	ML	L.303
7	TS.98.F.135/6	Bowl	SW	5YR7/4	M1-	MH	L.303
8	TS.98.F.135/3	Bowl	SW	5YR7/4	M1-	MH	L.303
9	TS.98.F.135/1	Bowl	SW	5YR7/4	M1-	MH	L.303
10	TS.98.F.135/10	Bowl	SW	10YR7/3	M2-	M	L.303
11	TS.98.F.135/9	Bowl	SW	7.5YR7/4	M1<	ML	L.303
12	TS.98.F.135/2	Bowl	SW	5YR7/6	M1>	MH	L.303
13	TS.98.F.122/8	Bowl	SW	5YR5/6	M1>	MH	L.303
14	TS.98.F.141/3	Jar	SW	5YR7/4	M1<	M	L.303
15	TS.98.F.141/4	Jar	SPW	7.5YR6/6	M2-	M	L.303
16	TS.98.F.135/7	Bowl	SW	10YR5/3	M1<	MH	L.303
17	TS.98.F.203/1	Jar	SW	7.5YR7/4	M3-	M	L.303
18	TS.98.F.131/6	Jar	SW	7.5YR5/4	M1>	MH	L.303
19	TS.98.F.131/9	Jug	SW	5YR5/4	M1<	M	L.303
20	TS.98.F.131/2	Jar	SW	5YR7/6	M2<	MH	L.303
21	TS.98.F.131/5	Jar	SW	7.5YR5/4	M1>	MH	L.303
22	TS.98.F.131/3	Jar	SW	5YR6/6	M1<	MH	L.303
23	TS.98.F.131/1	Jar	SW	7.5YR7/4	M2-	M	L.303
24	TS.98.F.131/4	Jar	SW	5YR5/4	M2>	M	L.303
25	TS.98.F.131/13	Jug	SW	5YR6/6	M1<	MH	L.303
26	TS.98.F.144/13	Nose-lug	SW	7.5YR4/1	M2-	M	L.303
27	TS.98.F.144/12	Nose-lug	SW	7.5YR5/4	M1-	M	L.303
28	TS.98.F.131/12	Jug	SW	5YR6/6	M1<	MH	L.303

Scale 1:4

Fig. 1:49 Pottery from L.303; Period IIIc1, Early Bronze IIIA, 2600-2450 BC.



N°	Reference	Shape	Class	F. Colour	Temper	Firing	Locus
1	TS.98.F.125/6	Hole mouth	KW	7.5YR6/3	M2-	L	L.303
2	TS.98.F.125/11	Hole-mouth	SW	5YR5/8	M2-	M	L.303
3	TS.98.F.125/1	Hole-mouth	KW	5YR6/4	M1-	L	L.303
4	TS.98.F.125/14	Hole-mouth	PW	7.5YR5/2	M2-	M	L.303
5	TS.98.F.125/2	Hole-mouth	KW	7.5YR6/4	M2-	L	L.303
6	TS.98.F.125/13	Hole-mouth	KW	7.5YR5/3	M2-	M	L.303
7	TS.98.F.125/17	Hole-mouth	PW	7.5YR5/1	M1-	M	L.303
8	TS.98.F.125/18	Hole-mouth	PW	7.5YR5/1	M1-	MH	L.303
9	TS.98.F.125/10	Hole-mouth	SW	5YR6/8	M2-	M	L.303
10	TS.98.F.125/4	Hole-mouth	PW	7.5YR6/1	M3>	L	L.303
11	TS.98.F.125/12	Hole-mouth	PW	7.5YR5/6	M2-	M	L.303
12	TS.98.F.125/8	Hole-mouth	PW	7.5YR6/1	M1<	L	L.303
13	TS.98.F.125/7	Hole-mouth	PW	7.5YR7/6	M1<	L	L.303
14	TS.98.F.141/15	Jar	PW	10YR6/2	M2-	ML	L.303
15	TS.98.F.141/7	Jar	PW	5YR7/4	M2-	M	L.303
16	TS.98.F.141/16	Pot	KW	7.5YR5/1	M2-	MH	L.303
17	TS.98.F.141/9	Jar	PW	5YR6/3	WM3>	ML	L.303

Scale 1:4

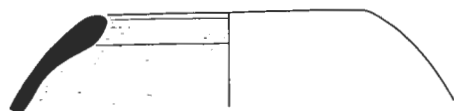
Fig. 1:50 Pottery from L.303; Period IIIc1, Early Bronze IIIA, 2600-2450 BC.



1



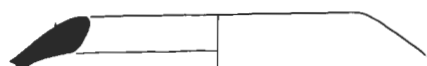
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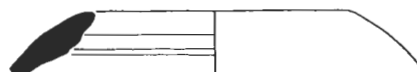
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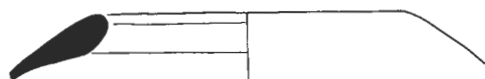
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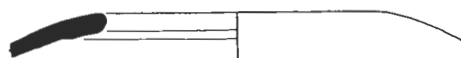
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8



4



9



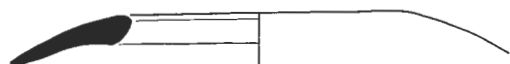
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10



12



11



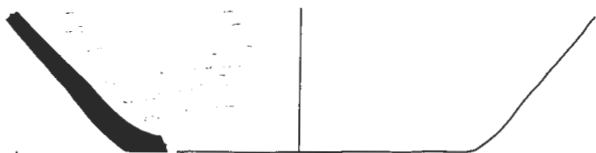
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13



15



16



17

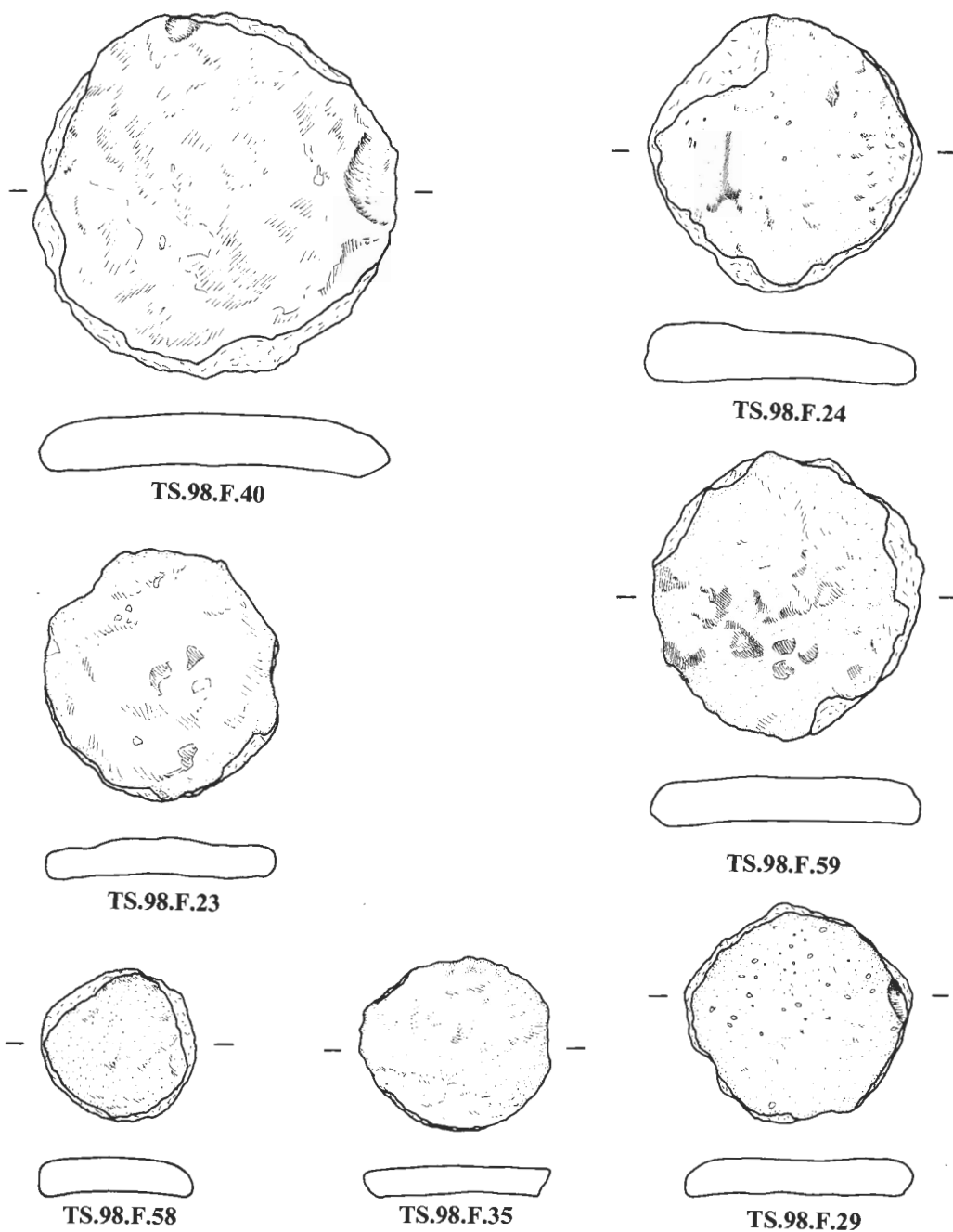


Fig. 1:51 Pottery disks from L.303; Period IIIc1, Early Bronze IIIA, 2600-2450 BC.

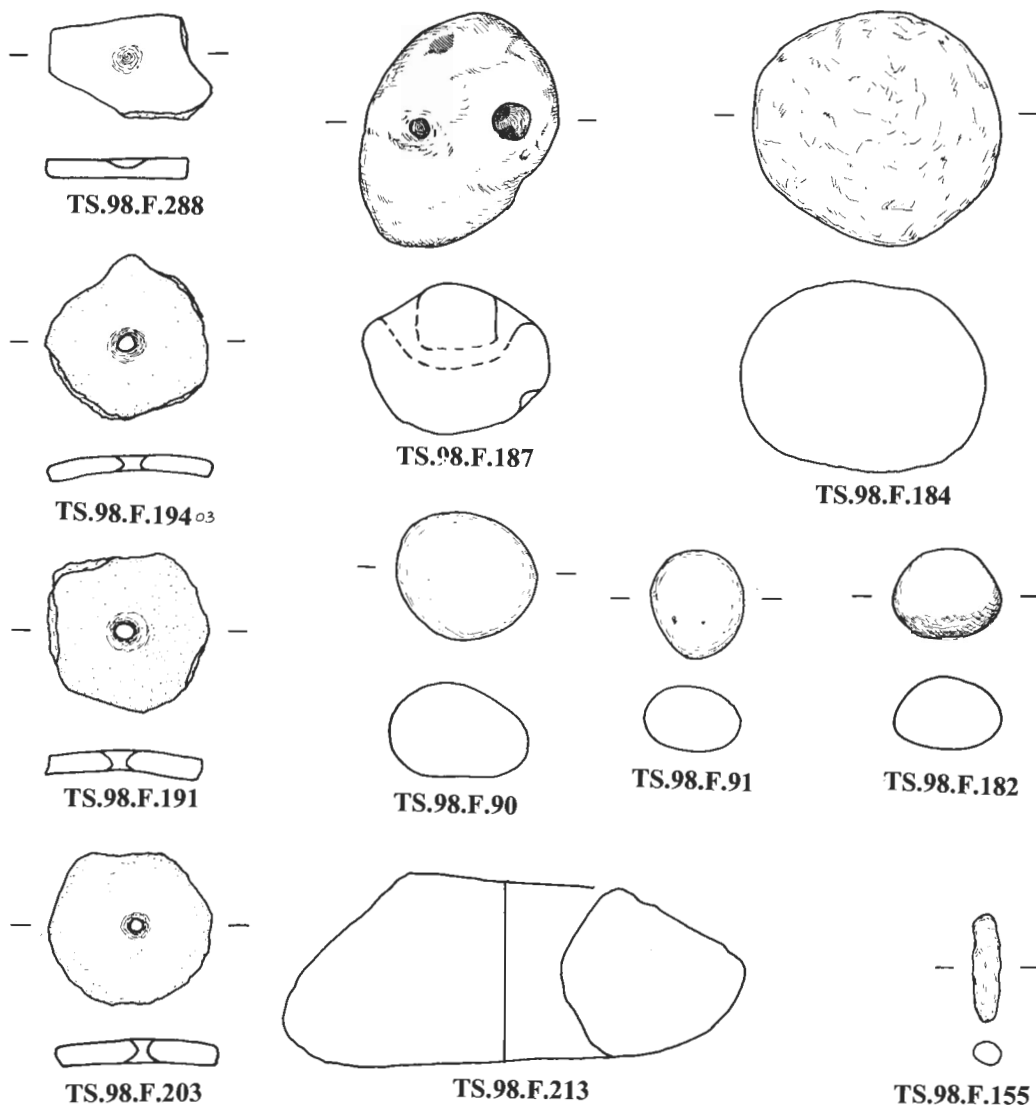


Fig. 1:52 Objects from L.303; Period IIIc1, Early Bronze IIIA, 2600-2450 BC.

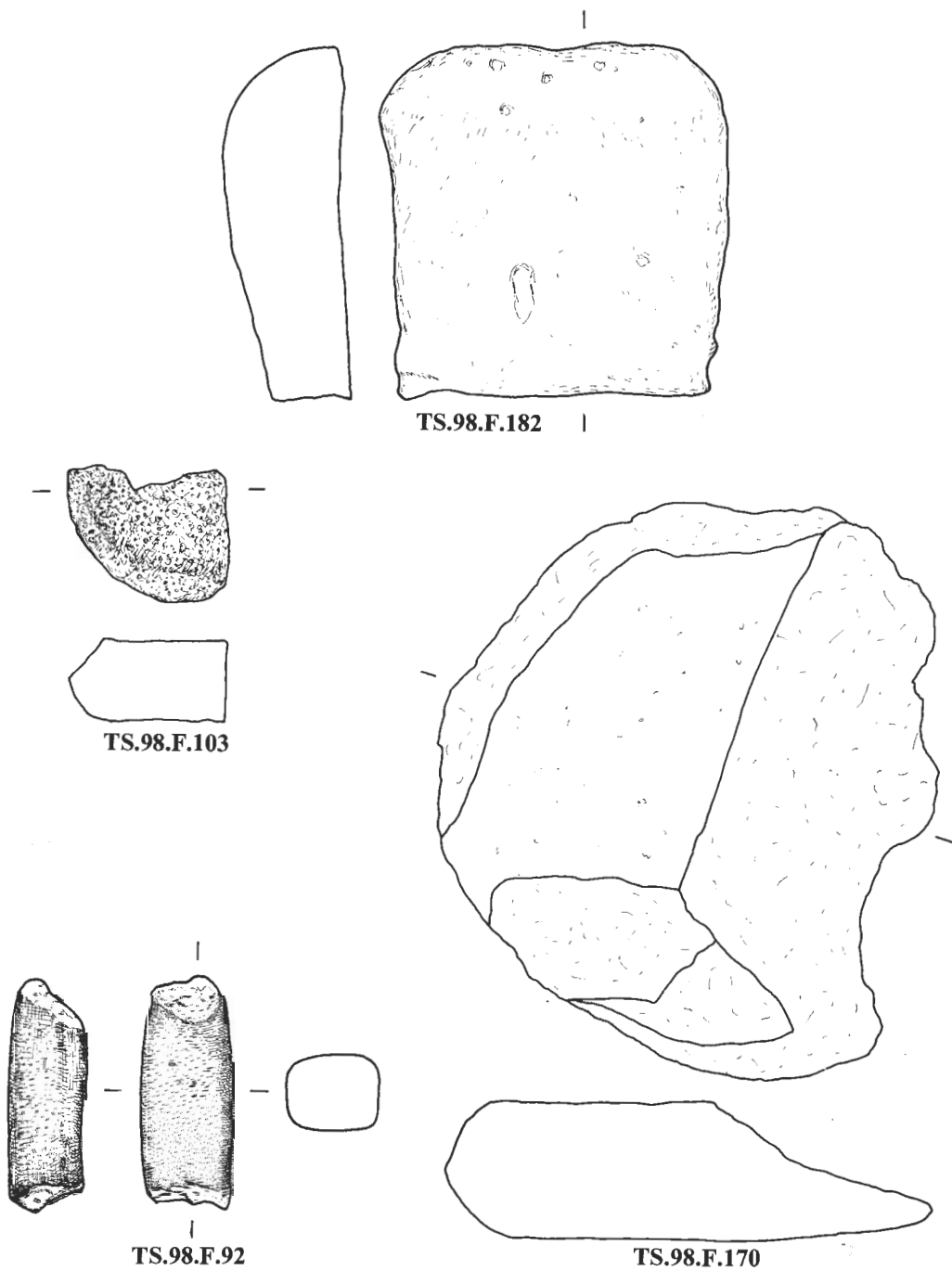
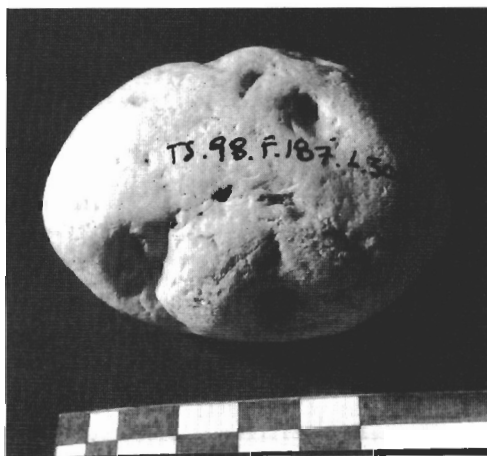


Fig. 1:53 Objects from L.303; Period IIIc1, Early Bronze IIIA, 2600-2450 BC (scale 1:2).



TS.98.F.187



TS.98.F.213



TS.98.F.203



Fig. 1:55 Area F, objects from L.303: a) flint debitage; b) 1 shekel weight TS.98.F.155; c) four bivalve sea shells; d) pottery disks (jar stoppers); Period IIIc1, Early Bronze IIIA, 2600-2450 BC.

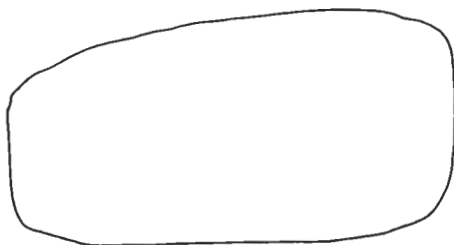
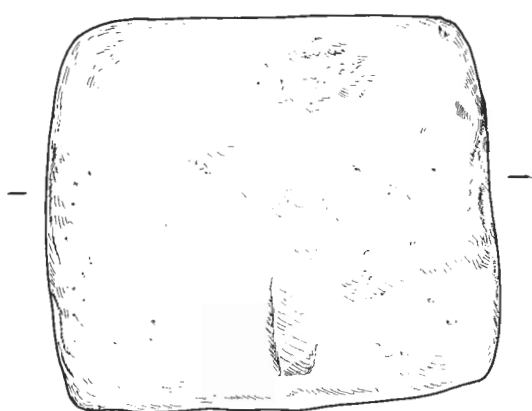
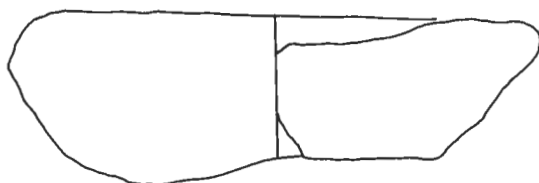
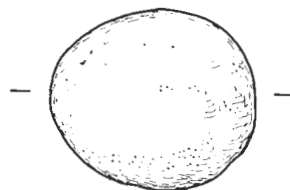
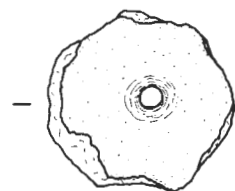
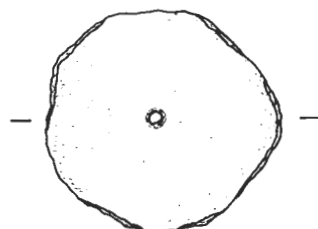
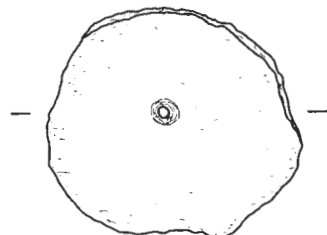
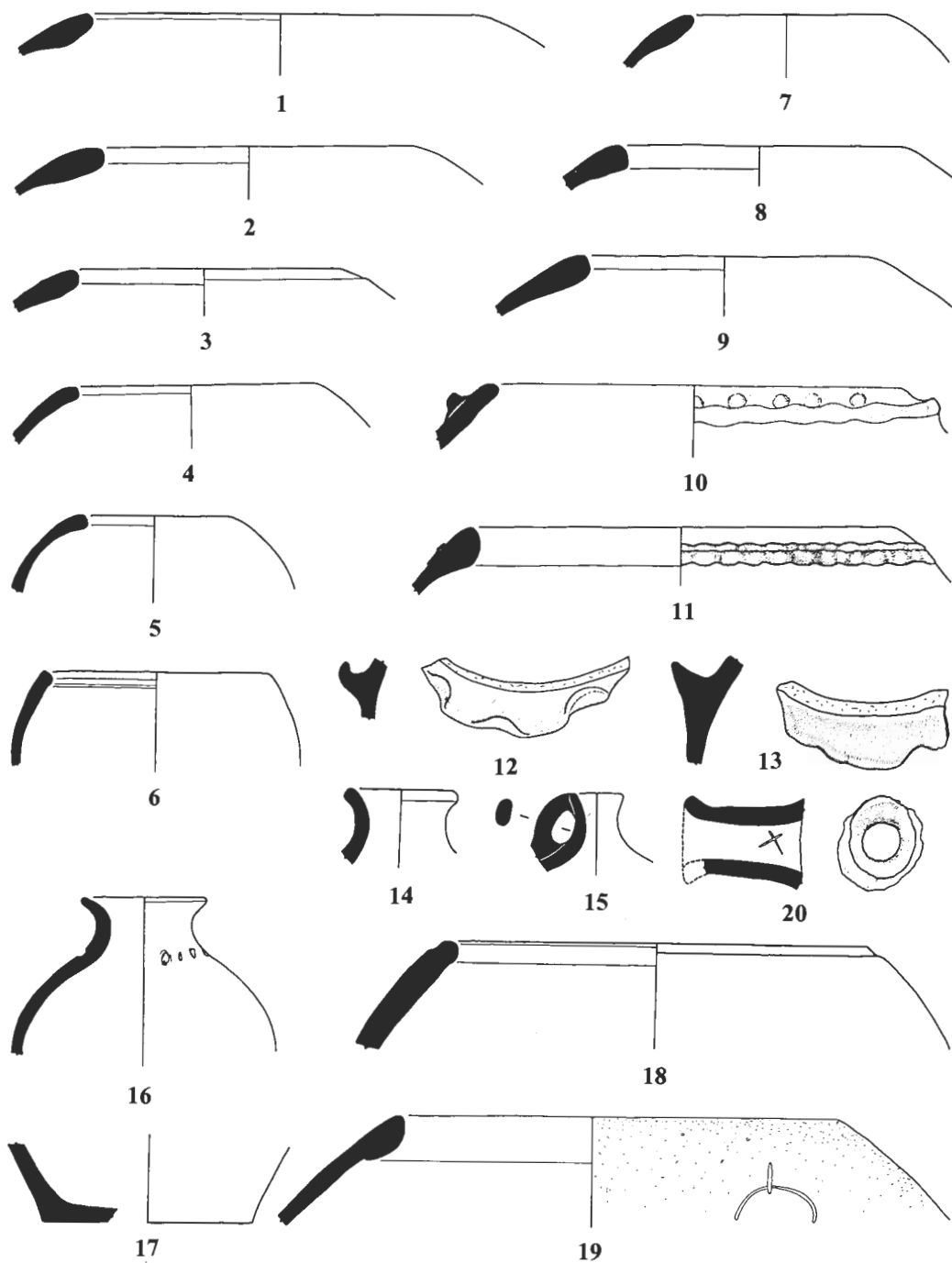
**TS.98.F.152****TS.98.F.308****TS.98.F.373****TS.98.F.160****TS.98.F.189****TS.98.F.326****TS.98.F.352**

Fig. 1:56 Objects and tools from L.319 and L.327; Period IIIc1, Early Bronze IIIA, 2600-2450 BC.

N°	Reference	Shape	Class	F. Colour	Temper	Firing	Locus
1	TS.98.F.202/3	Hole-mouth jar	PW	5YR6/4	M2>	MH	L.319
2	TS.98.F.138/2	Hole-mouth pot	KW	7.5YR7/4	M1>	ML	L.319
3	TS.98.F.139/14	Hole-mouth jar	SW	10YR7/4	M1-	M	L.319
4	TS.98.F.138/3	Hole-mouth pot	KW	7.5YR6/4	M1-	MH	L.319
5	TS.98.F.145/9	Hole-mouth small jar	SW	7.5YR7/4	M2>	M	L.319
6	TS.98.F.145/8	Hole-mouth small jar	SW	5YR7/6	M1<	M	L.319
7	TS.98.F.145/11	Hole mouth pot	SW	5YR7/6	M2<	MH	L.319
8	TS.98.F.139/12	Hole-mouth jar	PW	10YR4/2	M2>	ML	L.319
9	TS.98.F.139/13	Hole-mouth pot	KW	5YR5/4	M2>	M	L.319
10	TS.98.F.145/6	Hole-mouth pot	KW	10YR7/3	M2>	L	L.319
11	TS.98.F.139/10	Hole-mouth pot	KW	7.5YR7/4	M3>	ML	L.319
12	TS.98.F.138/8	Ledge handle	SW	5YR5/6	M1-	M	L.319
13	TS.98.F.202/1	Ledge handle	PW	7.5YR7/4	M2-	M	L.319
14	TS.98.F.145/17	Jar	SW	10YR7/4	M2<	M	L.319
15	TS.98.F.138/6	Juglet	SW	7.5YR7/6	M2>	ML	L.319
16	TS.98.F.139/3	Jar	SW	5YR6/6	M1<	MH	L.319
17	TS.98.F.145/18	Jar base	PW	7.5YR7/4	M2<	M	L.319
18	TS.98.F.202/2	Hole-mouth pot	PW	10YR5/2	M3>	L	L.319
19	TS.98.F.145/12	Hole-mouth jar	PW	10YR6/2	M2>	M	L.319
20	TS.98.F.139/8	Jar spout	SW	7.5YR7/6	M1-	M	L.319

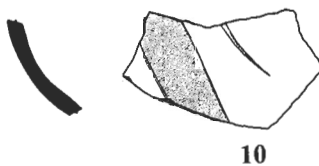
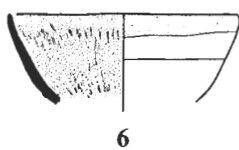
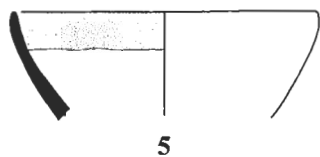
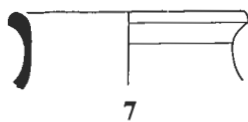
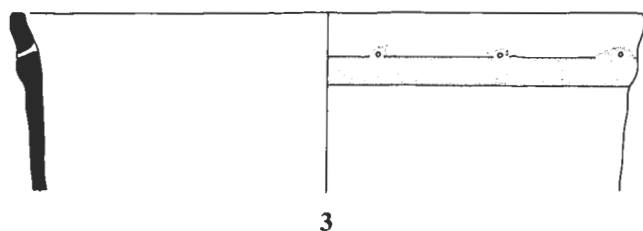
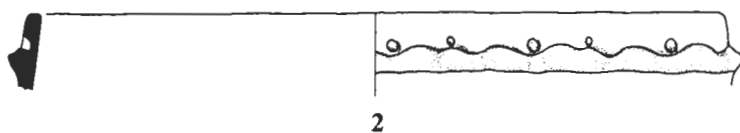
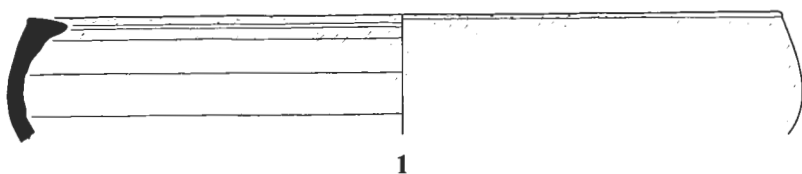
Scale 1:4

Fig. 1:57 Pottery from L.319; Period IIIc1, Early Bronze IIIA, 2600-2450 BC.



N°	Reference	Shape	Class	F. Colour	Temper	Firing	Locus
1	TS.98.F.139/1	Bowl	SW	5YR7/6	VM2>	M	L.319
2	TS.98.F.145/5	Pot	KW	10YR7/4	M23>	L	L.319
3	TS.98.F.145/4	Pot	KW	7.5YR7/6	12>	ML	L.319
4	TS.98.F.138/1	Bowl	SW	7.5YR7/2	M1<	MH	L.319
5	TS.98.F.145/1	Bowl	SPW	5YR6/6	M1-	MH	L.319
6	TS.98.F.145/2	Bowl	SPW	7.5YR7/4	M2-	MH	L.319
7	TS.98.F.139/4	Jar	SW	5YR6/6	M1<	MH	L.319
8	TS.98.F.139/7	Jug	SPW	2.5YR6/6	M1>	MH	L.319
9	TS.98.F.139/2	Jar	SPW	7.5YR7/4	M1<	MH	L.319
10	TS.98.F.145/21	Jar	SPW	10YR8/3	M1>	MH	L.319
11	TS.98.F.138/4	Jar	PW	5YR7/4	M2-	M	L.319
12	TS.98.F.139/16	Jar	PW	7.5YR7/4	M2-	M	L.319

Scale 1:4



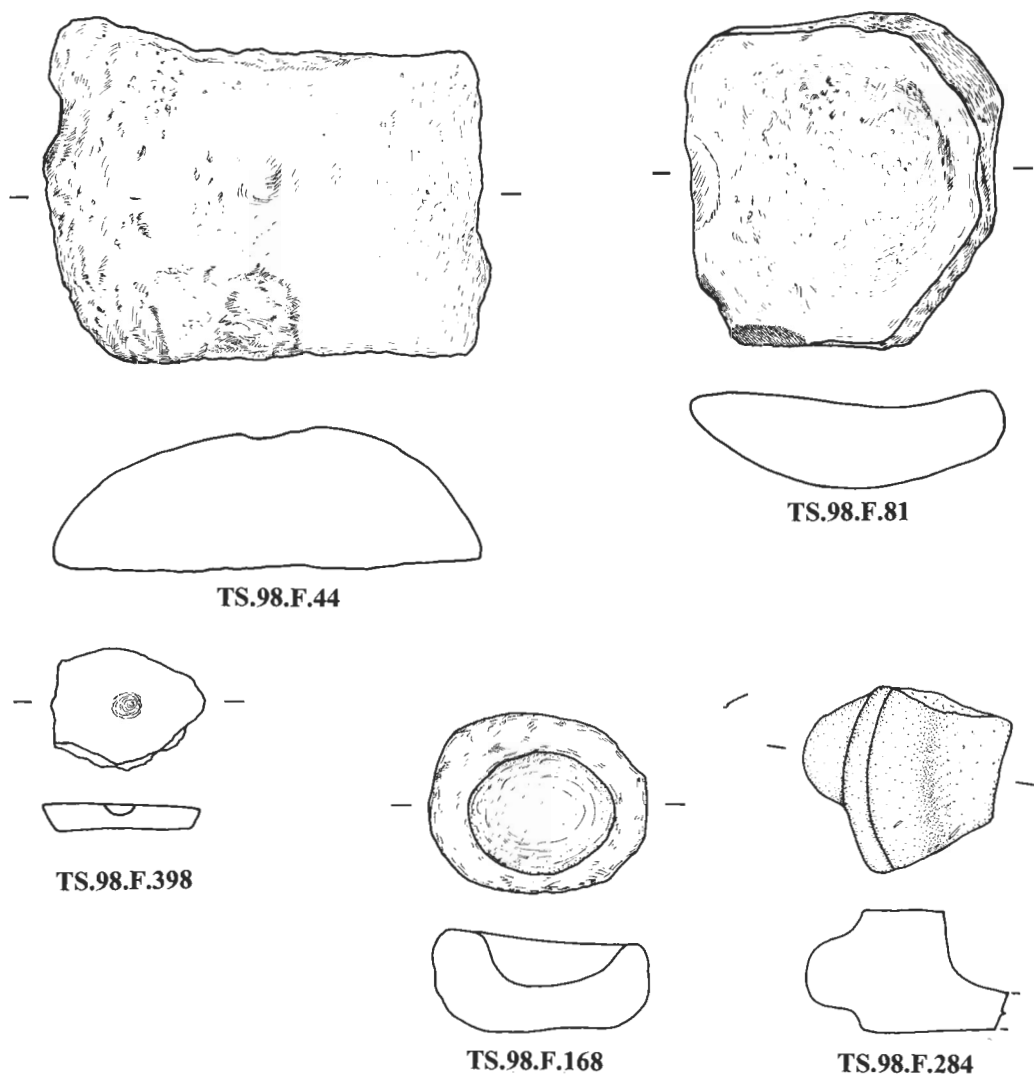
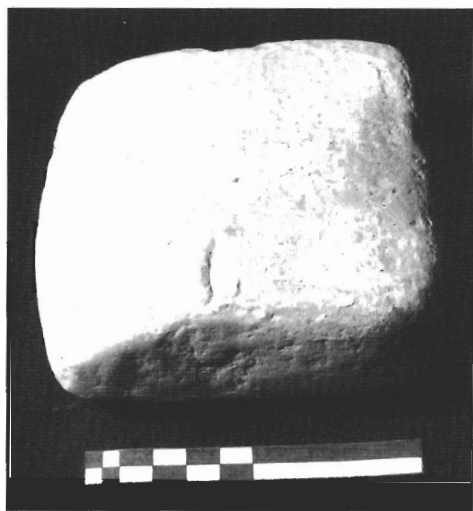


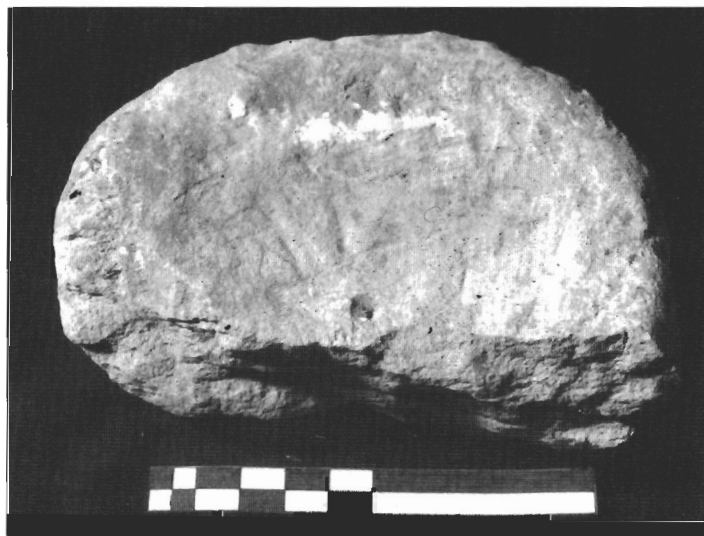
Fig. 1:59 Objects from L.319; Period IIIc1, Early Bronze IIIA, 2600-2450 BC.



TS.98.F.152



TS.98.F.284



TS.98.F.308

Fig. 1:60 Area F, objects from L.319; Period IIIc1, Early Bronze IIIA, 2600-2450 BC.

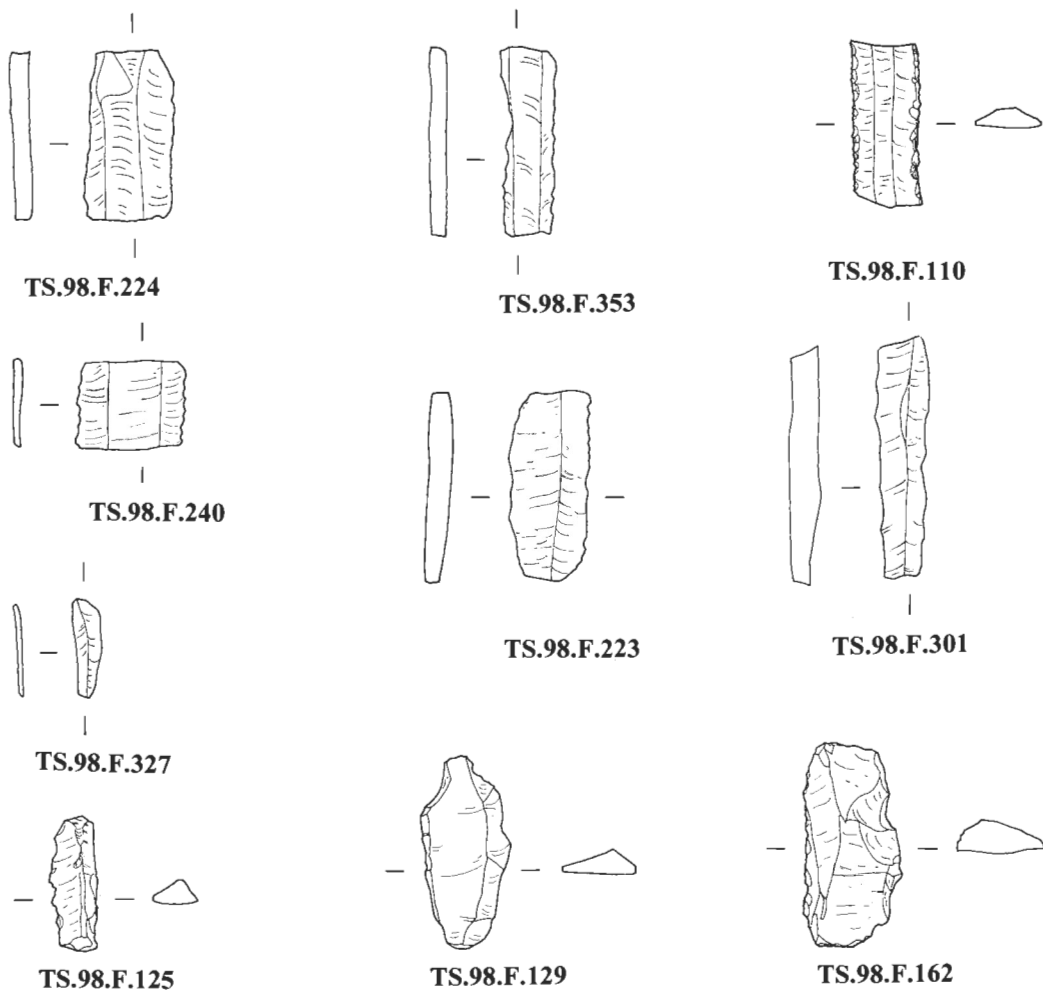


Fig. 1:61 Flint implements from Area F; Period IIIc1, Early Bronze IIIA, 2600-2450 BC.

2. AREA B

ARCHITECTURE AND STRATIGRAPHY OF BUILDING B1

Lorenzo Nigro

Benedetta Panciroli, Mohammed Ghayada¹

In Area B the investigation of Period IIIc2 (Early Bronze IIIB, 2450-2300 BC) double line of city-walls and the excavation of Building B1 (Marchetti, Nigro 1998: 23-80, fig. 1:1), located alongside them, have been prosecuted including squares AsIV4, ArIV4 and ArIV5. The enlargement to the north aimed at finding a definitive clue for matching architectural data obtained from present excavations with those available from the German expedition. Sellin and Watzinger excavated a long and deep trench across the tell passing just a few meters north of Area B.² The trench was then refilled by Garstang in 1931, who excavated radial cuts across the Period IIIc city-walls. Even if with many later disturbances, the new square has provided interesting data concerning the stratigraphy of the area and the architecture of Building B1 (figs. 2:1, 2:2).

2.1. THE STRATIGRAPHIC SEQUENCE

In Square ArIV5 the excavation was limited to the removal of the layers of collapsed mudbricks and ashes (F.39 c-a) overlying floor L.39,³ the last one of many superimposed floors.

2.1.1. Activity 5

Activity 5 represents the successive constructional phases of Building B1, all dating from Period IIIc2 (Early Bronze IIIB, 2450-2300 BC). During the previous campaign four operations were distinguished in Squares ArIV5 and AsIV5.⁴ The second season has indeed confirmed this stratigraphic subdivision.

¹ Benedetta Panciroli has written § 2.1; Mohammed Ghayada has written § 2.1.5; §§ 2.2 and 2.3 are by Lorenzo Nigro.

² Sellin, Watzinger 1913: fig. 21.

³ The state of preservation of the collapsed bricks in this room was remarkably good (Marchetti, Nigro 1998: figs. 1:17, 1:24).

⁴ Marchetti, Nigro 1998: 24-25.

Operation 5d

This is the earliest structural phase so far identified. It is represented by a large wall parallel to the boundary wall of the building, composed by two outer mudbrick curtains (W.34 and W.33)⁵ and by an inner composite fill of earth, rubble and pottery sherds (F.31b).⁶ Bound to W.33 and running perpendicular northward is W.204, which delimits two rooms (fig. 2:1).⁷ Two floors are tentatively attributed to this phase: they both are surfaces of beaten earth lying west of W.204: L.214, in the north-western corner of the trench, at the elevation of 8.98 m, and L.212 south of the former, at the elevation of 8.85 m (fig. 2:3).

Operations 5c-a

The successive raisings of the floors are not preserved, except for L.215 east of W.204. As the whole room has been heavily damaged by later activities, only a thin grey trace with white inclusions is still visible on the east face of W.204, at the elevation of 9.98 m. It was laid on top of an intentional fill of medium and large size stones (F.208), probably meant to regularize the ground. To this phase is also attributed a low bench, B.210, abutting on W.206 and consisting of stones lined by a 0.04 m thick layer of mortar. The top of this installation, likely to be related to L.215, is at the elevation of 10.16 m.

2.1.2. Activity 4

Building B1 underwent a violent destruction at the end of Period IIIc2: traces of this event are mostly visible in Squares ArIV5 and AsIV5, where the stratigraphy was not disturbed.⁸ In Square ArIV4 Operations 4c-a are represented by the mudbricks collapsed from W.204 (F.211). Such fill was largely cut by pit P.207b. The same happened to the mudbricks collapsed northwards from W.34 (F.39b-a), of which some are preserved on the edge

⁵ W.33 was previously thought to run northwards (Marchetti, Nigro 1998: 25); only the enlargement of the excavation area to the north made it possible to identify it correctly as the northern curtain of W.34.

⁶ In 1997 F.31b was interpreted as the earlier fill of P.31a, thus belonging to operation 2a (Marchetti, Nigro 1998: 27), but the new evidence points to an intentional fill within the two walls W.33 and W.34. The dating of the large quantities of pottery found in between W.34+W.33 fits the new interpretation, consisting almost exclusively of Period IIIc (or earlier) specimens (Marchetti, Nigro 1998: 28).

⁷ The existence of a third wall (W.213), and consequently of a third room, can only be supposed on the basis of some foundation stones, bound to the west face of W.204, and hinting at a wall parallel to W.206.

⁸ Marchetti, Nigro 1998: 25-26.

of the trench. Under the bottom of the pit there is a filling constituted of soft soil, with pottery and a few pebbles (F.209). In Square AsIV4 no feature belonging to Activity 4 is preserved.

Objects from Activity 4

In F.209 a polishing pebble (TS.98.B.306; fig. 2:5) was found, of a flat type common in Period IIIc2 (Early Bronze IIIB).

Catalogue of objects from F.209

TS.98.B.306, Polishing pebble (fig. 2:5)

Material: Limestone

Dims.: w. 3.5; d. 8.8 cm

Elevation: 8.85 m

Locus: F.209

Activity: 4

Period: IIIc2, Early Bronze IIIB

2.1.3. Activity 3

Activity 3 is to be interpreted as the abandonment which followed the destruction of Building B1: a compact reddish surface of erosion, already identified as F.32c-a,⁹ has been detected on top of W.204 (fig. 2:4), as well as on top of W.36, W.34 and W.206. These layers are preserved mainly on top of mudbrick structures; on the basis of some pottery fragments, and due to their stratigraphic location they may be tentatively attributed to Period IIId (Early Bronze IV, 2300-2000 BC).

2.1.4. Activity 2

In the following phase the area was cut by several pits, which have affected mostly the room east of W.204. Though the pottery materials from the fillings of the pits are mixed, the vast majority dates from Period IIIc2. New data have permitted to reassess the stratigraphy proposed, especially as regards the interpretation of F.31b, now considered an intentional filling belonging to operation 5d (see above, note 5).

Operation 2c

To this Operation belong P.31 and P.203b; the former, which cancelled almost completely the connection between W.204 and W.34+W.33, is roughly oval in shape, while the latter, which obliterated F.215, is irregular and larger (fig. 2:6).

⁹ Marchetti, Nigro 1998: 26, fig. 1:2.

Operation 2b

The fill of P.31 (F.31a) is of variable texture, being composed of reddish soil with small stones, broken mudbricks and charcoal traces. The fill of P.203b (F.203a) is similar except for the presence of charcoal, pottery sherds and objects.

Objects of Operation 2b

F.203a yielded many stone tools, possibly resulting from the destruction of Building B1 floors. A spherical polishing pebble (TS.98.B.270, fig. 2:7), a fragmentary quern (TS.98.B.278; fig. 2:7) may be ascribed to Period IIIc2, being perhaps related to food processing activities, as well as a flat pebble retrieved in F.31a (TS.98.B.254, fig. 2:9).

A barrel shaped limestone weight (TS.98.B.250, fig. 2:8), unfortunately broken, should correspond to the usual unit of 3 shekels (23.40 grams), already known from other specimens from Building B1.¹⁰ It confirms the picture illustrated by the findings from Area F,¹¹ that a administrative weighting system did exist already in Early Bronze Age Tell es-Sultan.

From the intentional filling F.31a come a stone and a pottery spindle whorl (TS.98.B.310, TS.98.B.262, fig. 2:9); the former has a rounded shape, flattened at the top and bottom, while the latter is a pierced pottery sherd. Even is plausible that these objects belong to the inventory of Building B1, their dating remain uncertain. The same is for a limestone mortar or pulping table (TS.98.B.316, fig. 2:10), also retrieved in F.31a, consisting of a flat slab with a shallow circular depression, which recalls similar devices found in Area F.¹² Usually these small slabs were set into a bench, serving for food transformation or similar productive activity, which implies the grinding of a powder or the mixture of semi-liquid substances.

Catalogue of objects of operation 2b

TS.98.B.250, Weight (figs. 2:8)

Material: Limestone

Dims.: l. 3.1; w. 5.4 cm

Elevation: 9.25 m

Square: ArIV4+AsIV4

Locus: F.203a

Activity: 2b

Period: IIIc2, Early Bronze IIIB

TS.98.B.254, Pebble (fig. 2:9)

Material: Limestone

Dims.: l. 2.3, w. 7.4, th. 5.7 cm

Elevation: 9.0 m

Square: ArIV4+AsIV4

Locus: F.31a

¹⁰ See on chapter 1, note 24.

¹¹ See on pp. 33-34.

¹² For example the two slabs found in L.305 (TS.98.F.130/b, TS.98.F.131/d), or the rectangular flat stone from L.319 (TS.98.F.152, fig. 1:60).

Activity: 2b
 Period: IIIC2, Early Bronze IIIB
TS.98.B.262, Spindle whorl (fig. 2:9)
 Material: Clay
 Dims.: d. 5.3 cm
 Elevation: 9.25
 Square: ArIV4+AsIV4
Locus: F.31a
 Activity: 2b
 Period: IIIC2, Early Bronze IIIB
TS.98.B.270, Polishing pebble (fig. 2:7)
 Material: Limestone
 Dims.: d. 8.5; d. 7.1 cm
 Elevation: 9.30 m
 Square: ArIV4+AsIV4
Locus: F.203a
 Activity: 2b
 Period: -
TS.98.B.278, Quern (fig. 2:7)
 Material: Limestone
 Dims.: l. 21.6, w. 16.0, th. 5.1 cm

Elevation: 9.36
 Square: ArIV4+AsIV4
Locus: F.203a
 Activity: 2b
 Period: -
TS.98.B.310, Spindle whorl (fig. 2:9)
 Material: Limestone
 Dims.: d. 3.7; th. 1.6 cm
 Elevation: 9.30 m
 Square: ArIV4+AsIV4
Locus: F.31a
 Activity: 2b
 Period: -
TS.98.B.316, Mortar (fig. 2:10)
 Material: Limestone
 Dims.: l. 22.6, w. 18.8, th. 9.5 cm
 Elevation: 9.30 m
 Square: ArIV4+AsIV4
Locus: F.31a
 Activity: 2b
 Period: IIIC1, Early Bronze IIIA

Operation 2a

The last phase of Activity 2 is represented by a third pit (P.207b), which cuts at the same time the west face of W.204 and P.31 (fig. 2:22). Its filling (F.207a) is constituted of small stones, broken mudbricks, sherds and some objects. Again the types of findings point to materials mainly resulting from Building B1. Among them there are a flint blade (TS.98.B.226, fig. 2:8) and a fragment of basalt quern (TS.98.B.366, fig. 2:11), of the elongated shape and rounded bottom typical of Early Bronze III specimens.¹³

Catalogue of objects from F.207a

TS.98.B.226, blade (fig. 2:8)
 Material: Flint
 Dims.: l. 4.7; w. 1.6; th. 0.5 cm
 Elevation:
 Square: ArIV4+AsIV4
Locus: F.207a
 Activity: 2a
 Period: IIIC, Early Bronze III

TS.98.B.366, Quern (fig. 2:11)
 Material: Basalt
 Dims.: l. 14.0; w. 31.0; th. 25.0 cm
 Elevation:
 Square: ArIV4+AsIV4
Locus: F.207a
 Activity: 2a
 Period: IIIC, Early Bronze III

¹³ Compare TS.97.B.91: Marchetti, Nigro 1998: fig. 1:34.

The pottery of Activity 2

Pits of Activity 2 yielded mixed pottery materials, ascribable both to Periods IIIc and IVa-c. A red-slip bowl with inturned rim, internally burnished from F.203a (fig. 2:23.2), and a miniature jar with vertical ledge handles and flat base from F.207a (fig. 2:23.5) can be attributed to Period IIIc.¹⁴ Preservation Ware shapes are attested to as well, and are here illustrated by two painted sherds from F.207a: a ledge handle with pushed up tips and upper red painting (fig. 2:24.5), and a jar bottom, self-slipped and painted with reddish brown vertical bands (fig. 2:24.10). These fragments may be attributed either to an earlier phase of Period IIIc2 or to a late phase of Period IIIc1, being similar to many found in Area F.¹⁵

Of particular interest is a Period IVb (Middle Bronze II) sherd, a self-slipped fragment of Preservation Ware, with an applied and incised decoration under a brown painted band (fig. 2:24.6).

2.1.5. Activity 1

Activity 1 represents the series of events which occurred in recent times, during the last centuries. In the light of the new excavations it was possible to define more precisely the stratigraphy proposed in the 1997 report, subdividing the whole Activity in four operations.¹⁶

Operation 1d

To this phase belongs fill F.202, corresponding to F.61 already identified in squares ArIV5 and AsIV5 and previously attributed to operation 1b.¹⁷ It is composed of layers of reddish soil and small stones, the uppermost of which is probably to be interpreted as the surface of the mound in recent times (fig. 2:19).

This filling has provided miscellaneous materials. The vast majority are flint blades, but also other tools and personal ornaments were found.

Among stone tools there are a well carved miniature mortar and a stone bowl with a crescent-shaped section (TS.98.B.273, TS.98.B.169, fig. 2:12), while personal ornaments are represented by a clay bead and a sea shell with pierced hinge, probably used as a pendant (TS.98.B.130, TS.98B.154, fig.

¹⁴ A similar specimen was also found in the 1997 campaign (Marchetti, Nigro 1998: fig. 1:33.3).

¹⁵ Compare, e.g., painted pottery on fig. 1:40.

¹⁶ Marchetti, Nigro 1998: 30-32.

¹⁷ Marchetti, Nigro 1998: 30-31, fig. 1:2.

2:12). The bead is made of a very peculiar pottery, with a regular inner texture due to the fine mineral sand temper employed for its fabric. Both pendants can be dated on the basis of comparisons to Period IIIc (Marchetti, Nigro, fig. 1:15).

Catalogue of objects from fill F.202

TS.98.B.130, Bead (fig. 2:12)

Material: Clay

Dims.: th. 0.5; d. 0.9 cm

Elevation: 10.45 m

Square: ArIV4+AsIV4

Locus: F.202

Activity: 1d

Period: IIIc, Early Bronze III

TS.98.B.154, Pendant (fig. 2:12)

Material: Shell

Dims.: w. 3.1; h. 1.2 cm

Elevation: 10.32 m

Square: ArIV4+AsIV4

Locus: F.202

Activity: 1d

Period: IIIc, Early Bronze III

TS.98.B.169, Bowl (fig. 2:12)

Material: Limestone

Dims.: w. 2.2; d. 5.3 cm

Elevation: 10.5 m

Square: ArIV4+AsIV4

Locus: F.202

Activity: 1d

Period: -

TS.98.B.273, Mortar (fig. 2:12)

Material: Limestone

Dims.: l. 3.4; d. 3.9 cm

Elevation: 10.66 m

Square: ArIV4+AsIV4

Locus: F.202

Activity: 1d

Period: -

Operation 1c

The successive phase is represented by a later a burial (D.205), dug in F.202, in the south-western corner of the trench (square ArIV4).

Burial D.205

The deposition consists of a shallow grave of elongated shape, east-west oriented (fig. 2:20): the eastern edge is oval and delimited by few small stones, while the western one lies beyond the limit of the excavated area. The grave was probably covered by a row of yellowish mudbricks, as it is also the case of other burials discovered along the Early Bronze III city-wall by the German expedition.¹⁸

The skeleton, in a good state of preservation, is stretched on its right side, with the face looking south in direction of Makkah, suggesting that it is an

¹⁸ Sellin, Watzinger 1913: 92-96, figs. 61-65. A burial in a similar stratigraphic position was excavated by the German expedition just inside of the *Hauptmauer* (W.1+W.2) on the summit of the east-west trench cut through the tell, as visible in the section Sellin, Watzinger 1913: fig. 21a, top right.

Ottoman burial;¹⁹ the left shoulder is turned forward, while the right one is concealed under the ribs.

The skeleton belonged to a young female individual, whose general conditions were good, except for some teeth and some vertebrae (the atlas in particular). The analysis of the pelvic bones showed that she had never brought forth.²⁰

Operation 1b

In 1909 the German expedition dug a trench parallel to Period IIIc2 (Early Bronze IIIB) city-wall (W.2), dumping materials in the whereabouts of Area B. Such event is recorded by filling F.60, a layer of grey soil and rubble, and its upper surface of reddish colour, L.201, sloping northwards (fig. 2:19, right). The area was further investigated by Garstang, who also filled Sellin's trench with materials removed from the outer side of W.1, mainly layers belonging to Period IVc (Middle Bronze III, 1650-1550 BC) rampart.²¹ These materials thus covered the modern topsoil (F.202) and the burial dug into it (D.205).

From F.60 come a Cananean blade, probably a sickle segment, with lozenge shaped section (TS.98.B.128; fig. 2:13), and a circular stone object with an inner shallow depression, possibly used as a mortar (TS.98.B.144; fig. 2:5).

Catalogue of objects from F.60

TS.98.B.128, blade (fig. 2:13)

Material: Flint

Dims.: l. 5.0; w. 2.2, th. 0.7 cm

Elevation: 11.41 m

Square: ArIV4+AsIV4

Locus: F.60

Activity: 1b

Period: IIIc, Early Bronze III

TS.98.B.144, mortar (fig. 2:5)

Material: Limestone

Dims.: d. 6.8; h. 2.0 cm

Elevation: 11.05 m

Square: ArIV4+AsIV4

Locus: F.60

Activity: 1b

Period: IIIc, Early Bronze III

¹⁹ In the Late Islamic tradition corpses are usually buried without coffins, stretched either on the back or on the right side, with the head at west and towards Makkah; the burial is usually a simple grave, but mudbrick-lined cists are also attested to. Grave-goods are prohibited by the Quran law (Simpson 1995: 241-245).

²⁰ For these few notes I wish to thank Dr. Issa Sarie', who examined rapidly the skeleton on the site in october 1998; for a complete report more detailed studies are needed, to be carried out by the Palestinian Department of Antiquities.

²¹ Marchetti, Nigro 1998: 30-31.

Operation 1a

The topsoil consists mainly of a thick layer of erosion called F.62; in the north-eastern corner of the trench it covers F.200, a filling of loose reddish soil with mixed mudbrick material and medium-sized stones, possibly resulting from the excavation of the nearby German trench. In this layer a polishing pebble (TS.98.B.113, fig. 2:13) has been found. Cleaning F.64, the uppermost layer in square AsIV5, two fragmentary basalt objects have been recovered: a quern with raised edges and a mortar (TS.98.B.45, TS.98.B.46, fig. 2:14).

The pottery of Operation 1a

The bulk of pottery material from this activity dates back to Periods III and IV, with few later specimens. Early Bronze III Simple Painted Ware is here illustrated by a red painted body fragment (fig. 2:23.9), and by a fragment of a spouted hole-mouth jar with an unusual geometric motive of reddish brown paint (fig. 2:23.8).

A quern from the surface

On the surface of the tell, in the nearby of Area B, but outside the limits of excavation, a fragmentary basalt quern (TS.98.B.413, fig. 2:10) has been found, possibly deriving from previous digs in the area.²²

Catalogue of objects of Operation 1a

TS.98.B.45, Quern (fig. 2:14)

Material: Basalt

Dims.: l. 32.0; w. 29.0, th. 10.0 cm

Elevation: 10.0 m

Square: AsIV5

Locus: F.64

Activity: 1a

Period: IIIC, Early Bronze III

TS.98.B.46, Mortar (fig. 2:14)

Material: Basalt

Dims.: l. 12.0; w. 15.0 cm

Elevation: 10.33 m

Square: AsIV5

Locus: F.64

Activity: 1a

Period: IIIC, Early Bronze III

TS.98.B.113, Pebble (fig. 2:13)

Material: Limestone

Dims.: d. 6.6 cm

Elevation: 10.34 m

Square: ArIV4+AsIV4

Locus: F.200

Activity: 1a

Period: IIIC2, Early Bronze IIIB

TS.98.B.413, Quern (fig. 2:10)

Material: Basalt

Dims.: l. 4.0; w. 22.5; th. 20.0 cm

Elevation: 11.45 m

Square: Surface

Locus: -

Activity: 1a

Period: IIIC, Early Bronze III

²² This object has been recorded herewith because it shows the same shape of TS.98.B.366 (fig. 2:11).

2.2. THE ARCHITECTURE AND FINDINGS OF BUILDING B1

Building B1 was already identified during the 1997 campaign as a large public architectural complex lying inside the city-walls (W.1 and W.2) to which it is directly bounded (fig. 2:22).²³ The enlargement of the excavated area in 1998 was planned in order to investigate its extension towards the north and the west. Notwithstanding some light discrepancies in the orientation, its general layout and dimensions can be reconstructed by plotting together the plans drawn by the Italian-Palestinian and the German expeditions (fig. 2:2). The outcome is a large building (roughly 30 x 30 m) bordered to the south by the city-walls and to the north by a street running towards the south-east; the central part of the structure is either unexplored, or heavily damaged by later pits, so that the understating of the whole plan is hampered. However, a substantial wall discovered in 1998 (W.204), suggests that there was a major central wing in this area. The southern wing is the only section of the building so far brought to light clearly readable.

2.2.1. *The southern wing: L.38 and L.39*

Located just inside the southern edge of the tell, the southern wing of Building B1 consists of a row of three rectangular rooms between the city-wall W.1+W.2 and W.34.

The filled-in wall W.34+W.33

W.34 is a 15 m-long mudbrick structure, roughly east-west oriented, which the 1998 campaign has revealed to be the southern curtain wall of a 2.5 m thick filled in structure, running parallel to the city-wall. The northern curtain has been definitely identified with W.33, a wall previously thought to extend towards the north, uncovered in the north-eastern corner of the excavated area.²⁴ Actually, the last season of excavations has clarified that it is the northern counterpart of W.34. The roughly 1.0 m-wide gap between the two walls was filled in with a compacted layer of pottery sherds and discharged building materials. Due to its state of preservation, it is impossible to establish the original height of W.34+W.33, however it may be suggested that the central filling was not covered on top, being used as a walking passageway within the building.²⁵

²³ Marchetti, Nigro 1998: 39-49, fig. 1:15.

²⁴ Marchetti, Nigro 1998: 39-40, figs. 1:10, 1:26.

²⁵ A similar device is attested to at contemporary Building P4 at Tell Mardikh, ancient Ebla: Marchetti, Nigro 1995-96, fig. 4, M.5036.

The southern boundary wall W.48

A further wall (W.48) parallel to W.34+W.33 abutted directly on W.2, thus delimiting Building B1 to the south. Its presence has been detected on the basis of very scanty remains identified on the north-eastern limit of Kenyon's Trench III, in square ArIV5, and of some stones of its foundation brought to light near the eastern limit of the excavation in square AsIV5. This second wall was almost completely dug away by Sellin's cut and subsequent erosion. In any case, it shows the stratigraphic relationship between Building B1 and the city-wall (W.2), indicating that the first was added to the latter when it was substantially repaired with the insertion of wooden post at the beginning of Period IIIc2 (Early Bronze IIIB, ca. 2450 BC).

Rib-walls dividing the rooms

The rooms were bounded by rib-walls (W.36, W.37), built on stone foundations with an approximate thickness of two bricks (0.7-0.8 m), linking the two main east-west walls.

The north-south rib-walls were instead rebuilt three times,²⁶ as the various raisings and refurbishing of the floors of the rooms also testify to, not necessarily one over the other. Thus, W.36²⁷ and W.37 must be ascribed only to the last phase of utilization of Building B1, when rooms L.39 and L.38 were also in use. A third rib-wall was surely present in front of the offset protruding from W.34 with a door socket still on its spot, which probably belonged to the door between room L.38 and an unfortunately not preserved room east of it.

L.38, the fireplace unit

In L.38 three superimposed floors of beaten earth, each one refurbished many times, were brought to light in 1997.²⁸ The north-west corner of the room was occupied by a hearth, paved with basalt stones (T.40), and flanked by a raised platform (B.42), where a stone-lined circular installation was set. Here, a smashed pot was found, demonstrating that the bench was used for cooking food.²⁹

²⁶ This is clearly visible, as concerns W.36, in section: Marchetti, Nigro 1998: figs. 1:2, 1:14.

²⁷ W.36, was partly excavated by Kenyon (who called it Wall NFF, phases lxxv-lxxvi of Trench III: Kenyon 1981: 210-212, pl. 269c).

²⁸ L.41 at an elevation of almost 8.55 m; L.45 at an elevation of 8.23 m, which is perhaps the original floor of the room.

²⁹ Marchetti, Nigro 1998: 42-43, fig. 1:30.

Even if the reconstruction of the entrance to L.38 on its eastern side points to a east-west oriented circulation in this wing of Building B1, there is no clear evidence showing a direct connection between L.38 and L.39. On the contrary, it seems that the two room were connected through the passageway on top of W.34+W.33.

L.39, the room of the two mortars

The removal of a thick layer of compacted and very well preserved collapsed mudbricks has allowed to clarify the limits of L.39 and to bring to light the floors of this room. The entire width of the room between W.36 and W.37 is of 3.05 m., and the length between W.48 and W.34 is approximately the same. In its north-eastern corner, a small flight of wooden steps connected it to the passageway on W.34+W.33 (fig. 2:6), which thus served as the east-west axis of the inner circulation. The presence of a door here is indicated by a door socket found on the spot of its western lintel, while the wooden staircase, completely carbonized, is preserved only where were the slots for the supporting timbers fixed into the wall (fig. 2:17).

The floor L.39 is a surface of reddish beaten earth, with many lime inclusions of small dimensions, lying at the elevation of 9.22-9.26 m. Two big limestone mortars were sunk into it (fig. 2:16). Other implements related to food processing have also been found in this room, as well as broken hole-mouth jars, thus confirm the hypothesis already put forward that the southern wing of Building B1 was devoted to food processing.

The pottery from L.39

A large amount of pottery has been recovered in the collapsed layers superimposed on L.39 (F.39c-b),³⁰ while only few sherds have been found on the floor itself. The pottery was mainly concentrated in the north-east corner of the room, and seemed to have fallen down from the upper passage on W.34. Among 362 sherds, all of which belonging to the Period IIIc2 horizon, 198 (55%) belong to Preservation Ware, 154 (42%) are Kitchen Ware and just 10 (3%) are Simple Ware. The best parallels are offered by the pottery coming from phases li and lii-liii of Trench I,³¹ phases lxii to

³⁰ These layers belong to Activity 4 which, as stated above, is the result of the destruction of Building B1: F.39c is a 0.40 m-thick ashy layer, rich in burnt materials lying directly on the floor, while F.39b is composed by the bricks collapsed into the room from W.34 (Marchetti, Nigro 1998: 26, fig. 1:14).

³¹ Kenyon, Holland 1983: 46-47, fig. 19.

lxvii-lxviii of Trench II,³² and phases lxxiv-lxxv to lxxvi-lxviib of Trench III,³³ to be compared with Period IIc2 (Early Bronze IIB, 2450-2300 BC).

Among open shapes two fragments represent carinated bowls with short upper wall and tapering rim (fig. 2:23.1), and deep bowls with plain rim (fig. 2:23.4);³⁴ fabrics are of light brown colour, with mineral inclusions and well fired.

Closed shapes are represented by the only complete fragment found, a small jar with plain, everted rim, slightly globular body and flat base (figs. 2:15, 2:23.3). To closed vessels, most probably jars, should also belong two spouts (fig. 2:23.6-7); however, the possibility that they belong to bowls or small kraters cannot be ruled out.

As already stated, the vast majority of vessels from L.39 belongs to Preservation Ware of medium size. All jars have flat bases (fig. 2:24.3, 8-9, 11-12) either necked or not, with plain flaring rim (fig. 2:24.1) or hole-mouth (fig. 2:24.4). Three fragments of the same vessel (fig. 2:24.1-3) illustrate a necked jar with elongated body and ledge handles. Fabric colours range from reddish yellow, sometimes light grey inside, to light brown; clays are fairly gritty and firing is generally not very good: in one case a pattern combing was used (fig. 2:24.7).

Cooking pots are all of the hole-mouth type, with curving upper walls, and folded inside and rounded rim (fig. 2:23.10-12).³⁵ They differ from hole-mouth jars both in fabrics, much coarser, and in bottoms, rounded rather than flat, and for this reason unidentifiable among body fragments of this kind of vessels.

Objects from L.39

Few objects have been found on the floor L.39: except for the door socket (TS.98.B.376) at the bottom of the staircase, they all are limestone mortars displaced along the north and west walls of the room. These mortars belong to a well known Early Bronze II-III type at Tell es-Sultan.³⁶ One of them, TS.98.B.374 (fig. 2:16), is pierced and provided with a flat working (worn) surface at one side; the diameter and the deepness of the cavity

³² Kenyon, Holland 1983: 166-167, fig. 65:1-14.

³³ Kenyon, Holland 1983: 233-236, figs. 100:13-26, 101-102.

³⁴ Compare Marchetti, Nigro 1998: fig. 1:33.1.

³⁵ Compare Marchetti, Nigro 1998: fig. 1:32.5.

³⁶ Similar objects were found also in the first season; compare TS.97.B.4, TS.97.B.43 (Marchetti, Nigro 1998: 45-46, figs. 1:3, 1:34), but also a specimen found by the German expedition in the near east-west trench (Sellin, Watzinger 1913: fig. 21, L4). As regards the general type see Dorrell 1983: 553.

indicate that a pole, and not a pestle, was used for flouring. A charred wooden pole was in fact found in 1997 not far from this spot (Marchetti, Nigro 1998: 49, fig. 1:20), which was interpreted as part of the collapsed ceilings of the room. In the light of the discovery of the pierced mortar, however, this may be considered the tool employed for grinding and pulping food. All of these stone objects were found *in situ*, but TS.98.B.48, that was found upside-down and was not in its original position (fig. 2:17).

Catalogue of objects from L.39

TS.98.B.48, Mortar

Material: Limestone

Dims.: l. 29.0; w. 22.0, th. 12.0 cm

Elevation: 9.22

Square: ArIV5

Locus: L.39

Activity: 5a

Period: IIIc2, Early Bronze IIIB

TS.98.B.374, Mortar (fig. 2:16)

Material: Limestone

Dims.: l. 14.9; w. 46.0, th. 44.0 cm

Elevation: 9.36 m

Square: ArIV5+AsIV5

Locus: L.39

Activity: 5a

Period: IIIc2, Early Bronze IIIB

TS.98.B.375, Mortar (fig. 2:16)

Material: Limestone

Dims.: l. 19.6; w. 41.5, th. 34.0 cm

Elevation: 9.39 m

Square: ArIV5+AsIV5

Locus: L.39

Activity: 5a

Period: IIIc2, Early Bronze IIIB

TS.98.B.376, Door socket

Material: Limestone

Dims.: l. 11.0; w. 25.0, th. 20.0 cm

Elevation: 9.51 m

Square: ArIV5+AsIV5

Locus: L.39

Activity: 5a

Period: IIIc2, Early Bronze IIIB

2.2.2. The central wing: Wall W.204 and Room L.215

In squares ArIV4 and AsIV4 a further row of rooms was brought to light, separated from L.38 and L.39 by W.34+W.33.³⁷

The central grid of main walls

From the north face of the latter wall an impressive structure about 1.10 m large branches off northwards (W.204). It rests on stone foundations as well, with regular mudbricks measuring 0.30 x 0.40 x 0.12 m; the top of the wall is preserved at the elevation of 10.62 m in the south and 10.29 m in the north. W.204 is part of the major supporting structure of Building B1, and thus it is neither aligned with rib-walls W.36 and W.37, nor with the thinner

³⁷ One should rather say "connected to", taking into consideration the presumable function of passageway accomplished by W.34+W.33 (see note 25 above).

structures identified by Sellin to the north; yet it is bound to and in phase with W.34+W.33, so it has been attributed to operations 5d-a.

These massive orthogonal structures suggest that a rectangular wall grid did exist, being the central supporting core of the building.

Room L.215

The last phase of Activity 5 is here attested only east of W.204, where the preparation of a floor (F.208) and a 0.2 m-high bench (B.210) are preserved.

The floor itself (L.215) is indicated only by the trace it left in the face of W.204, at the elevation of 9.98 m. Nothing can be said about the function of this room, since no objects have been found *in situ* neither on the floor nor on the bench.

The connection between the two rows of rooms, that lie at a different elevation,³⁸ has again to be sought on the passageway over W.34+W.33.³⁹

Rooms east of W.204

The existence of another row of rooms east of W.204 is demonstrated by a short section of a further rib-wall extending westwards from the latter. Two rooms can be in fact reconstructed in the western half of the excavated square (L.212, L.214, fig. 2:3), albeit they were completely obliterated by later pits, which were sunk down to a level deeper than the foundations both of wall W.204 and W.34+W.33.

No data are available for connecting these rooms to the known system of circulation in the southern wing of Building B1. However, it seems that both were accessible from west or north, thus depending on a different wing of Building B1.

2.3. INTERPRETATION AND DATING OF BUILDING B1

At the end of the second season of excavations in Area B the original extension and function of Building B1 have not yet been definitely clarified. Some hypotheses may be put forward concerning the overall architectural layout of this building, as well as on its function, however only the chronology seems to have been satisfactory ascertained.

³⁸ L.215 (9.98 m) is considerably higher than L.38 and L.39 (respectively 8.94 m and 9.25).

³⁹ The same happened obviously in operation 5d, where L.46 is at the elevation of 8.23 m, while L.212 and L.214 are at 8.85 m and 8.98 m respectively.

2.3.1. Chronological setting of Building B1

Three kinds of evidence can be supplied for fixing the chronology of the life-use of Building B1: stratigraphy, pottery and other finds comparative analysis and radiocarbon dates.⁴⁰

Stratigraphy

The stratigraphic location of Building B1 can be fixed in respect of two main pinpoints. The first one is the Period IIIc city-wall W.2, since, as stated above, the foundation of Building B1 has to be related to the later major reconstruction of the city-wall (W.1), which marks the beginning of Period IIIc2 (Early Bronze IIIB, around 2450 BC). The second one is, is the link with Kenyon's stratigraphy, provided by W.36, which actually is Kenyon's wall NFF, belonging to phases lxxv-lxxvi of Trench III, and dating from the final phase of Early Bronze III (Kenyon 1981: 212). This allows to connect our stratigraphy (i.e. Activity 5 in Area B) with Kenyon's, ascribing Building B1 to Period IIIc2. The stratigraphic evidence seems especially in this case of basic importance: Building B1 is linked to W.2 and covered and cut by the Period IVc rampart fillings and later pits and occupation layers.

Pottery and objects

A second decisive chronological indication, even if just limited to the final occupation of Building B1, is given by the pottery assemblage from its destruction layer (Activity 4), which illustrates a final Period IIIc2 ceramic horizon (see above and Marchetti, Nigro 1998: 44-45). This points to a dating around the end of the 23rd century BC for the fierce fire which destroyed not only Building B1, but the whole town.⁴¹

Objects and tools are less useful as chronological indicators, however some specific items, have been found only in Period IIIc2 layers. This is the case, for instance, of a small stone tables or mortars with a central depression (TS.98.B.144, fig. 2:6; TS.98.F.278, fig. 2:8, TS.98.B.169 and TS.98.F.273, fig. 2:12). The technique of embossing, with cuts all showing the same orientation is in fact typical of this period.

Radiocarbon dates

The same destruction layers yielded some charcoal samples, which have provided radiocarbon dates.

⁴⁰ An overall summary of data from Area B is found in Nigro in press.

⁴¹ Note that some pottery shapes are clear forerunners of classic Period IIId1 (Early Bronze IVA, 2300-2150 BC) types, such as the small Simple Ware jar on fig. 2:23.3.

Even if these samples were sections of carbonized wooden beams employed in the ceilings and collapsed during the final destruction of Building B1, the dates obtained, obviously, must be referred to the time when these ceased to live, i.e. the plants they belonged were cut.⁴¹ The mean of this dates is around 2450 BC, when Building B1 was possibly erected.

Dating

Stratigraphy, pottery analysis and radiocarbon dates thus converge towards a dating of Building B1 utilization to Period IIIc2, between 2450 and 2300 BC.

2.3.2. The function of Building B1

At least six rooms of Building B1 have been uncovered so far, however very few data are available for establishing the purpose to which this building was dedicated.

Moreover, if one takes into account the unequal state of preservation of its quarters, it is immediately clear that not a decisive indication can be obtained in the present state of archaeological investigation. It is instead almost surprising that the unity of all structures uncovered has been neatly recognized. One of the main clue is in fact the building technique, which is unique even if walls are not always aligned, nor built at a homogeneous elevation, since the building stands on terraces raising towards the north and the west.

The extension of Building B1, around 30 m on the east-west axis and 20 m on the north-south, the dimensions of its main walls (from 1.10 to 2.40 m in width), and the direct link with the city-walls, upon which it abuts, are hints at its public function, and distinguish it very clearly from coeval domestic units.

If one looks at the architectural layout and at its location in the town, in the southern-western corner of the city-wall, Building B1 can be compared with two similar buildings brought to light against the inner face of Period IIIc city-wall by the British⁴² and German⁴³ expeditions. These kind of buildings do not have to be confused with the rectangular elongated towers commonly built across the line of defences in the Early Bronze III cities of

⁴¹ These samples gave the calibrated date 2572-2465 BC: see Appendix D.

⁴² The plan of the location of Building B1 in respect of the city-wall, clearly recalls that of a building excavated by Kenyon in Site M along Wall TW.IV (Kenyon 1981: pls. 289-90, 292).

⁴³ Sellin, Watzinger 1913: plan I.

Palestine.⁴⁴ They are instead less impressive constructions, without an explicit military or defensive function, even if directly linked to the city-walls. Usually they are subdivided in regular arrays of rooms, recalling the plan of barracks or storerooms. This, of course, suggests that they were built by the same ruling institution which was responsible of the city defences.

Building B1 was possibly built by the same institution responsible for the city-wall, and, as far as data available allow to know, its southern wing was devoted to food preparation (cereals, legumes, olives)⁴⁵ and cooking, at a scale which seems larger than that usually exhibited by private houses. This is well exemplified by the many grinding devices of L.39, and the large and well refined hearth T.40.

⁴⁴ This typology has been correctly identified by S.W. Helms at Tell Dothan (1977: 105-106), and described more precisely by A. Kempinski (1992a: 72-74).

⁴⁵ See Appendix D and F in this volume.

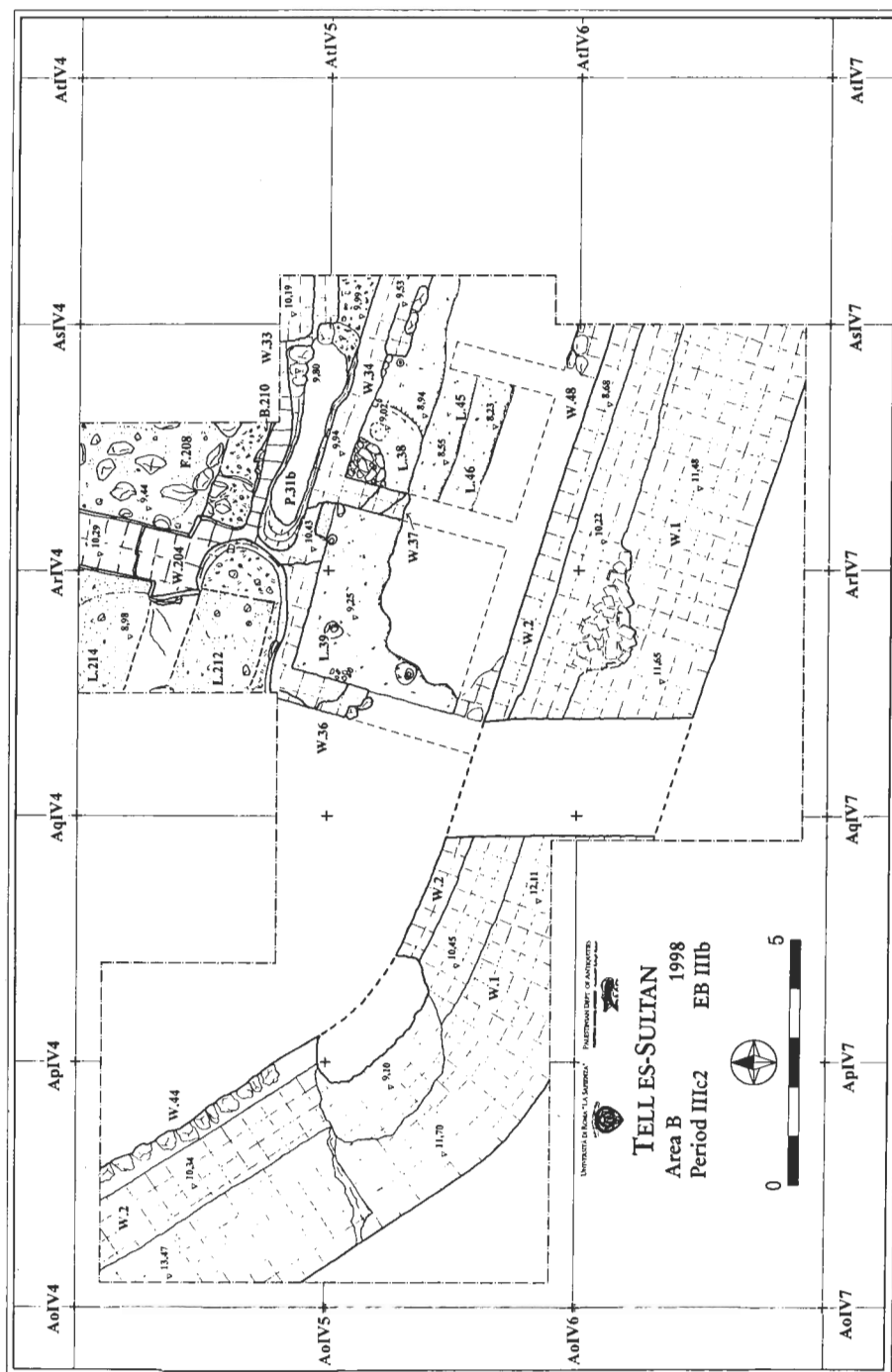


Fig. 2:1 Detailed plan of Area B; Period IIIc2, Early Bronze IIIB, 2450-2300 BC.

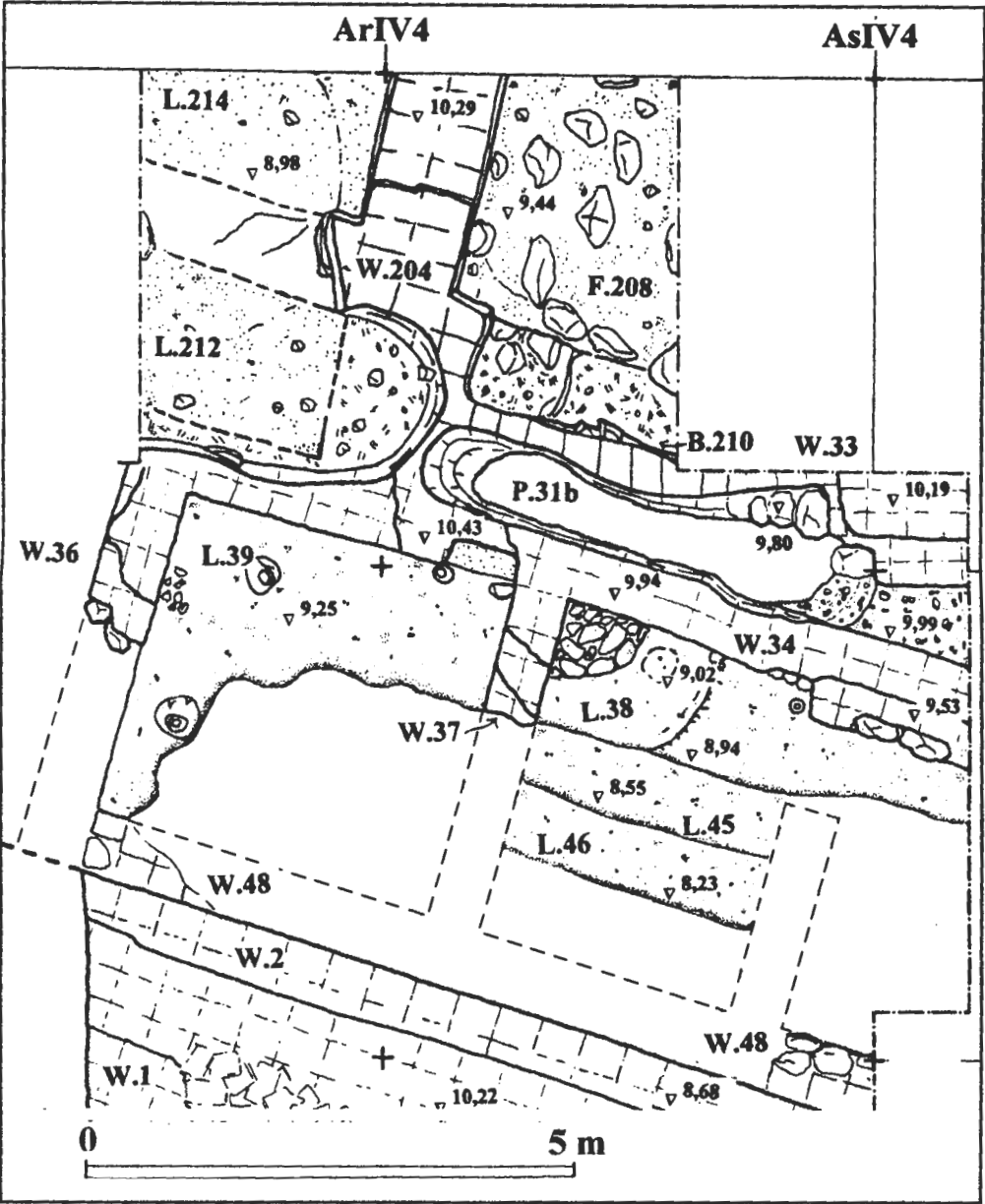


Fig. 2:3 Detailed plan of squares ArIV4 + AsIV4; Period IIIc2, Early Bronze IIIB, 2450-2300 BC.

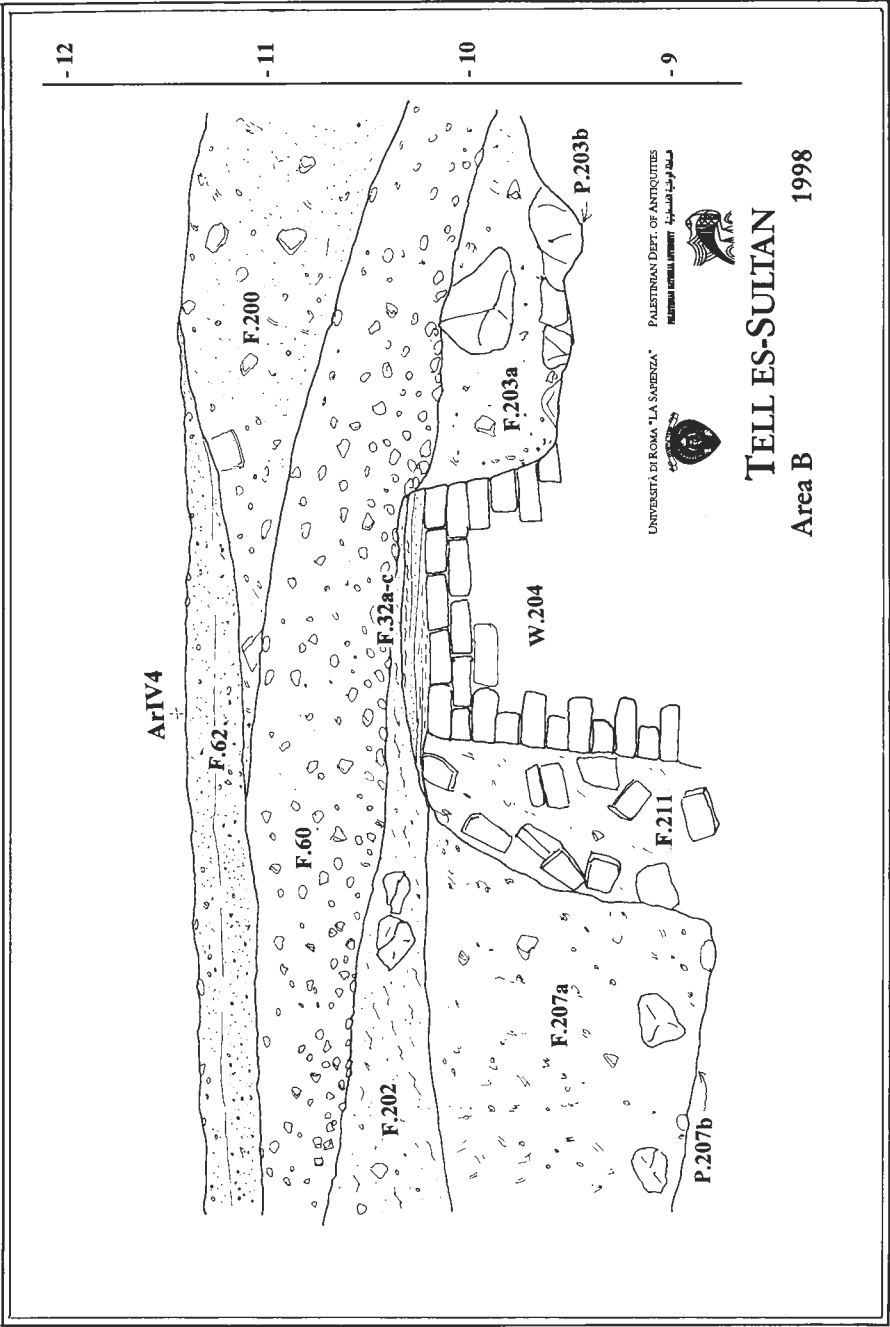


Fig. 2.4 North archaeological section of squares ArIV4 + AsIV4; Period IIIc2, Early Bronze IIIB, 2450-2300 BC.

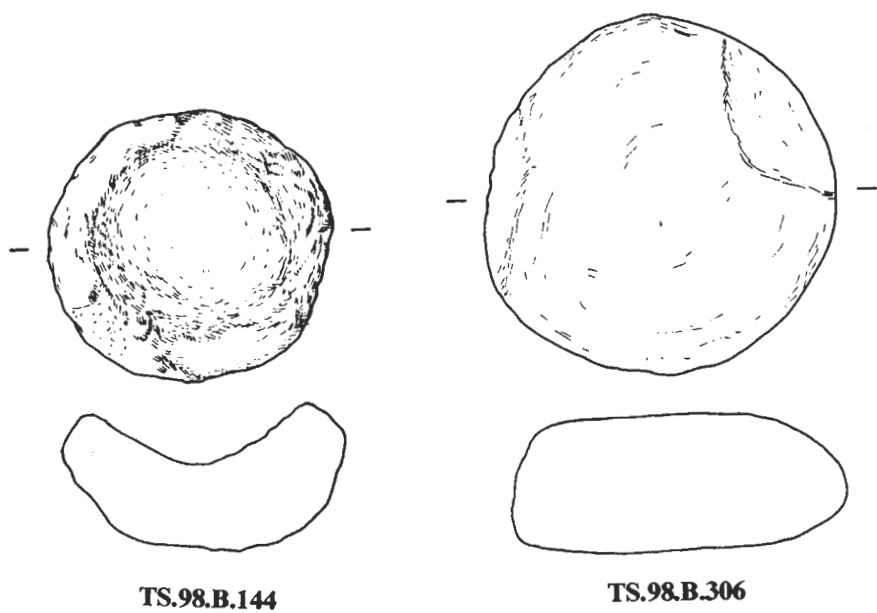


Fig. 2:5 Stone bowl TS.98.B.144 from F.60, polishing pebble TS.98.B.306 from F.209 (scale 1:2).



Fig. 2:6 Area B, Building B1 from west. The oval shaped pit P.31 (foreground) cuts the connection between W.33+W.34 (middle) and W.204 (left); Period IIIc2, Early Bronze IIIB, 2450-2300 BC.

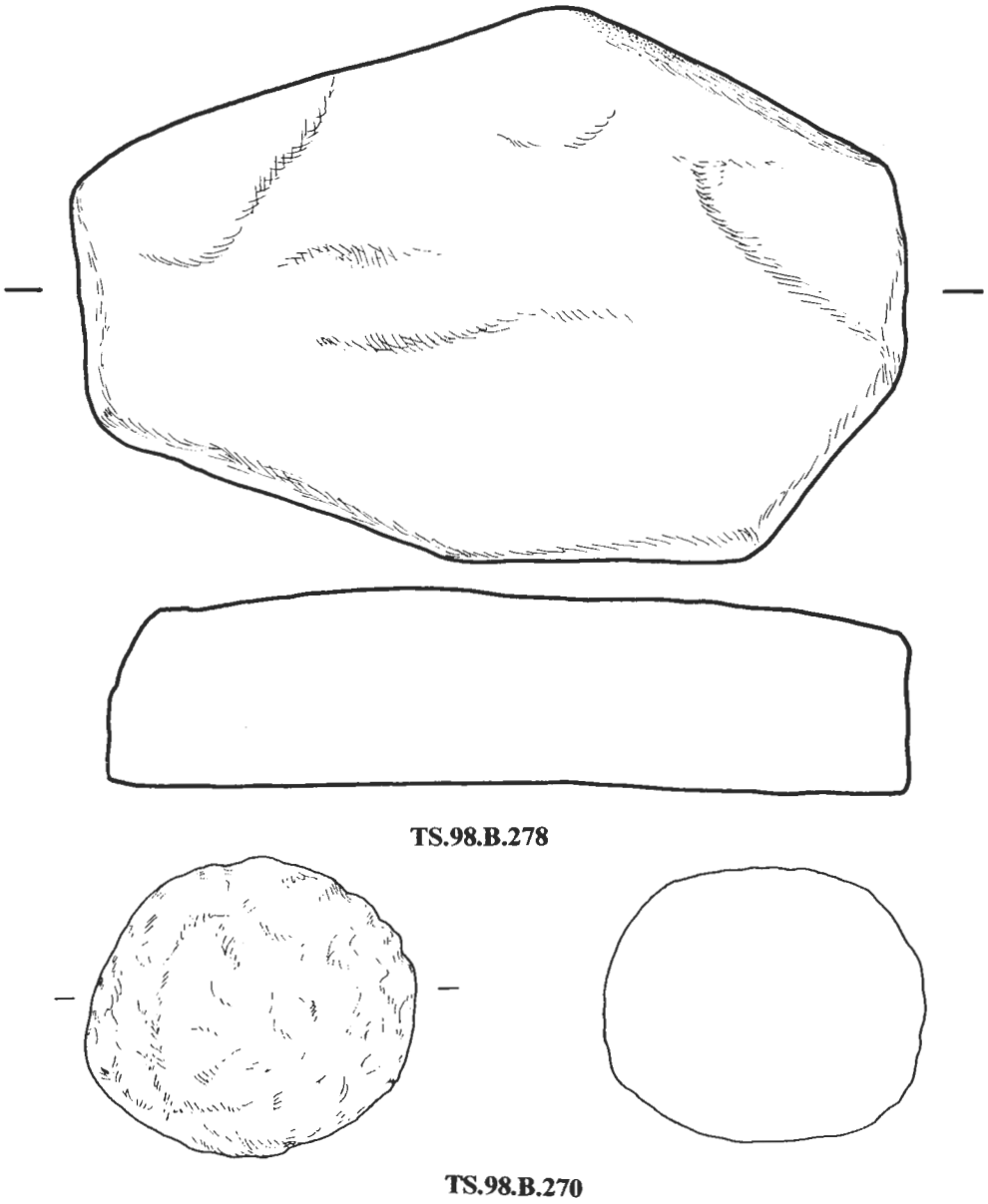


Fig. 2:7 Quern TS.98.B.278 and polishing pebble TS.98.B.270 from F.203a (scale 1:2).

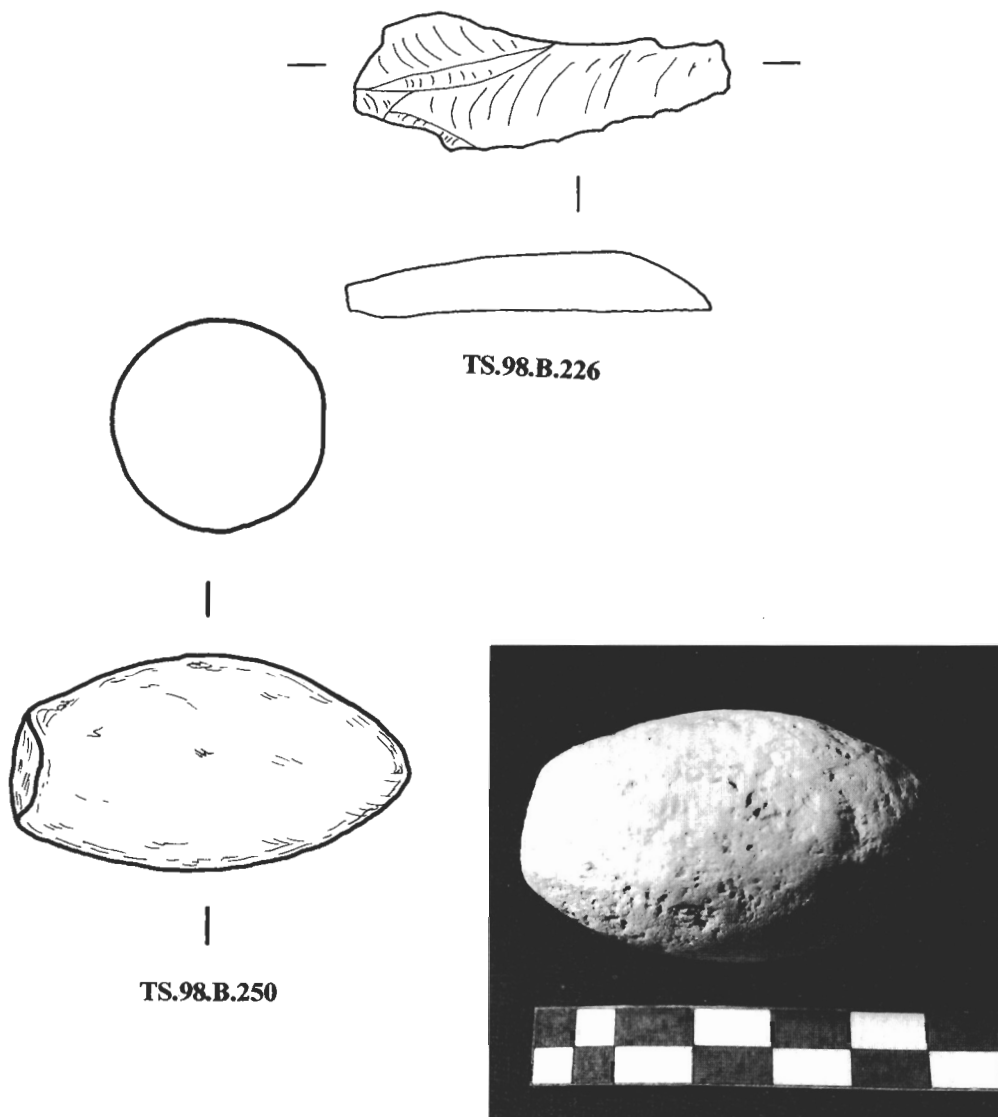


Fig. 2:8 Weight TS.98.B.250 from F.203a and flint blade TS.98.B.226 from F.207a (scale 1:1).

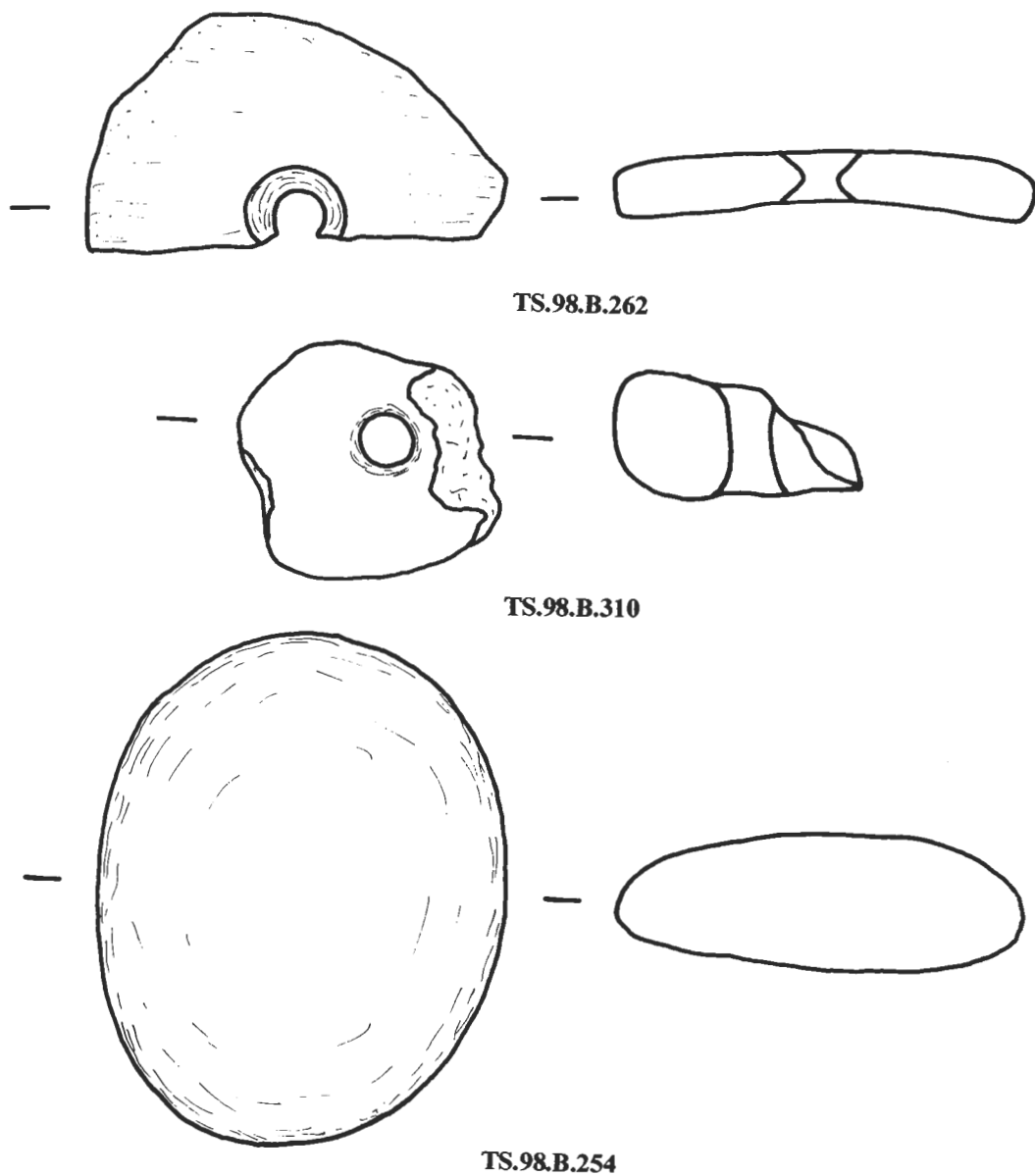


Fig. 2:9 Spindle whorls and polishing pebble from F.31a (scale 1:1).

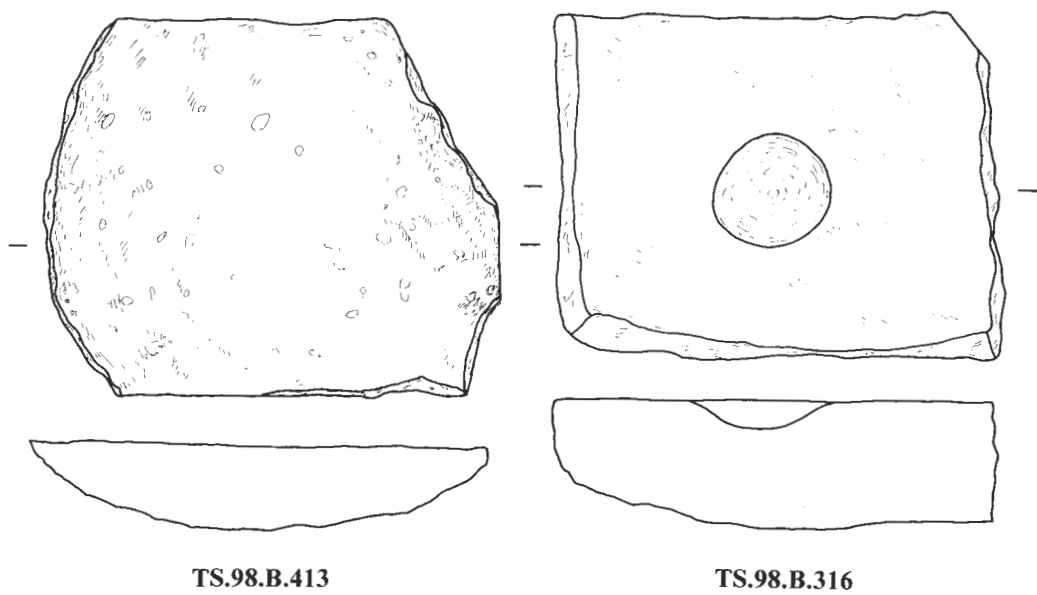
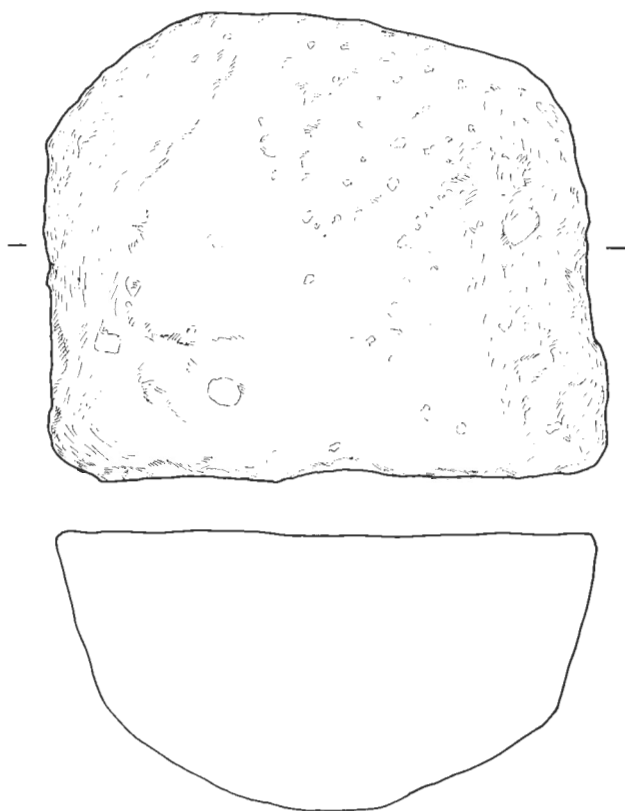


Fig. 2:10 Area B, quern TS.98.B.413 from the surface and mortar TS.98.B.316 from F.31a (scale 1:4).



TS.98.B.366

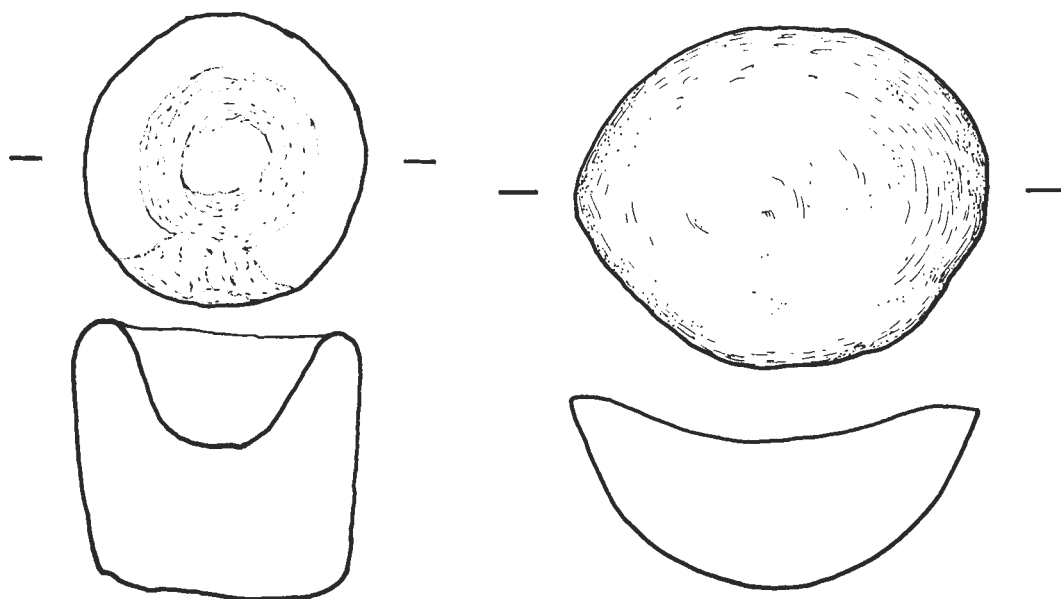
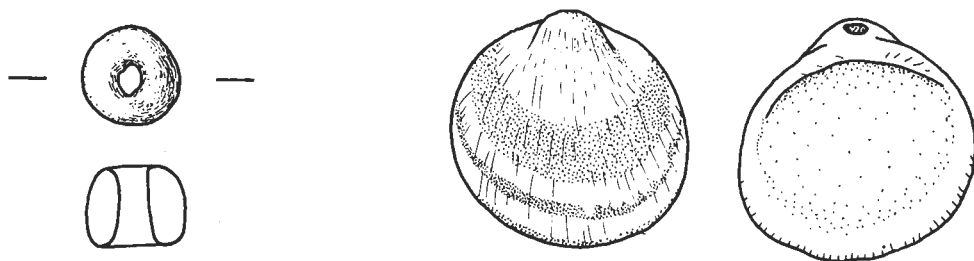
**TS.98.B.273****TS.98.B.169****TS.98.B.130****TS.98.B.154**

Fig. 2:12 Two small mortars and two pendants from F.202 (scale 1:1).

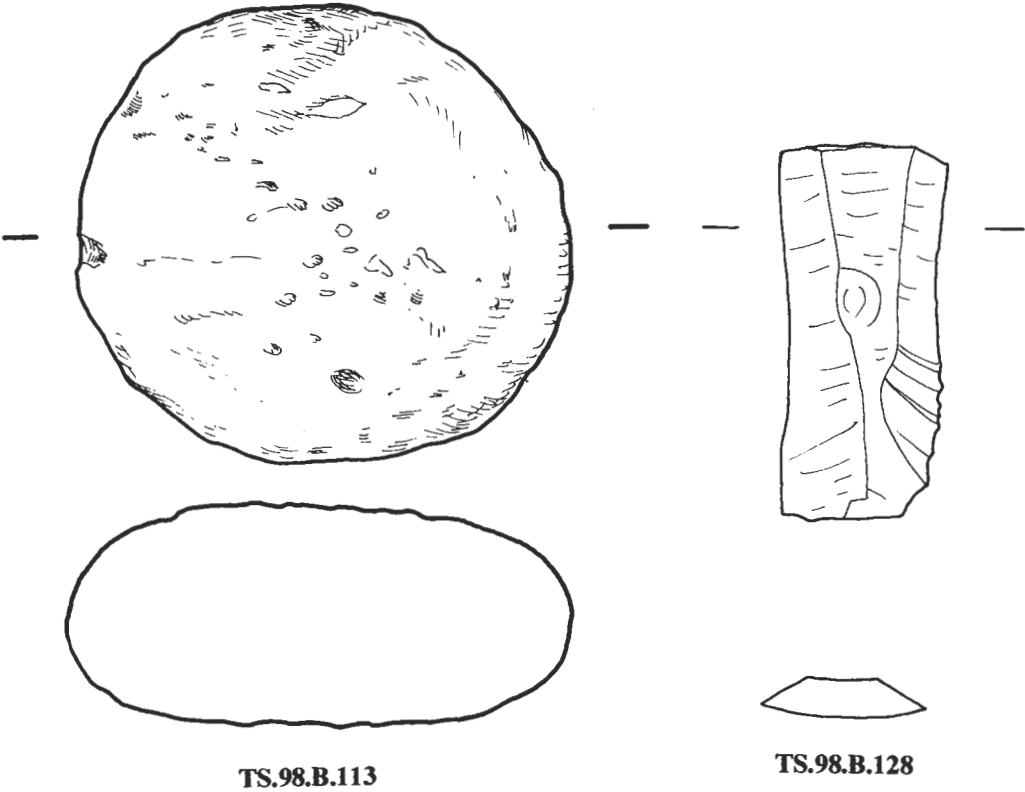


Fig. 2:13 Polishing pebble TS.98.B.113 from F.200 and flint blade TS.98.B.128 from F.60 (scale 1:1).

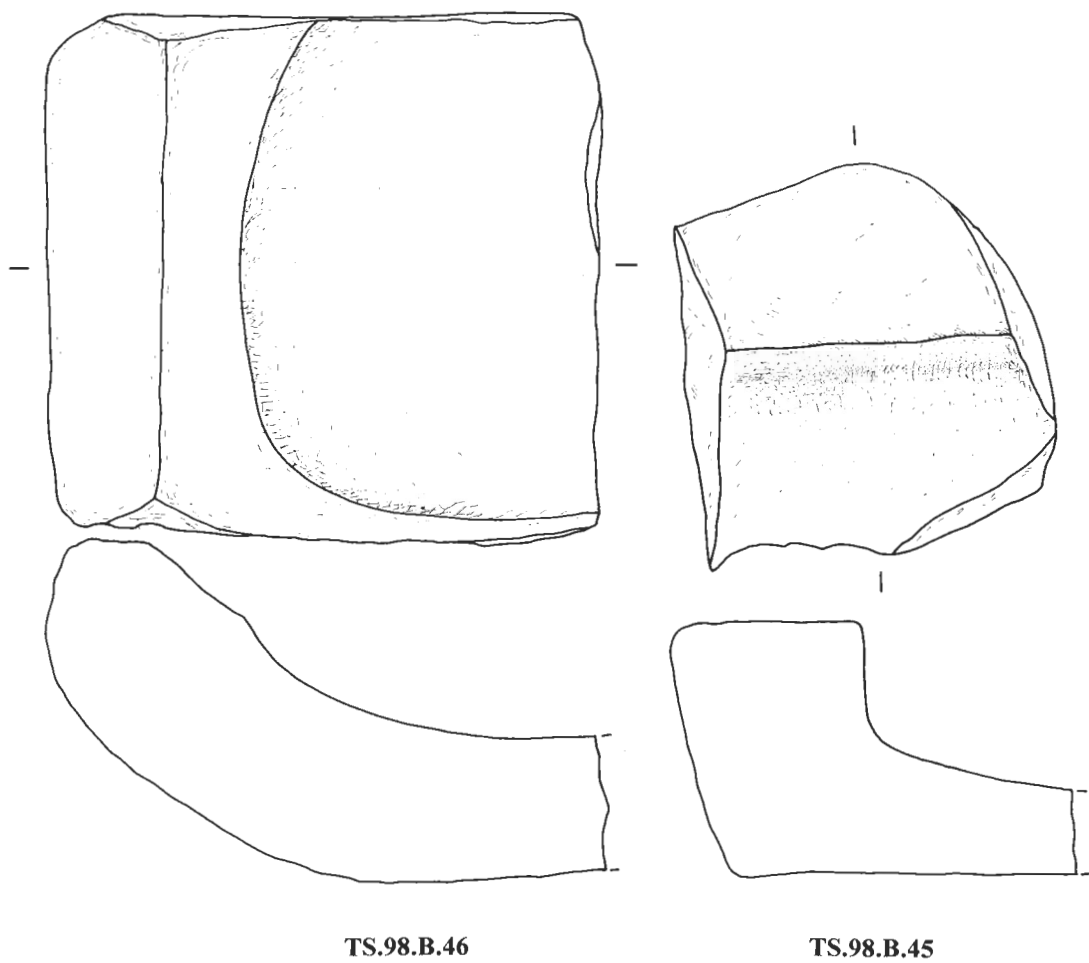


Fig. 2:14 Quern TS.98.B.46 and mortar TS.98.B.45 from F.64 (scale 1:4).



Fig. 2:15 Area B, Building B1, small jar TS.98.B.50/3 from F.39b; Period IIIc2, Early Bronze IIIB, 2450-2300 BC.

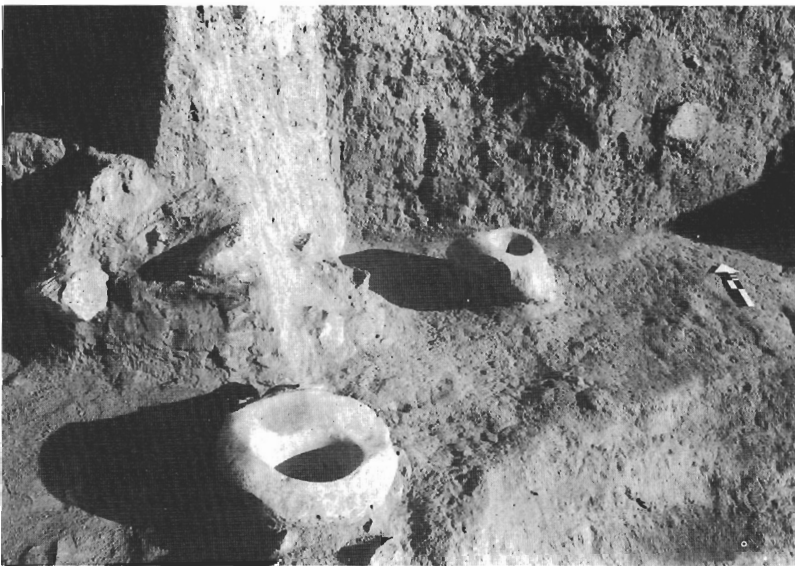


Fig. 2:16 Area B, Building B1, stone mortars TS.98.B.374 (left foreground) and TS.98.B.375 (right background) *in situ* on floor L.39; Period IIIc2, Early Bronze IIIB, 2450-2300 BC.



Fig. 2:17 Area B, Building B1 from south. Left foreground: L.39 (Operation 5a). Note the objects *in situ* on the floor and the staircase in W.34. Right foreground: L.45 (operation 5b) and L.38 with hearth T.40 (operation 5a). Background: the second row of rooms damaged by later pits. In between, where the north is, W.204; Period IIIc2, Early Bronze IIIB, 2450-2300 BC.



Fig. 2:18 Area B, Building B1 from west. W.204 (north-south oriented) and W.34+W.33 (east-west oriented) after the clearing of F.31b. Note that the connection between the two walls has been almost completely cancelled by P.31 (left foreground).

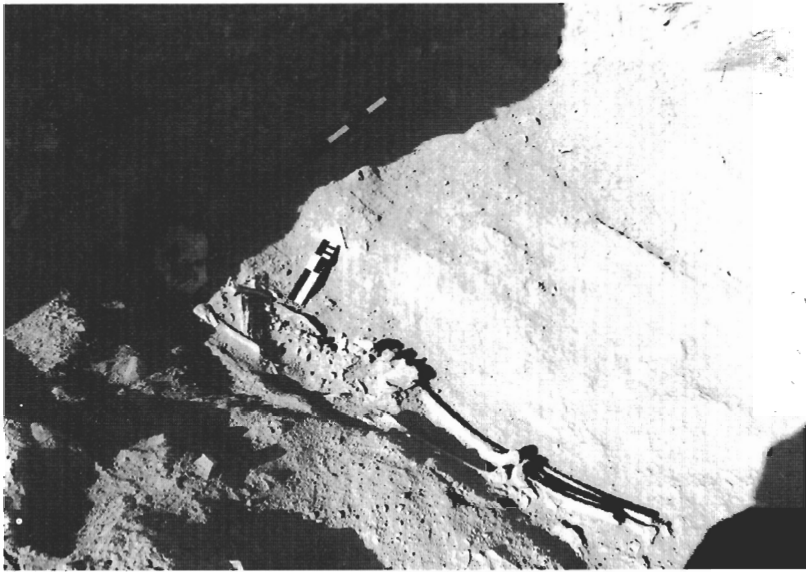


Fig. 2:19 Area B, burial D.205; Period XI, Ottoman period, 19th century AD.



Fig. 2:20 Area B, L.201, the upper surface of F.60, from north-west.



Fig. 2:21 Area B, Building B1, W.204 (middle) cut by P.203b (foreground) and P.207b (background); Period IIIc2, Early Bronze IIIB, 2450-2300 BC.



Fig. 2:22 Area B looking north-west, Building B1 (left) and the city-walls W.1 and W.2 (right). In the middle the cut of the Sellin's trench; Period IIIc2, Early Bronze IIIB, 2450-2300 BC.

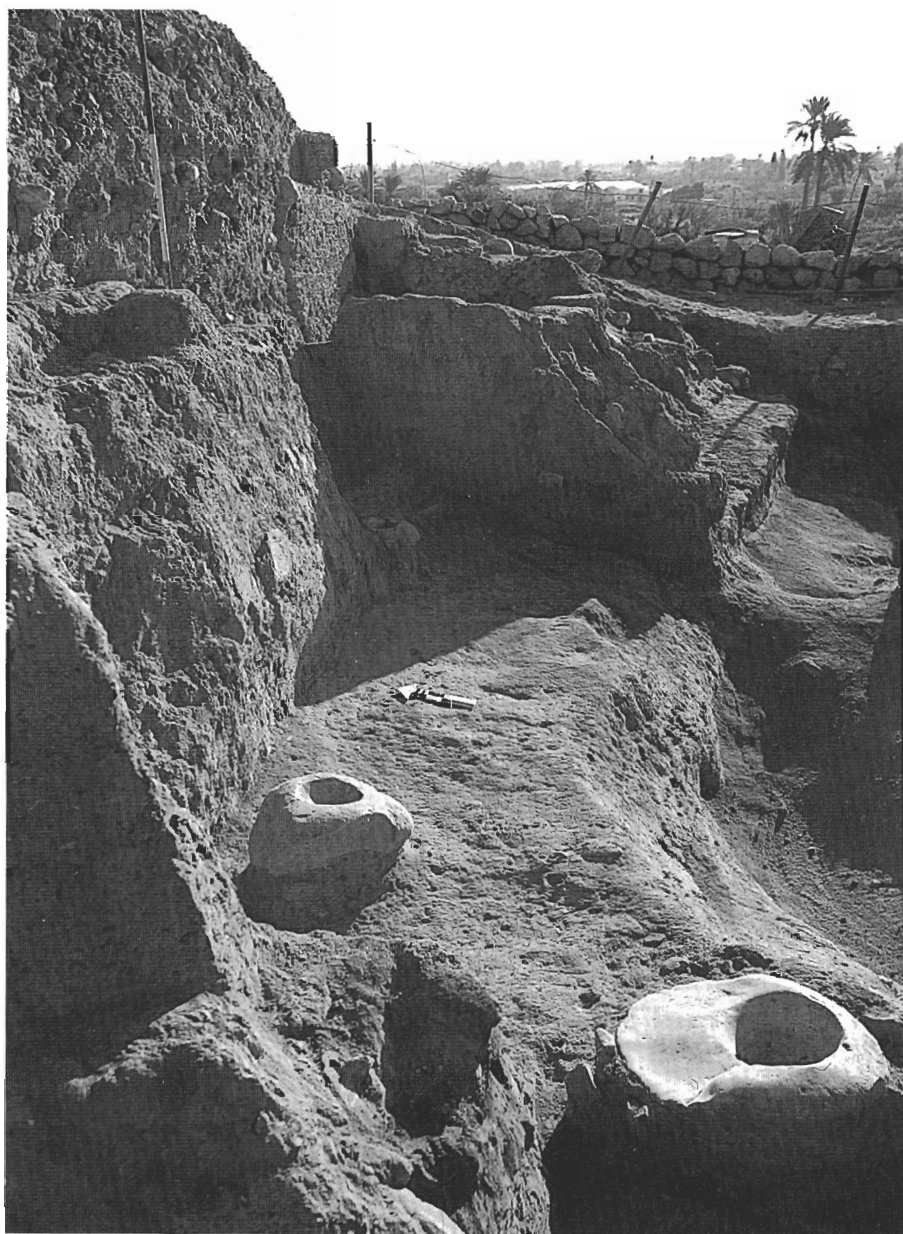


Fig. 2:25 Area B, Building B1: L.39c from west; in the foreground the two mortars; Period IIIc2, Early Bronze IIIB, 2450-2300 BC.

N°	Reference	Shape	Class	F. Colour	Temper	Firing	Locus
1	TS.98.B.50/2b	Jar	PW	7.5YR6/6	M->	M	F.39b
2	TS.98.B.50/2a	Ledge handle	PW	7.5YR6/6	M2>	M	F.39b
3	TS.98.B.50/2c	Jar	PW	7.5YR6/6	M2>	M	F.39b
4	TS.98.B.50/14	Hole-mouth jar	PW	10YR7/3	M123>	MH	F.39b
5	TS.98.B.175/2	Ledge handle	PW	10YR6/4	M1-	M	F.207a
6	TS.98.B.175/25	Body fragment	PW	5YR7/3	M2-	M	F.207a
7	TS.98.B.50/7	Body fragment	PW	5YR7/4	M2-	M	F.39b
8	TS.98.B.50/5	Jar	PW	7.5YR7/6	M2>	M	F.39b
9	TS.98.B.50/16	Jar	PW	10YR6/4	M12-	M	F.39b
10	TS.98.B.175/27	Jar	PW	10YR6/3	M1-	MH	F.207a
11	TS.98.B.50/15	Jar	PW	7.5YR7/6	M2>	M	F.39b
12	TS.98.B.50/4	Jar	PW	7.5YR7/6	M3>	M	F.39b

Scale 1:4

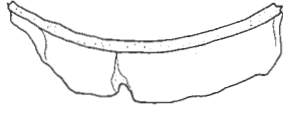
Fig. 2:23 Pottery from F.39b and F.207a.



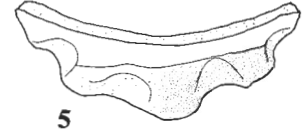
1



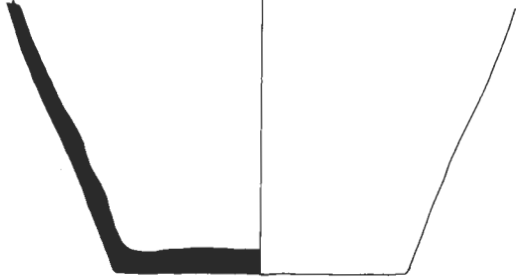
4



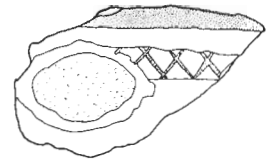
2



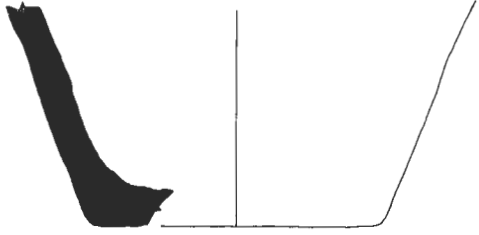
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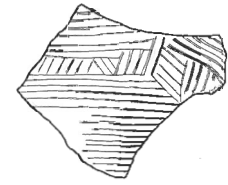
3



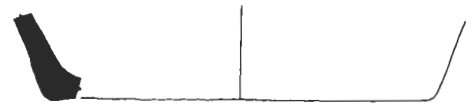
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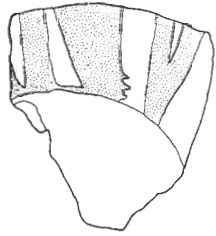
8



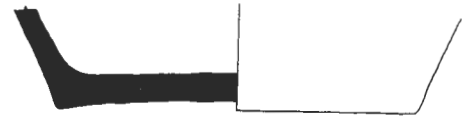
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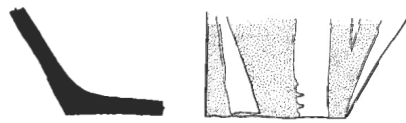
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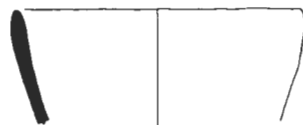
N°	Reference	Shape	Class	F. Colour	Temper	Firing	Locus
1	TS.98.B.50/11	Carinated bowl	SW	7.5YR6/4	M2>	MH	F.39b
2	TS.98.B.63/26	Large bowl	SPW	5YR6/6	M2-	M	F.203a
3	TS.98.B.50/3	Small jar	SW	7.5YR5/2	M2>	MH	F.39b
4	TS.98.B.50/10	Deep bowl	SW	10YR7/3	M2-	MH	F.39b
5	TS.98.B.175/26a-c	Miniature jar	SW	10YR6/1	M1-	M	F.207a
6	TS.98.B.50/6	Spout	SW	10YR7/3	M2-	M	F.39b
7	TS.98.B.50/8	Miniature spout	SW	7.5YR7/4	M1-	M	F.39b
8	TS.98.B.59/11	Spout	SPW	10YR7/3	M1<	M	F.200
9	TS.98.B.56/5	Body fragment	SPW	5YR6/4	M23-	M	F.64
10	TS.98.B.50/13	Hole-mouth pot	KW	7.5YR6/4	M12>	ML	F.39b
11	TS.98.B.50/9	Hole-mouth pot	KW	10YR6/2	M12>	ML	F.39b
12	TS.98.B.50/12	Hole-mouth pot	KW	7.5YR6/3	M2>	ML	F.39b

Scale 1:4

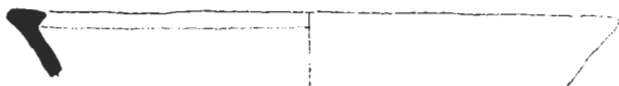
Fig. 2:24 Pottery from F.39b, F.203a, F.207a, F.200 and F.64.



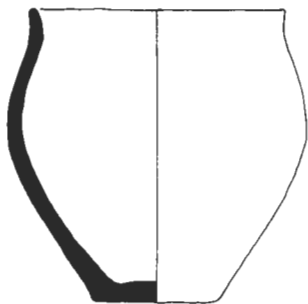
1



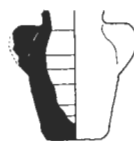
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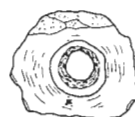
2



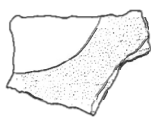
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3. AREA D

THE TELL FORTIFICATIONS IN FRONT OF THE SPRING

Lorenzo Nigro

In 1997 a rescue excavations was carried out in Area D, where the road had cut the lowest layers of the tell just in front of the spring.¹ A massive mud brick structure (called W.7) was indeed visible in this cut, seemingly being a major urban feature of the site. In the first season of excavation the huge wall on stone foundations was rapidly traced on the ground, removing the accumulated debris from its surface and establishing its eastern limit, along the line of denudation and the modern fence enclosing the archaeological site. The western face of wall W.7 was, instead, not properly identified, due to the erosion of the overlying strata, which had completely concealed it.²

For this reason in 1998 excavations were resumed in Area D, uncovering that huge structure on both sides and following its remains towards the north beyond the borders of Kenyon's Square HVI (figs. 3:1, 3:5). A small sounding was also excavated in BIIII8 to get stratified materials suitable for dating the wall, previously tentatively ascribed to Period IIIC mainly on the basis of general topographic observations.³

3.1. STRUCTURE AND ORIENTATION OF W.7

W.7 has been brought to light for a length of c. 30 m (fig. 3:2), with a 1 m-wide gap in its southern part, caused by the heavy rain wash, on the eastern slope of the central terrace. This cut has provoked a cross section of the wall (fig. 3:3), which is otherwise possible to be examined in a front view on its eastern side and on top as emerging on the ground. The western

¹ This is just east of the area called "Spring Hill" by Garstang (1935: 146), corresponding to squares I6 and I7 of Sellin (Sellin, Watzinger 1913: plan I). It is located east and south of Kenyon's Square HVI (Kenyon 1981: fig. 1, pls. 229-241). After the 1998 enlargement, Area D includes ten squares (BIIII7-11, BIIII7-10) covering approximately an area of 150 sqm.

² Marchetti, Nigro 1998: figs. 2:2, 2:3. Note that the plan on fig. 2:1 in Marchetti, Nigro 1998 is misleading, since a layer of collapsed mudbricks was interpreted as the western part of the wall, which was consequently drawn thicker than its real state.

³ Marchetti, Nigro, Yasin 1999: fig. 3.

limit of W.7 has been clearly determined only in correspondence of Kenyon's Square HVI, where it is neatly visible in the southern section of the dig, while in the rest of the excavated area it is still concealed by the dump accumulated by Kenyon south of Square HIII (fig. 3:4, on the background).

3.1.1. The architecture of W.7

W.7 is built on stone foundations, one course high only, with reddish yellow mudbricks of regular size 42 x 36 x 15 cm.⁴ In the best preserved spot twelve courses of bricks are visible, making the superstructure approximately 1.75 m high. In BIII9-10 the stones of the foundation are arrayed according to a regular align, thus indicating the eastern limit of the wall, while northwards this limit has been obliterated by the cut for the road. These big stones, in fact, were mostly washed away (fig. 3:4, on the right).

In BiII8-BIII8, where the western edge of W.7 falls within Kenyon's Square HVI (see below), the foundation is completely exposed, since the superstructure was completely removed by the British expedition (fig. 3:5; see below).

The southern section of Square HVI is the only available for fixing the western limit of W.7, albeit in a very eroded situation (fig. 3:6). The face of W.7 is not clearly distinguishable, having an intentional filling with brick rubble against it. Moreover, the wall seems to lean westwards. However, the width of W.7 has been estimated around 3.50-4.0 m.

3.1.2. Orientation of W.7

As the two faces of W.7 have been identified, its orientation can be more precisely established. The wall stretches from SSW to ENE, and apparently turns towards the north from Kenyon's Square HVI onwards. This alignment is the same of the slope of the tell in correspondence of the spring, and also that of the main stream of the water springing up from the source, which was fixed in the orientation of the Ottoman pool.

The orientation of W.7 is not consistent with both buildings excavated by previous excavation on the upper terraces of the "Spring Hill". The uppermost construction, the so-called "Hilani" excavated by the German expedition, as well as the "Middle Building" and the "Palace Storerooms", brought to light by Garstang, have indeed different orientation (see below).

⁴ In some spots bricks with a length of 0.60 m are also visible.

This may suggest that all these buildings were not contemporary with W.7, even if this hypothesis has to be corroborated by more cogent stratigraphic and topographic data.

3.2. TOPOGRAPHIC AND STRATIGRAPHIC SETTING OF W.7

W.7 is located in a strategic area of the ancient city of Jericho, just between the 'Ain es-Sultan and the centre of the tell, where the main buildings were located. Due to the difference in elevation between the spring and the top central area all buildings erected on the eastern slope of the site were built on terraces; this is the case of the above mentioned "Hilani",⁵ but also of the "Middle Building",⁶ and the "Palace storerooms" excavated by Garstang south-west of W.7, and the Middle Bronze II-III dwelling quarter excavated by Kenyon in Squares HI-VI.

W.7 lies at the bottom of the terraced slope of the tell, being covered by the destruction layers of all these buildings. This situation has made difficult a clear understanding of the stratigraphic relations in the area, which, moreover, due to its morphology, was also exposed to severe erosion.

The complexity of stratigraphy in this area of the tell is indeed one of the main unsolved problems of the archaeology of Jericho, which has puzzled many scholars, as the study on the "Hilani" (Weippert, Weippert 1976), or Garstang's (Bienkowski 1986), and Kenyon's buildings testify to (lastly Bienkowski 1989).

A further series of buildings (a massive tower and a group of houses) excavated by Garstang c. 10 m to the south, has to be taken into consideration, since they are approximately at the same elevation of W.7, and the interpretation of the latter must cope with the evidence provided by these major features of the eastern side of the ancient town.

3.2.1. Garstang's "Eastern Tower" and "Wall B"

The area just west and south of Area D was extensively excavated by J. Garstang in 1932. The discovery of a massive tower on stone foundations, called "East Tower",⁷ in Garstang's Squares I6-K6 is particularly interesting

⁵ Sellin, Watzinger 1913; Weippert, Weippert 1976.

⁶ Garstang, Garstang 1948; Bienkowski 1986.

⁷ Garstang 1932: 15-17, fig. 6.

in the light of the identification of W.7. The tower in fact is located just 15 m to the south of the wall (fig. 3:1). Moreover a substantial wall was indeed discovered by Garstang protruding from the north side of the tower northwards, which had an orientation comparable to that of W.7 (Garstang 1932: 13, pl. IX). This wall was preserved for a length of almost 12 m, and had a 1.85 m-wide interruption c. 7.35 m north of the Tower, which Garstang considered a postern or even a gate.⁸ Garstang considered the wall starting from the East Tower as part of City-wall B, initially dated to the Middle Bronze Age (Garstang 1932: 14-15), but later (after the excavation of the north-eastern corner of the town) attributed to Early Bronze III (Garstang 1935: 147).

Actually, the wall branching out of the East Tower was 1.8 m wide, that is around half of the ascertained width of W.7; however, in the plan of the area produced by Garstang,⁹ a brief section of this wall has a width of almost 4 m. This is exactly in front of the spring, on the border between squares I6 and I7. This structure may be identified with W.7, even if it is not easy to fix its exact location on the site today, and thus this identification remains hypothetical.

3.2.2. Structures in Kenyon's Square HVI possibly related to W.7

In the eastern half Square HVI Kenyon excavated a series of structures and walls, which had a relatively important role in her reconstruction of the stratigraphic history of Tell es-Sultan.

Wall HAJ

Wall HAJ (Kenyon 1981: pl. 328a), at the bottom of the stratigraphic sequence, was deemed the earliest Middle Bronze Age line of fortifications. According to Kenyon it represents the initial Middle Bronze line of fortification, having later cut a rectangular structure interpreted as a tower (walls HBJ, HBK, HBL),¹⁰ dated somewhat later in Period IVa (Middle

⁸ Actually, Garstang was not able to find any entrance to the Tower itself, which, however, as convincingly suggested by L.-H. Vincent at the time of excavation (Vincent 1935: pl. XXXIV), looked like a city-gate, rather than a simple tower. In an unpublished plan of this building an interruption can be noted in the superstructure of the west wall of the northern room of the Tower, which may be interpreted as a passage, not visible at the foundations level. If this is the case, one may reconstruct the gate with a passage through the north room and two staircases to the south.

⁹ Garstang 1932: pl. IX.

¹⁰ Due to its location in front of the spring Kenyon considered this possible tower part of a city gate (Kenyon 1981: 351-352, pl. 331a).

Bronze I). The latter is the main architectural feature identified in the area, and is located at the bottom of Kenyon's stratigraphic sequence.¹¹

The hypothesis that wall HAJ (as well as its forerunners walls HAK and HAL) actually abutted on the tower, in stratigraphic contemporaneity, and that the two structures were erroneously ascribed to different phases by Kenyon, would produce a more understandable arrangement of the area, supporting Kenyon's own suggestion, that the tower was a city gate, with a defensive line adjoined.¹²

Having put forward the gate hypothesis, Kenyon's, however, did not explain the presence of two gates (her own and Gastang's) apparently contemporary at a distance of roughly 20 m one from the other in the area of the spring.

Walls HCJ and HCP

Just east of Tower HBJ, but in a later phase, Kenyon discovered two flanking (and partially diverging) walls (HCJ and HCP), which show exactly the same alignment of W.7, and can be confidently identified with it (Kenyon 1981: 356-357, pls. 339-340). Although these are recorded in plan as two different even diverging walls, at a direct examination on the ground they actually seem to be a unique structure.

3.2.3. The stratigraphic sounding and the chronology of W.7

Location of the 1998 sounding in Kenyon's square HVI

While to the south W.7 vanishes in the ravine caused by the drastic erosion from the upper central terrace of the tell, making thus impossible to get any new information about its dating from associated stratified deposits, to the north it is cut by the road. Only a rectangular island was left unexcavated by Kenyon, on the eastern side of the square. This almost completely occupied by W.7 (fig. 3:4). The only spot deemed suitable for investigating its stratigraphic position is the southern section of Kenyon's square HVI.

After cleaning the dump accumulated in the south-eastern corner of square HVI, W.7 has been completely exposed in squares BIIII7-BIIII8, and a sounding below its stone foundation (W.230) has been dug, where Kenyon had already removed the superstructure of wall HCJ.¹³

¹¹ Kenyon 1981: pl. 339.

¹² Marchetti, this volume, § 5.4, note 32.

¹³ Kenyon 1981: pl. 331a, meters 23-24.

The sounding was opened in the north-western corner of square BIIII8, in a spot where the mud brick superstructure was lost; it had a north-south length of 1.0 m by a width of 0.6 m. From the top of the stones of the foundation W.230 (elevation 4.0 m) a 0.5 m deep sounding was excavated (fig. 3:9), removing a homogeneous filling (F.231).

Results of the sounding below W.7

Below the stone foundations of W.7 (W.230), which consisted of a single course of medium sized blocks 0.3 m thick, a soft filling of greyish soil, with rare bricks fragments and ashy lens, has been excavated down to the elevation of c. 3.50 m. The texture and composition of this layer suggest that it was an intentional fill, caused by the levelling of the area for successive building activity.

What is of primary interest for fixing the date of W.7 is that this layer, which extends to the south and the west, is completely covered by the foundations of W.230, thus preceding in stratigraphic chronology the erection of W.7. Since the same fill F.231 to the west covers wall HBL, as it is shown in the southern section of square HVI (Kenyon 1981: pl. 339), that is the east wall of Kenyon's Middle Bronze I tower, this indicates that the latter antedates the foundation of W.7.¹⁴

Dating of W.7

If one accepts Kenyon's chronological table, all this evidence should lead to the attribution of W.7 to the final part of Period IVa (end of Middle Bronze I, c. 1850 BC). However, as rightly pointed out by P. Bienkowski (1989), one has to be very cautious in validating Kenyon's attributions, which, especially in squares H II-VI, are not sufficiently supported by a direct correspondence between stratigraphic units (layers, phases, stages) and the associated pottery materials used for dating.

In any case, the preliminary and very limited new data made available by the 1998 sounding below the foundation of W.7 (Kenyon's HCJ+HCP), show that it was built upon a filling containing, among various Early Bronze III specimens, also few Period IVa (Middle Bronze I, 2000-1800 BC) diagnostic types (described below in the following paragraph). This thus provides a *terminus post quem* for the construction of W.7 around the end of Period IVa, which corresponds to that proposed by Kenyon for the same structure (Walls HCJ+HCP).

¹⁴ This is clearly visible in Kenyon's south section (redrawn here in fig. 3:9).

3.2.4. Pottery from Filling F.231

Few diagnostic pottery fragments have been collected in F.231. Two Simple Ware jars with everted rim (fig. 3:8.1-2), two with double everted rim (fig. 3:8.3-4), and the handle of a storage jar (fig. 3:8.5), found in F.231 sealed by the foundation W.230, date from Period IVa (Middle Bronze I, 2000-1800 BC), thus providing a *terminus post quem* for W.7.

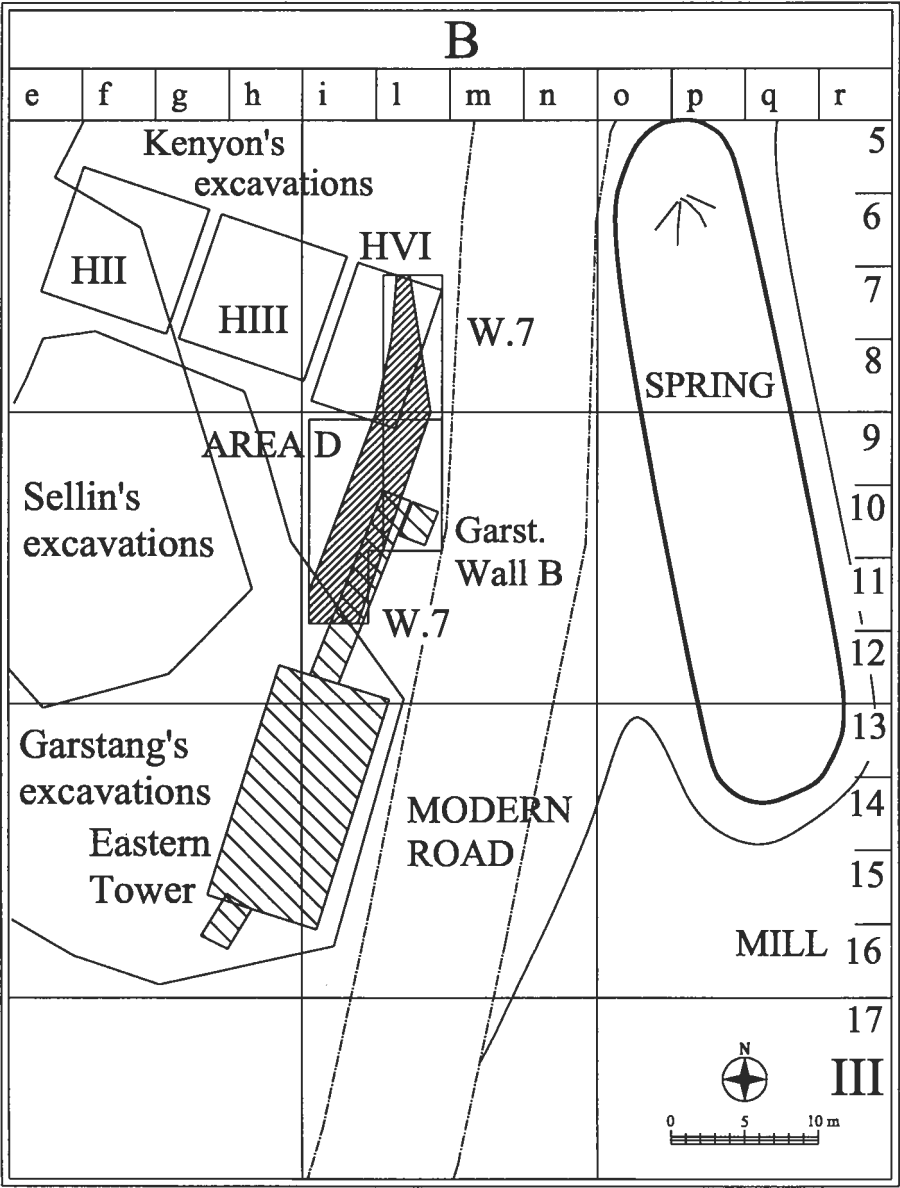


Fig. 3:1 Schematic plan of Area D, with previous excavations.

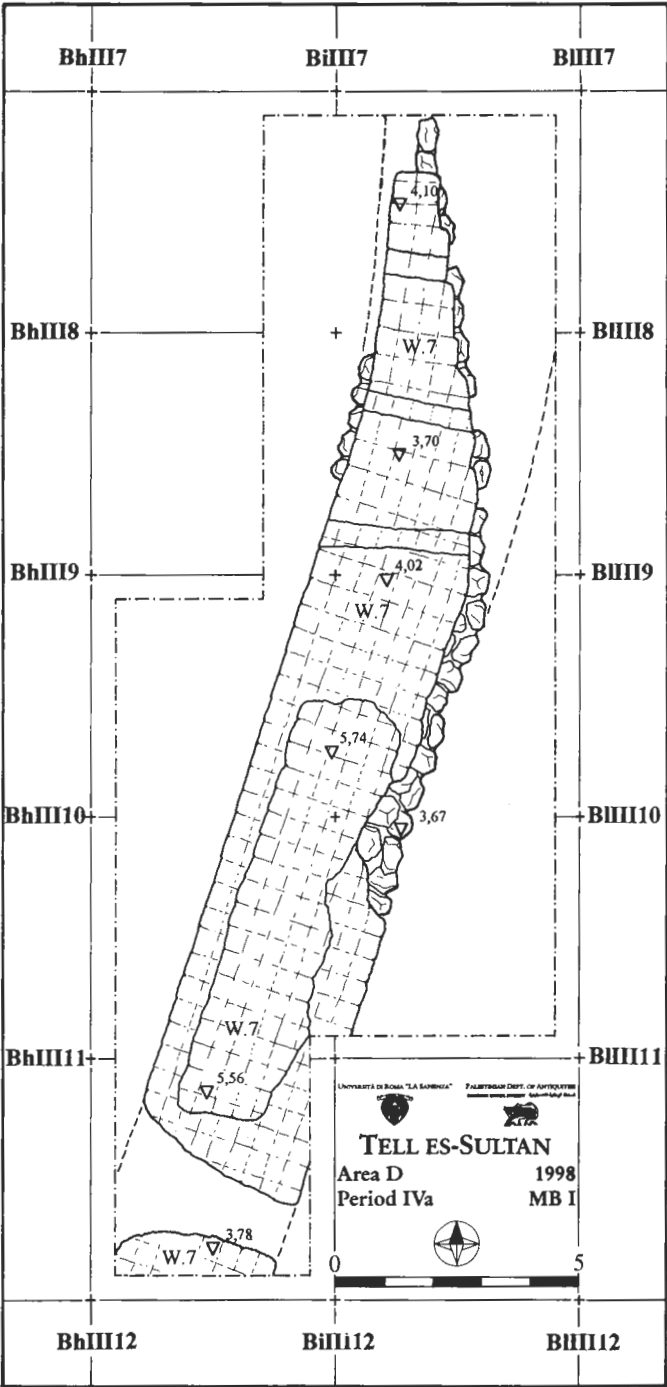


Fig. 3:2 Detailed plan of Area D with W.7.

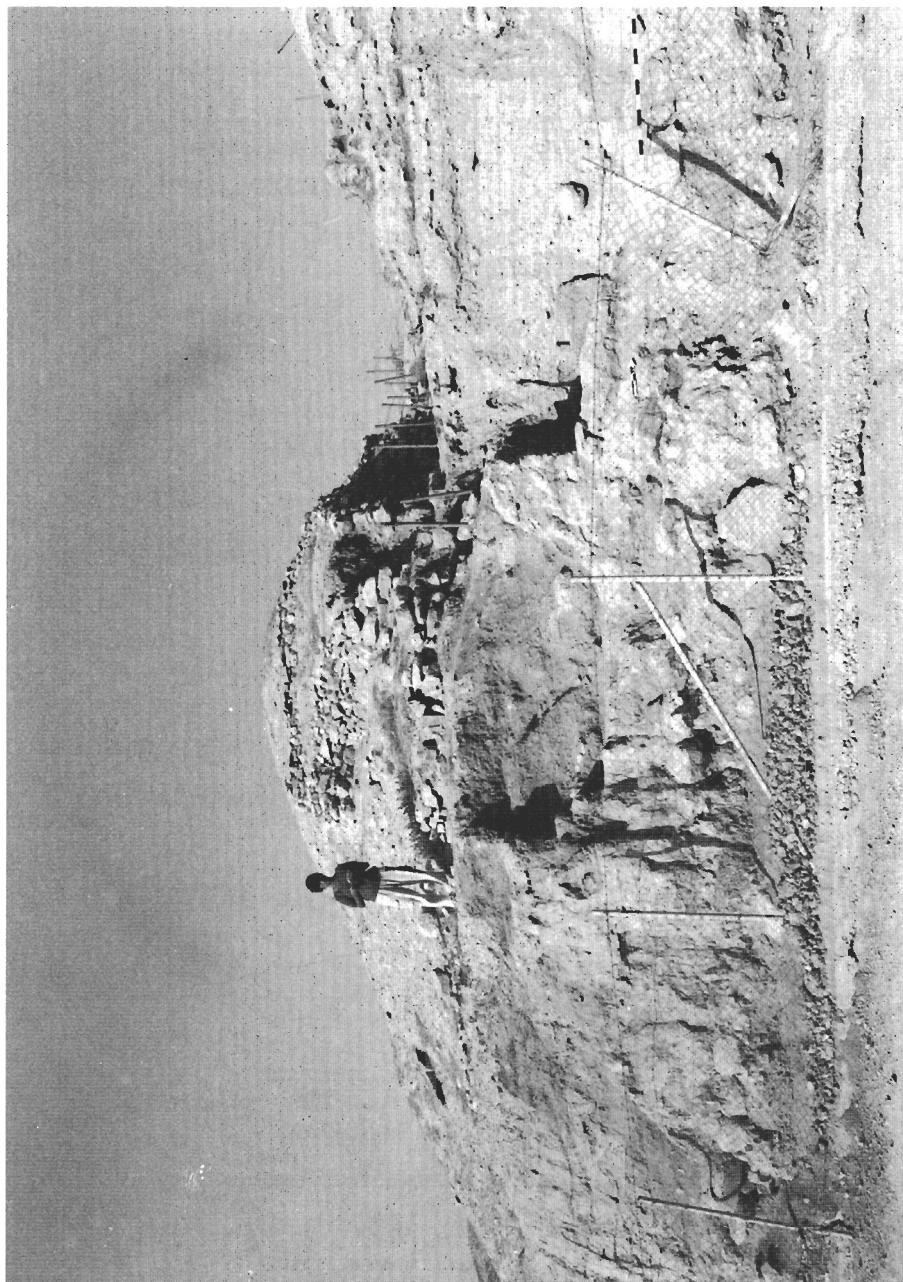


Fig. 3:3 Area D, general view from east. In the foreground the stone foundation (W.230) of W.7. On the right the cut of Kenyon's Square HVI.

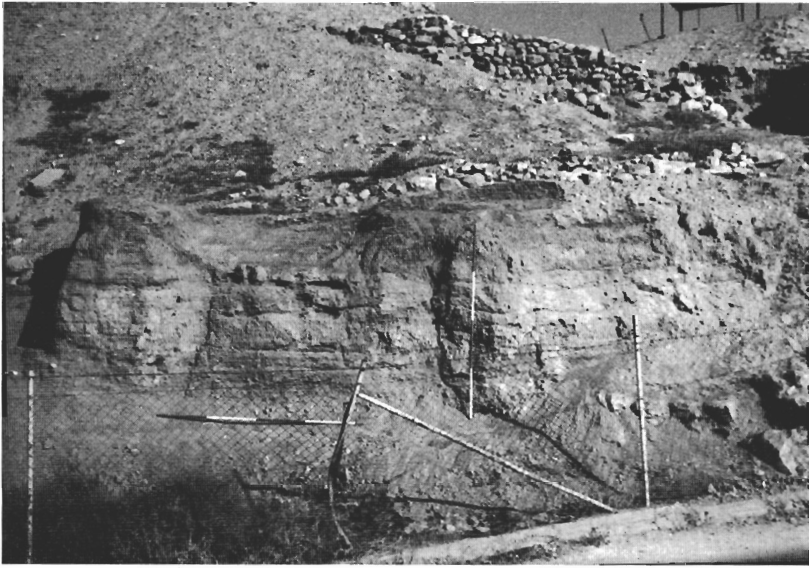


Fig. 3:4 Area D, the south section of W.7 seen from east.

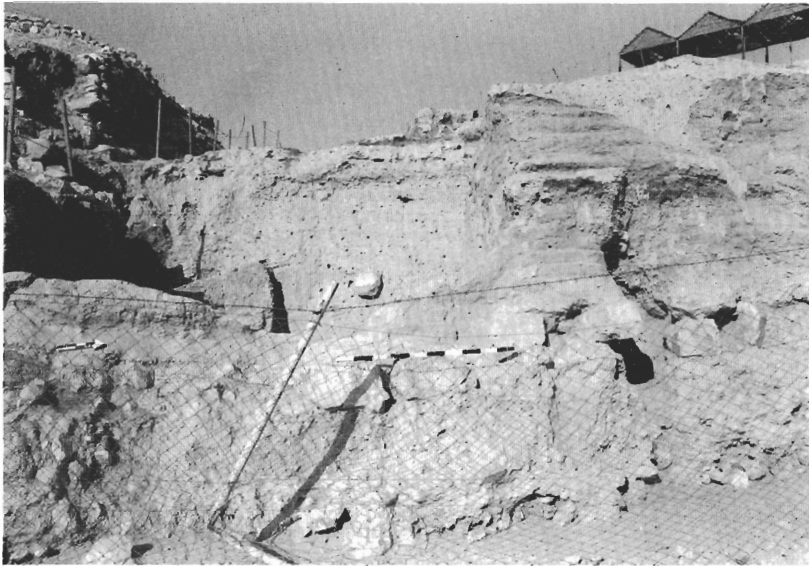


Fig. 3:5 Area D, the north stretch of W.7. The meter is aligned with the northern limit of Kenyon's Square HVI and lies upon the stone foundation of W.7 (W.230).



Fig. 3:6 Area D, the stone foundation of W.7 (W.230) from west. The meter is aligned with the preserved mudbrick superstructure of W.7.



Fig. 3:7 The north section of W.7. In the middle (behind the meter) the unexcavated section of W.7.

N°	Reference	Shape	Class	F. Colour	Temper	Firing	Locus
1	TS.98.D.208/3	Jar	SW	7.5YR7/2	M1<	M	F.231
2	TS.98.D.208/4	Jar	SW	7.5YR4/0	M1<	M	F.231
3	TS.98.D.208/2	Jar	SW	7.5YR5/0	M2>	M	F.231
4	TS.98.D.208/5	Jar	SW	2.5Y6/4	M1<	M	F.231
5	TS.98.D.208/1	Jar	SPW	7.5YR7/3	M2-	MH	F.231

Scale 1:4

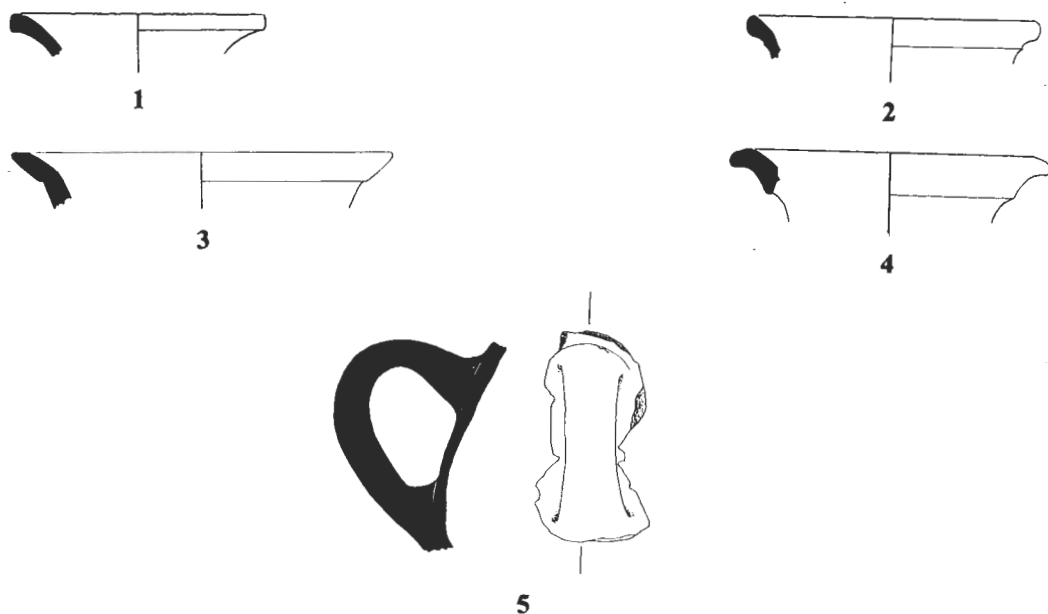


Fig. 3:8 Selection of pottery from F.231.

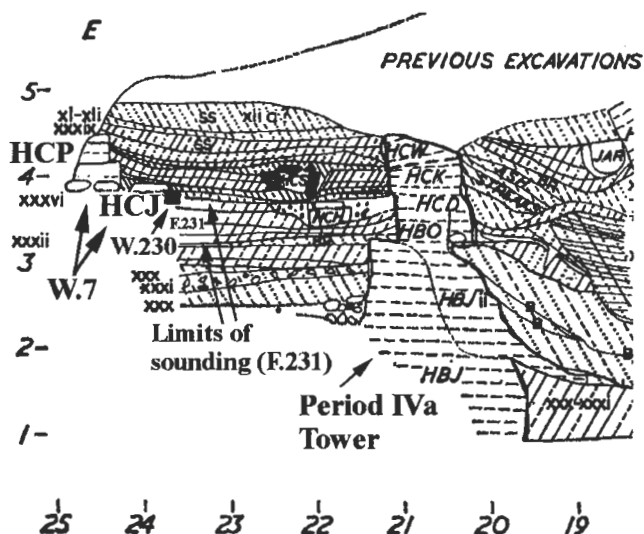


Fig. 3:9 South section of square HVI with walls HCJ and HCP, possibly W.7, according to Kenyon (1981: pl. 339).

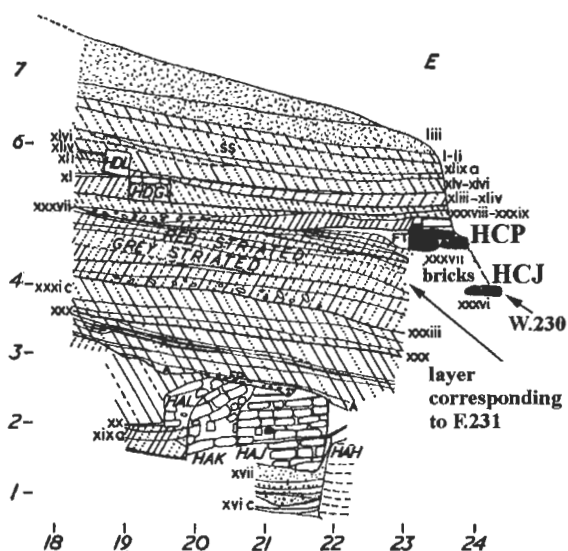


Fig. 3:10 North section of square HVI with walls HCJ and HCP, possibly W.7, according to Kenyon (1981: pl. 340).

4. AREA E

THE SOUTH-WESTERN MIDDLE BRONZE I-II FORTIFICATIONS

*Nicolò Marchetti, Jehad Yasin**

This new area was opened on the projection of the alignment of the stone corner (W.5) discovered in 1997 at the north-western edge of Area A (see fig. 5:19 in the following chapter),¹ in order to check the nature of such an imposing structure seemingly connected to the foot of the first rampart, dating from late Period IVa-IVb, late Middle Bronze I-II (1850-1650 BC).²

4.1. THE STRATIGRAPHIC SEQUENCE

The high dump which covered the whole area was thrown on the slope of the tell mostly by Garstang digging one of his trenches across the Period IIIc, Early Bronze III fortification wall (now called Area B West),³ but partly also during the digging of nearby Kenyon's Trench III. The layers identified below it are described in stratigraphic order (fig. 4:1).

4.1.1. Activity 5

The first line of the Period IV fortifications is represented by a massive stone fortification structure (W.270+W.268), for a detailed description of which see § 4.2. Such structure is the earliest feature detected thus far. Its dating is suggested by several indirect stratigraphic elements discussed in § 4.2, since no associated materials could yet be recovered.

* J. Yasin has written § 4.1 and N. Marchetti § 4.2. Only four objects have been illustrated here, since most of the over thirty objects retrieved come from secondary contexts and they will be part of separate studies organized by classes of materials.

¹ Marchetti, Nigro, Sarie' 1998: 134, fig. 16; Marchetti, Nigro 1998: 120-123, figs. 4: 5, 4: 6, 4: 8.

² Two squares (AmIV9, AnIV10) were opened 10 m to the north-west of W.5. In a third square (AmIV10) the dump was excavated only until a flat area was obtained, in order to facilitate digging operations in AnIV10 and AmIV9.

³ Such trench was cleared in 1997: Marchetti, Nigro, Sarie' 1998: 129-130, fig. 2; Marchetti, Nigro 1998: 81-92.

4.1.2. Activity 4

At a low elevation, in square AmIV9, an ashy fill (F.275) emerged, but its nature has yet to be ascertained. Stratigraphically, it covered W.270+W.268.

4.1.3. Activity 3

A rubbly fill (F.269), probably belonging to the Period IVc rampart (Middle Bronze III, 1650-1550 BC) covers W.270+W.268 (operation 3a), when such structure was apparently no more in use. Some collapsed stones (F.273), originally belonging to the top of W.270+W.268, lie below F.269 (operation 3b; see also fig. 4:2).

4.1.4. Activity 2

Evidence from Period Xb, Middle Islamic is represented by a flimsy stone structure of small and medium field stones (W.265) and associated earthen floor with pebbles sloping to the south (L.271), with overlying fill (F.271a). Both are covered by a debris layer (F. 264) that can be the interface between the dump and the archaeological strata, representing the original surface of the tell. This phase probably has a short duration and its dating is based on a lamp attributable to the Mamluk period (fig. 4:3).⁴

4.1.5. Activity 1

The dump of Garstang's and Kenyon's excavations is 5 m high, consisting of alternating layers of rubble, decayed mudbricks and stones (F.252, F.245, F.250, F.251, F.256, F.260, F.261, F.262, F.252, F.257, F.259, and F.263).⁵ An accumulation of stones was observed within the dump (W.258). It seems that the dump comes from two directions.

It yielded objects dating from Pre-Pottery Neolithic to the Islamic periods (figs. 4:4 and 4:5), including modern materials.⁶

⁴ Lamp TS.98.E.82/1 has a moulded relief decoration with caprids and vegetal motives. The dating is given, besides the comparisons cited by Zagari in this volume, by the (lost) loop handle, characteristic of the Mamluk period.

⁵ The various layers from which the dump is made are very loose and the continuous collapse of the excavation walls has forced to make some steps in the upper part of the sections, also for security reasons.

⁶ For TS.98.E.51 (fig. 4: 4 left) compare Crowfoot Payne 1983: 720, figs. 347-349, for TS.98.E.389 (fig. 4: 4 right) Dorrell 1983: figs. 221.12 and 226.13 and for TS.98.E.204 (fig. 4: 5 left) Wheeler 1982: fig. 258:15.

4.2. THE FORTIFICATIONS OF LATE PERIOD IVA-B (LATE MIDDLE BRONZE I-II, 1850-1650 BC)

4.2.1. *Architecture of Tower E1*

The main structure, called E1 (fig. 4:6), is a tower 7.5 m large, which to the west is adjoined by a stone revetment wall (W.274), which seemingly represents the continuation of the fortification towards the north-west (fig. 4:7). Since W.5 (for which see fig. 5:19) does not lie on the same line of W.270+W.268, but seems instead slightly curving to the north-east, it can represent the continuation of W.274.⁷ The topographical position of Tower E1, in the south-western corner of the site, allows to hypothesize that also W.5 and W.274 have a curvilinear plan like W.4 in Period IVc. Tower E1 is formed by a presumably unitary rectangular tower (W.270+W.268) made by undressed limestone blocks (figs. 4:8-10). Under the chronological profile the connection of W.270+W.268 with W.5-W.3 places the former within Kenyon's stratigraphy. On the basis of several elements (see also § 5.4 in this volume), the first rampart must date between late Middle Bronze I and Middle Bronze II (1850-1650 BC).

4.2.2. *Interpretation of Tower E1 and adjoining structure W.274*

Tower E1 seems set within the foot of the first line of rampart defences of the Period IV town. Its function must be a defensive one, being further located in a strategic spot, in the south-western corner of the town where the ramparts turn more sharply. It does not seem to be part of a city gate either because W.5 and W.274 seem to be just retaining walls, and also because the Early Bronze III city walls are located more than 5 m higher than the top of Tower E1;⁸ further, the retaining wall of the Middle Bronze III rampart (W.4), which was traced on the surface by Sellin in front of Area E (his *Böschungsmauer*),⁹ seems continuous and so in Middle Bronze III at least

⁷ W.3 in Kenyon's Trench III thus represents a retaining wall joining W.5 (1981: 216, pls. 126a, 127, 271a, Wall NFP).

⁸ Since the walls are less than 25 m distant to the north (Kenyon 1981: pl. 273; Marchetti, Nigro 1998: figs. 1: 7, 4: 8), the gradient necessary to overcome them seems too steep for a passageway.

⁹ See the area at the intersection of squares M-N/3-4 (Sellin, Watzinger 1913: fig. 35: 2, pl. I).

there was no gate in this area (see § 5.4 in this volume for a discussion of the urban structure of the site).

A thorough analysis of the excavated evidence concerning the earthen ramparts at Jericho and other contemporary Palestinian sites has been already done in the previous report (Marchetti, Nigro 1998: 141-146): one of the main conclusions was that only two successive ramparts were attested to on the site, and not three as Kenyon maintained. The first rampart was identified by Kenyon in the thick "rubble fill, phase lxxxi" (Kenyon 1981: 215-216, pl. 273); however, only its south part seems to belong to it, while the northern part would belong to the Middle Bronze III rampart (Marchetti, Nigro 1998: 120-123, fig. 4: 39); the top of the first rampart would then be that of phase lxxx-lxxxi, from which come Early Bronze IV materials (Kenyon, Holland 1983: 240-242, fig. 105: 5-18; see also Kenyon 1981: 215, Stage XX), as one should expect for a rampart built during Middle Bronze I. In Trenches I (with Area C) and II, where the steep Middle Bronze I-II rampart had a revetment of crushed limestone,¹⁰ similar features were identified and support this interpretation.¹¹ The berm attested to in Trenches I and II would also be present in Trench III if a horizontal line is drawn between the base of phase lxxx-lxxxi and phase lxxxvi on top of wall W.3/NFP. The stone wall at the foot of the first rampart, according to the present interpretation, was excavated in the fifties either in Trench I (Kenyon 1981: pls. 91b, 236, wall KC, phase lx) and in Trench III (Kenyon 1981: 216, pls. 126a, 127, 271a, wall NFP, phase lxxxii, here called W.3).¹² W.5 directly adjoins W.3 (the outer face of which is collapsed at present, see Marchetti, Nigro 1998: fig. 4: 6); the latter structure however does not seem to have extended much to the east. Stratigraphically, NFP was covered by oblique and horizontal layers (Kenyon 1981: pl. 273, phases lxxxi, lxxxii, lxxxv), which were then cut by the foundation trench for W.4.

¹⁰ Kenyon 1981: 108-109, 167-168, pl. 236, phase lvii, pl. 259, phase lxix; Marchetti, Nigro 1998: 103-105, fig. 3:1.

¹¹ Trench I: Kenyon 1981: 108, pl. 236, phase lvi-lvii; Trench II: Kenyon 1981: 167-168, pl. 259, phase lxviii-lxix; for the pottery see Kenyon, Holland 1983: 167-173, figs. 66-70; for some Middle Bronze Age sherds see Kenyon, Holland 1983: fig. 73: 1-3.

¹² An earlier structure to the north (W.70; see Marchetti, Nigro 1998: fig. 4: 39) was not recorded by Kenyon.

In Area C the first rampart was apparently crowned by a thick mudbrick wall, probably also identified by Kenyon in Site A.¹³ Combining the evidence from Area C and the northern section of Trench I (Kenyon 1981: pl. 236), the first rampart must have had a height of 10 m, to which must be added the height of the mudbrick wall on top of it (Marchetti, Nigro 1998: fig. 4: 44).

The available data allow the following preliminary reconstruction: in the late Period IVa-b (late Middle Bronze I-II) rampart, which had a very compact revetment made in a characteristic technique, the slope was divided in two sections with a berm in between; on top of it there probably was a mudbrick fortification wall (exposed in 1997 in Area C), while its base was protected by a stone retaining wall, which in the south-western corner of the town was also reinforced by Tower E1.

¹³ Kenyon 1952: fig. 3; 1981: 374-375, pl. 343a; see also 1981: 215, *sub* phase lxxxi. See however also note 34 in Chapter 5 in this volume.

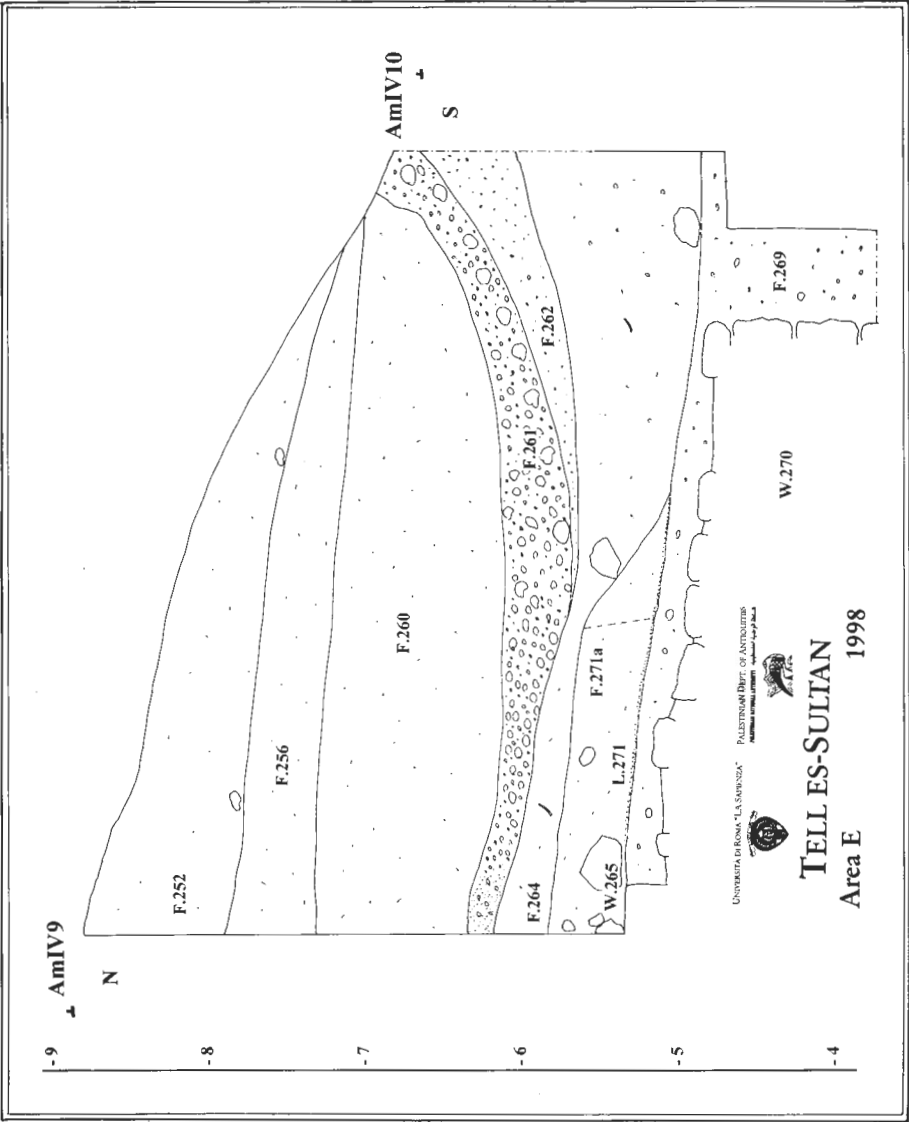


Fig. 4:1 East archaeological section of AmIV9 (the lower part is projected).

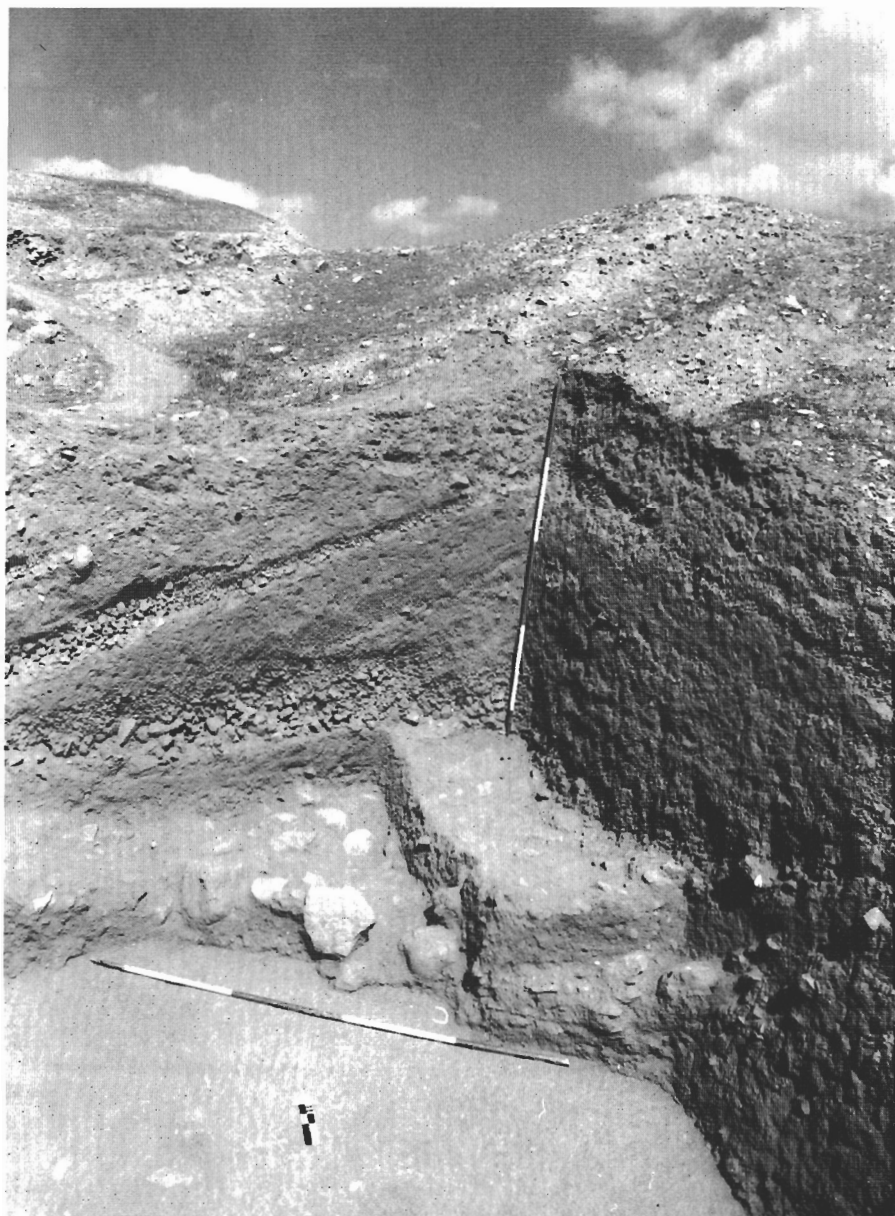


Fig. 4:2 Area E, the upper layers of square AmIV9, from south; note the inclined strata of the dump with alternating strata of loose rubble and earth, overlying the original surface of the tell (F.264), under which appear some collapsed stones (F.273), which lie over wall W.270.

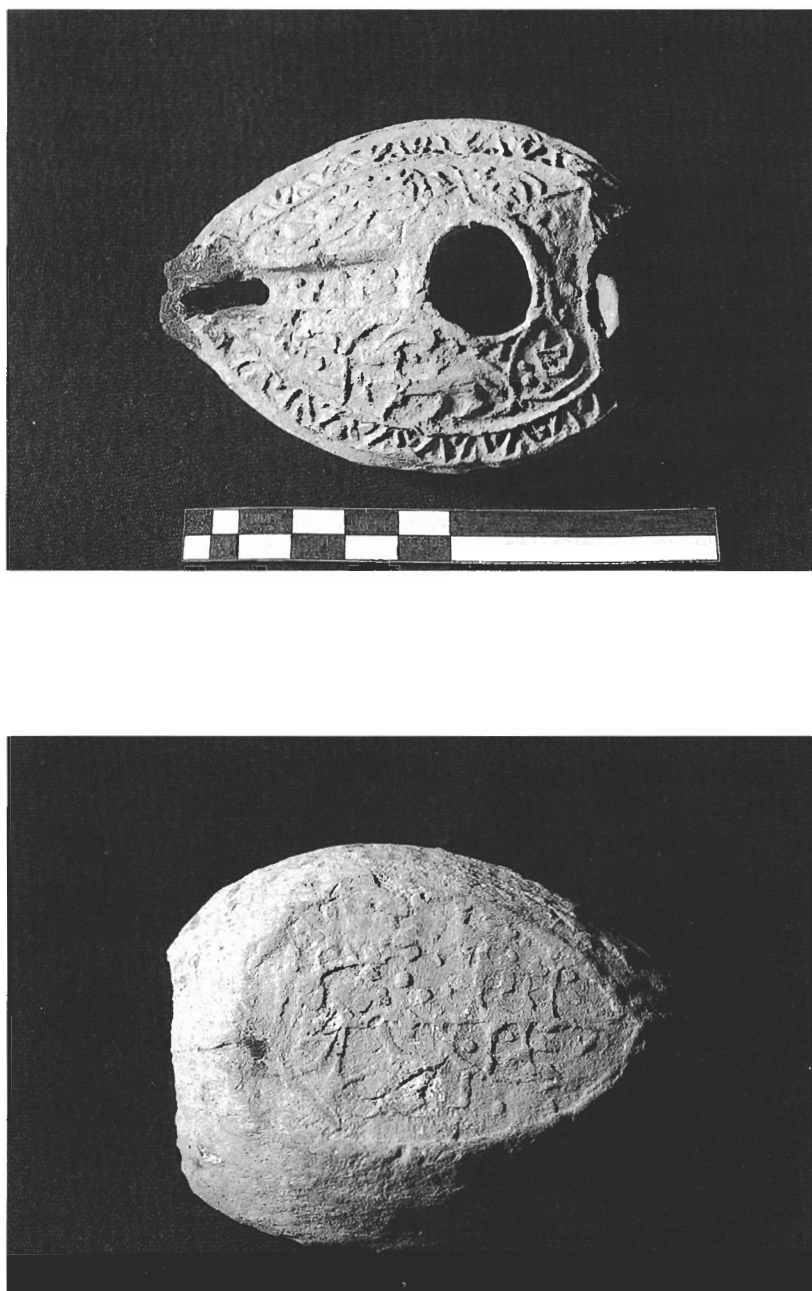


Fig. 4:3 Mamluk lamp TS.98.E.82/1 from F.271a.



Fig. 4:4 Early Bronze III tabular flint scraper TS.98.E.51 from F.254 (left) and Pre-Pottery Neolithic basalt pestle TS.98.E.389 from the surface (right).



Fig. 4:5 Early Bronze stone loom weight TS.98.E.204 from F.262 (left) and Late Byzantine-Islamic glass from the dump (right).

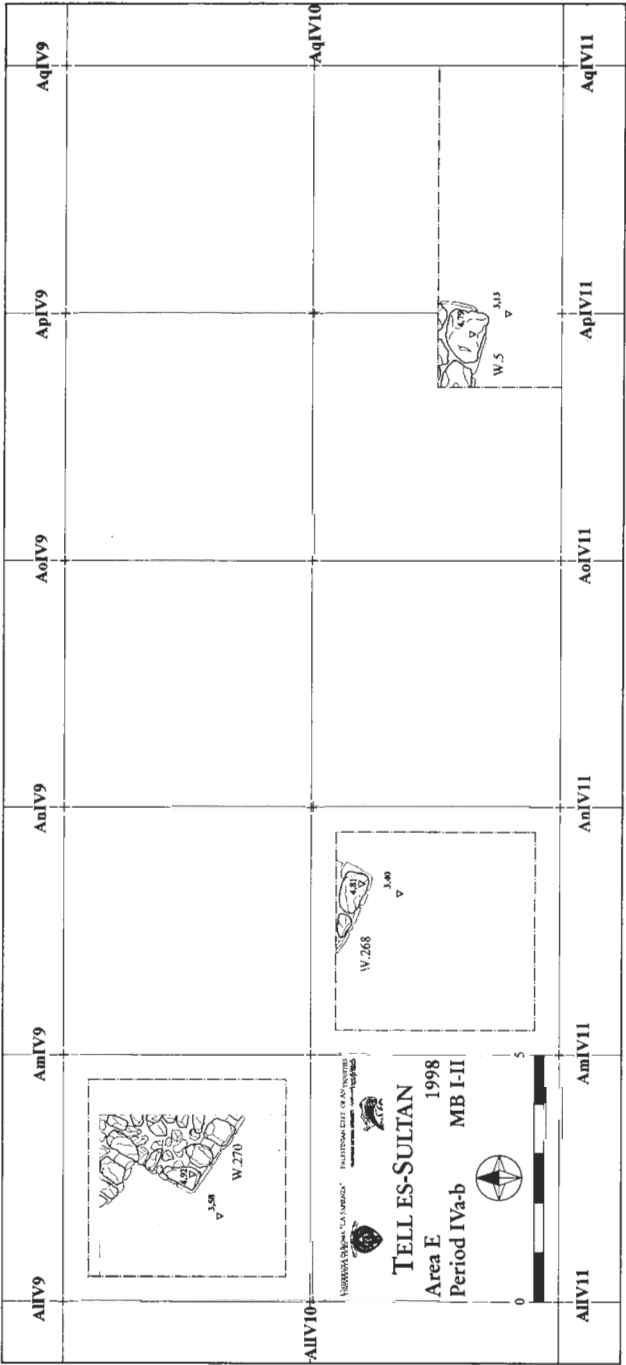


Fig. 4:6 Detailed plan of Area E in late Period IVa-b, late Middle Bronze I-II, 1850-1650 BC.

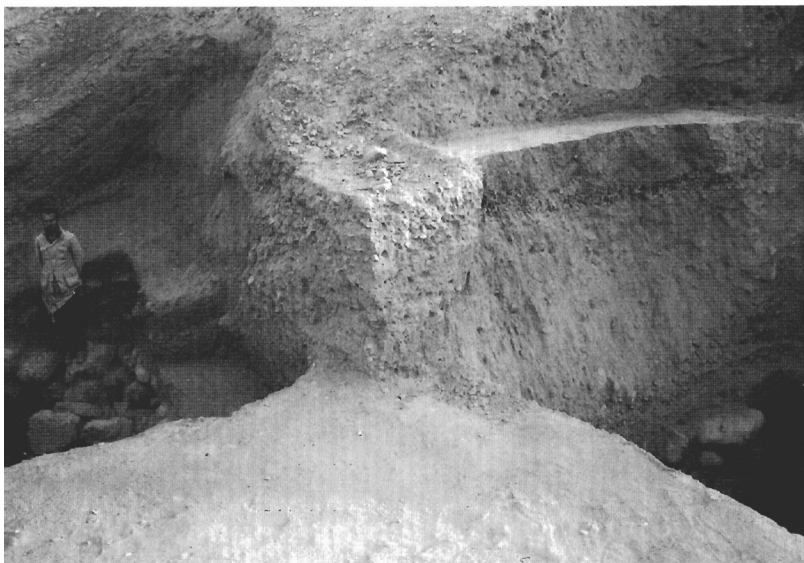


Fig. 4:7 Area E, view of Structure E1 from south-west; note the loose texture of the overlying dump; Periods IVa-b, Middle Bronze I-II, 1850-1650 BC.

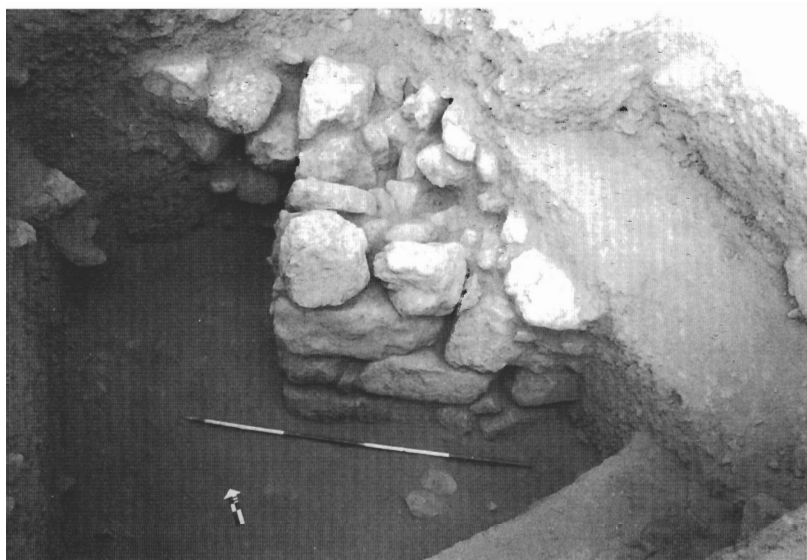


Fig. 4:8 Area E, the western stone corner (W.270) of Structure E1 and adjoining wall W.274, from south; Periods IVa-b, Middle Bronze I-II, 1850-1650 BC.

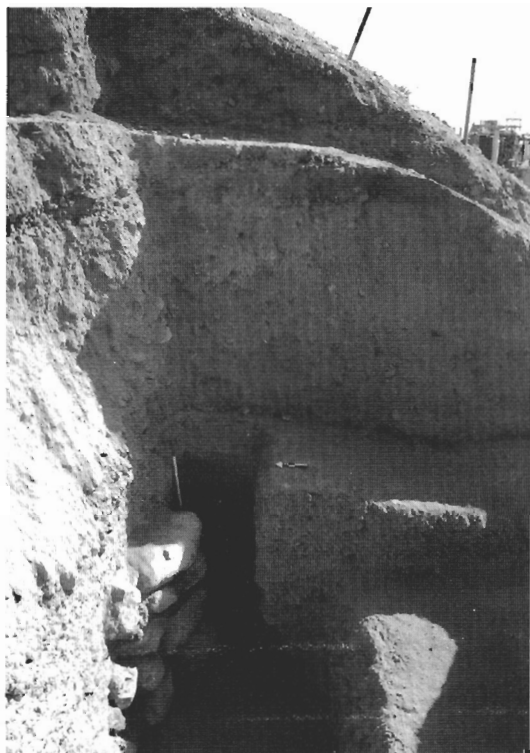


Fig. 4:9 Area E, the south-eastern corner (W.268) of Structure E1 from west; Periods IVa-b, Middle Bronze I-II, 1850-1650 BC.



Fig. 4:10 Area E, detail of the preceding structure, from south-west.

5. AREA A

A MIDDLE BRONZE II PUBLIC BUILDING AND RESIDENTIAL QUARTER IN THE LOWER TOWN

Nicolò Marchetti

In Area A, in order to prosecute the investigation of the Middle Bronze II residential structures brought to light in the first season, an extension was made to the east and south of the already excavated area, where it seemed that such levels were well preserved.¹ The results of the 1998 season have not only added substantially to this aim, but have also furnished most important elements for the reconstruction of the history of the southern Lower Town at Jericho.

5.1. THE STRATIGRAPHIC SEQUENCE

The stratigraphic units (*loci*) are described in detail in §§ 5.2 and 5.3, besides being indicated in the archaeological sections (figs. 5:1-2). Hereafter follows a brief description of the main stratigraphic activities as resulting from the 1998 excavations, which have furnished a more detailed sequence than that obtained in 1997. Activity 5 was initially confined to the stone revetment wall W.5 (fig. 5:19; Marchetti, Nigro 1998: 118, 120-124), but, since such structure is now considered part of Area E (see chapter 4 in this volume) and since Areas A and E can not yet be too precisely correlated under the stratigraphic profile, it seems better for the time being to keep it out of the Area A sequence.²

¹ After the removal of a large dump from Kenyon's excavations located on the south-eastern flank of Trench III (visible e.g. in Marchetti, Nigro 1998: figs. 4: 3, 4: 40, 4: 42), the halves of squares AsIV11, At IV11, AsIV12, AtIV12, AsIV13, ArIV13 were opened on the ground.

² Further, on the bottom of a small sounding made against W.4 and the east face of the stone foundations of W.19 (see below) the top of a plastered east-west wall was exposed (W.352, elevation -0.82 m), showing that earlier structural phases are present in the area. In fig. 5:61 one can see such emerging wall, which was originally cut by floor L.21 of Building A1, which thus obliterated similar earlier structures.

5.1.1. Activity 4

Several building phases have been distinguished within the occupational sequence of Period IVb (Middle Bronze II; figs. 5:3-4).³

Operation 4e

The first phase (fig. 5:5) is represented by Building A1 and the lower floor of its tower (L.199, elevation -0.74 m), while to the east of wall W.19 a pebbled sloping surface was present (L.21).

Operation 4d

Probably at the same time of the refurbishing of the floor of the tower, which was raised with fill F.198a as a preparation for floor L.198, Building A2, with its at least four rooms (L.186, L.191, L.185, L.197), was built (fig. 5:6). Wall W.22 and courtyard L.20 with oven T.24 also belong to this phase, as well as the blocking wall W.355 between W.25 and W.164 (figs. 5:7-8). Over the open spaces L.21 and L.20 debris accumulated during their use, respectively L.21b and L.20b. In the north-eastern part of L.20 stone foundations for a possible bench emerged (B.350). All floors slope to the south following the natural inclination of the terrain.

Operation 4c

When Building A2 went out of use, with Building A1 probably still existing, thick layers of collapsed mudbricks accumulated over its floors and over the surrounding open spaces: fill F.175 over floor L.191, F.183 over L.186, F.184 over L.185, F.192 over L.197, F.177 to the south of W.168a, F.21a over L.21b and F.20a over L.20b.

Operation 4b

Another house (Building A3) was rebuilt over Building A2, probably on a very similar plan (fig. 5:9) although poorly preserved due to the fact that the area was razed for the later rampart (F.13b-c). The eastern room had two refurbishing: a thick layer of crushed limestone (F.196) served as a preparation for floor L.195 that originally must have reached wall W.187a. Later on (fig. 5:6), a preparation similar to F.196 (F.194) and floor L.193 were made when another skin of mudbricks was added to the eastern face of

³ Some of the interpretations offered here differ from the 1997 preliminary reconstruction: for an analytic description of the stratigraphic units of 1997 see Marchetti, Nigro 1998: 118-119, 125-126. Operations 4d-c correspond here to operations 4b-a there. Further, W.26 does not belong to the same phase of W.25 and the fill of broken mudbricks F.21a does not any more seem intentional (Marchetti, Nigro 1998: 125).

W.187a (W.187b). The western room had a thick stratum of crushed limestone as preparation for the floor (L.173), while the walls of Building A2 were simply raised (W.179, W.168b and W.26). To the south of W.168b an earthen fill (F.169) accumulated over F.177.

Operation 4a

When Building A3 went out of use, layers of collapsed mudbricks accumulated over the floors (F.166), above which another similar layer accumulated during the final razing of the area (F.165b-a). To the south-west of W.26 an ashy layer was present (F.171), which can be possibly assigned to this operation (ashes are in fact attested to in the tower area in operation 4a), although the presence in it of an *in situ* bowl (figs. 5:39-40) suggests the possibility that it can be a deposit of some kind between activities 4 and 3. Notwithstanding the absence of direct stratigraphic relations between Buildings A1 and A3 because of later razing of the area, it seems that they were both destroyed at the same time, although the tower of Building A1 was burnt by a fire (fill F.162 is full of charcoals and burnt objects; figs. 5:11-12), of which there are no traces in Building A3.⁴ Some of these burnt materials probably also fell towards courtyard L.20 and an ashy fill (F.356), containing medium stones, many sherds and a burnt wooden spindle whorl (for which see fig. 5:52), was in fact present in the corner between W.22 and W.15 at a high elevation. To the west of Building A1, F.23 represents another collapsed layer of mudbricks sealing an as yet unexcavated surface (fig. 5:13 to the right). If this interpretation is correct, then fill F.16, to the west of Building A1 and directly thrown against it and over F.23, probably represents the levelling layer needed for the foot of the Period IVc (Middle Bronze III) rampart.⁵

5.1.2. Activity 3

The stratigraphy of the Period IVc (Middle Bronze III) rampart was already treated in detail in the previous report (Marchetti, Nigro 1998: 118, 136-137). While the extension of the earthen core (F.13b-c) and of its

⁴ While Building A1 underwent only limited refurbishing during a long time, the surrounding houses were more frequently rebuilt and this must have created a very marked difference in elevation between the courtyard of Building A1 and the floor of Building A3. In any case, no surface belonging to Building A3 was identified over F.20a to the east.

⁵ In this case it would correspond stratigraphically to F.13b-c, belonging to Activity 3.

revetment of limestone scales (F.13a), which were followed further to the south, has been confirmed, in the 1998 season, however, some new elements concerning the foundation trench for the retaining wall W.4 were added. As one could expect for a length of almost 20 m (figs. 5:59-60), the inner fill of the trench is not homogeneous: instead of the regular stratification of F.10+F.14+F.17 noted in 1997, here fill F.14 (which is deeper than in 1997) covers F.176, a rubbly greyish fill possibly also thrown from north (F.17 was instead thrown from south); W.174 was built over a strip of F.17 and was covered by F.176. The top of the foundation trench has been cut by German excavations.

5.1.3. Activity 2

No new elements could be ascribed to this activity, thus far represented only by a pit (P.8), which was completely excavated in 1998 (see fig. 5:59 for its localization) and had some flat pebbles on its bottom (see Marchetti, Nigro 1998: fig. 4: 1 for a section of the pit). A fragmentary quern from F.8a (TS.98.A.177, fig. 5:58) may either be ascribed to the Early Bronze or to the Middle Bronze Age, which is more probable since all the remains in the area are of the latter date, although many stray Early Bronze sherds were present in the upper levels; very few sherds came from the pit, all Middle Bronze in date.

The wash accumulated over the surface of the rampart consists of fine rubble and earth (F.156) and is present in the south of the excavation area.

Catalogue of objects from Activity 2

TS.98.A.177, Quern (fig. 5:58)

Material: Basalt

Dims.: h. 14.0; l. 11.0; w. 6.5 cm

Elevation: 3.0 m

Square: AsIV11

Locus: F.8a

Activity: 2

Period: -

5.1.4. Activity 1

Sellin's superficial tracing of W.4 became probably deeper approaching the south-east corner of the tell, where he uncovered a substantial mudbrick

building (for which see § 5.4). Fill F.157 represents the fill of such cut, as the many modern materials retrieved in it attest to (fig. 5:1). The earth excavated during the tracing of W.4 seems to have been dumped to the south, just by the excavations (F.150). After the end of the German excavations a layer of wash accumulated over F.157 (F.9a; see also fig. 5:60 in the excavation wall). From F.150 and F.157 come some much oxidized iron fragments, belonging either to modern tools or fences (TS.98.A.106 and TS.98.A.148), and a Middle Bronze shell pendant (TS.98.A.108, fig. 5:58)⁶. In F.9a two stone tools of Middle Bronze II-III date (pestle TS.98.A.13, fig. 5:58, and quern TS.98.A.14), a Middle Bronze mortar (TS.98.A.25, fig. 5:58)⁷ and two modern glass fragments (TS.98.A.15) have been found.⁸ The pottery materials from the above mentioned loci are of various periods from Neolithic to Middle Bronze.

Catalogue of objects from Activity 1

TS.98.A.13, Pestle (fig. 5:58)

Material: Stone

Dims.: w. 6.1; 4.2 cm

Elevation: 3.40 m

Square: AsIV11

Locus: F.9a

Activity: 1

Period: IVb-c, Middle Bronze II-III

TS.98.A.14, Quern

Material: Stone

Dims.: h. 10.5; l. 5.2 cm; w. 3.4 cm

Elevation: 3.40 m

Square: AsIV11

Locus: F.9a

Activity: 1

Period: IVb-c, Middle Bronze II-III

TS.98.A.15, Indeterminate

Material: Glass

Dims.: h. 1.8; l. 1.6 cm

Elevation: 3.50 m

Square: AtIV11

Locus: F.9a

Activity: 1

Period: Modern

TS.98.A.25, Mortar (fig. 5:58)

Material: Basalt

Dims.: h. 8.9; l. 2.8 cm

Elevation: 3.40 m

Square: AsIV11

Locus: F.9a

Activity: 1

Period: IVb-c, Middle Bronze II-III

⁶ See e.g. Kenyon 1964: fig. 249.5 from Tomb A136.

⁷ Compare Dorrell 1983: 365, fig. 232.2 (type H2) from phase li of Squares HII-III-VI.

⁸ Like in the 1997 season (Marchetti, Nigro 1998: 119, note 6, 139, note 44), several Neolithic or later flint tools were found out of context, most probably as a result of levelling operations and also because included in mudbricks: seven come from F.9a (TS.98.A.16, TS.98.A.17, TS.98.A.18, TS.98.A.19, TS.98.A.20, TS.98.A.21, TS.98.A.22), one from F.150 (TS.98.A.107), one from F.8a (TS.98.A.11), four from F.16 (TS.98.A.126, TS.98.A.153, TS.98.A.186, TS.98.A.268), one from F.175 (TS.98.A.227), one from F.176 (TS.98.A.340), two from F.184 (TS.98.A.339, TS.98.A.350), three from F.162 (TS.98.A.351, TS.98.A.358, TS.98.A.363).

TS.98.A.106, Indeterminate

Material: Iron

Dims.: w. 0.9 cm (fragments)

Elevation: 2.30 m

Square: AtIV13

Locus: F.150

Activity: 1

Period: Modern

TS.98.A.108, Pendant (fig. 5:58)

Material: Shell

Dims.: h. 2.7 cm; l. 2.8 cm; w. 0.9 cm

Elevation: 2.40 m

Square: ArIV12

Locus: F.150

Activity: 1

Period: IV, Middle Bronze

TS.98.A.148, Indeterminate

Material: Iron

Dims.: h. 10.4 cm; l. 3.4 cm; w. 0.4 cm

Elevation: 2.90 m

Square: AsIV11

Locus: F.157

Activity: 1

Period: Modern

5.2. THE BUILDINGS OF PERIOD IVA-B (MIDDLE BRONZE II, 1850-1650 BC)

The 1998 excavations have clarified the structural sequence in Area A and have better defined the nature of Building A1, which already in 1997 was identified as having a public function, although the new discoveries have shown that courtyard L.20 and wall W.25 belong to Building A2 (fig. 5:7).

5.2.1. *Architecture and stratigraphy of Building A1*

The construction of Building A1: operation 4c

Building A1 is thus far represented by a massive mudbrick wall on stone foundations (W.19; figs. 5:5, 7), to which a tower (formed by walls W.15+W.164+ W.190) joins to the east (figs. 5:10, 13-14). Along the western face of W.19, opposite to where the tower is located, there is a sort of buttress, c. 30 cm thick (fig. 5:13 in right background). The first floor of the tower, which has no doorway, is made of beaten earth (L.199) and lies at the same elevation of the top of the stone foundations (fig. 5:15 in foreground).⁹ The latter ones are made of medium sized stones (fig. 5:16) and they can best be studied in the foundation trench for W.4 where it cuts W.19 (fig. 5:13 in foreground): the foundations are made there of two rows of stones and the large stone lying at the elevation of 0.0 m, which gives the impression of an oblique line because a stone is missing to the north on the western side, seems to mark a wider section of W.19, possibly symmetric to the one to the south along the same side of the tower. Floor L.21 (already described in Marchetti, Nigro 1998: 118, 125) was just higher than the top of the stone foundations of W.19 (fig. 5:14 to the left). The original floor to the west of W.19 has not yet been excavated. Since the tower has no doorway, a ladder must have given access from the upper storey (fig. 5:19). The existence of the latter one is inferred not only from the thickness of the structures, but also from the collapsed objects and vessels of operation 4a,

⁹ Some burnt traces were observed on L.199 along W.190 and W.164; in particular, along W.190 there was an L-shaped spur of fine black ash. A small sounding was conducted in the south-west corner of L.199, against the junction of W.190 with W.19: the underlying fill was made of earth and pebbles, with some larger stones and broken dark mudbricks, while here also it was evident that the foundations of the walls were two stone courses high.

which indicate that several working activities were carried out there (fig. 5:18).

The refurbishing of the tower: operation 4d

After some time (fig. 5:8) the floor of the tower was refurbished with a fill 25 cm thick (F.198a), which contained some medium sized stones (fig. 5:15 in background); the slight subsiding of W.164 (fig. 5:19 to the right), indicated by its actual curving profile, suggested perhaps the necessity of raising the floor.

The destruction of Building A1: operation 4a

The tower of Building A1 was burnt by a fierce fire, which left impressive traces (fig. 5:18). The burnt fill (F.162) contained broken mudbricks and even some medium sized stones in its upper part (fig. 5:11-12). Fragments of poplar beams have been identified (fig. 5:17; see Lazzeri, Macchioni in this volume) and are probably relative either to the floor of the upper storey and to its ceiling.

The upper part of F.162 was represented by a whitish powdery substance (visible also on the top part of the preserved mudbrick walls; for the pollen analysis see Caramiello in this volume). Several utilitarian objects and fragmentary vessels, among which there were circa five storage jars, were retrieved in F.162 at different elevations and without any particular concentration (see their discussion below). Some long human bones (for which see Santandrea in this volume) were present in the upper part of F.162, to the south: their fragmentary state of preservation and the fact that they are burnt indicate that they belong to the collapse of the tower, although no explanation can be offered at present for their presence.

5.2.2. The pottery materials from Building A1

A large ceramic inventory was retrieved in the destruction layer (F.162) of Building A1. Almost no complete vessels were present and since they were also found at various elevations it is clear that they are all fallen from above. One vessel was however found smashed over L.198 (fig. 5:45.1; see also fig. 5:18 to the lower left) and it is thus possible that it was kept in that room. The various ceramic classes, distinguished by fabrics and with a functional differentiation, are unevenly represented: 18 indicator sherds of Simple Ware were present, along with 8 indicators and 36 body sherds of Kitchen Ware, while Preservation Ware was either documented by indicator

sherds and by circa five jars which must have been complete before the collapse of the upper storey of Building A1 (several body sherds belong to vessels for which no indicators could be found). Simple Ware is always wheel-made, in Preservation Ware only the rim is wheel-made and Kitchen Ware is usually hand-made and finished on the wheel.¹⁰

The Simple Ware assemblage of open shapes includes medium-sized bowls with inturned rim (fig. 5:44.1-5), although few specimens may also associate a slightly flaring rim with the hemispherical shape (fig. 5:44.6); carinated bowls may have a short everted rim (fig. 5:44.7, 9, the latter one burnished on the outside) or, in some cases, the characteristic high flaring rim (fig. 5:44.8). One specimen seems to belong to Miniature Ware (fig. 5:44.10). Among the closed shapes, apart from a cylindrical juglet with flaring neck (fig. 5:44.12), there are some medium-sized jars with thickened rim (fig. 5:44.13-14); the second one seems to belong to a jug with handle on the horizontal shoulder (fig. 5:44.15), to which may also be attributed a ring base of the same fabric (fig. 5:45.8). A typical Period IVb (Middle Bronze II) shape is an almost complete jar with marked shoulder that has a ring base and a narrow flaring neck with everted rim (fig. 5:45.1). Peculiar are an inturned flat rim with a ridge below (fig. 5:45.2) and a cylindrical fragment (fig. 5:44.11), possibly belonging to a pipe. Among the flat bases (fig. 5:45.3), one fragment has a hole that may either be interpreted as an ancient repair or as a functional feature (fig. 5:45.4). Some other flat, disk or ring bases of medium-sized vessels may either belong to Simple Ware closed shapes or to Preservation Ware jars (fig. 5:45.5-7, 9-10).

Preservation Ware jars may have four or two handles on the shoulder (respectively figs. 5:20 and 5:46.1, with collared rim, scrabbled wavy motive, rills on upper body and flat base, and fig. 5:46.2, with double everted rim and of which many fragments of a grey “metallic” fabric were recovered). A similar rim is also present in other specimens (fig. 5:46.4, 6), of which one has a scrabbled motive on the shoulder (fig. 5:46.5). One jar with a rim thickened on both sides has a shoulder higher than the others (fig. 5:46.3a), under which there are the handles and a single band of combing (fig. 5:46.3b). Incised motives are common (normally on or over the

¹⁰ Surface treatments are rare. Self-slip is a rather frequent feature being attested to in fig. 5:44.5-6, 8, 10, fig. 5:45.3, 9 and fig. 5:46.6.

shoulder of the vase) such as double combings (fig. 5:46.8) or a herringbone pattern between two parallel lines (fig. 5:46.7).

Kitchen Ware vessels include a platter with blind holes on the base (fig. 5:47.1), pots with everted rim (fig. 5:47.2-4), in the second case of a more elaborated type, and larger neckless pots with thickened rim (fig. 5:47.5-6). Some fragments of an oven were also retrieved (fig. 5:47.7).

The assemblage from F.162 can be compared with the materials from the best Middle Bronze Age sequence obtained by Kenyon on the tell, i.e. that of Squares HII-III-VI (Kenyon, Holland 1983: xxxix and tabs. at pp. xlv, xlvii). Notwithstanding the long duration for these layers (Stages V-XIII extend from late Middle Bronze I to the end of Middle Bronze III), the cultural continuity observable in the material culture has made difficult the recognition of distinct archaeological phases (see Bienkowski 1989: 173-174 and the Appendix by R. Chapman at the pp. 176-178, there). The best comparisons for the pottery of Building A1 are the materials of Stage XII-XIII, phase lii-liii, which anyhow are the most abundant of Kenyon's sequence and so particularly apt to be compared with ours, though they are probably somewhat later since they date from Middle Bronze III (Kenyon, Holland 1983: 442-460, figs. 189-203).¹¹

5.2.3. *The objects from Building A1*

From F.162 several pestling and weaving tools were retrieved (fig. 5:22), most of which comparable to the 1997 inventory from L.20. Seven irregularly spherical large stone pestles have a flattened and worn face, which is smooth and lustrous (TS.98.A.313, TS.98.A.314, TS.98.A.317, TS.98.A.329, TS.98.A.338, TS.98.A.359, TS.98.A.360, fig. 5:52). Another kind of tool is probably a pestle too (TS.98.A.280, fig. 5:52), although square in section and more elongated. One small stone mortar can be compared to other Middle Bronze pieces (TS.98.A.277, fig. 5:57).¹² Three

¹¹ The excavations of Kenyon, though innovative and accurate for their time, failed however in attributing materials to their single stratigraphical unit and this hampers the possibility of using them for building a detailed archaeological sequence for the Middle Bronze Age, which is one of the main objectives of the Italian-Palestinian Expedition. The principal criterion lies in studying the whole of the pottery assemblage and in the varying percentages of ceramic types, as Kenyon herself wrote for the tomb materials (1960b: 268-293; 1964: 171-176), and the excavations of Area A seem thus very promising in this respect.

¹² See Dorrell 1983: 566, fig. 231.11, type H2.

querns and one grinding stone attest to the transformation of cereals (TS.98.A.349, fig. 5:54, TS.98.A.357, fig. 5:53, TS.98.A.364, fig. 5:55 and TS.98.A.347, figs. 5:55 and 5:21).¹³ Weaving tools are represented by two clay loom weights (TS.98.A.361 and TS.98.A.362, fig. 5:53) and a large stone loom weight (TS.98.A.276, fig. 5:52), while a carbonized ellipsoidal spindle whorl (TS.98.A.47, fig. 5:52) comes from the destruction debris in the south corner of L.20 and it may come from the collapse of Building A1.¹⁴ A fragment of a clay sealing has been tentatively identified on the basis of the shape of the inner part (TS.98.A.386), which seems to have sealed the neck of a large vessel.

Catalogue of the objects from Building A1

TS.98.A.47, Spindle whorl (fig. 5:52)

Material: Carbonized wood

Dims.: l. 3.2; h. 1.8 cm

Elevation: 2.08 m

Square: ArIV12

Locus: F.356

Activity: 4c

Period: IVb, Middle Bronze II

TS.98.A.276, Loom weight (fig. 5:52)

Material: Stone

Dims.: w. 7.7 cm

Elevation: 1.0 m

Square: AsIV13

Locus: F.162

Activity: 4c

Period: IVb, Middle Bronze II

TS.98.A.277, Mortar (fig. 5:57)

Material: Stone

Dims.: h. 10.6; w. 12.8 cm

Elevation: 1.0 m

Square: AsIV13

Locus: F.162

Activity: 4c

Period: IVb, Middle Bronze II

TS.98.A.280, Pestle (fig. 5:52)

Material: Stone

Dims.: h. 17; l. 5.7; w. 5 cm

Elevation: 1.0 m

Square: AsIV13

Locus: F.162

Activity: 4c

Period: IVb, Middle Bronze II

TS.98.A.313, Pestle (fig. 5:52)

Material: Limestone

Dims.: w. 8.4 cm

Elevation: 0.40 m

Square: ArIV13

Locus: F.162

Activity: 4c

Period: IVb, Middle Bronze II

TS.98.A.314, Pestle (fig. 5:52)

Material: Limestone

Dims.: w. 10.5 cm

Elevation: 0.40 m

Square: ArIV13

Locus: F.162

¹³ For the first piece compare Dorrell 1983: 570, fig. 232.15 from phase li of Squares HII-III-VI.

¹⁴ Compare Wheeler 1982: 623-624, fig. 254.1-2 from phase lii-liii of Squares HII-III-VI for the first two pieces; see also Kenyon 1960b: fig. 184.2 from Tomb J1 for a wooden spindle whorl.

Activity: 4c
 Period: IVb, Middle Bronze II
TS.98.A.317, Pestle (fig. 5:52)
 Material: Limestone
 Dims.: w. 11.8; 8.4 cm
 Elevation: 1.0 m
 Square: AsIV13
Locus: F.162
 Activity: 4c
 Period: IVb, Middle Bronze II
TS.98.A.329, Pestle (fig. 5:52)
 Material: Basalt
 Dims.: w. 5.9; 6.3 cm
 Elevation: 0.40 m
 Square: AsIV13
Locus: F.162
 Activity: 4c
 Period: IVb, Middle Bronze II
TS.98.A.338, Pestle (fig. 5:52)
 Material: Stone
 Dims.: w. 3.1; l. 7.3; 6.9 cm
 Elevation: 0.40 m
 Square: AsIV13
Locus: F.162
 Activity: 4c
 Period: IVb, Middle Bronze II
TS.98.A.347, Grinding stone (figs. 5:55 and 5:21)
 Material: Basalt
 Dims.: h. 46.5; l. 14.5; w. 8.5 cm
 Elevation: 0.40 m
 Square: AsIV13
Locus: F.162
 Activity: 4c
 Period: IVb, Middle Bronze II
TS.98.A.349, Quern (fig. 5:54)
 Material: Limestone
 Dims.: h. 5.5; l. 25.5; w. 19.5 cm
 Elevation: 0.50 m
 Square: AsIV13
Locus: F.162
 Activity: 4c
 Period: IVb, Middle Bronze II

TS.98.A.356, Pestle (fig. 5:52)
 Material: Stone
 Dims.: w. 6.5; 5.2 cm
 Elevation: 0.05 m
 Square: ArIV11
Locus: F.162
 Activity: 4c
 Period: IVb, Middle Bronze II
TS.98.A.357, Quern (fig. 5:53)
 Material: Basalt
 Dims.: h. 5.5; l. 14; w. 9.5 cm
 Elevation: 0.05 m
 Square: ArIV11
Locus: F.162
 Activity: 4c
 Period: IVb, Middle Bronze II
TS.98.A.359, Pestle (fig. 5:52)
 Material: Limestone
 Dims.: w. 8.2; 6.4 cm
 Elevation: -0.25 m
 Square: ArIV13
Locus: F.162
 Activity: 4c
 Period: IVb, Middle Bronze II
TS.98.A.360, Pestle (fig. 5:52)
 Material: Limestone
 Dims.: w. 5.7; l. 8.7; 6.5 cm
 Elevation: -0.25 m
 Square: ArIV13
Locus: F.162
 Activity: 4c
 Period: IVb, Middle Bronze II
TS.98.A.361, Loom weight (fig. 5:53)
 Material: Clay
 Dims.: h. 10.8; w. 5.5 cm
 Elevation: -0.25 m
 Square: ArIV13
Locus: F.162
 Activity: 4c
 Period: IVb, Middle Bronze II
TS.98.A.362, Loom weight (fig. 5:53)
 Material: Clay
 Dims.: w. 6.1; 6.3 cm

Elevation: -0.25 m

Square: ArIV13

Locus: F.162

Activity: 4c

Period: IVb, Middle Bronze II

TS.98.A.364, Quern (fig. 5:55)

Material: Stone

Dims.: h. 36; l. 17; w. 10 cm

Elevation: 1.0 m

Square: AsIV13

Locus: F.162

Activity: 4c

Period: IVb, Middle Bronze II

TS.98.A.386, Sealing (fig. 5:52)

Material: Clay

Dims.: h. 6.6; l. 4.7; w. 1.4 cm

Elevation: -0.10 m

Square: AsIV13

Locus: F.162

Activity: 4c

Period: IVb, Middle Bronze II

5.2.4. Interpretation of Building A1

The interpretation of Building A1 is a provisional one, due the limited area thus far exposed. It seems that the excavated sector represents the eastern wing of a large building possibly articulated around a courtyard.¹⁵ The tower would thus be placed along the boundary wall of such a building; its circulation scheme, with the ground room accessible only from above, is paralleled in the ground rooms of contemporary military buildings, either in the fortresses of Tell Mardikh/Ebla (Matthiae 1997b: 10-12, figs. 22-24), Tell el-Mutesellim/Megiddo and Tell Jezari/Gezer (Kempinski 1992b: 132-135) and in city gates such as that of level VII at Tell Atchanah/Alalakh (Woolley 1955: 150, fig. 55). The short distance separating Building A1 from the stone foot of the Middle Bronze I-II rampart (see also chapter 4 in this volume), lying c. 8 m to the north-west, suggests a possible functional and structural correlation of the two constructions, although a more detailed hypothesis is hampered at present by the lack of further elements.¹⁶ As far as the activities carried out in the upper storey of the tower are concerned, they evidently were the transformation and temporary storage of cereals and legumes (see Caramiello in this volume), as the set of stone grinding and pestling tools and the pottery equipment attest to. The animal bones retrieved include a few goat and sheep fragments, of which only one shows traces of butchering marks, while some ribs of a bovine are probably raw materials for the preparation of tools (see Alhaique in this volume, fig. 7). While the pottery materials from Building A1 should belong to the final phase of Period IVb (Middle Bronze II), its construction date cannot at present be established: if the correlation with Tower E1 and the curving stone retaining wall of Area E is confirmed, a date towards the end of Period IVa (Middle Bronze I) is probable.

5.2.5. The absolute dating of the destruction layer of Building A1

Two calibrated radiocarbon datings from F.162, made on carbonized fragments of poplar wood, gave two different dates (see Lombardo, Piloto in

¹⁵ In the first preliminary report it was proposed that Building A1 extended to the north-east (Marchetti, Nigro 1998: 135, n. 38), while it is now clear that it extends to the west.

¹⁶ For some preliminary considerations on the chronology of these structures see Marchetti, Nigro 1998: 135; Marchetti, Nigro, Sarie' 1998: 138.

this volume): the first one (Rome-1776) fits the chronology of the traditional end of Middle Bronze II, towards 1650 BC, while the second one (Rome-1775) is for some reason too low.

5.2.6. *Architecture and stratigraphy of Building A2*

The construction of Building A2: operation 4d

Building A2 was built after Building A1: the portion excavated in 1998 (fig. 5:23) consists of four rooms flanked by a courtyard to the west (L.20) and an open area to the south (the floor of which, as yet unexcavated, must lie under F.177; fig. 5:28).

The rooms had floors made by a thin layer of crushed limestone over a preparation of small pebbles and walls made of rectangular or square mudbricks. Because of the incomplete plan of the building recovered thus far (figs. 5:7-8), only one doorway is known between rooms L.186 and L.191 (fig. 5:24-27).

L.197 was not completely excavated in 1998 in order to leave part of the overlying stratigraphy. The mudbricks of W.188 were very poorly preserved, except than to the east, and so it was decided to expose the stone foundations in order to study their technique: they are made of medium sized and small stones with their flat side facing upwards and they are two stones wide with smaller chips in between (fig. 5:29).

Courtyard L.20 (fig. 5:30) was already described in the previous report (Marchetti, Nigro 1998: 125-126): one can only add here that the quite large dimension of W.22, built during this phase over L.21, seems relative to Building A1 rather than to Building A2, the walls of which are much thinner and show a different building technique, although its precise function remains obscure representing perhaps a regularization of the prospect of Building A1 facing the residential quarter.

The destruction of Building A2: operation 4c

Building A2 was intentionally torn down. The beams of the ceiling were probably reused and few vessels and objects were left behind (see below). The fill of broken mudbricks retrieved in all the four rooms of Building A2 (fig. 5:31), and also over L.20b and L.21b to the west, certainly represents the collapse of the upper parts of the walls, which at least in L.186 remained a little higher than the top of such fill, since the preparation for the floor of later Building A3 (L.173) went against their extant upper faces.

5.2.7. *The pottery materials from Building A2*

In order to allow a functional characterization of each room of Building A2, the description of the pottery assemblage will be done accordingly, although the pottery materials from Building A2 are not abundant. Generally speaking the three main functional classes are evenly represented, although no reliable statistic could be obtained from the sample. From fill F.183, overlying L.186, came a complete shape of a characteristic Period IVb (Middle Bronze II) bowl with slightly flaring disk base and inturned rim (fig. 5:50.1 and fig. 5:34), which is probably self-slipped; there were also a hemispherical bowl (fig. 5:50.2) and the fragment of a lamp with traces of burning on the rim (fig. 5:50.3). Two painted fragments (fig. 5:36) seem to belong to closed shapes: the first one has a wavy motive between parallel lines painted in a dark yellowish brown colour on a white slip (fig. 5:50.4), while the other has more irregular motives painted in a pinkish grey colour (fig. 5:50.5).¹⁷ To a juglet or bottle belongs a flaring neck where on the white slip (extending on the outside and the inner part of the rim) there is a dark brown painted band (fig. 5:50.6 and fig. 5:36 above). The bottom of a cylindrical juglet has a dark slip and a vertical burnishing (fig. 5:50.7). Two rims of Simple Ware jars are respectively thickened (fig. 5:50.8, self-slipped) and simple (fig. 5:50.9). The body of a Simple Ware jar with rounded base (fig. 5:50.12) has approximately the same dimensions of a vessel here classified in the Preservation Ware because of the two handles and the thick walls (fig. 5:50.11). To the latter class surely belongs an everted rim with a ridge below (fig. 5:50.10). A ring base seems to pertain to a Simple Ware jar (fig. 5:50.13). Kitchen Ware is represented by a basin with rope decoration (fig. 5:50.14) and a pot with expanded rim (fig. 5:50.15).

The fill over L.191, F.175, gave a less varied assemblage although similarly composed: a complete bowl with everted rim and ring base, self-slipped, has an inner pattern burnish (fig. 5:51.1 and fig. 5:35), while other bowls have an inturned or simple rim (fig. 5:51.2-3, the former with an inner

¹⁷ For painted Middle Bronze Simple Ware sherds see Kenyon 1960b: fig. 150.1 from Tomb B35; 1964: fig. 185.11 from Tomb J19; Kenyon, Holland 1983: figs. 71.5, 175.2, 179.13, 185.11, 206.1-5; the best parallels come from Squares HII-III-VI and especially from phases xxxii-xxxiii (Kenyon, Holland 1983: fig. 169.6), xxxvii-xxxviii (Kenyon, Holland 1983: fig. 176.15) and li (Kenyon, Holland 1983: fig. 186.19-20).

smooth). Carinated bowls are represented by one specimen (fig. 5:51.4), while a thin-walled base may either belong to a similar vessel or to a pedestal vase (fig. 5:51.5). A possible black painted band appears on the rim of a large bowl (fig. 5:51.9). Closed shapes are represented by an everted stepped rim (fig. 5:51.7) and a disk base with rilled body (fig. 5:51.6). A handle belongs to Preservation Ware (fig. 5:51.10), while to Kitchen Ware a pot with everted rim and outer traces of fire (fig. 5:51.8) and the fragment of an oven (fig. 5:51.11).

Finally from F.184, over L.185, come two bowls with inturned rim (fig. 5:49.4-5 and fig. 5:34), a bowl with slightly everted rim (fig. 5:49.10), a small vessel with flat base white slipped and smoothed which has a brown painted pattern motive (fig. 5:49.6), a juglet (fig. 5:49.7) and a jar with double everted rim (fig. 5:49.9). An everted rim with a ridge below belongs preservation jar (fig. 5:49.8). Kitchen Ware is represented by two pots (fig. 5:49.11-12) and the fragment of an oven (fig. 5:49.13), the first and third of which with traces of burning inside.

5.2.8. *The objects from Building A2*

Eleven stone pestles of small or medium dimensions have been retrieved in Building A2 (TS.98.A.333, fig. 5:53, TS.98.A.292, TS.98.A.293, TS.98.A.294, TS.98.A.295, TS.98.A.296, TS.98.A.297, TS.98.A.298, fig. 5:56, TS.98.A.291 and TS.98.A.334, fig. 5:57, TS.98.A.411).¹⁸ Two mortars (TS.98.A.365, fig. 5:55, and TS.98.A.420, for which see fig. 5:65-66)¹⁹ and two querns (TS.98.A.367 and TS.98.A.368, fig. 5:54) are the only other tools which can be connected with pestling and grinding activities. Two pierced stones (TS.98.A.383 and TS.98.A.384, fig. 5:56 and fig. 5:33),²⁰ found *in situ* on the floor of L.186, had a symmetric position as to the room plan (fig. 5:25; they are also drawn in fig. 5:7); their function remains however unclear, although they may be connected with TS.98.A.344 from the same room. Weaving is in fact represented by a clay spindle whorl

¹⁸ Seven pestles (TS.98.A.292 to 298) were found together in F.183 near vessels TS.98.A.29/1 and TS.98.A.29/2. Pestles TS.98.A.291 and TS.98.A.294 are small and of smoothed limestone, having perhaps been used as polishers (they cannot be weights since they do not seem to fit in any known ponderal system).

¹⁹ A piece similar to the first one is illustrated in Dorrell 1983: 565, fig. 231.9 (type H1) from phase xIv of Squares III-III-VI.

²⁰ See Dorrell 1983: 569, fig. 232.11-12 and Kenyon 1964: fig. 123.3 from Tomb J37.

(made from an old sherd: TS.98.A.344, fig. 5:56) and a loom weight (TS.98.A.337, fig. 5:53).²¹ An isolated find from F.183 is a bronze adze of a common type (TS.98.A.286, fig. 5:56 and fig. 5:32). The richest assemblage of tools comes from F.183 (fig. 5:37).

Catalogue of the objects from Building A2

TS.98.A.286, Adze (figs. 5:56 and 5:32)

Material: Bronze

Dims.: h. 12.3; l. 1) 4.8 2) 2.5; w. 1.0 cm

Elevation: 0.60 m

Square: AsIV12

Locus: F.183

Activity: 4c

Period: IVb, Middle Bronze II

TS.98.A.291, Pestle (fig. 5:57)

Material: Limestone

Dims.: w. 3,8; 5,3; 4,5 cm

Elevation: 0.40 m

Square: AtIV11

Locus: F.184

Activity: 4c

Period: IVb, Middle Bronze II

TS.98.A.292, Pestle (fig. 5:56)

Material: Limestone

Dims.: w. 2.6; 4.5 cm

Elevation: 0.60 m

Square: AsIV12

Locus: F.183

Activity: 4c

Period: IVb, Middle Bronze II

TS.98.A.293, Pestle (fig. 5:56)

Material: Limestone

Dims.: w. 3.9; 5.1; 5.2 cm

Elevation: 0.60 m

Square: AsIV12

Locus: F.183

Activity: 4c

Period: IVb, Middle Bronze II

TS.98.A.294, Pestle (fig. 5:56)

Material: Limestone

Dims.: w. 5.6; 4.9 cm

Elevation: 0.60 m

Square: AsIV12

Locus: F.183

Activity: 4c

Period: IVb, Middle Bronze II

TS.98.A.295, Pestle

Material: Limestone

Dims.: w. 5.0; 6.7; 5.5 cm

Elevation: 0.60

Square: AsIV12

Locus: F.183

Activity: 4c

Period: IVb, Middle Bronze II

TS.98.A.296, Pestle (fig. 5:56)

Material: Limestone

Dims.: w. 5.3; 6.4 cm

Elevation: 0.60 m

Square: AsIV12

Locus: F.183

Activity: 4c

Period: IVb, Middle Bronze II

TS.98.A.297, Pestle (fig. 5:56)

Material: Limestone

Dims.: w. 4.5; l. 5.4; 4.7 cm

Elevation: 0.60 m

Square: AsIV12

Locus: F.183

Activity: 4c

Period: IVb, Middle Bronze II

TS.98.A.298, Pestle (fig. 5:56)

Material: Limestone

²¹ For the former see Wheeler 1982: 637, fig. 259.7, for the latter compare Dorrell 1983: 569, fig. 232.14.

Dims.: w. 5.3; 6.3 cm

Elevation: 0.60 m

Square: AsIV12

Locus: F.183

Activity: 4c

Period: IVb, Middle Bronze II

TS.98.A.333, Pestle (fig. 5:53)

Material: Stone

Dims.: w. 6.0; l. 8.0; 7.4 cm

Elevation: 0.70 m

Square: AsIV11

Locus: F.175

Activity: 4c

Period: IVb, Middle Bronze II

TS.98.A.334, Pestle (fig. 5:57)

Material: Stone

Dims.: w. 5.8; l. 5.7 cm

Elevation: 0.40 m

Square: AtIV11

Locus: F.184

Activity: 4c

Period: IVb, Middle Bronze II

TS.98.A.337, Loom weight (fig. 5:53)

Material: Limestone

Dims.: h. 14.0; l. 12.5; w. 9.4 cm

Elevation: 0.70 m

Square: AsIV11

Locus: F.175

Activity: 4c

Period: IVb, Middle Bronze II

TS.98.A.344, Spindle whorl (fig. 5:56)

Material: Clay

Dims.: w. 1.1; h. 6.9 cm

Elevation: 0.60 m

Square: AsIV12

Locus: F.183

Activity: 4c

Period: IVb, Middle Bronze II

TS.98.A.365, Mortar (fig. 5:55)

Material: Limestone

Dims.: h. 28.4; l. 19.4; w. 13.8 cm

Elevation: 0.60

Square: AsIV12

Locus: F.183

Activity: 4c

Period: IVb, Middle Bronze II

TS.98.A.367, Quern (fig. 5:54)

Material: Stone

Dims.: h. 7.2; l. 19; w. 12 cm

Elevation: 1.40 m

Square: AsIV11

Locus: F.175

Activity: 4c

Period: IVb, Middle Bronze II

TS.98.A.368, Quern (fig. 5:54)

Material: Stone

Dims.: h. 28.0; l. 17.4; w. 7.4

Elevation: 1.0 m

Square: AsIV11

Locus: F.175

Activity: 4c

Period: IVb, Middle Bronze II

TS.98.A.383, Pierced stone (fig. 5:56 and fig. 5:33)

Material: Limestone

Dims.: h. 6.0; w. 14.5 cm

Elevation: 0.22 m

Square: AsIV12

Locus: F.183

Activity: 4c

Period: IVb, Middle Bronze II

TS.98.A.384, Pierced stone

Material: Limestone

Dims.: h. 5.4; w. 13.8 cm

Elevation: 0.22 m

Square: AsIV12

Locus: F.183

Activity: 4c

Period: IVb, Middle Bronze II

TS.98.A.411, Pestle

Material: Stone

Dims.: h. 7.9; w. 4.8 cm

Elevation: 0.20 m

Square: AtIV11

Locus: F.184

Activity: 4c

Period: IVb, Middle Bronze II
TS.98.A.420, Mortar (fig. 5:66
foreground)
Material: Limestone
Dims.: h. 25; l. 42; w. 36 cm

Elevation: 0.68 m
Square: AtIV11
Locus: F.184
Activity: 4c
Period: IVb, Middle Bronze II

5.2.9. Interpretation of Building A2

The circulation system of Building A2 must have presented another doorway through W.179 in the northern, lost part of L.191, connecting this room with L.185.²² In its turn L.185 was either connected with L.197 (through a doorway located to the east of the excavation limit) or with another room to the east; the comparisons with other Middle Bronze Age houses of Jericho suggest that to Building A2 belonged also a courtyard, on which opened the rooms of the house.²³ If L.20 belonged to the house it must have been accessible through the northern part of L.191; besides the three doorways which would then so be reconstructed for L.191 (making of this room just a passage room), there remains the problem of the main entry of the house, either from the north of L.20 (but there would be some difficulties in reconstructing also an east-west street along the foot of the Period IVa-b, Middle Bronze I-II rampart), or through streets located to the east or south-east of the excavation limits. Conversely, if L.20 did not belong to Building A2 (or at least was a secondary open space of the house) a courtyard must be reconstructed to the east of L.191 and L.185. The main function of Building A2, as revealed by the objects retrieved, seems to have been connected to household craft activities and in particular to food processing, but probably also, though less, to weaving.

Due to the presumably long sequence of occupation of the Lower Town also during Period IVa (see note 2 above), it seems probable that Building A2 represents one within a series of continuous reconstructions of the residential units. To these earlier and thus far scarcely documented phases of Area A²⁴ probably belong the structures excavated by Kenyon on the slope

²² The possibility that another room existed farther to the north of L.191 seems ruled out by the angle of the slope as it can be reconstructed from the section of Trench III (Kenyon 1981: pl. 273).

²³ The houses of the "Palace Storerooms" dug by Garstang (1932: 12-18; 1933: 41-42; 1934: 118-130, pls. XV-XVI) have been studied under the typological profile by Foucault-Forest (1996: 76-78, pl. 68): she has identified four courtyard houses of which *Bâtiments* 2 to 4 have a four-room suite on the side of the courtyard (compare, e.g., rooms 44-47 and 45-35, in Garstang 1934: pls. XV-XVI, with L.186-L.191 and L.185-L.197 of Building A2). Contemporary houses excavated by Kenyon to the north are less well known, although they might have been similar (especially the eastern block: Kenyon 1981: 367-370, pl. 336a).

²⁴ Just as a hint for the evaluation of the architectural development of Area A, one can recall here that in Kenyon's Squares III-III-VI (compare Kenyon 1981: pls. 334, 335,

to the north (phases lxxxiii-lxxxv, Kenyon 1981: 217-218, pls. 126b, 127a, 272a-b; see Marchetti, Nigro 1998: 121-122).

The wall discovered in the sounding against W.4 (W.352; see also note 2 above and § 5.3.1 below) seems to have the same orientation of those of Building A2 and differs thus from the orientation of Building A1, which was thus oriented according to a different function, possibly a defensive one if the interpretation put forward above is correct. Building A1 would have thus partially changed the urban plan of a sector of the southern residential area in the Lower Town, which however for the rest maintained its own orientation through its continual reconstructions, as is shown also by Building A3.

5.2.10. Architecture and stratigraphy of Building A3

The construction of Building A3: operation 4b

After that Building A2 was tore down, another house was reconstructed on the same plan (fig. 5:9), with only minor differences and with several refurbishings in the course of time (figs. 5:1, 6, 29). The structures were rebuilt directly over the old ones, in the case of W.168b and probably also of W.179, or almost on the same alignment, as in the case of W.26 (figs. 5:38-39); W.187a was built on very rough stone foundations parallel to W.179, thus representing a slight variation in comparison with the plan of Building A2. Due to the cut of the foundation trench for the retaining wall of the Period IVc (Middle Bronze III) rampart, which was wider in its upper part, the northern portion of Building A3 is lost. No real outdoor surfaces were identified: to the south F.169 is a homogeneous fill, while to the east over F.20a no particular features could be noted; however, due to the severe razing of the area for the Period IVc (Middle Bronze III) rampart, this upper building level is so badly preserved that they are probably lost.

5.2.11. The pottery materials and objects from Building A3

Few materials have been retrieved from Building A3. From F.166-F.165 come some bowls with simple or inturned rim (fig. 5:47.8 and fig. 5:48.3), the flaring neck of a possible small carinated bowl or pedestal vase (fig. 5:47.9), a whole lamp (figs. 5:47.10 and 5:42, from the northern limit of

336a) there is a remarkable degree of continuity in the orientation and layout of the successive reconstructions of the houses during the Middle Bronze Age.

F.165), two everted rims of preservation jars with a ridge immediately below or at the base of neck (fig. 5:47.11 and fig. 5:48.4) and a two-handled medium preservation jar (figs. 5:48.2 and 5:43, found along the eastern side of W.26). To Kitchen Ware belong a platter with incised notches along the rim (fig. 5:48.5) and a pot with everted rim and outer traces of fire (fig. 5:47.12). In the fill (F.169) to the south of W.168b, in addition to a bowl with inturned rim (fig. 5:48.8), also carinated bowls have been retrieved, either of a close shape (fig. 5:48.9) and of the kind with sharp carination, flaring straight thin walls and shallow ring base (fig. 5:48.6-7). To Preservation Ware belong two everted rims with a ridge below (fig. 5:48.10-11). Kitchen Ware is represented by pots with everted rim (fig. 5:49.1) or with thickened rim and rilled body (fig. 5:49.2) and by a basin with notched rim (fig. 5:49.3); the first and third specimen have outer traces of fire.²⁵ The whole bowl from the ashy fill F.171 (fig. 5:48.1 and fig. 5:34) cannot be assigned to the destruction phase with certainty (see § 5.1.1 above), also because its horizontal position (fig. 5:40) rather hints at an intentional deposition of the vessel (which contained an animal bone and a reddish soft mineral).

Two objects were found in F.165-F.166: a stone pestle (TS.98.A.151) and a flint sickle blade (TS.98.A.131, figs. 5:58 and 5:41), one of the few characteristic flint tools made in the Middle Bronze Age.²⁶ From the foundations of the northern part of W.187a comes a limestone bowl or mortar (TS.98.A.345, fig. 5:57).²⁷

Catalogue of the objects from Building A3

TS.98.A.131, Sickle blade (figs. 5:58 and 5:41)

Material: Flint

Dims.: h. 9.5; l. 3; w. 0.7 cm

Elevation: 2.40 m

Square: AtIV12

Locus: F.165

Activity: 4a

Period: IVb, Middle Bronze II

TS.98.A.151, Pestle

Material: Stone

Dims.: w. 9.1; 6.5 cm

Elevation: 2.15 m

Square: AsIV12

Locus: F.166

Activity: 4a

²⁵ In comparison with Building A2, Kitchen Ware seems less represented in Building A3.

²⁶ See Crowfoot Payne 1983: 725-727, fig. 351.5 from the Period IVc (Middle Bronze III) houses of Area H (phase lii-liii).

²⁷ Compare Dorrell 1983: fig. 231.12, pl. 23a.

Period: IVb, Middle Bronze II

TS.98.A.345, Bowl (fig. 5:57)

Material: Limestone

Dims.: h. 24.0; l. 12.2; w. 8.5 cm

Elevation: 1.30 m

Square: AtIV12

Locus: W.187a

Activity: 4b

Period: IVb, Middle Bronze II

5.3. THE RAMPART OF PERIOD IVC (MIDDLE BRONZE III, 1650-1550 BC)

The 1998 excavations revealed several new, though minor, features of the last urban fortification of the site, which contribute to the knowledge of its building technique (for the previous account see Marchetti, Nigro 1998: 136-140, figs. 4: 1 and 4: 37).

5.3.1. *Architecture and stratigraphy of the rampart*

In 1998 W.4 has been exposed for a height of more than 4 m (it reaches 5 m if one calculates the base reached in the sounding described in § 5.1.2; fig. 5:61) and the excavated portion has now reached a length of almost 18 m (figs. 5:59-60); the building technique is the same as that observed in 1997, with smaller chips set between larger stones (fig. 5:63), which are slightly smaller in the upper part of the wall. The extensive razing of the residential quarter which took place for the building of the rampart at the beginning of Period IVc (Middle Bronze III) must have marked at least a retraction to the south of the Lower Town in this area.

The retaining wall for the rampart: operation 3b

The cut P.154 of the foundation trench for W.4, which in 1997 was found to be filled up with very regular layers (F.10+F.14+F.17), in the new area to the east had a partly different stratigraphy, with F.176 lying under F.14 instead of F.17 (fig. 5:64).

F.176 covered a structure consisting of three steps accessible from east with a sort of buttress to the south (W.174), which can be interpreted as a sort of ramp used during the construction of the rampart; W.174 is made of some flat and roughly squared stones, except the large and elongated ones to the west which are similar to many of those employed in W.4 (fig. 5:65-67).

In the sounding against the north-east face of the foundations of W.19, the base of W.4, which has an elevation of -0.77 m, lies on a levelling fill of rubble (F.351) 0 cm high, laid on the bottom of the foundation trench (P.154).²⁸

²⁸ As far as W.174 is concerned, one can perhaps compare the mudbrick structure discovered against the *Böschungsmauer* (Sellin, Watzinger 1913: fig. 35.6), possibly a ramp. A fill similar to F.351 was also noticed in the German excavations under the

The revetment of the rampart: operation 3a

The foot of the rampart extended at least 10 m to the south of W.4. The 1998 excavations have identified the upper revetment of crushed limestone scales (F.13a) only to the south-south-east (though probably mainly deriving from wash since it was not hardly pressed; fig. 5:62 to the far left), while to the east it was washed away, only the earthen core being present there (F.13c-b; fig. 5:62). The homogeneous greyish fill F.16, filling the inside of Building A1 after its abandonment, must probably be attributed to this phase, representing a levelling fill for the construction of the foot of the rampart.

5.3.2. The objects from the rampart

Few objects were found in the fill of the Period IVc (Middle Bronze III) rampart. Three pestles (TS.98.A.149, TS.98.A.183, TS.98.A.196, fig. 5:58), a limestone quern with a flat section characteristic of the latter part of the Middle Bronze Age (TS.98.A.216, fig. 5:54)²⁹ and a basalt bowl (TS.98.A.412).

Catalogue of the objects from the rampart

TS.98.A.149, Pestle (fig. 5:58)

Material: Stone

Dims.: h. 7.8; w. 7.6 cm

Elevation: 0.95 m

Square: AsIV11

Locus: F.14

Activity: 3b

Period: IVb-c, Middle Bronze II-III

TS.98.A.183, Pestle (fig. 5:58)

Material: Stone

Dims.: w. 5.8 cm

Elevation: 0.75 m

Square: AtIV11

Locus: F.14

Activity: 3b

Period: IVb-c, Middle Bronze II-III

TS.98.A.196, Pestle (fig. 5:58)

Material: Stone

Dims.: h. 7.2; l. 7.3 cm

Elevation: 0.85 m

Square: ArIV13

Locus: F.16

Activity: 3

Period: IVb, Middle Bronze II

TS.98.A.216, Quern (fig. 5:54)

Material: Stone

Dims.: h. 26.2; l. 16.3; w. 5.7 cm

Elevation: 0.75 m

Square: AtIV11

Locus: F.14

Activity: 3b

Period: IVb-c, Middle Bronze II-III

²⁹ *Böschungsmauer* directly over natural bedrock and up to almost 1 m high (Sellin, Watzinger 1913: fig. 35.1-6).
Compare Dorrell 1983: 570, fig. 233:1

5.4. THE OCCUPATIONAL HISTORY OF AREA A AND THE URBAN SETTING OF JERICHO IN THE MIDDLE BRONZE AGE

Summarizing the analytical interpretations put forward above, the southern Lower Town (Area A) seems to have been densely settled throughout the Middle Bronze Age. The domestic occupation was reduced, at least at the beginning of Period IVb but probably also earlier, by the construction of a large public building (A1). The latter construction was possibly a large fort connected with the town fortifications and in particular with the stone tower in Area E (for which see Chapter 4 in this volume), which in fact seems to have had a similar chronology. Nothing can be said at present on its plan except that it must have been organized around a courtyard lying to the west. The houses lying to the east of Building A1 are likely to have had a plan similar to that of the terraced houses on the eastern slope at Jericho, as the analysis of Building A2 allows to hypothesize. The economic activities carried on in the houses (but also in the upper storey of the tower of Building A1) are mainly relative to weaving and to the transformation (grinding and pulping) of food.

At the beginning of Middle Bronze III part of the southern Lower Town was razed for the construction of a rampart sustained by a massive stone retaining wall set within a foundation trench and covered by a sloping embankment with a superficial revetment of crushed limestone.³⁰ No evidence has thus far been obtained for the existence of a Lower Town also in this period.

A preliminary, though sketchy, urban history of Jericho during the Middle Bronze Age is hampered by the limited extent of occupation layers from this period excavated on the tell, except for the slope overlooking the spring, to the east. There either Garstang (see note 23 above), and Kenyon dug late Period IV houses; Kenyon also obtained an occupational sequence

³⁰ For its constructional features see Ussishkin 1989 and, more detailed, Marchetti, Nigro 1998: 141-145. The precise dating of a substantial mudbrick building, which Sellin brought to light in the south-western corner of the town against the stone Middle Bronze III retaining wall (Sellin, Watzinger 1913: 82-84, figs. 35.3, 49-50), remains problematic: he dated it to the Byzantine period only on the basis of a nearby construction and because it would have covered an "israelitische Treppe" (i.e. a Middle Bronze Age structure). However the low elevation of this building and its direct stratigraphic relationship with W.4 allow to hypothesize for it a dating similar to that of the buildings excavated in Area A.

for the earlier phases which remains basic for the history of the site during Period IV.³¹ The main problem lies in the correlation between it and the rampart fortifications excavated in several spots of the tell by the various expeditions. Kenyon identified the first defensive wall of the city as Wall HAJ in her Squares HII-III-VI, dating from early Middle Bronze I.³² The wall excavated in Area D belongs to a city wall slightly later than HAJ (Kenyon 1981: pls. 331a-b, 340, Walls HCP+HCJ; see also Chapter 3 in this volume).³³

Concerning the rampart fortifications, they are apparently of a later date than the mudbrick walls of Square HVI and Area D (Bienkowski 1989 also maintains the same opinion). Kenyon identified three successive constructions of the ramparts, of which only the last one had a stone revetment wall at its foot, although a flimsier revetment wall was also recorded at the base of the first rampart in the northern section of Trench I (Kenyon 1981: 109-110, pl. 98b, Wall KC). However a study of old and

³¹ Some other remains were identified in Trench III (Kenyon 1981: 217-218, pls. 126b, 127a, 272a-b, phases lxxxiii-lxxxv; see also Marchetti, Nigro 1998: 121).

³² Although there do exist some problems from the published sections in doing so, one wonders if Wall HAJ actually joined the tower, rather than being cut by it as Kenyon maintained (Kenyon 1981: pls. 328a, 329a, 339-340), in this case representing its annexed defense wall; such mudbrick tower was interpreted by Kenyon as a possible Middle Bronze Age city gate on the eastern side of the tell (Kenyon 1981: 351-352, pl. 329a), but such identification has remained hypothetical. For another Middle Bronze I tower excavated by Garstang to the south, see its preliminary discussion in Chapter 3 in this volume (§ 3.1.1).

³³ Some chronological problems can be highlighted here: if W.7 in Area D (see Chapter 3 in this volume) is identical with Walls HCJ+HCP of phases X.xxxvi to xxxviii, it follows that the latter phases still belong to Middle Bronze I (although at present only a *terminus post quem* is available for the dating of W.7) being earlier than the ramparts, while Bienkowski (1989: 173) excludes this possibility deeming that phase xx marks the end of Middle Bronze I in the area. In any case no really good stratigraphical evidence is available for determining the exact position of Kenyon's HCJ+HCP as to neighbouring stratification. The beginning of Middle Bronze II in such sequence is problematic: one can at least note that phase XI.xliv (Kenyon 1981: pl. 333a) represents a break under the architectural profile, marking the beginning of a series of reconstructions of residential building with the same alignment which goes down to the end of the Middle Bronze Age. The north and south sections of Squares HII-III-VI (Kenyon 1981: pls. 339-340) show anyhow that the architectural periods are much less numerous than the phases which have been carefully distinguished but which sometimes appear made *a posteriori*, normally looking at the sections after the excavations (consider for example the case of the unitary wall W.4 in Area A/Trench III in which four phases were instead distinguished: Kenyon 1981: 215-219, pls. 271-273).

new evidence has led to the conclusion that only two ramparts are present on the site (Marchetti, Nigro 1998: 141-142). After the middle of Middle Bronze I, in the course of the 19th century BC following the reconstruction put forward for Squares HII-III-VI, a rampart was made with earth mostly taken from the ruins of the Early Bronze IV settlement, as the great quantity of sherds from that period contained in it suggests (Marchetti, Nigro 1998: 105, 140, 145), the surface of which consisted of very careful layers of crushed limestone particularly in the part over the berm (which was located halfway up the slope). Such rampart seems to have had a 5 m thick mudbrick wall on top³⁴ and its base, in the south-west corner of the town (Area E, see chapter 4 in this volume), was protected by a stone tower, to which a stone revetment wall was probably joined on both sides.

In other Palestinian sites a similar development of two successive rampart fortifications can be reconstructed, thus hinting at the strong socio-cultural homogeneity of the Palestinian region during all the Middle Bronze Age:³⁵ at Ras el-ʿAin/Aphek, Tell Faliq/Tel Poleg and Tell edh-Dhurur/Tel Zeror there are late Middle Bronze I embankments with a mudbrick wall on top, while in the course of Middle Bronze II-III many ramparts are restored and some of these have internal stone retaining walls built in a characteristic technique very similar to that of W.4 at Tell es-Sultan (Tell Balatah/Shechem, Khirbet Seilun/Shiloh and the northern Lower Town of Tell el-Mutesellim/Megiddo).

Jericho underwent a complex urban history throughout the Middle Bronze Age. Several chronological and stratigraphical issues remain problematic and they will be investigated in the future excavation campaigns: what can be positively stated now is that already after the 1998 campaign some new interpretative elements have been added concerning the development of the urban structure of the site.

³⁴ Such wall was discovered in 1997 in Area C (Marchetti, Nigro 1998: 103-105). The possibility that it represents a local feature cannot however be completely excluded (see in any case § 4.2.2 in this volume and note 13 there).

³⁵ See Marchetti, Nigro 1998: 145-154 for detailed discussion and references.

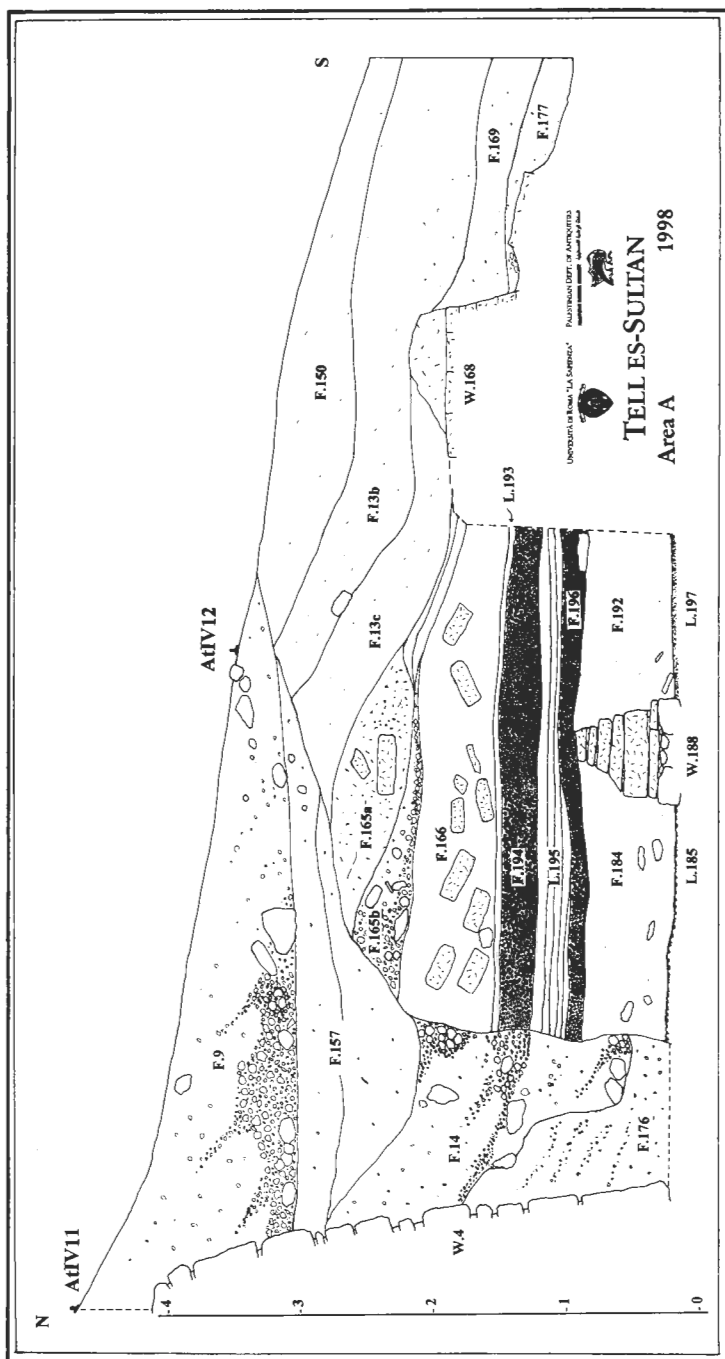


Fig. 5:1 East archaeological section of AtIV11+AtIV12.

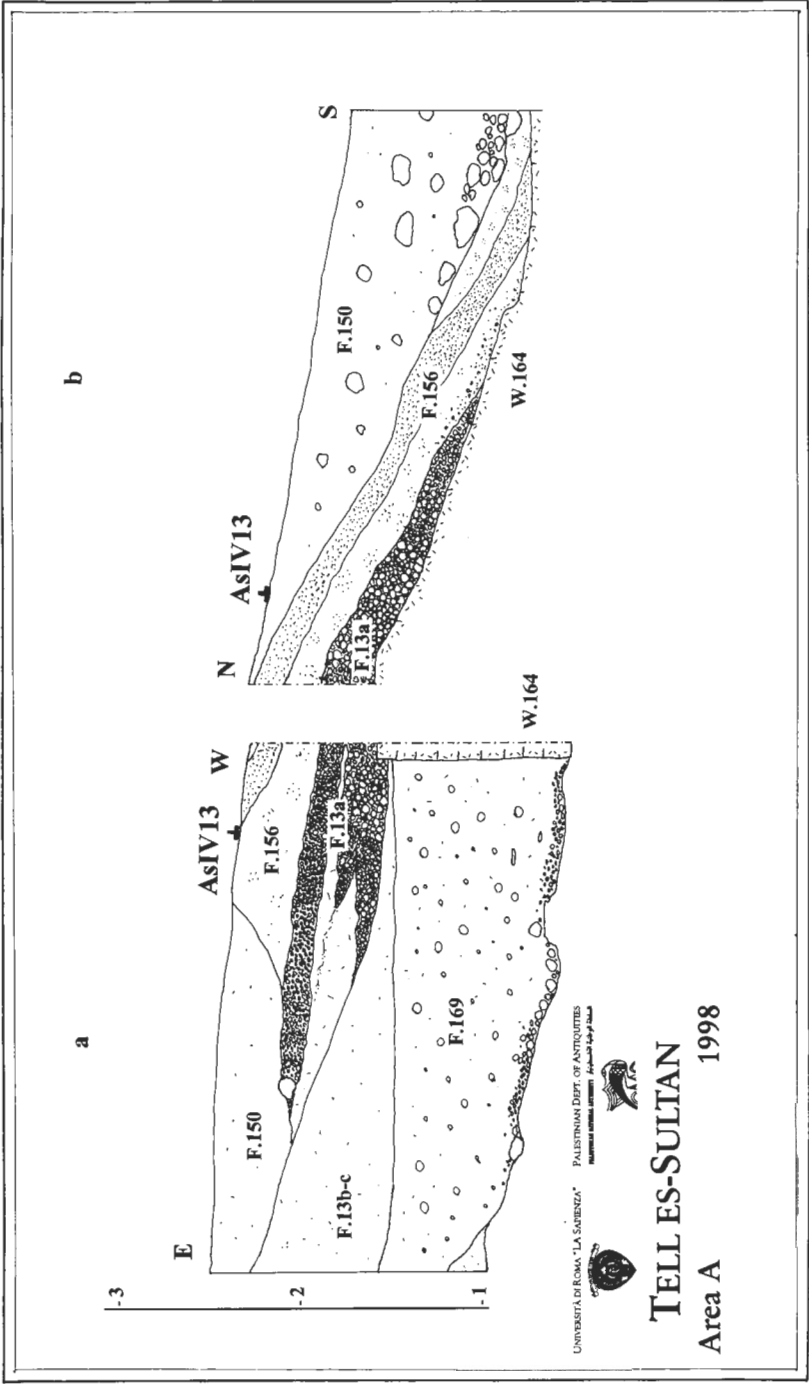


Fig. 5:2 a) South archaeological section of AtIV12; b) East archaeological section of AsIV13.



Fig. 5:3 Area A, walls W.19 (partially visible in foreground), W.22 and W.25 (middle background), with the east section showing stratification, from west-north-west; Period IVb, Middle Bronze II, 1750-1700 BC.

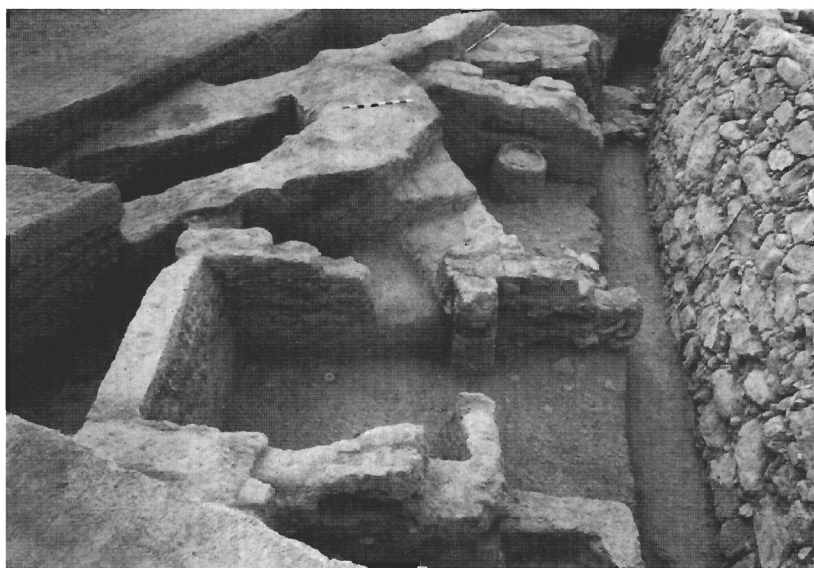


Fig. 5:4 Area A, general view from east-north-east: in foreground Building A2, in background the tower of Building A1, on the right stone retaining wall W.4 of later rampart; Periods IVb-c, Middle Bronze II-III, 1800-1550 BC.

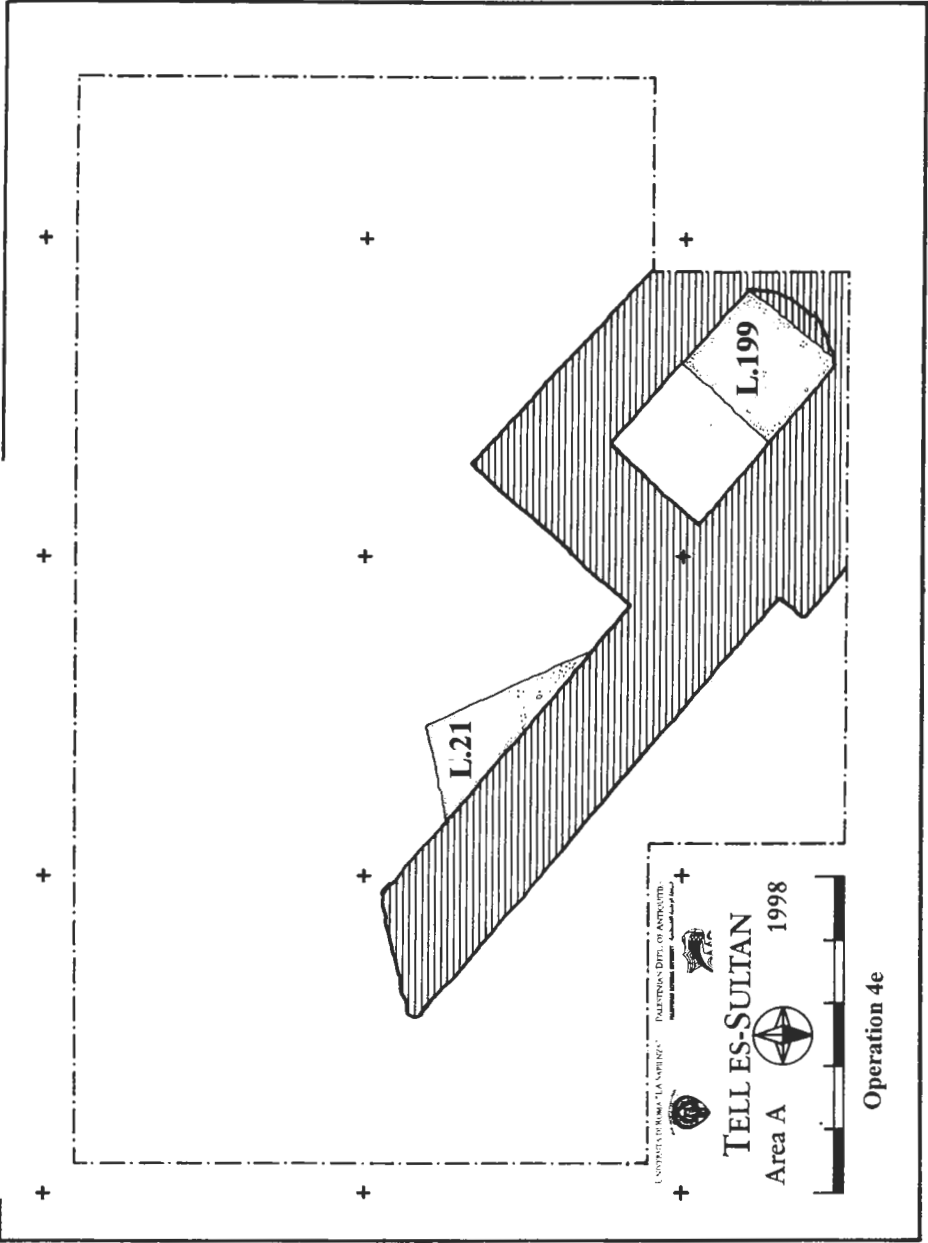


Fig. 5:5 Schematic plan of Area A, operation 4e, Period IVb, Middle Bronze II (c. 1800-1650 BC).

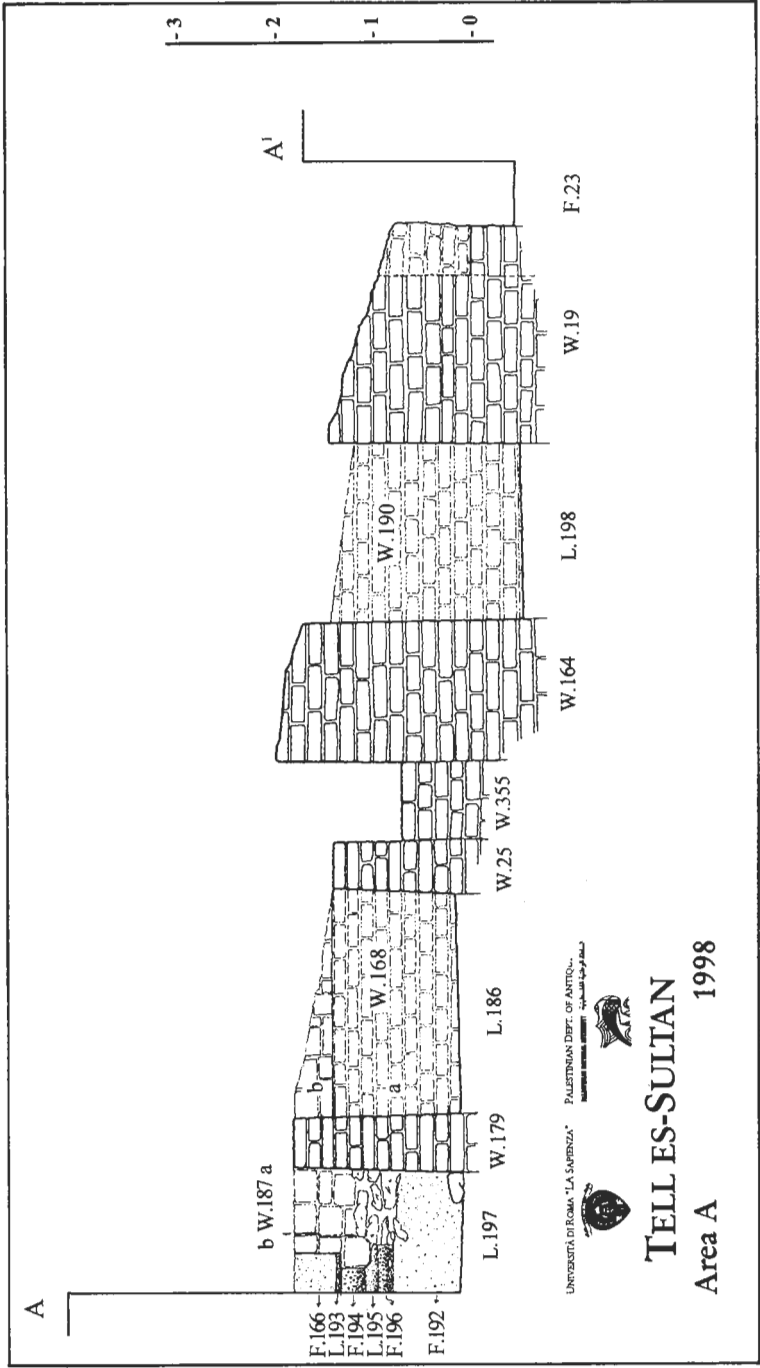


Fig. 5-6 East-west architectural section of Buildings A1, A2 and A3 in their final state of excavation, Period IVb, Middle Bronze II (c. 1800-1650 BC).

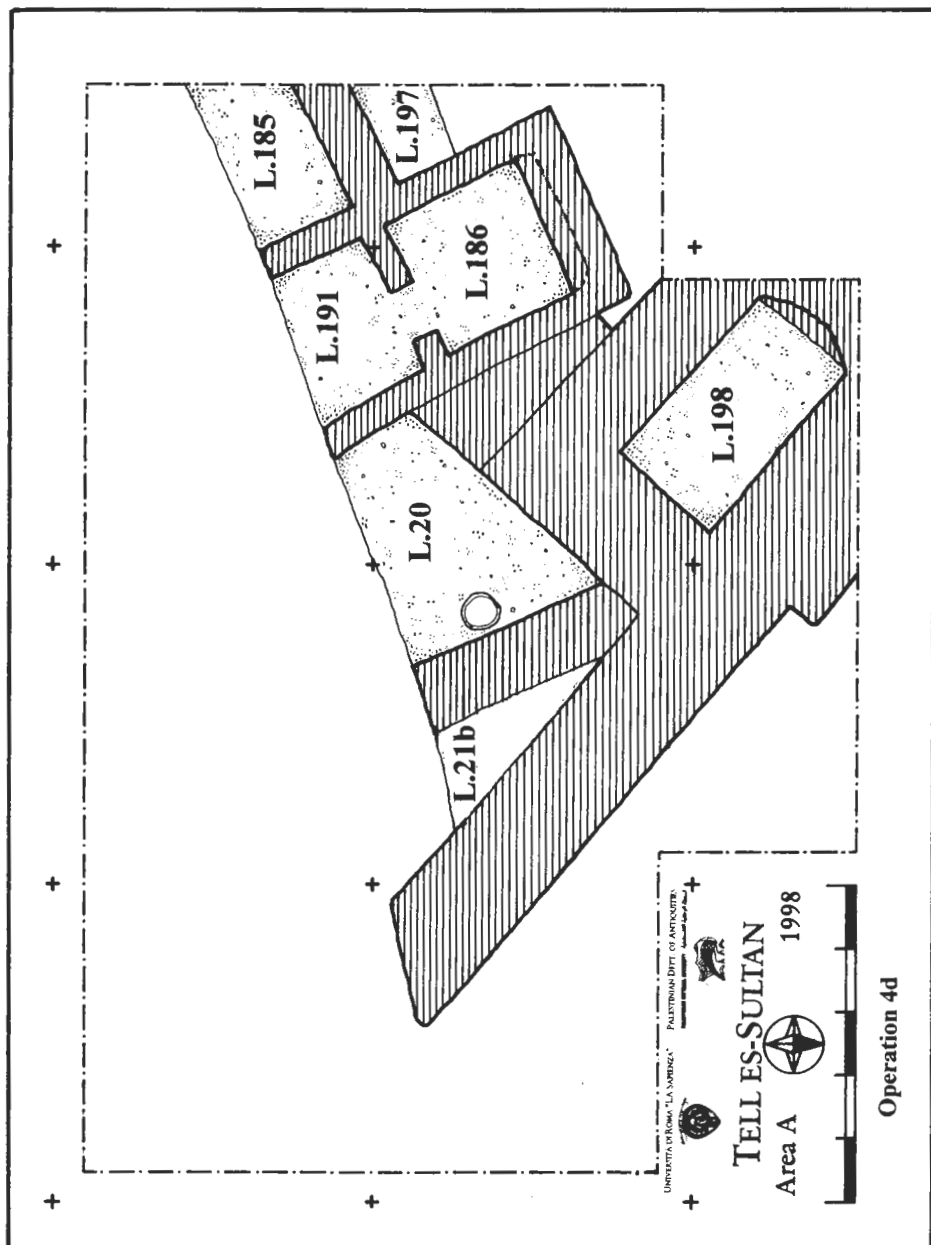


Fig. 5:8 Schematic plan of Area A, operation 4d, Period IVb, Middle Bronze II (c. 1750-1700 BC).

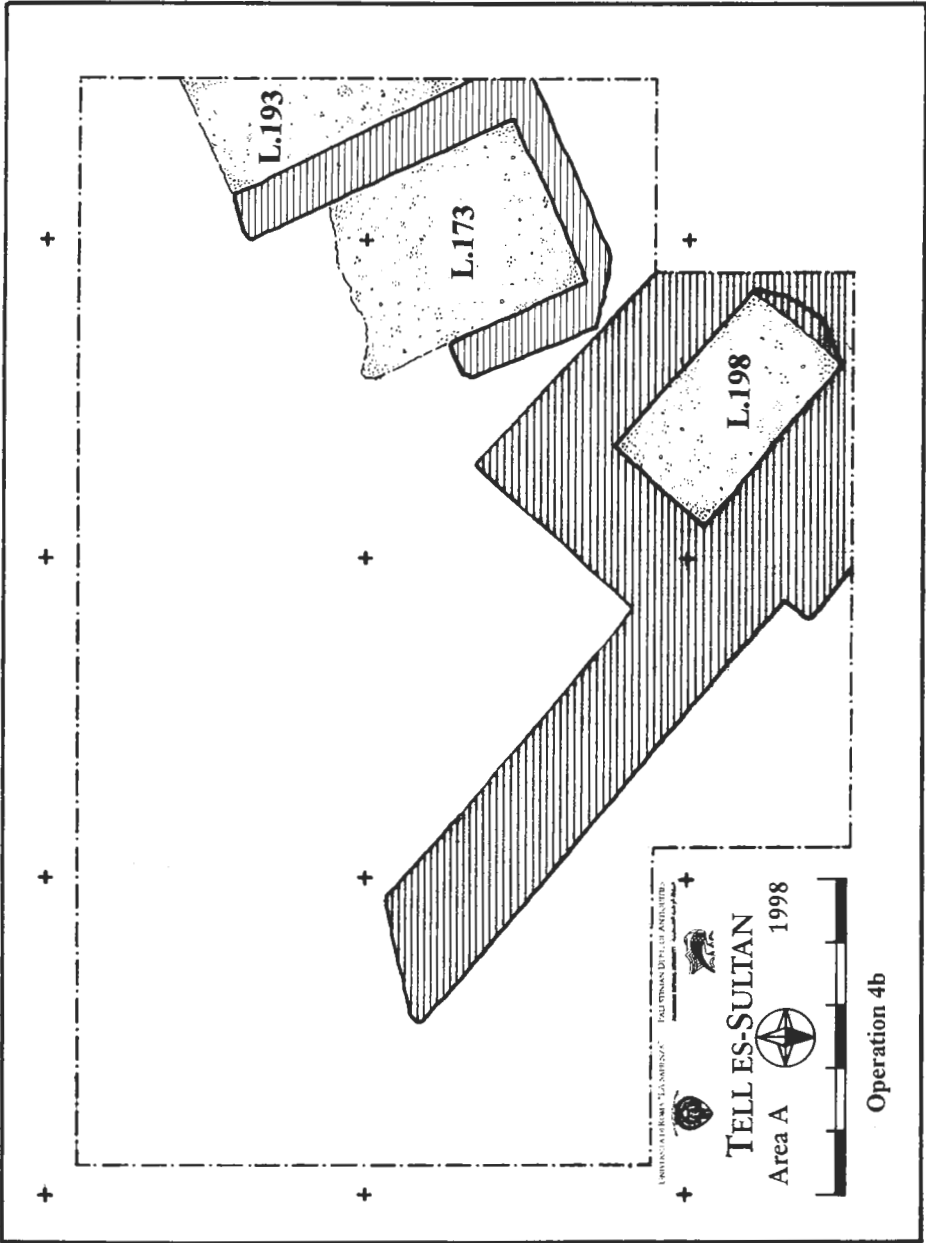


Fig. 5:9 Schematic plan of Area A, operation 4b, Period IVb, Middle Bronze II (c. 1700-1650 BC).



Fig. 5:10 Area A, general view of Buildings A1 and A2 from north-west; Period IVb, Middle Bronze II, 1800-1650 BC.

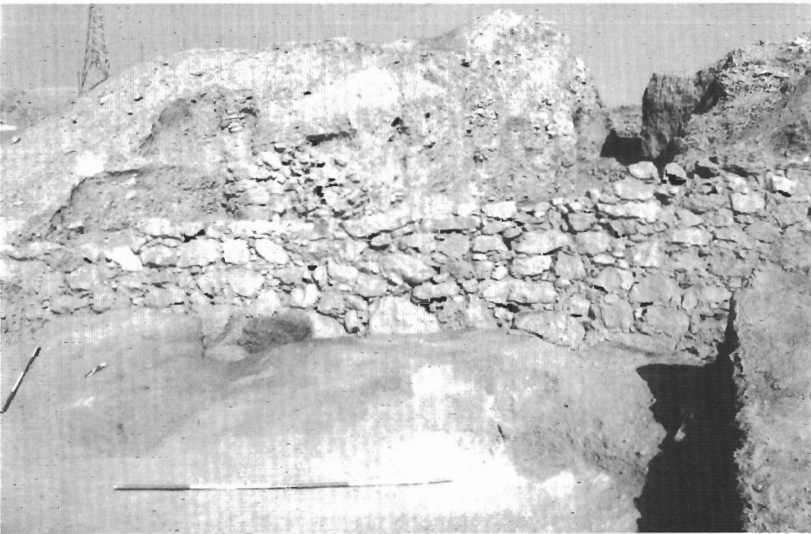


Fig. 5:11 Area A, the tower of Building A1 appearing from the ground in the course of the excavation, from south-south-east; in foreground fill F.13b-c of the Period IVc rampart, in the middle walls W.15 and W.19 (to the left); Period IVb, Middle Bronze II, 1800-1650 BC.



Fig. 5:12 Area A, the tower of Building A1 in the course of the excavation, from south-east; note the white ashy fill of the upper part of F.162 with fallen mudbricks and stones; Period IVb, Middle Bronze II, 1800-1650 BC.



Fig. 5:13 Area A, wall W.19 of Building A1 from north-west; note the stone foundations larger than the wall itself and the collapsed mudbricks of F.23 to the right; Period IVb, Middle Bronze II, 1800-1650 BC.



Fig. 5:14 Area A, wall W.19 of Building A1 from north; note the emerging stone foundations (to the left of the wall) which were covered by cobbled floor L.21; Period IVb, Middle Bronze II, 1800-1650 BC.



Fig. 5:15 Area A, detail of the two superimposed floors L.199 (lower one) and L.198 (upper one), from south-east; some stones were included in the filling (F.198a) between them; Period IVb, Middle Bronze II, 1800-1650 BC.

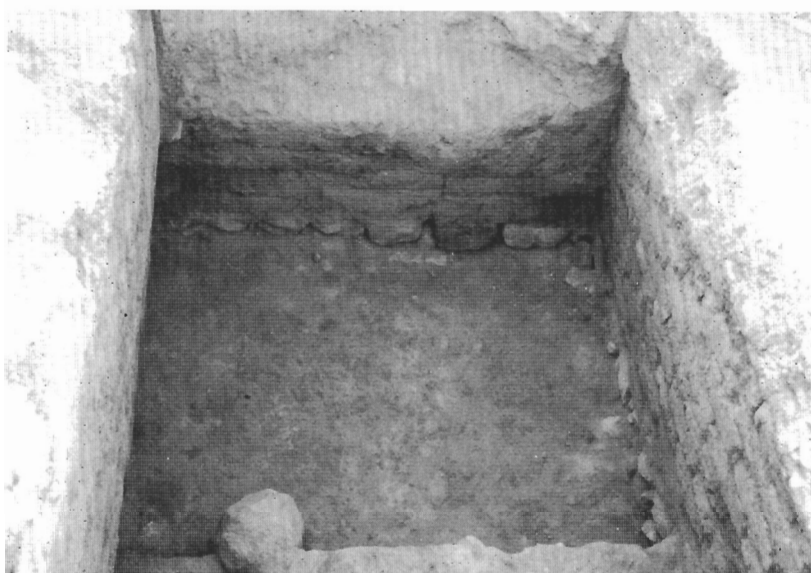


Fig. 5:16 Area A, detail of floor L.199 and wall W.190 with stone foundations inside the tower of Building A1, from north-west; Period IVb, Middle Bronze II, 1800-1650 BC.

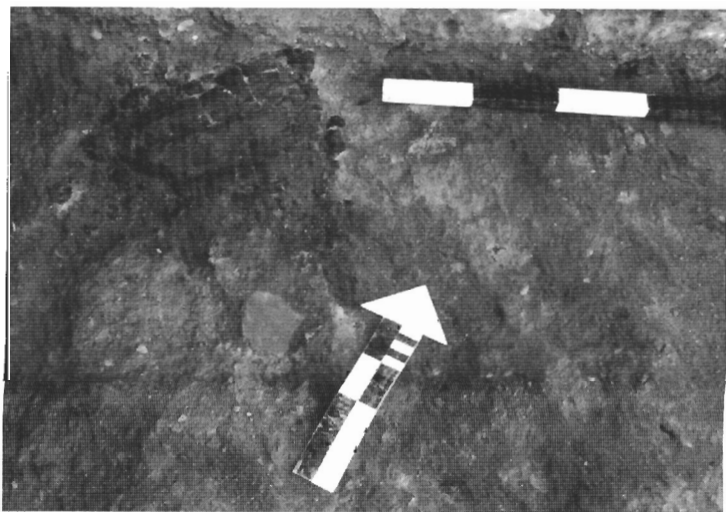


Fig. 5:17 Area A, carbonized poplar beam in F.162, along wall W.15 of the tower of Building A1, from south-east; Period IVb, Middle Bronze II, 1800-1650 BC.



Fig. 5:18 Area A, view of the tower of Building A1 in the course of the excavation of F.162, from south-south-east; on the lower left one can see the mouth and body fragments of jar TS.98.A.23/10; Period IVb, Middle Bronze II, 1800-1650 BC.



Fig. 5:19 Area A, the tower of Building A1 with the two superimposed floors L.199 and L.198, from south-east; Period IVb, Middle Bronze II, 1800-1650 BC; in background note W.5 of late Period IVa-IVb.



Fig. 5:20 Area A, four-handled jar (TS.98.A.30/3) from F.162.

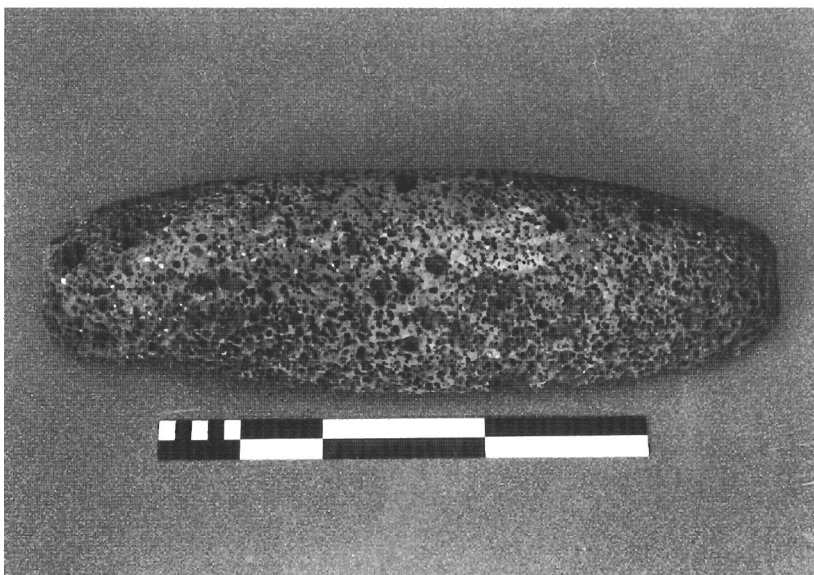


Fig. 5:21 Area A, basalt grinding stone (TS.98.A.347) from F.162.



Fig. 5:22 Area A, stone tools and clay loom weights from F.162.



Fig. 5:23 Area A, on the left Building A2 with the doorway between rooms L.186 and L.191, western boundary wall W.25 and courtyard L.20, on the right background Building A1 with W.15 and W.164, from north-east; note the filling mudbrick wall W.355 between W.164 and W.25; Period IVb, Middle Bronze II, 1800-1700 BC.



Fig. 5:24 Area A, general view from east: in foreground Building A2, the northern part of the tower of Building A1 and walls W.19 and W.22 in background, on the right stone retaining wall W.4 of the Middle Bronze III rampart; Periods IVb-c, Middle Bronze II-III, 1800-1550 BC.

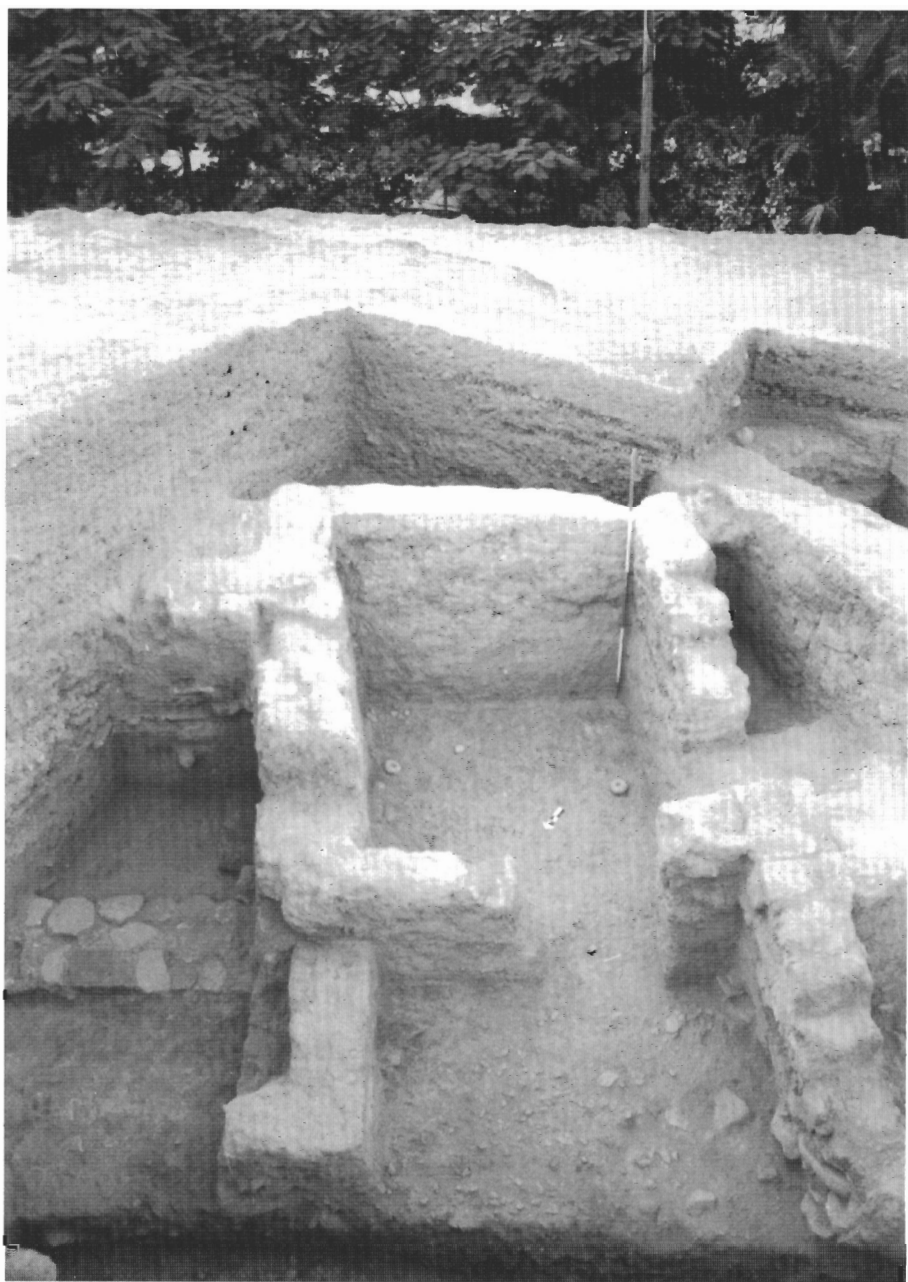


Fig. 5:25 Area A, Building A2, rooms L.186 and L.191 (right) and rooms L.197 and L.185 (left), from north; Period IVb, Middle Bronze II, 1750-1700 BC.

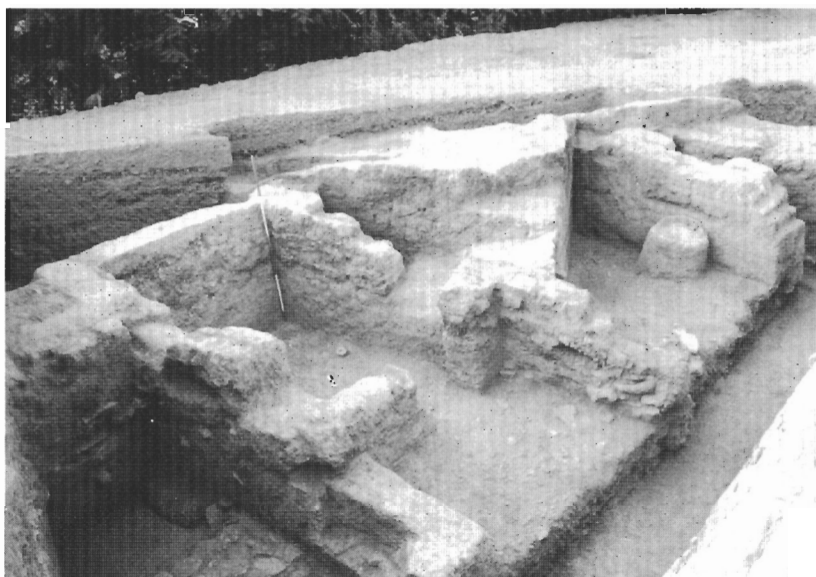


Fig. 5:26 Area A, in foreground Building A2 (rooms L.186 and L.191) and courtyard L.20 with oven T.24, in background Building A1, from north-east; Period IVb, Middle Bronze II, 1800-1700 BC.

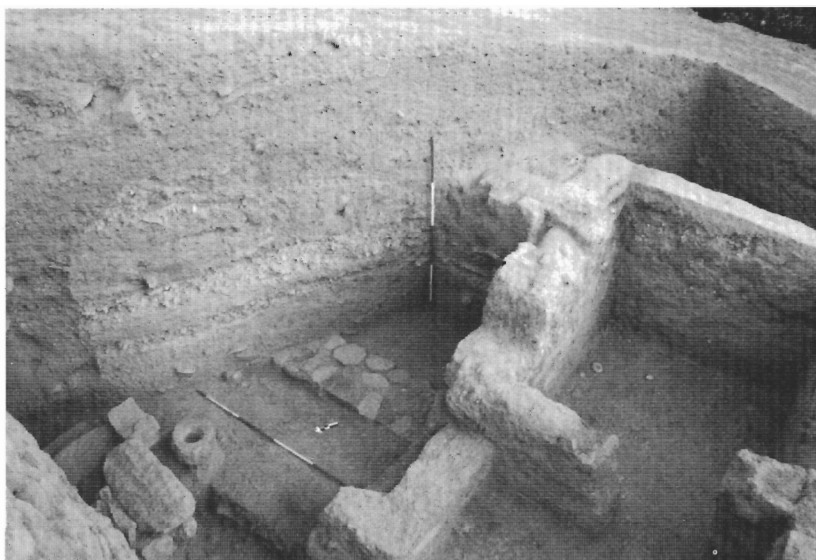


Fig. 5:27 Area A, Building A2, room L.186 in right foreground and rooms L.185 and L.197 with the east section showing stratification, from north-west; Period IVb, Middle Bronze II, 1750-1700 BC.



Fig. 5:28 Area A, Building A2, wall W.168a+b and mudbrick collapse F.177 (to the right), from east; Period IVb, Middle Bronze II, 1700-1650 BC.

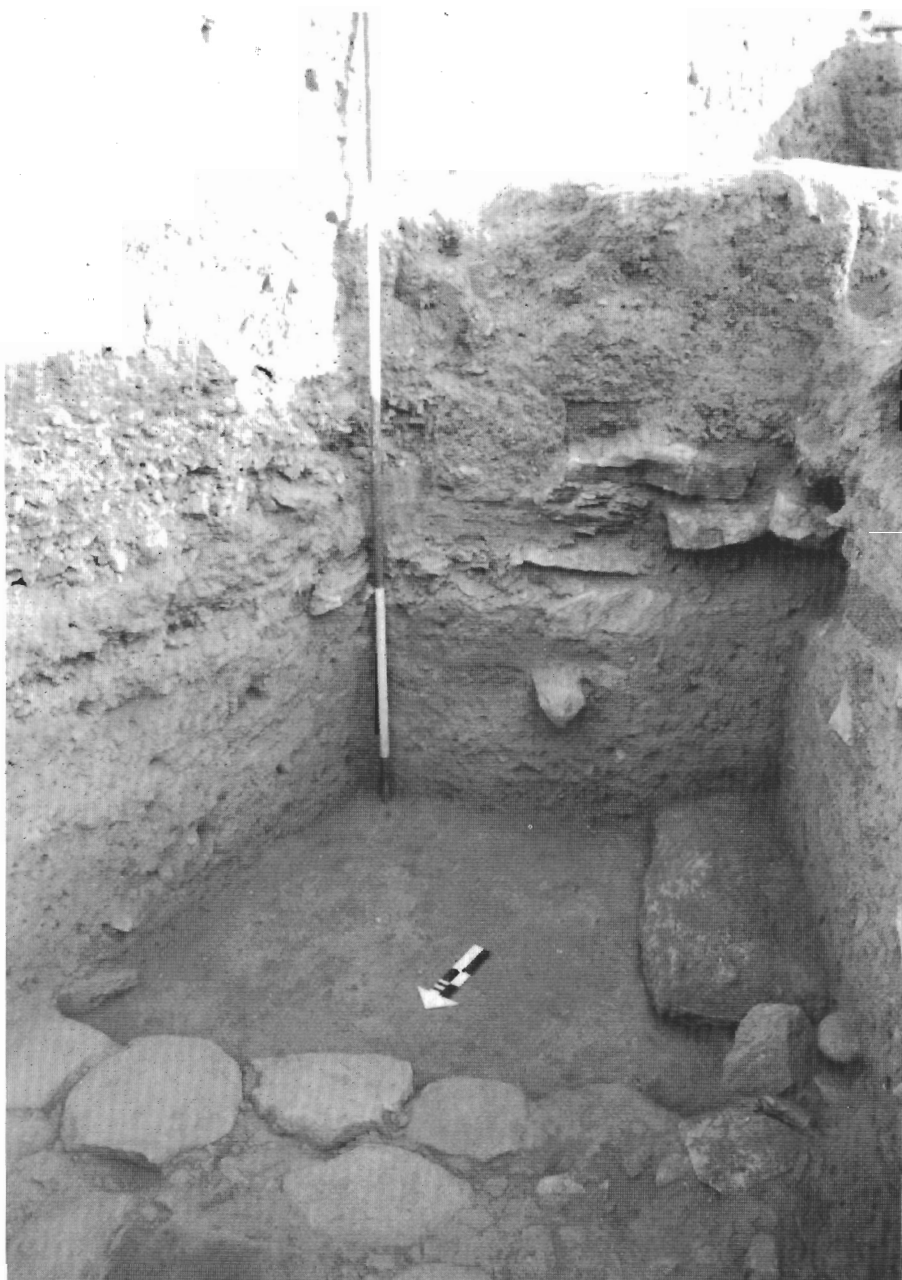


Fig. 5:29 Area A, Building A2, room L.197 and W.188 (in foreground), with later phases visible in the section (floor L.195 and wall W.187), from north; Period IVb, Middle Bronze II, 1750-1650 BC.

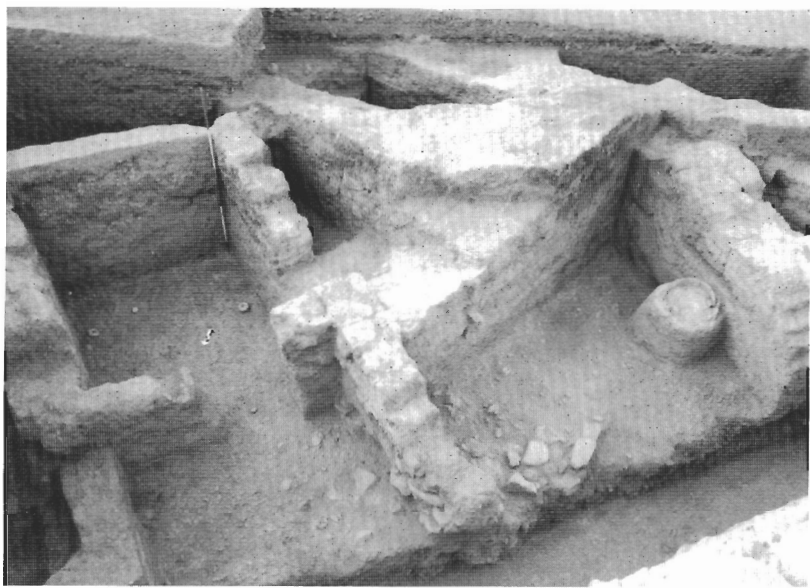


Fig. 5:30 Area A, on the left Building A2 (rooms L.186 and L.191), on the right courtyard L.20 with bench B.350 and oven T.24 against wall W.22, from north; Period IVb, Middle Bronze II, 1750-1700 BC.

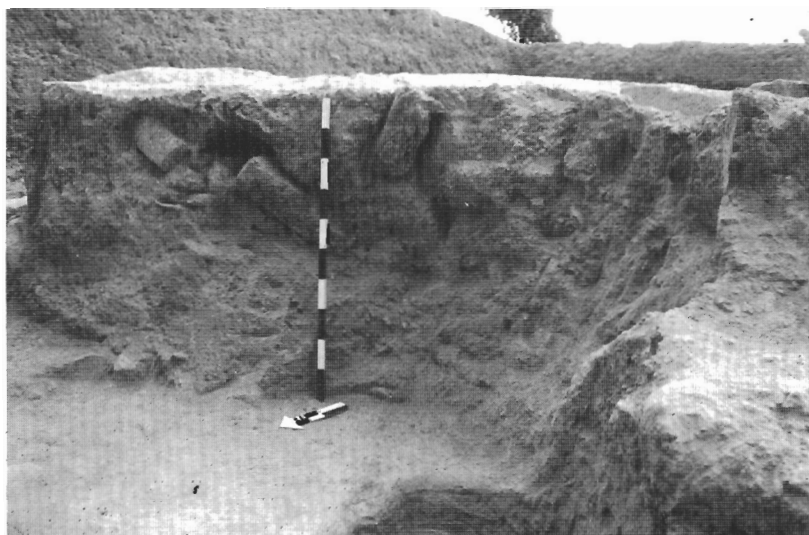


Fig. 5:31 Area A, collapsed mudbricks (F.175) sealing room L.191, from north-west; Period IVb, Middle Bronze II, 1750-1700 BC.



Fig. 5:32 Area A, bronze adze (TS.98.A.286) from F.183.



Fig. 5:33 Area A, pierced stone (TS.98.A.383) from F.183.

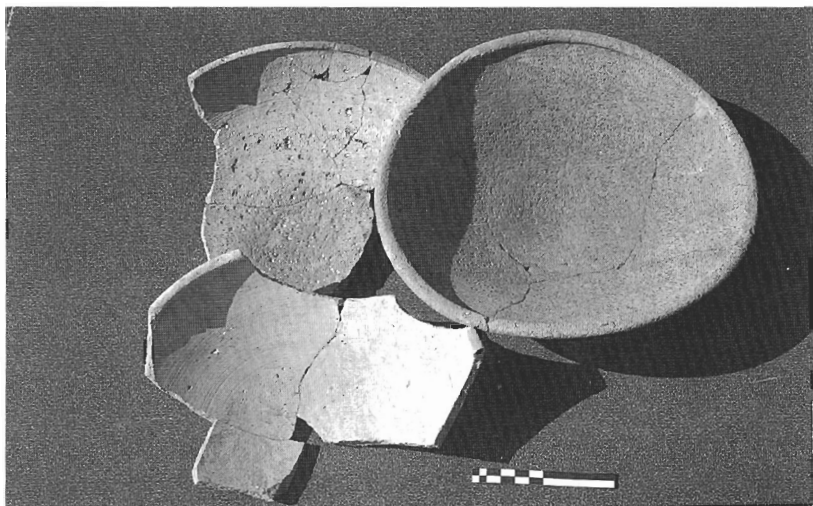


Fig. 5:34 Area A, inturned rim bowls TS.98.A.28/1 and TS.98.A.29/1, from F.183, and bowl TS.98.A.14/1, from F.171.

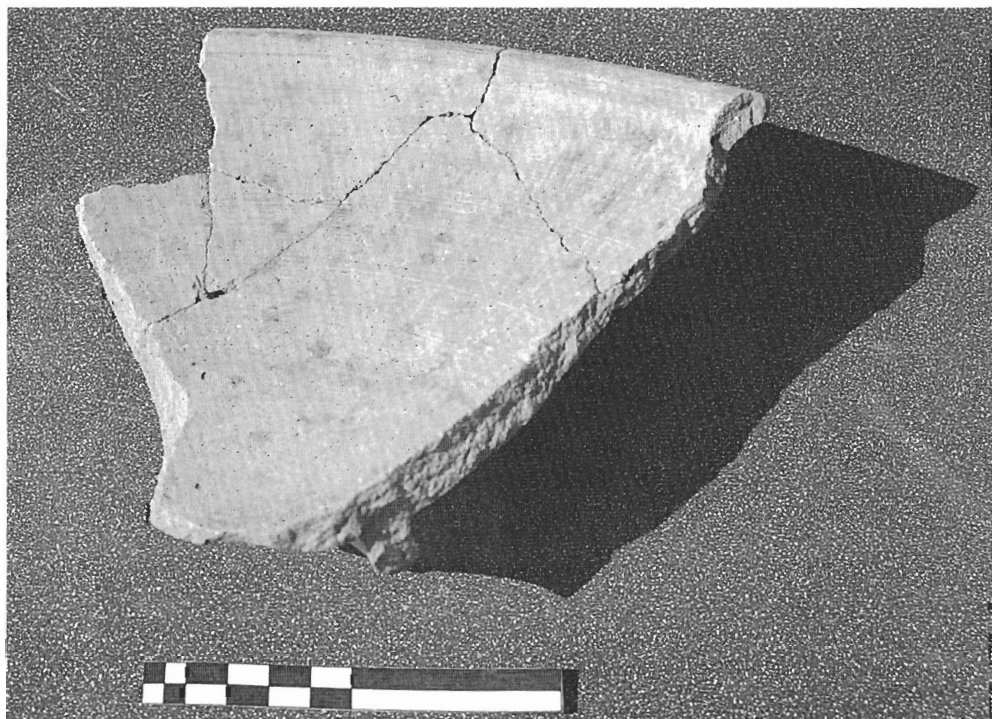


Fig. 5:35 Area A, bowl TS.98.A.33/1 from F.175 with radial inner burnish.

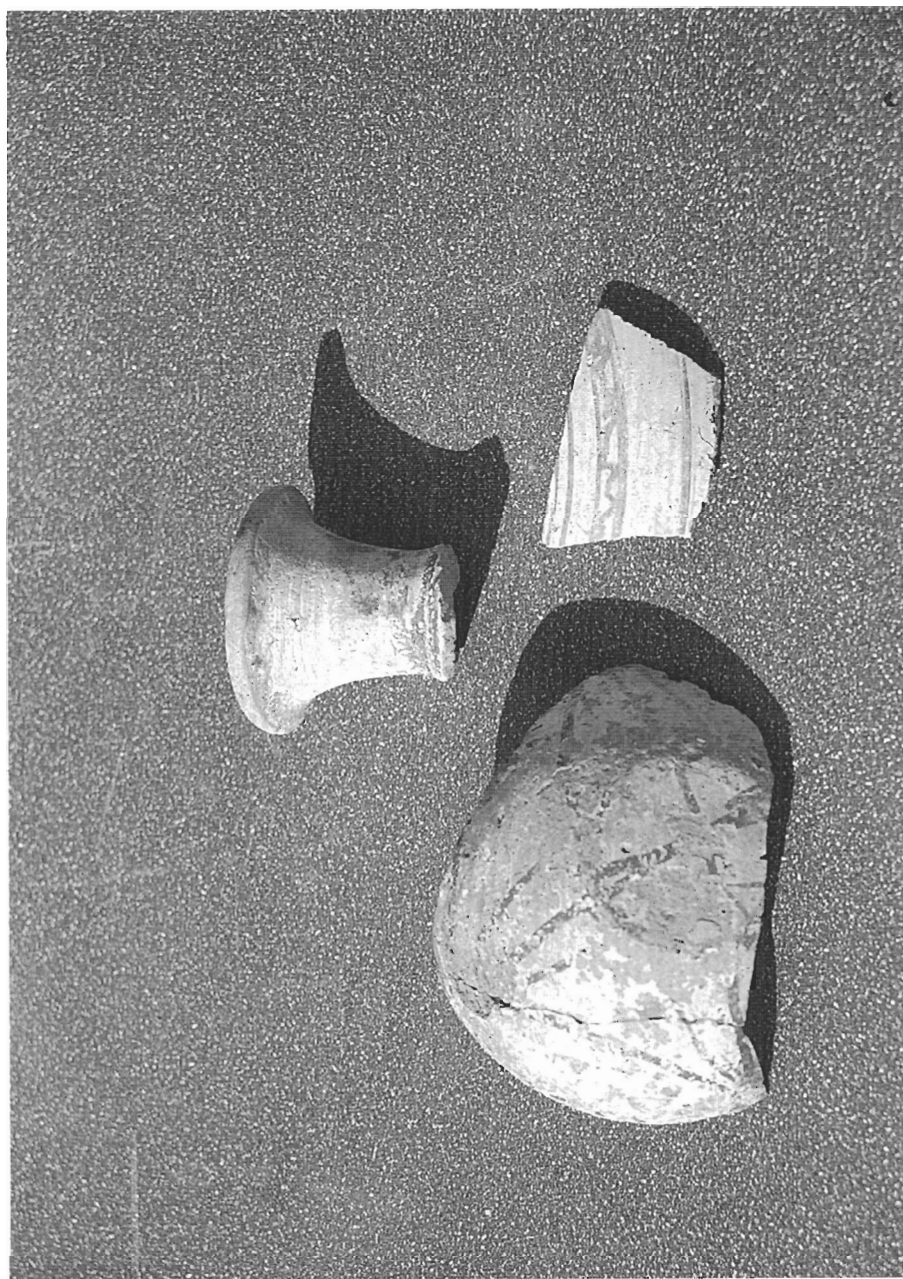


Fig. 5:36 Area A, painted sherds TS.98.A.29/16, TS.98.A.28/3 and TS.98.A.29/5, from F.183 and F.184.

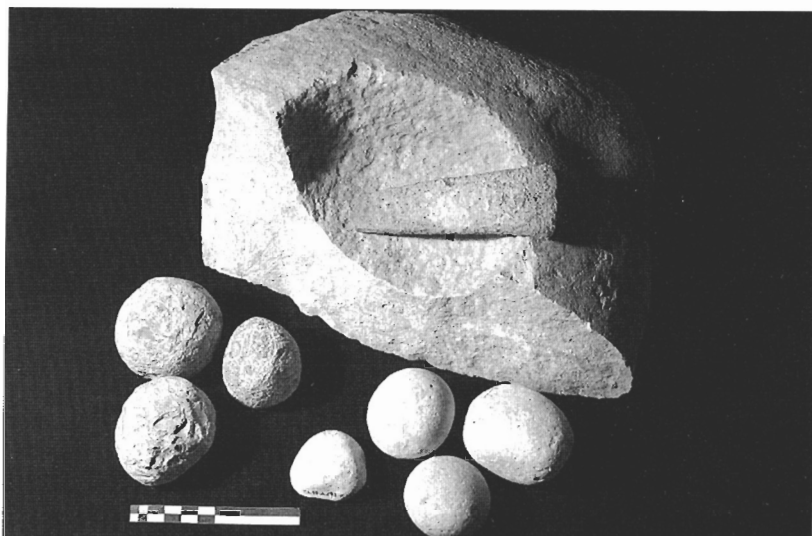


Fig. 5:37 Area A, stone and bronze tools from F.183.



Fig. 5:38 Area A, wall W.26 to the right, bowl TS.98.A.14/1 *in situ*, and F.165 in middle foreground, from south-east; the top of wall W.168b is emerging to the left of meter stick in foreground and parallel to it; Period IVb, Middle Bronze II, 1700-1650 BC.

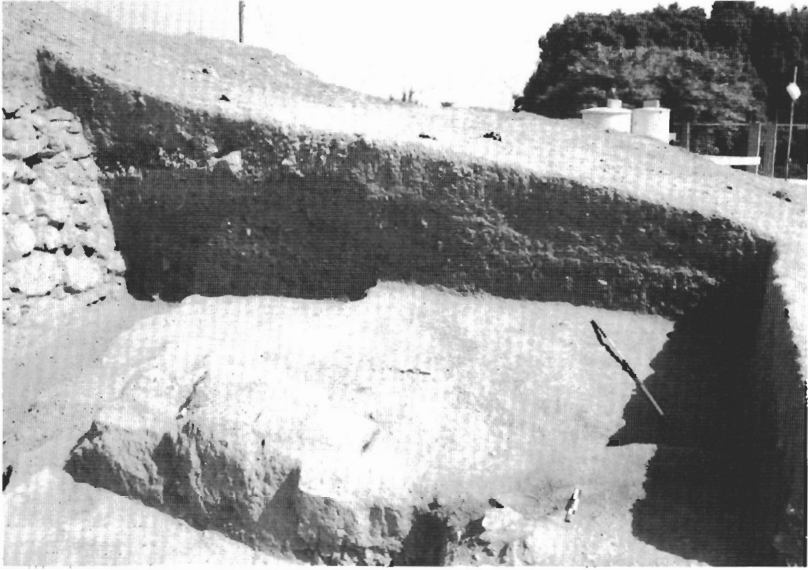


Fig. 5:39 Area A, wall W.26 (left foreground), bowl TS.98.A.14/1 *in situ*, and F.165 in the middle, from south-west; Period IVb, Middle Bronze II, 700-1650 BC.

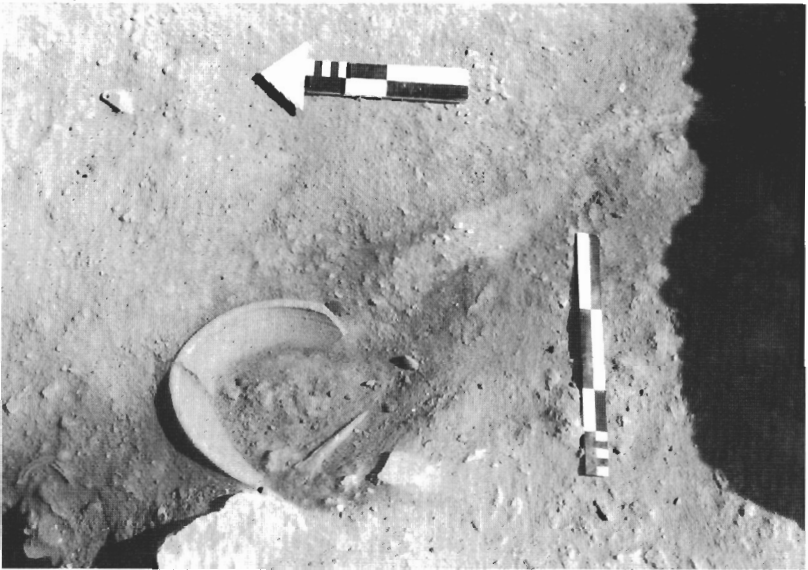


Fig. 5:40 Area A, bowl TS.98.A.14/1 *in situ*, laid in ashy fill F.171, from east; Period IVb, Middle Bronze II, 1700-1650 BC.



Fig. 5:41 Area A, flint sickle blade (TS.98.A.131) from F.165.



Fig. 5:42 Area A, clay lamp TS.98.A.11/1 from F.165.

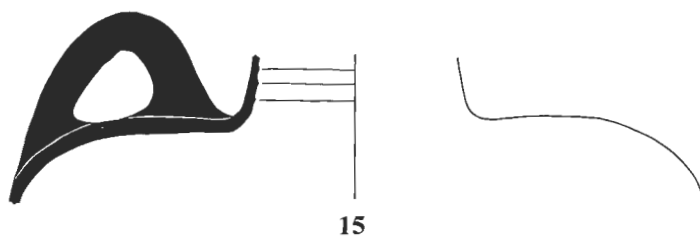
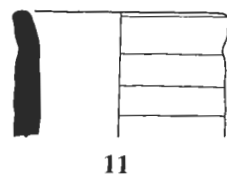
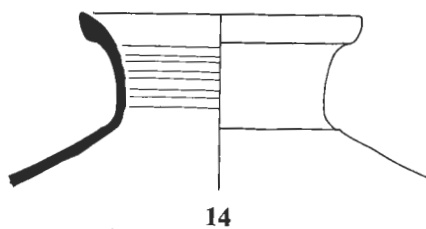
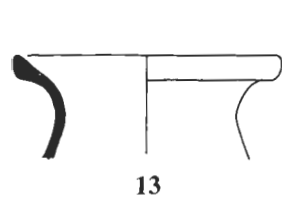
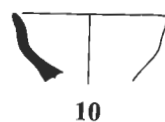
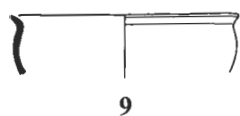
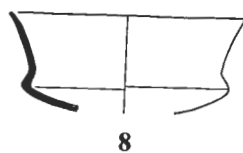
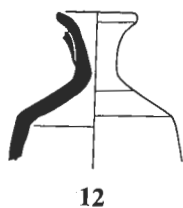
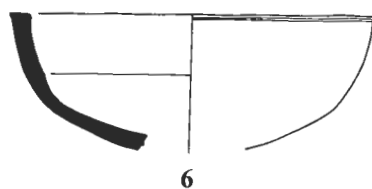
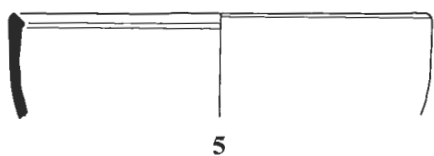
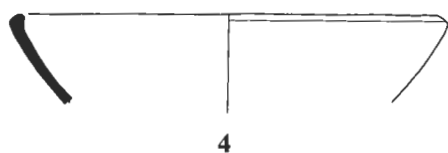
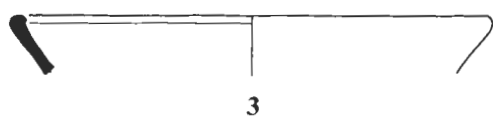
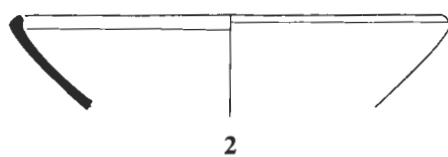
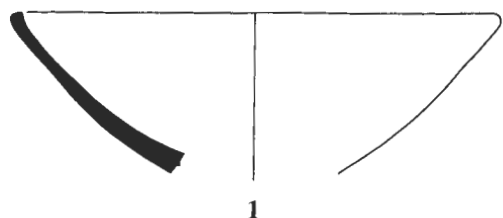


Fig. 5:43 Area A, two-handled jar TS.98.A.16/1 from F.165.

Nº	Reference	Shape	Class	F. Colour	Temper	Firing	Locus
1	TS.98.A.22/8	Bowl	SW	7.5YR6/4	M1-	M	F.162
2	TS.98.A.22/12	Bowl	SW	10YR7/3	M1<	MH	F.162
3	TS.98.A.22/4	Bowl	SW	10YR6/3	M1<	M	F.162
4	TS.98.A.22/11	Bowl	SW	7.5YR6/4	M1<	MH	F.162
5	TS.98.A.22/10	Bowl	SW	5YR5/6	M12>	M	F.162
6	TS.98.A.22/9	Bowl	SW	10YR7/4	M1-	M	F.162
7	TS.98.A.22/6	Bowl	SW	10YR7/3	M1<	M	F.162
8	TS.98.A.22/1	Bowl	SW	2.5YR6/6	M1-	MH	F.162
9	TS.98.A.22/5	Bowl	SW	5YR7/4	M1<	MH	F.162
10	TS.98.A.22/2	Lamp	SW	10YR6/3	M2-	M	F.162
11	TS.98.A.22/7	Pipe (?)	SW	10YR7/4	M1<	M	F.162
12	TS.98.A.22/13	Juglet	SW	7.5YR6/4	M1<	M	F.162
13	TS.98.A.22/14	Jar	SW	5YR5/6	M2-	M	F.162
14	TS.98.A.23/1A	Jar	SW	5YR6/1	M23>	M	F.162
15	TS.98.A.23/1B	Jar	SW	5YR6/1	M23>	M	F.162

Scale 1:4

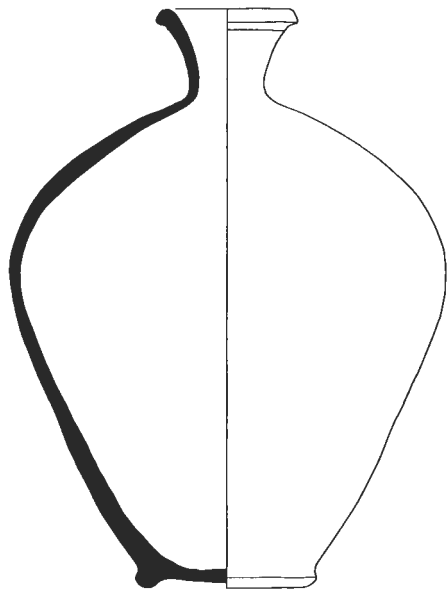
Fig. 5:44 Simple Ware from F.162, Period IVb, Middle Bronze II, 1750-1650 BC.



N°	Reference	Shape	Class	F. Colour	Temper	Firing	Locus
1	TS.98.A.23/10	Jar	SW	10YR7/3	M23>	M	F.162
2	TS.98.A.23/3	Jar	SW	7.5YR5/2	M1<	M	F.162
3	TS.98.A.23/11	Jar	SW	7.5YR6/4	M1<	M	F.162
4	TS.98.A.23/6	Jar	SW	7.5YR5/1	M3>	M	F.162
5	TS.98.A.23/7	Jar	SW	7.5YR6/4	M12>	M	F.162
6	TS.98.A.23/4	Jar	SW	7.5YR6/6	M1>	M	F.162
7	TS.98.A.23/5	Jar	SW	10YR6/3	M23>	M	F.162
8	TS.98.A.23/1C	Jar	SW	5YR6/1	M23>	M	F.162
9	TS.98.A.23/8	Jar	PW	10YR5/1	M12>	M	F.162
10	TS.98.A.23/9	Jar	PW	10YR5/2	M3>	ML	F.162

Scale 1:4

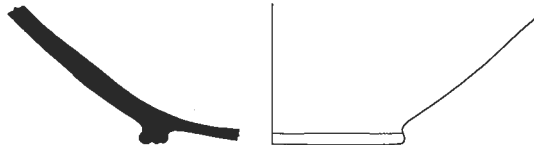
Fig. 5:45 Simple and Preservation Ware from F.162, Period IVb, Middle Bronze II, 1750-1650 BC.



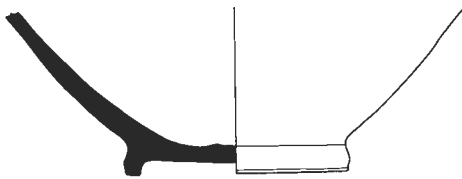
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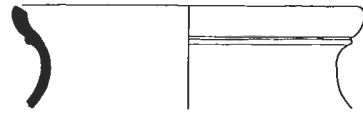
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7



8



2



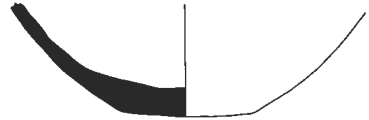
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4



5



9

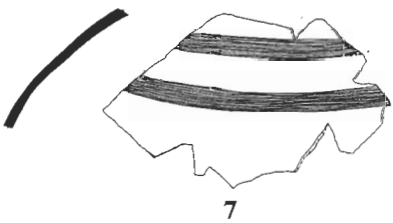
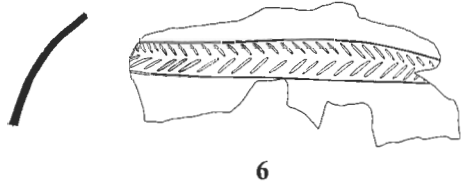
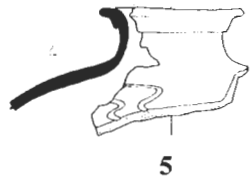
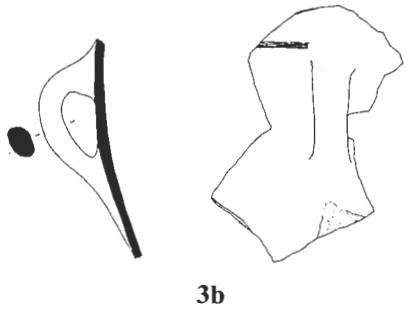
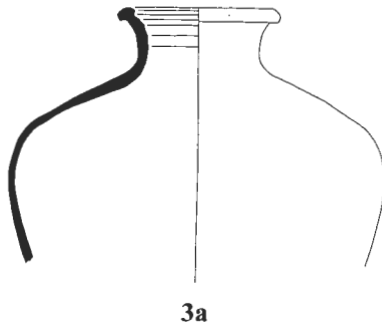
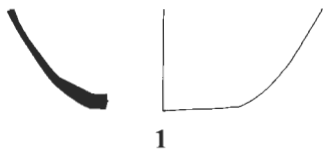
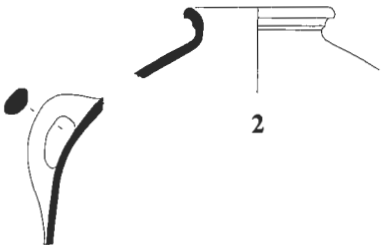
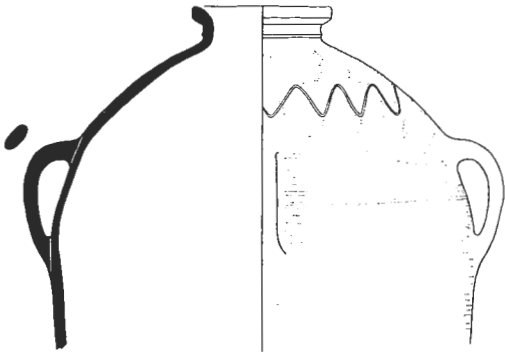


10

N°	Reference	Shape	Class	F. Colour	Temper	Firing	Locus
1	TS.98.A.30/3	Jar	PW	10YR6/3	M1<	M	F.162
2	TS.98.A.30/1	Jar	PW	10YR4/3	M1<	M	F.162
3	TS.98.A.30/2	Jar	PW	10YR5/1	M3>	M	F.162
4	TS.98.A.23/2	Jar	PW	7.5YR6/4	M2>	M	F.162
5	TS.98.A.30/6	Jar	PW	5YR6/1 o./i.5YR6/4	M12>	M	F.162
6	TS.98.A.30/7	Jar	PW	7.5YR6/1 o.5YR5/6 i.7.5YR6/4	M1<	M	F.162
7	TS.98.A.30/4	Jar	PW	10YR5/1 o./i.5YR6/6	M23-	M	F.162

Scale 1:8

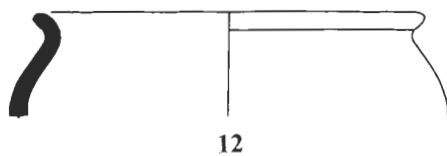
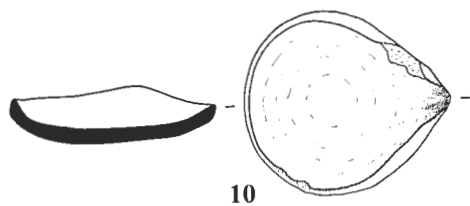
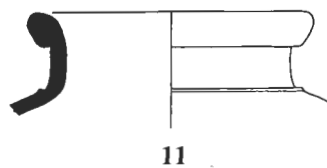
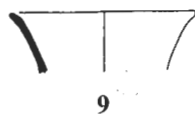
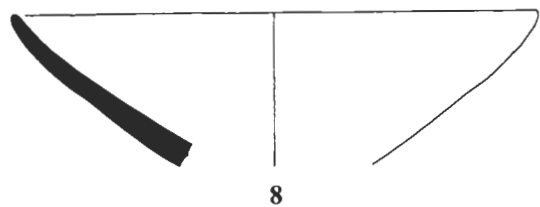
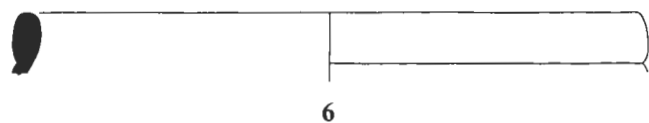
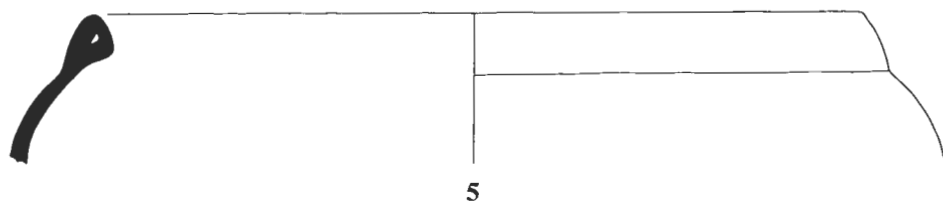
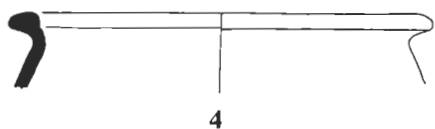
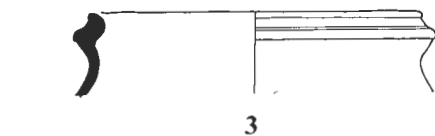
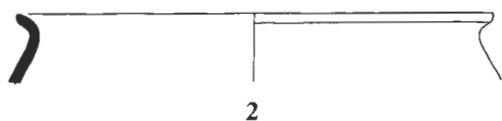
Fig. 5:46 Preservation Ware from F.162, Period IVb, Middle Bronze II, 1750-1650 BC.



Nº	Reference	Shape	Class	F. Colour	Temper	Firing	Locus
1	TS.98.A.22/17	Platter	KW	7.5YR5/4	M2-	M	F.162
2	TS.98.A.22/16	Pot	KW	10YR6/3	M2-	M	F.162
3	TS.98.A.22/20	Pot	KW	7.5YR5/1	M2>	M	F.162
4	TS.98.A.22/14	Pot	KW	5YR5/6	M2-	M	F.162
5	TS.98.A.22/18	Pot	KW	7.5YR5/2	M2-	M	F.162
6	TS.98.A.22/15	Pot	KW	10YR4/2	M2-	M	F.162
7	TS.98.A.22/19	Oven	KW	7.5YR4/2	M3>	M	F.162
8	TS.98.A.11/3	Bowl	SW	7.5YR5/1	M2-	M	F.165
9	TS.98.A.11/2	Bowl	SW	7.5YR6/4	M1<	M	F.165
10	TS.98.A.11/1	Lamp	SW	2.5YR6/1	M1<	ML	F.165
11	TS.98.A.11/4	Jar	PW	7.5YR5/3	M2<	M	F.165
12	TS.98.A.11/5	Pot	KW	7.5YR6/4	M2>	ML	F.165

Scale 1:4

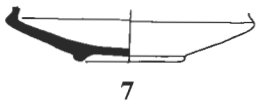
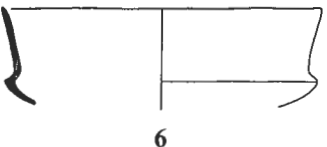
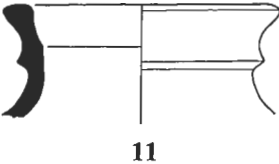
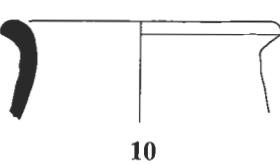
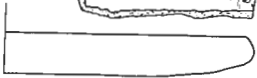
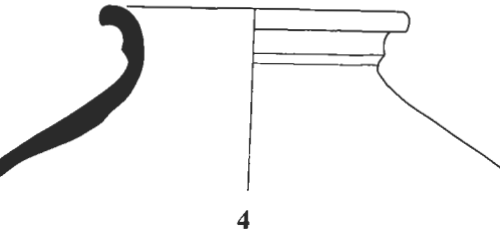
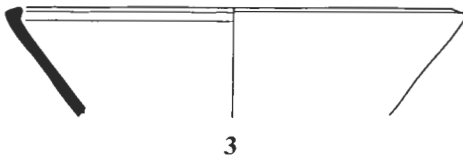
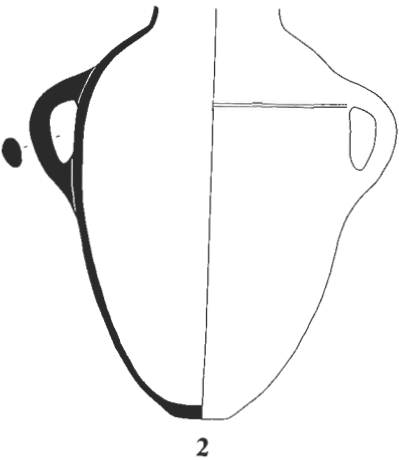
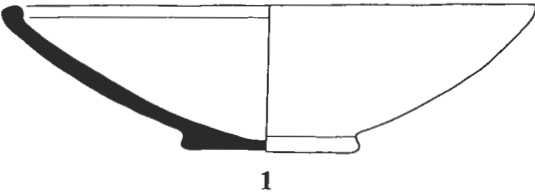
Fig. 5:47 Kitchen Ware from F.162 and vessels from F.165, Period IVb, Middle Bronze II, 1750-1650 BC.



Nº	Reference	Shape	Class	F. Colour	Temper	Firing	Locus
1	TS.98.A.14/1	Bowl	SW	10YR7/3	M12<	M	F.171
2	TS.98.A.16/1	Jar	PW	7.5YR6/4	M2-	M	F.166
3	TS.98.A.13/1	Bowl	SW	7.5YR6/4	M2<	MH	F.166
4	TS.98.A.13/2	Jar	PW	10YR6/3	M2<		F.166
5	TS.98.A.13/3	Platter	KW	o.5YR4/4 i.5YR5/2	M2>	ML	F.166
6	TS.98.A.17/1	Bowl	SW	7.5YR7/3	M1<	M	F.169
7	TS.98.A.17/5	Bowl	SW	7.5YR7/4 o./i.7.5YR6/6	M1<	M	F.169
8	TS.98.A.17/6	Bowl	SW	7.5YR6/1 o./i.7.5YR6/4	M2<	M	F.169
9	TS.98.A.17/2	Bowl	SW	2.5YR6/6	M1<	M	F.169
10	TS.98.A.17/4	Jar	PW	10YR7/3	M1<	M	F.169
11	TS.98.A.17/3	Jar	PW	7.5YR7/3	M1<	M	F.169

Scale 1:4, except no. 2, scale 1:8

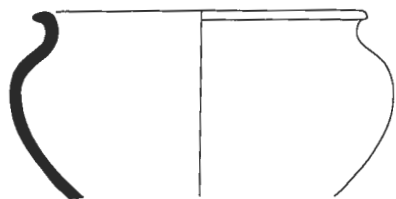
Fig. 5:48 Pottery from F.171, F.166 and F.169, Period IVb, Middle Bronze II, 1700-1650 BC.



Nº	Reference	Shape	Class	F. Colour	Temper	Firing	Locus
1	TS.98.A.17/8	Pot	KW	5YR6/3	M2-	ML	F.169
2	TS.98.A.17/7	Pot	KW	7.5YR6/4	M2-	ML	F.169
3	TS.98.A.17/9	Basin	KW	7.5YR5/2 o./i.7.5YR6/4	M2-	ML	F.169
4	TS.98.A.28/1	Bowl	SW	10YR7/3	M1<	MH	F.184
5	TS.98.A.28/2	Bowl	SW	10YR8/3	M1<	MH	F.184
6	TS.98.A.28/3	Jar	SW	10YR6/3	M1<	MH	F.184
7	TS.98.A.28/4	Juglet	SW	10YR7/3	M1<	MH	F.184
8	TS.98.A.28/5	Jar	SW	5YR6/1	M23-	M	F.184
9	TS.98.A.28/6	Jar	PW	10YR7/3	M1<	MH	F.184
10	TS.98.A.28/7	Bowl	SW	7.5YR7/4	M2-	M	F.184
11	TS.98.A.28/8	Pot	KW	10YR7/3	M12-	M	F.184
12	TS.98.A.28/9	Pot	KW	10YR5/1	M2-	M	F.184
13	TS.98.A.28/11	Oven frag.	KW	o.10YR6/3 i.7.5YR6/2	V3> M3>	ML	F.184

Scale 1:4

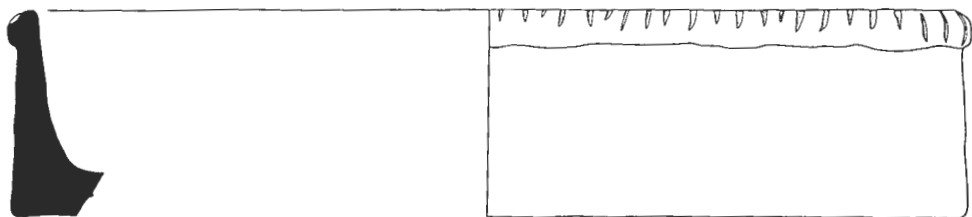
Fig. 5:49 Pottery from F.169 and F.184, Period IVb, Middle Bronze II, 1750-1650 BC.



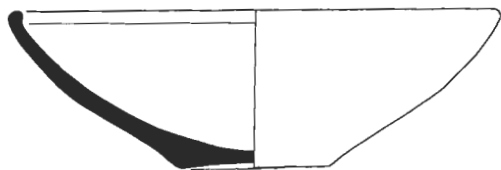
1



2



3



4



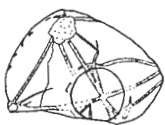
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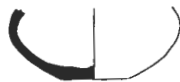
9



8



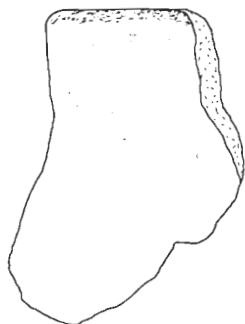
6



10



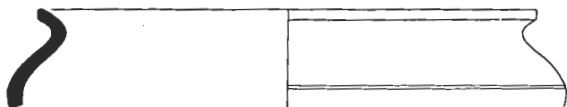
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12



7

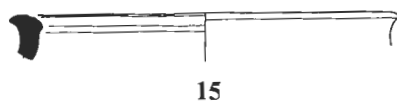
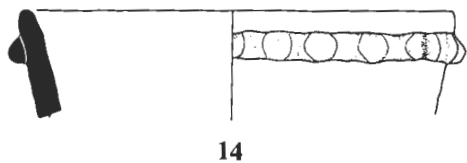
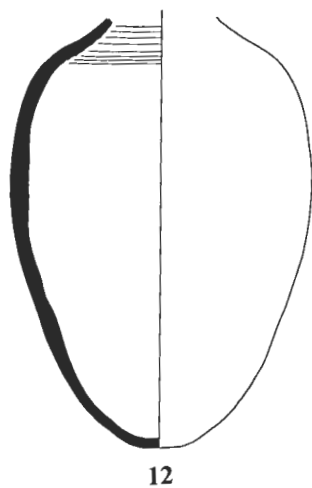
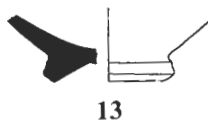
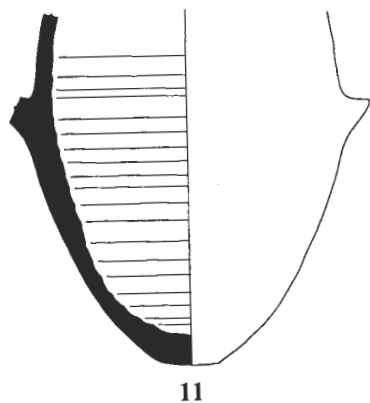
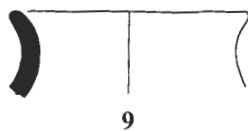
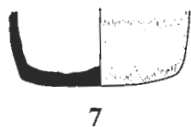
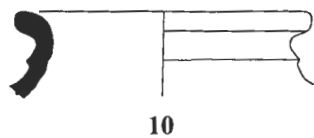
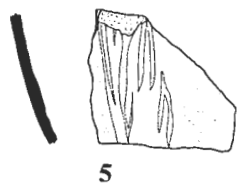
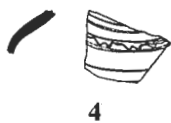
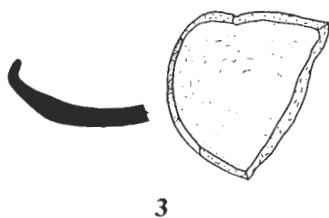
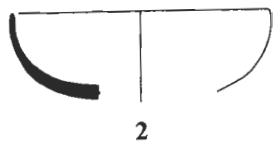
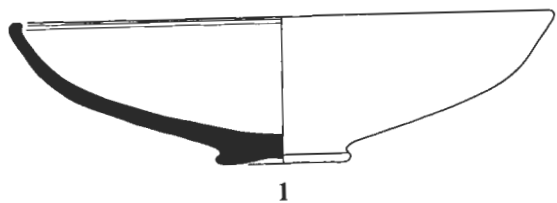


11

N°	Reference	Shape	Class	F. Colour	Temper	Firing	Locus
1	TS.98.A.29/1	Bowl	SW	10YR6/3	M23>	M	F.183
2	TS.98.A.29/3	Bowl	SW		M2<	M	F.183
3	TS.98.A.29/4	Lamp	SW	5YR7/4	M12>	M	F.183
4	TS.98.A.29/5	Body frag.	SPW	10YR6/2	M1<	MH	F.183
5	TS.98.A.29/15	Body frag.	SPW	5YR5/4	M1<	MH	F.183
6	TS.98.A.29/16	Bottle	SPW	10YR7/4	M1<	MH	F.183
7	TS.98.A.29/6	Juglet	SW	o.10YR6/2 i.7.5YR5/1	M12<	MH	F.183
8	TS.98.A.29/9	Jar	SW	10YR7/3	M2>	M	F.183
9	TS.98.A.29/8	Jar	SW	10YR7/4	M1<	M	F.183
10	TS.98.A.29/7	Jar	PW	10YR6/1	M1<	M	F.183
11	TS.98.A.29/14	Jar	PW	7.5YR7/4	M12>	M	F.183
12	TS.98.A.29/2	Jar	SW	5YR6/4	M12-	M	F.183
13	TS.98.A.29/10	Jar	SW	10YR7/3	M2<	M	F.183
14	TS.98.A.29/12	Basin	KW	10YR5/1	M2-	ML	F.183
15	TS.98.A.29/11	Pot	KW	5YR5/6	M1>	ML	F.183

Scale 1:4

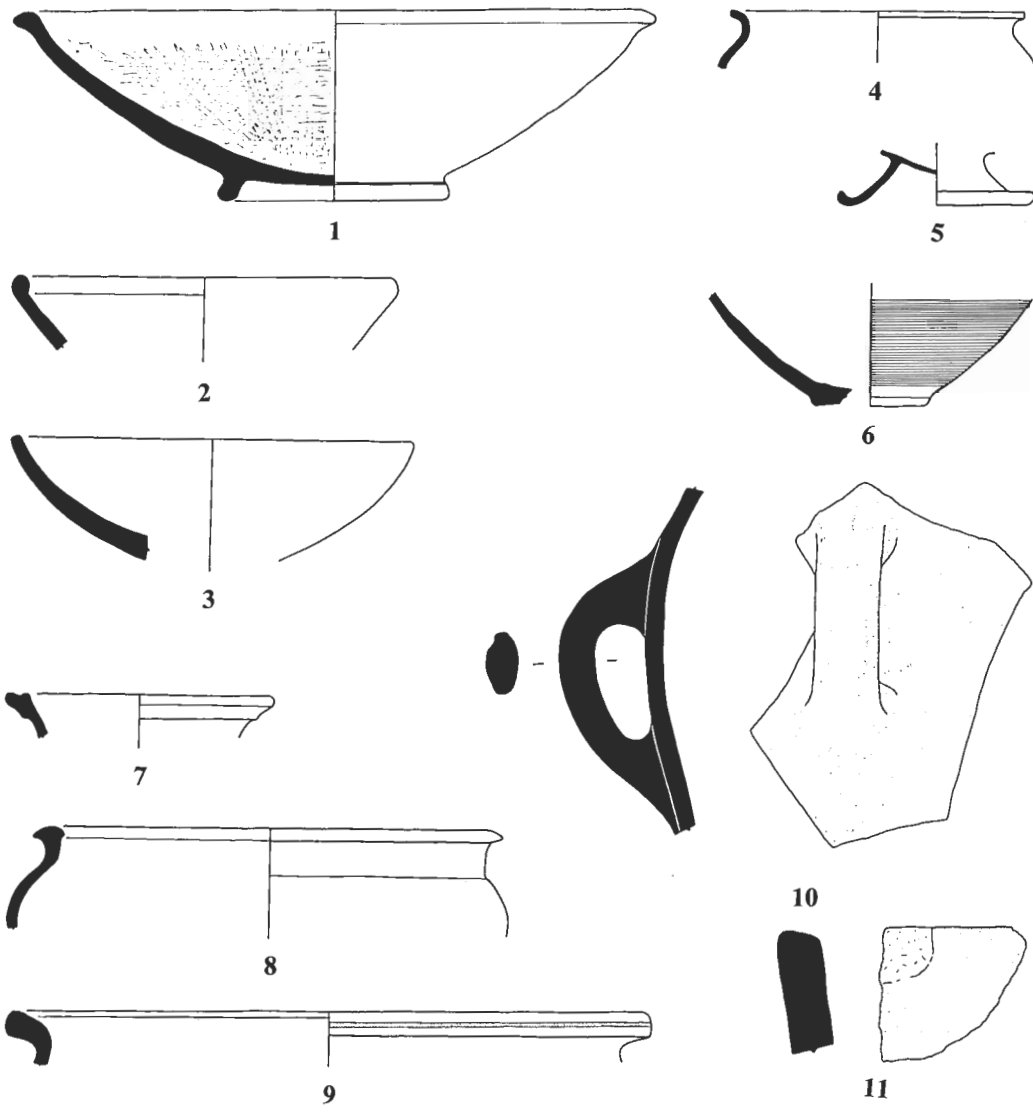
Fig. 5:50 Pottery from F.183, Period IVb, Middle Bronze II, 1750-1700 BC.



Nº	Reference	Shape	Class	F. Colour	Temper	Firing	Locus
1	TS.98.A.33/1	Bowl	SW	5YR6/6	M2-	M	F.175
2	TS.98.A.33/2	Bowl	SW	10YR8/3	M1-	M	F.175
3	TS.98.A.33/6	Bowl	SW	5YR6/6	M12-	M	F.175
4	TS.98.A.33/4	Jar	SW	10YR7/3	M2-	M	F.175
5	TS.98.A.18/1	Bowl	SW	7.5YR8/2	M1-	M	F.175
6	TS.98.A.33/3	Jar	SW	10YR7/3	M12>	M	F.175
7	TS.98.A.33/5	Jar	SW	10YR7/4	M1<	M	F.175
8	TS.98.A.18/2	Pot	KW	2.5YR5/6	M2<	ML	F.175
9	TS.98.A.33/9	Bowl	SW	5YR6/2 o./i.5YR6/4	M23>	M	F.175
10	TS.98.A.33/7	Jar	PW	10YR7/1 o./i.10YR8/4	M1>	M	F.175
11	TS.98.A.33/10	Oven frag.	KW	7.5YR6/4	V3> M3>	ML	F.175

Scale 1:4

Fig. 5:51 Pottery from F.175, Period IVb, Middle Bronze II, 1750-1700 BC.



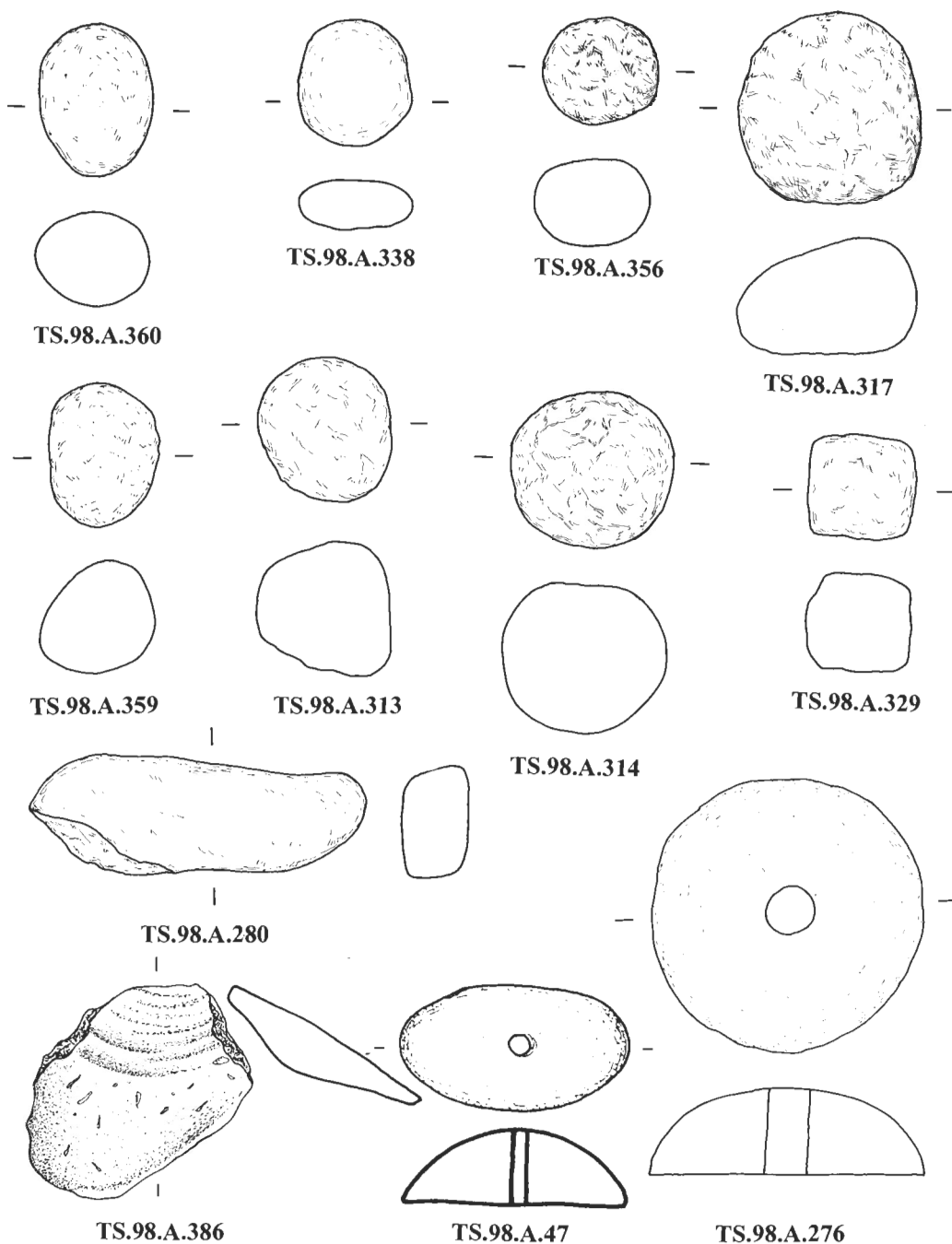


Fig. 5:52 Stone tools and sealing from F.162 and wooden spindle-whorl from F.356 (scale 1:4, except TS.98.A.47, scale 1:1, and TS.98.A.276, TS.98.A.386, scale 1:2).

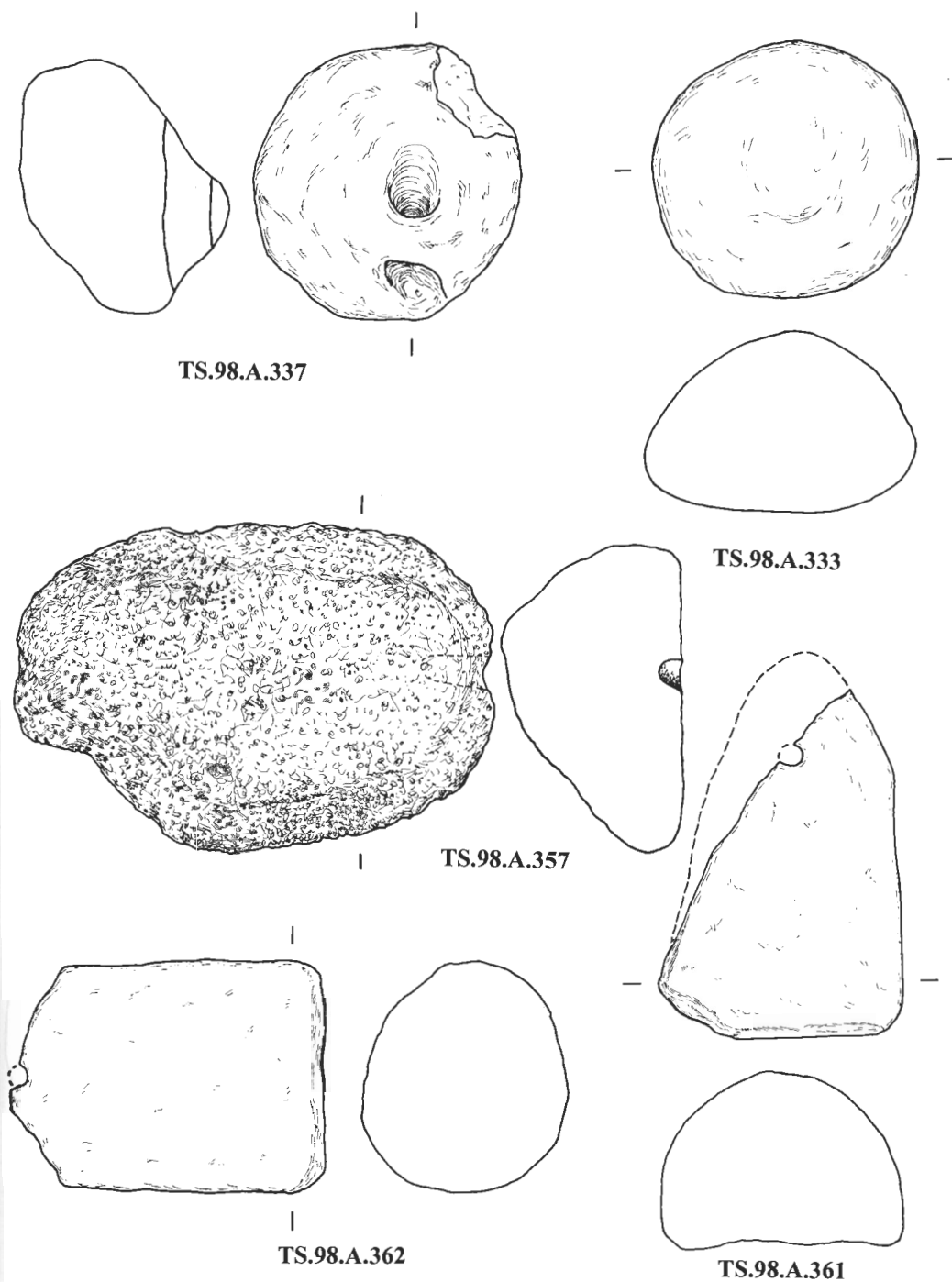


Fig. 5:53 Stone and clay tools from F.162 and F.175 (scale 1:2, except TS.98.A.337, scale 1:4).

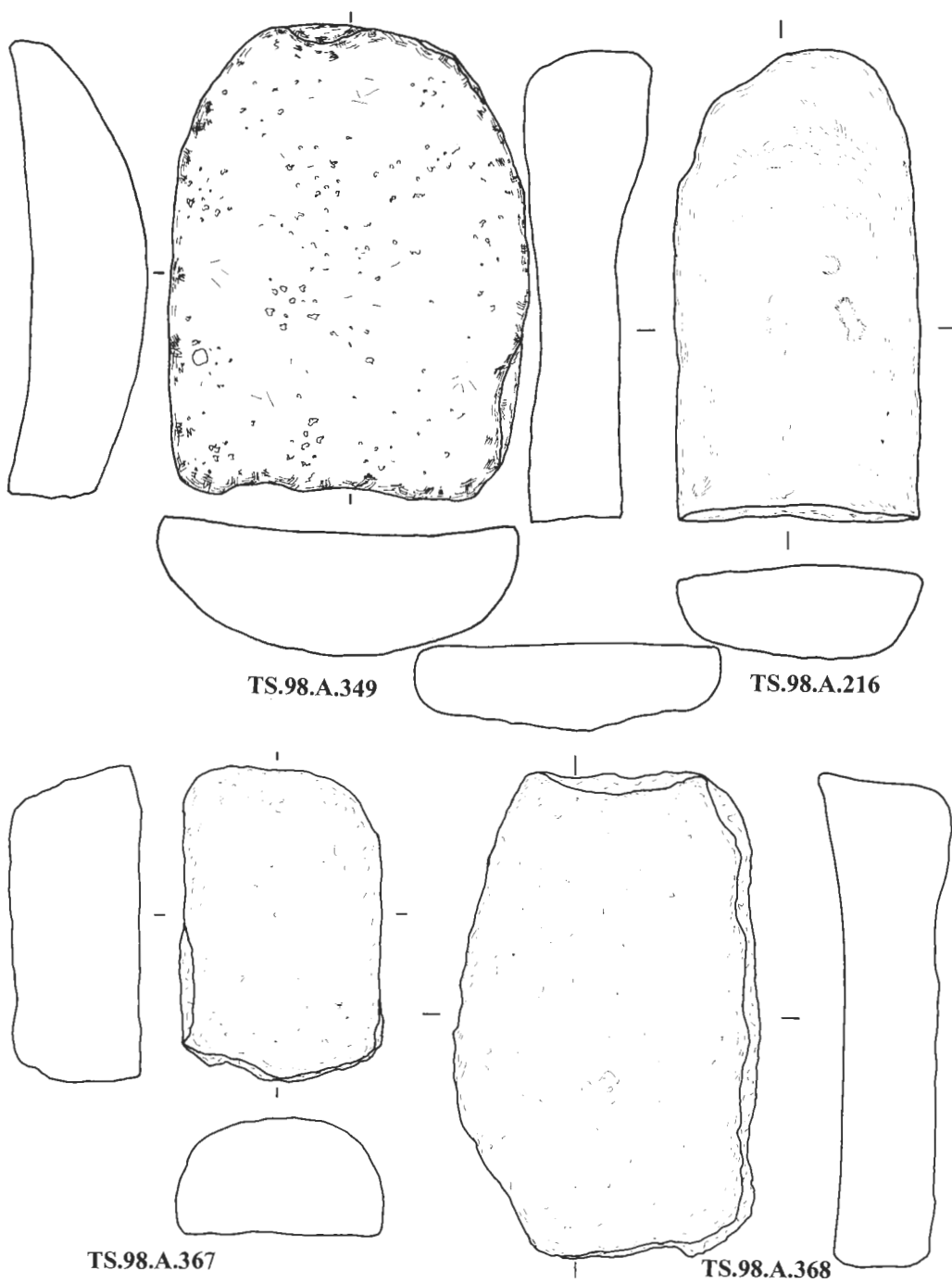


Fig. 5:54 Querns from F.162, F.175 and F.14 (scale 1:4).

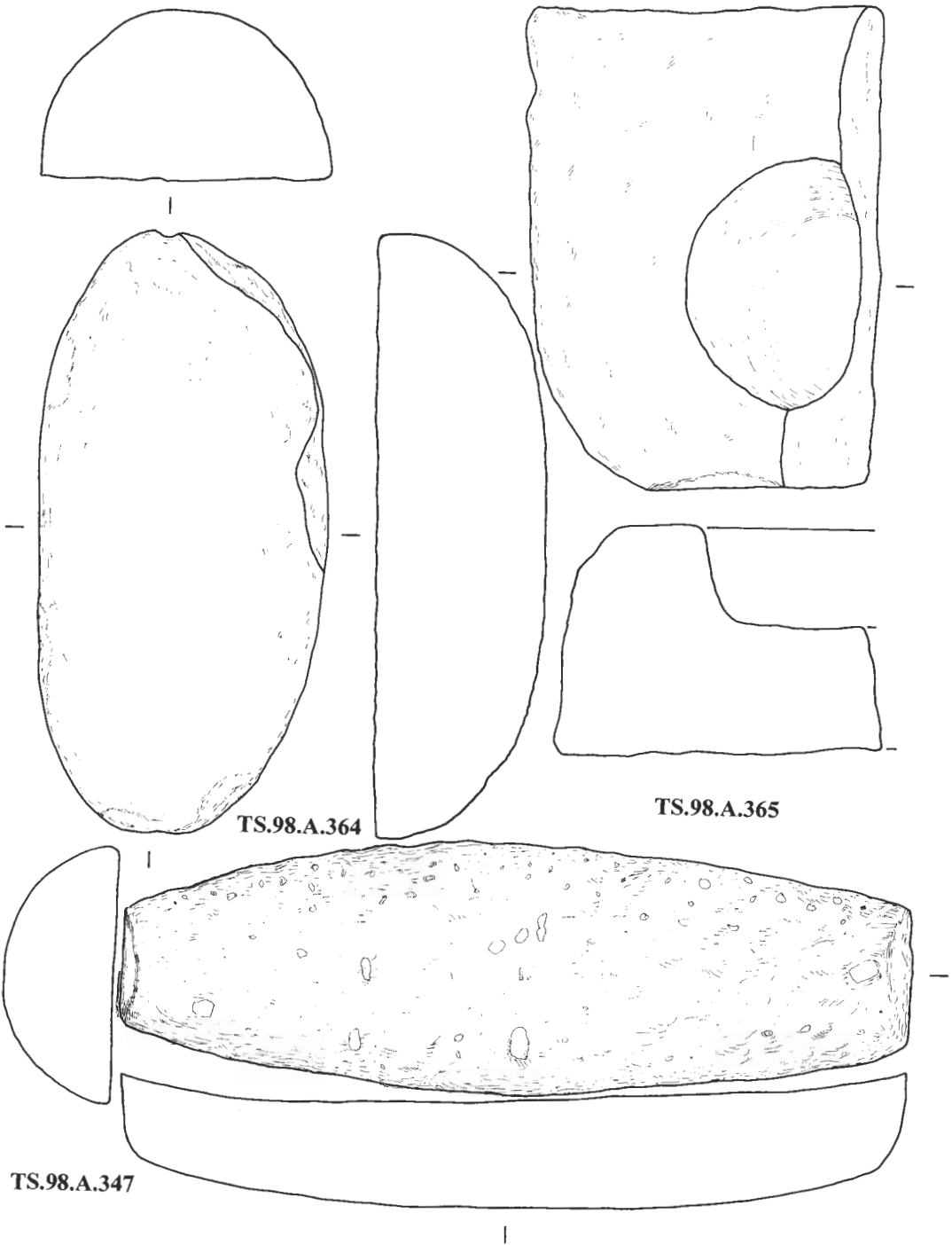


Fig. 5:55 Stone tools from F.162 and F.183 (scale 1:4).

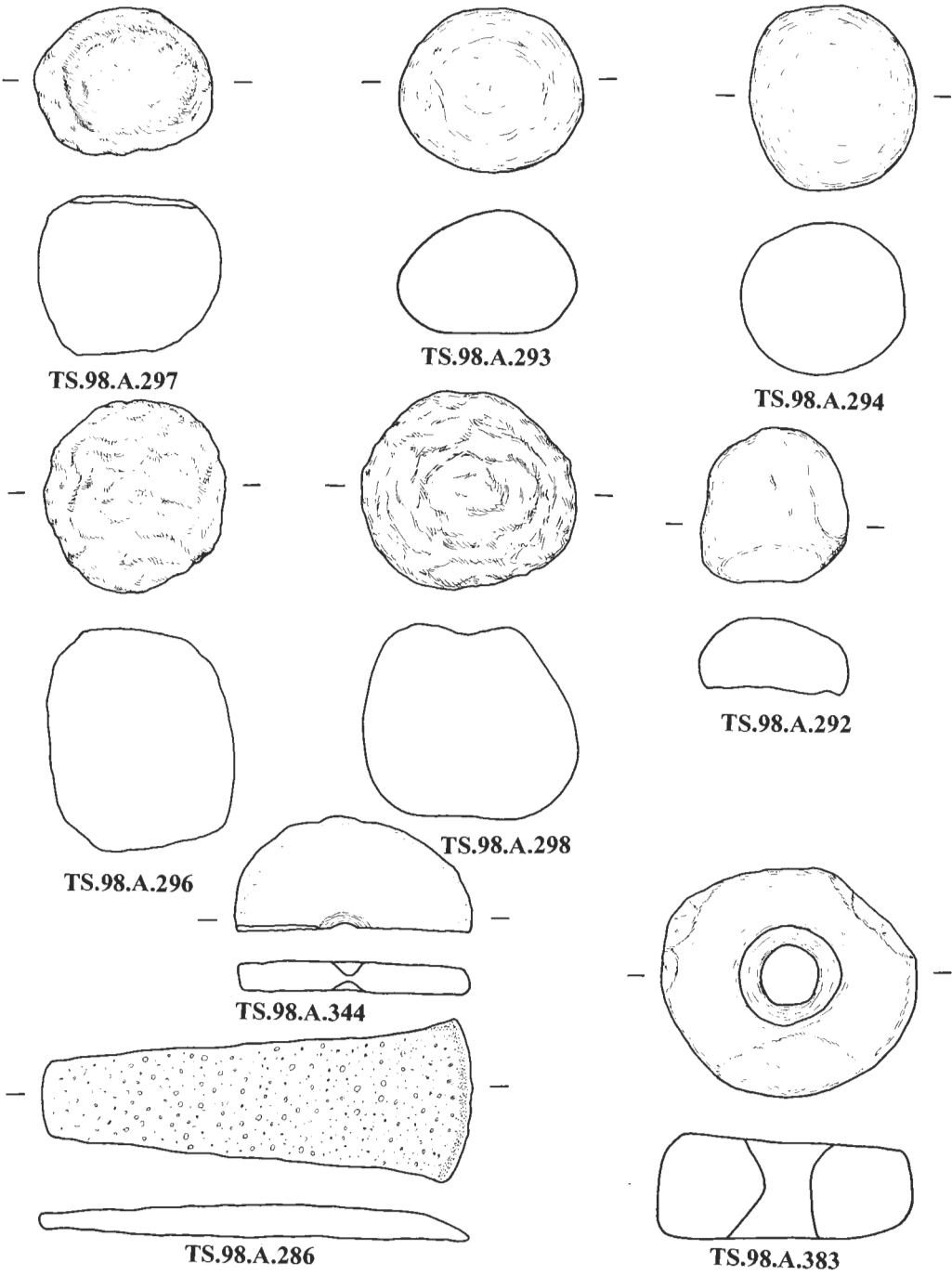


Fig. 5:56 Tools from F.183 (scale 1:2, except TS.98.A.383, scale 1:4).

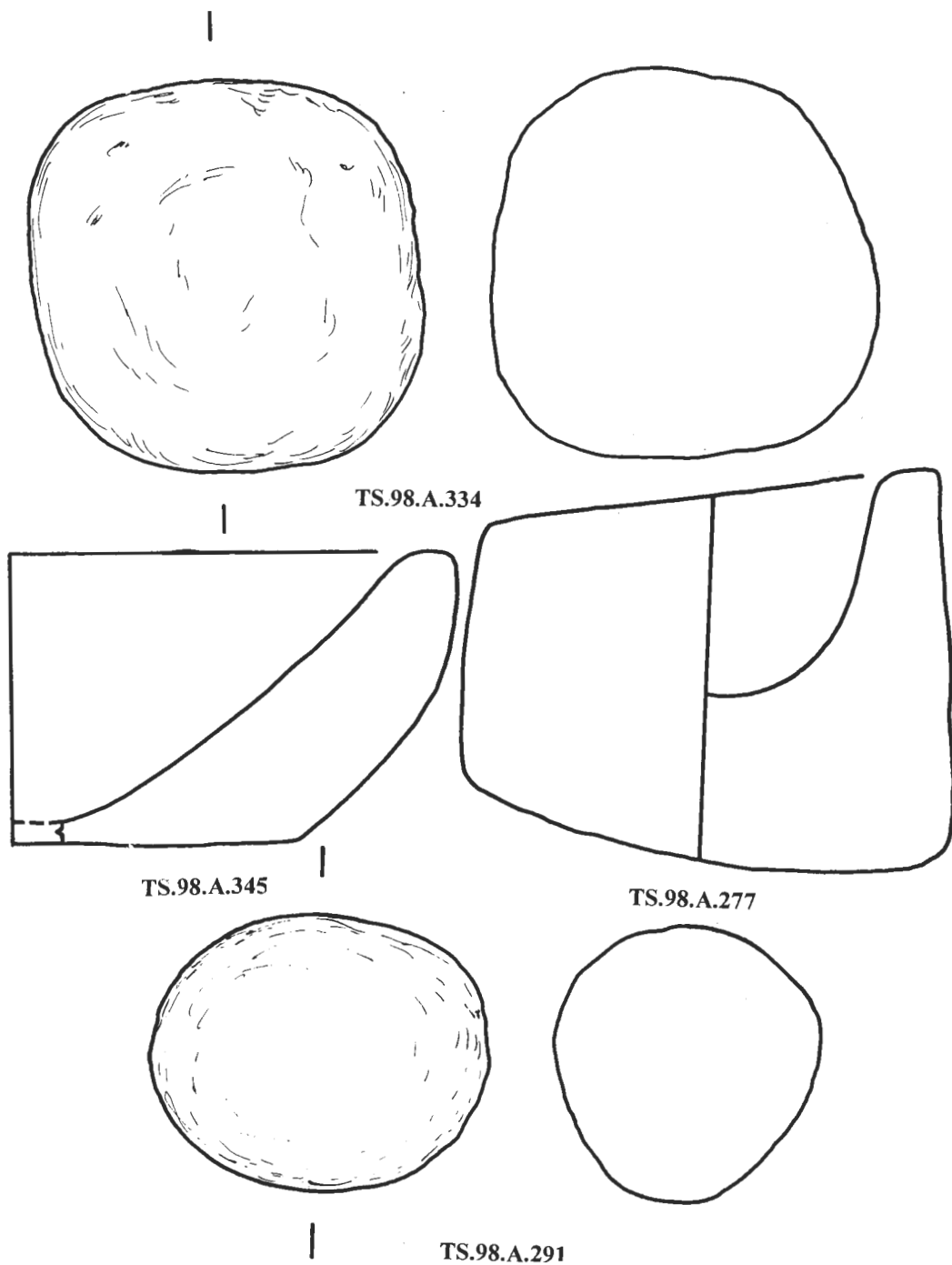


Fig. 5:57 Stone tools from F.162, F.184 and W.187 (TS.98.A.277 and TS.98.A.345, scale 1:2, TS.98.A.291 and TS.98.A.334, scale 1:1).

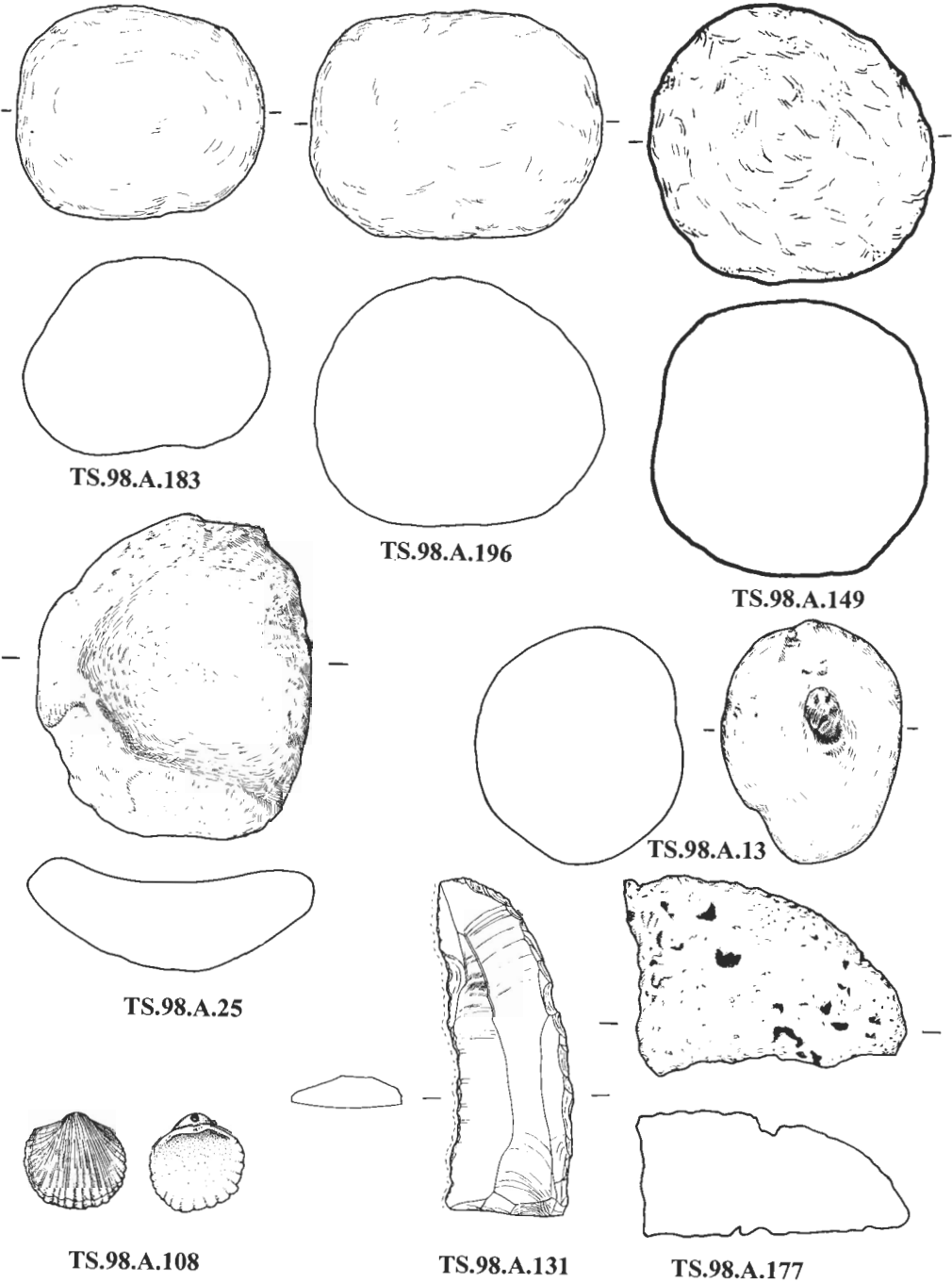


Fig. 5:58 Stone tools from F.165, F.16, F.14, F.8a, F.150, F.9a (scale 1:2, except TS.98.A.177, scale 1:4).

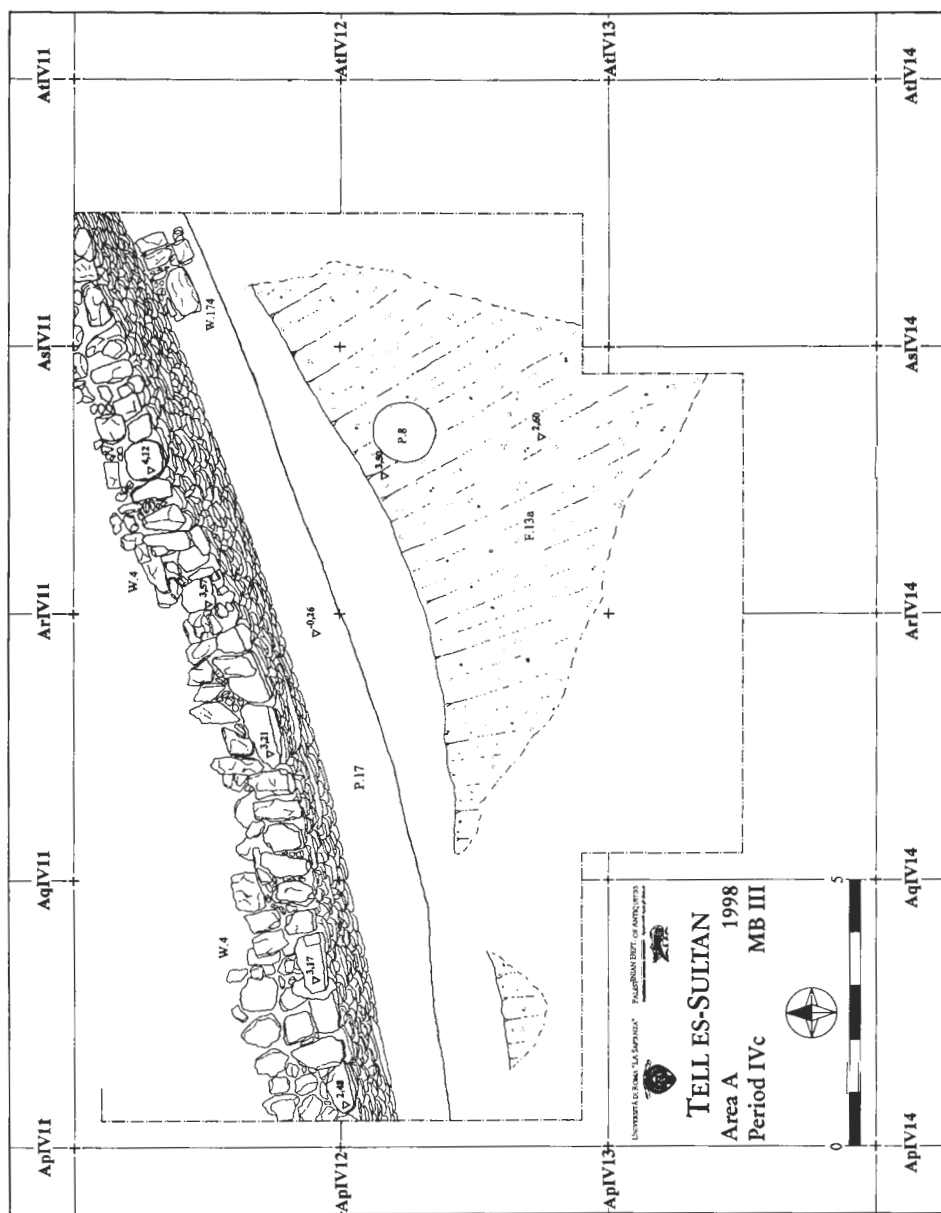


Fig. 5:59 Detailed plan of Area A in Period IVc, Middle Bronze III, 1650-1550 BC.



Fig. 5:60 Area A, general view of the curving stone retaining wall W.4 (excavations 1997-1998), from west; the section clearly shows its foundation trench cutting through the Middle Bronze II strata; Period IVc, Middle Bronze III, 1650-1550 BC.



Fig. 5:61 Area A, sounding against stone retaining wall W.4 and the east face of the foundations of wall W.19 (two rows high) showing the bottom course of wall W.4, resting on fill F.351, from south-south-east; the arrow lays on the top of a plastered mudbrick wall cut by foundation trench P.154 (but originally also cut by the prosecution of the floor L.21); Period IVc, Middle Bronze III, 1650-1550 BC.

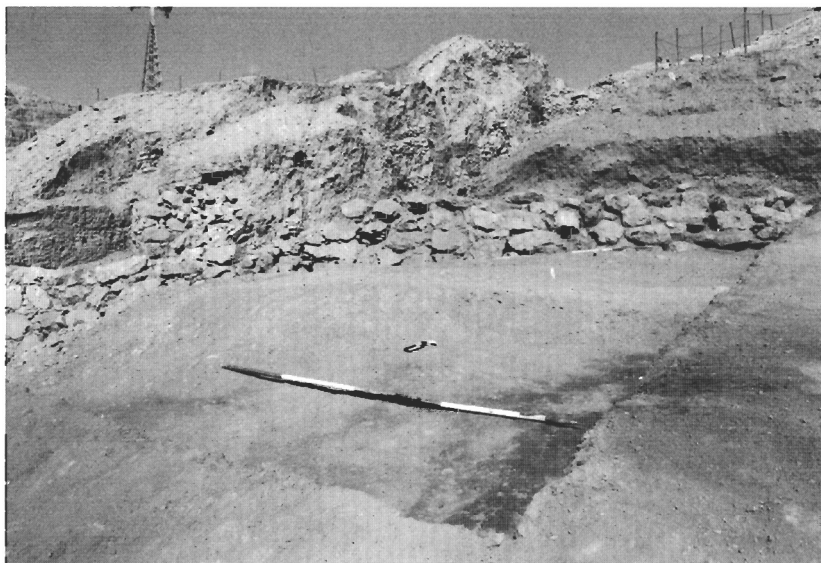


Fig. 5:62 Area A, the sloping rampart core (F.13b-c) covering stone retaining wall W.4 (emerging in the background), from south-east; remains of the rampart revetment of crushed limestone are visible to the left; Period IVc, Middle Bronze III, 1650-1550 BC.



Fig. 5:63 Area A, stone retaining wall W.4 with at its base (to the lower right) the stepped structure W.174, from south; Period IVc, Middle Bronze III, 1650-1550 BC.



Fig. 5:64 Area A, detail of the east section of AtIV11, showing the stratigraphical position of stone retaining wall W.4 (and associated stepped structure W.174 at its base), cutting through Middle Bronze II strata, from west; Period IVc, Middle Bronze III, 1650-1550 BC.



Fig. 5:65 Area A, W.174 from above and rooms L.186 and L.191 in the background, from north; Periods IVb-c, Middle Bronze II-III, 1750-1550 BC.



Fig. 5:66 Area A, detail of the stepped structure W.174 at the base of wall W.4 (the Middle Bronze II stone mortar TS.98.A.420 in the foreground belongs to Building A2), from south; Period IVc, Middle Bronze III, 1650-1550 BC.



Fig. 5:67 Area A, view of W.4 and W.174, with foundation trench P.154 visible in the baulk, from south-west; Period IVc, Middle Bronze III, 1650-1550 BC.

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APPENDIX A
THE 1998 SEASON AT TELL ES-SULTAN: MEASURES FOR
PROTECTION AND DEVELOPMENT OF THE SITE.
A PROJECT FOR ANCIENT JERICHO

*Francesco Nigro**

INTRODUCTION

At Tell es-Sultan the principal objective of restoration activities is defence against the damage by atmospheric agents of the mudbrick structures, which are notably significant for their dimensions and good state of conservation at the time of their discovery. The constant exposure to sunlight, to the action of the wind and to the rare but violent rainfalls, causes a slow process of disintegration of the mudbricks which proves difficult to halt, if not through large-scale acts of protection of the excavation areas, but it is possible to slow down and control by means that in particular reduce the effects of rain. The uniqueness of the materials of which the walls are made and the variety of fabrics that can be recognized on the site, all due to the diverse epochs of construction and therefore of manufacture and supply of primary materials, together with the uncertainties which still exist regarding the treatment of these materials, makes any type of direct conservation actions both arduous and very experimental.

The activity of restoration of the archaeological site would have little sense if not directed towards the inspection and understanding of the finds which have been brought to light. In fact, the other important objective of the joint Italian-Palestinian Expedition is the development of Tell es-Sultan which, seen by hundreds of thousands of visitors each year, represents the most important tourist destination for Palestine (as shown in recent years by the development of economic activities related to the oasis of Jericho, the cableway for the Mount of Temptation, commercial centre, hotels, casinos). Until a more definitive stage can be reached in these years of archaeological research, the projection and realization of facilities for the vision and understanding of the site which are both flexible and reversible, closely following the progress in excavation and referring to the draft of a general plan of administration of the archaeological area which will be redacted as soon as possible (see Nigro 1998, with references, for the general outline of the program for the conservation and development of the site carried on by the Expedition).

MEASURES FOR CONSERVATION AND PROTECTION

The application of ethyl silicate

The first measure for the conservation of the mudbrick structures by means of treatment with chemicals has the objective of improving the physico-chemical characteristics and mechanics of the material with the aim of raising its resistance - in particular to the actions of atmospheric agents -, and therefore its durability.

Thanks to the invaluable and unsubstitutable collaboration with MAPEI, which has offered the product and total availability of its analysis laboratory to the archaeological Expedition, it has been possible to test the utilization of ethyl silicate (tetra-ethyl-orthosilicate) for the consolidation of the bricks. This was followed by experimentation,

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both in laboratory and on site, to comprehend the physico-chemical composition of the materials and to verify the consolidation effect of ethyl-silicate.

The bricks are made of earth, sand and in some cases also straw, mixed with water and dried in the sun, yet it is a composition which, if mixed in the correct proportions of its constituent materials and well constructed, can reach optimum characteristics of mechanical resistance and durability, as is demonstrated by many of the well-preserved structures at Jericho.

The mudbrick samples, each distinguishable by colour, composition of components, consistency and porousness, as is perceptible to the naked eye, taken in particular from areas A and F, underwent simple tests *in situ* (absorption of water, by capillarity and fall of water, and to the treatment of ethyl-silicate, for absorption by pressure of gravity - from fine tubes inserted into the brick from above - and spraying, to verify the appropriate quantity and the times of acquisition, as well as the final state in terms of consistency and mechanical resistance, at least after two weeks), while the laboratory analysed the samples from the same structures, both before the consolidation treatment and after four months of its application.

At the site the samples underwent a test for absorption of the ethyl-silicate by pressure of gravity to verify the modality of absorption (preferential directions and the capacity of the sample to expand), information necessary to understand the depth into the structure to which the ethyl-silicate can reach and the quantity of substance necessary for treatment. The general results show a notable capacity of absorption (one must realise what happens when it rains at Tell es-Sultan!) with times that can be quite slow. This same test made it possible to assess the first effects of the ethyl-silicate after seven and then fifteen days. Some samples were hardened, i.e. consolidated, and quite impermeable to the pouring on of water. Others have undergone a profound deterioration and would break up with little intervention.

On the basis of the results obtained, two walls were chosen, one in area A and the other in area F, on which to test the treatment, applying the ethyl-silicate by gravity fed injection using a container placed above (fig. 4), capable of serving six injections simultaneously. The application, done without pause, required many hours and a large quantity of the substance to finish the treatment of the sections of wall selected, as already seen in the test of the samples. The treated sections were then immediately covered with plastic sheets to retard the evaporation of the ethyl component of the product, which, if too rapid, for the high temperatures that can be reached at Jericho, could render the treatment less effective. Furthermore, in area A application by spraying was also tested (fig. 3); this was done to check the absorption results with respect to application through force of gravity (it was indeed faster, though probably less successful in penetrating beyond the surface of the mudbricks)

The experimental results obtained were overall confirmed and scientifically demonstrated by the analyses and tests done in the laboratory four months after the treatment *in situ* (for a detailed report on the analysis conducted see Cerulli in this volume). Most importantly the various differences in fabric were compared, both regarding the structure (dimension, quantity, mineral origin of the constituents) and the basic source materials (mineral composition), even if from the same masonry work. The lack of homogeneity of the fabrics indicates a limited mixture of primary materials in the building phase, but also, especially if the samples come from masonry of different epochs, indicates that the inhabitants of Jericho changed the sources of supplies of the primary materials. In particular it is clear that the major distinction between the fabrics is derived from the quantity of clayey minerals present which are responsible for the formation of cohesive

bonds between their particles during the phase of dessication and so able to strengthen the bricks through a series of characteristics typical of this class of minerals. In fact, some untreated samples, exposed to the same environmental conditions as those treated and which were taken at the same time four months later, were shown by the analysis to be in a good state of conservation and characterized by a discrete presence of clay. Specific studies carried out at the MAPEI laboratory indicate that a mixture of sand and clay in proportions ranging from 4:1 to 3:1 (by weight) produce optimal results for the required mechanics and durability when exposed to atmospheric agents.

The response of the samples analysed to the ethyl-silicate treatment has yielded widely diverse results, as was predicted comparing the effects of the product on the experimentally tested samples in the field. Some samples, four months after treatment, were shown to be in a good state of conservation, solid and water resistant, while others broke up easily and able to absorb water. In effect, the numerous analyses and tests carried out in the first case had demonstrated an improvement in the physical characteristics of the material, while in the second no positive effects were recorded, rather the treatment with ethyl-silicate often brought about an effective degradation relative to the presence of clay in the fabric or lack thereof. The application of ethyl-silicate in fact produces a three-dimensional network of continuous links with certain elements of the particles in the clay (consolidating action), elements formed in the drying process of the fabric and is responsible for the original cohesion of the material.

Thus on the basis of the above, one may conclude that the differences encountered with regard to the effectiveness of the consolidation efforts on the bricks are directly dependent on the nature and the right proportions of the mix of primary materials, amongst which, the presence of clay proves decisive both for the durability of the bricks and for the validity of the use of the ethyl-silicate treatment. In consequence, as is also demonstrated at Tell es-Sultan, the use of this product is not always the best solution for the consolidation of earth.

The control of water flow and protection of the more important finds

The work of conservation and protection of the archaeological site, which is yet again object of investigation and archaeological research, closely follows developments of the excavation and consists of diverse interventions, both direct (e.g. the consolidation treatment using ethyl-silicate) and indirect, on the finds, though the archaeological work in progress means that the organization of the site is not fixed. Grave damage to the excavations is not only caused by rain water though, but also the erosion accommodated by the particular formation of the tell, characterized by steep slopes and ditches, which cause the rain water to gain a strong and dangerous velocity. Some channels have been constructed to collect and take the water away, especially around area M (the excavations of Prof. K. Kenyon), where these cause erosion of the various Bronze Age levels year after year, cutting veritable furrows.

It is without doubt that to conserve the excavations as long as possible and render them accessible to the public, the actions of the various atmospheric agents need to be drastically curtailed, through the only practical and effective solution: the construction of protective coverings for the excavation zones. Unfortunately, this means costly operations because they require careful planning, choice of materials to use and an accurate implementation. The construction of coverings - though provisional and experimental - for the most important and best preserved areas are part of the programme of the Expedition in the next campaigns. Beside this, the complex problem of Trench I with its Neolithic tower has begun to be dealt with, the solution of which requires the combined efforts of diverse specialists along with specific and consistent funding.

MEASURES FOR DEVELOPMENT

The activity of development of the site also follows the archaeological diggings closely, with its precise aim of rendering the site, year after year, more usable and more comprehensible to visitors both in the zones dug by previous expeditions and those recently brought to light. In particular, in these early years, the programme of development, sadly still without a specific and general plan (see following section), foresees the gradual systemization of the disordered arrangement of the site and the realization of routes for visiting the newly uncovered finds. In the 1998 campaign the following operations were carried out.

Removal of dumps

The first operation, aimed at transforming the image of the site and rendering more understandable the form of the ancient city and the course of its legendary walls, consisted of the manual and/or mechanical removal of some of the dumps (hillocks formed from the build-up of earth removed during previous archaeological excavations), which, beside the general problems relating to the usability and understanding of the site, make difficult the control of ground water and make heavier going of the current archaeological research.

Creation of new tour paths

In order to see the results of the excavations of the Expedition immediately, a beaten pathway, with low containment walls of earth and stairways with wooden steps have been made for visiting and connecting the new areas A and B (fig. 1). The materials used and the techniques of construction make this type of action functional, but, at the same time, removable according to the necessities of excavation and better organization of the site.

A ramp of around 100 m, with a width of 1.2 m minimum, was constructed alongside the main existing route with its uneven stairway and its high, awkward steps, to aid visits of people with walking difficulties (fig. 2).

A PROJECT FOR ANCIENT JERICHO

The two campaigns which the Expedition has completed so far have produced optimal results with regard to archaeological research and made possible the realization of some limited, but undelayable, measures of protection and site enhancement. Unfortunately, the complexity and delicate state of the site, along with the limits of time and means at hand, do not permit sufficient speed for the work of protection and site enhancement to reach a more definitive state for this, one of the most important archaeological monuments in the world.

Such desired speed is instead reflected in the intense building activities that have been seen in the immediate vicinity to the south-west of the site in recent years, for the development of facilities for tourism and the cableway which passes over the ancient walls to connect Tell es-Sultan with the Monastery of the Quarantena which is located on the slopes of the Mount of Temptation (Jebel Quruntul). Unfortunately, these tourist oriented developments, which are extremely positive for the local economy, happen outside the necessary organization and planning for the oasis and in the absence of programme for the Archaeological Park or at least a general project to deal with the archaeological site, and thus risk becoming a danger to the site of Tell es-Sultan.

The new buildings have been constructed in part on what could be the lower city of ancient Jericho, according to the results of the reconnaissance carried out, and far too close to the tell: the first pylon of the cableway is located 30-40 metres from the western walls, thus limiting the possibility of archaeological research in that area, risking the possible destruction of remains, and rendering more difficult the organization and equipping of the site for an easier inspection, and a clearer understanding, of it.

It would be necessary on the one hand to provide the Department of Antiquities with the technical-juridical means to exercise an effective management of its archaeological sites (e.g. by means of imposition of restraints that guarantee the conservation of sites and finds without however the exclusion of occasional possibilities of development compatible with administration and the exigencies of the working order of the archaeological area) and on the other hand to prepare urgently the draft for the Archaeological Site, as an integral part of the broader scheme for the great Park of the Oasis, thus to have a document which will outline the functional choices and finalise the operations for the protection of the site and its development along with that of the neighbouring areas. The existence of a specific programme for Tell es-Sultan would also facilitate the inevitable research for financing - from foreign governments, public institutions and private interests - to support projects that would involve the cooperation of the Palestinian National Authority for the conservation of its cultural heritage. The objectives of the proposal are the conservation and enhancement of the site, taking advantage of the collaboration with private contractors who, interested in investing in structures and activities for tourism at Tell es-Sultan, could be obliged through specific financing to contribute to the implementation of the Archaeological Area and of the structures connected with it, according to the clear rules and precise procedures governing the relationship between public and private sectors, a relationship which should also be indicated in this timely project.

That which has happened at the site in recent years once again demonstrates the problem of coupling the exigencies of the protection of the historical-artistic heritage with the exigencies of tourism and its economy. This is possible if the planning and strategy take into account that cultural heritage is clearly an economic resource, i.e. that it is capable of producing wealth indirectly, but at the same time unique, precious and not renewable. A young nation such as Palestine, whose principal resource is tourism, cannot permit itself to risk the destruction of its heritage, as has in part happened at Tell es-Sultan, through lack of controls, through absence of planning, through the practices of private entrepreneurs who, in this specific case, financially exploit the presence of the archaeological site without contributing to its conservation and development.

In conclusion, the formation of a project for the site must be seen as an imperative. The foremost objective of this project should be the restoration, protection and presentation of the archaeological remains together with the organization of the adjoining zones with facilities for tourism, stimulated through public funding (PNA and/or foreign governments) and private financing by entrepreneurs disposed via investment to collaborate in the realization of the most important tourist centre in Palestine. Such a complex project, from the restoration of the mudbrick walls to the important urban transformations of the areas neighbouring the oasis, implies a united effort for its planning and strategy by the competent institutions (Ministry of Tourism and of Antiquities, other ministries, and the municipality of Ariha), preferably under the coordination of the Department of Antiquities - guaranteeing the central position of the archaeological site in the project -, in close contact with the Department of Tourism.

The joint Italian-Palestinian Expedition continues its works of archaeological research, restoration and site enhancement, but it is evident that with present limited resources the

task of making Tell es-Sultan a true "open-air museum", organized and equipped as deserves its inestimable value, will not be achieved. The recommencement of work at the site, the important results thus far obtained, and the vigour of private investment in the oasis, all allow us to look forward with optimism, in the hope that work will be set in motion for the drawing up of a project to integrate the diverse exigencies by means of an accord between the competent institutions and to seek the necessary financing. Only thus will it be possible to bring Jericho back to its ancient splendour to the advantage of archaeology, its visitors and both the local economy and that of the Palestinian Nation.

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Fig. 1 General view from south of the tell; note the viewpoint, the steps on the east side of Kenyon's Trench III and the tourist path connecting Areas B and A (right).

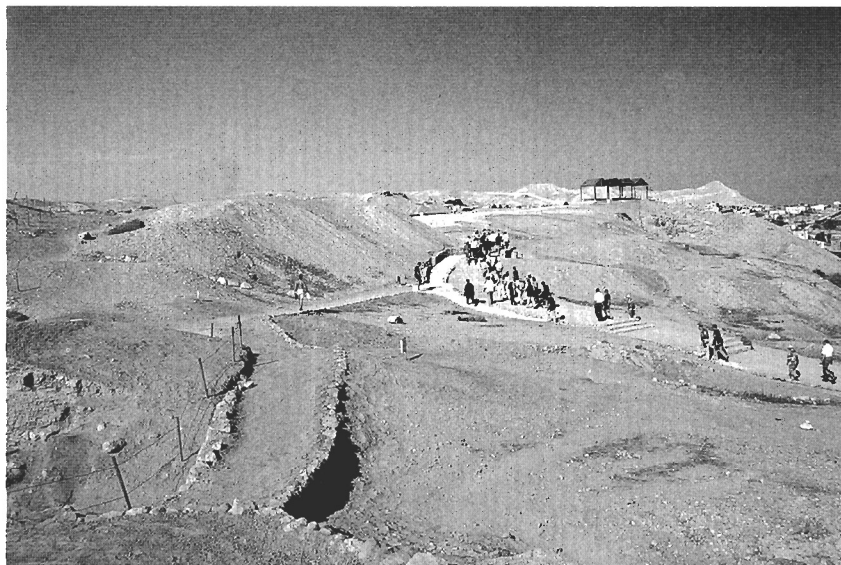


Fig. 2 General view from south-west of the central plateau; note the new tourist path branching off from the main track to Area B (the disabled ramp is on one side).

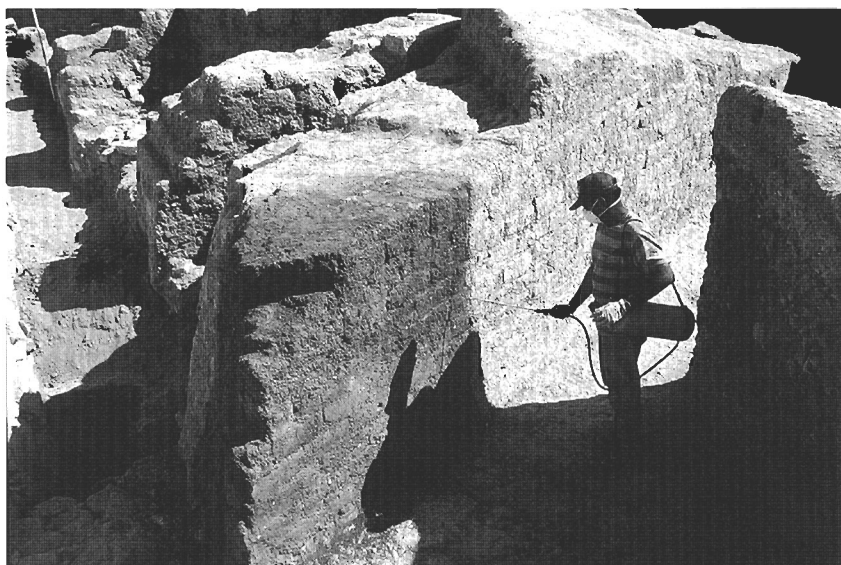


Fig. 3 Spraying application of ethyl silicate to wall W.19 in Area A.

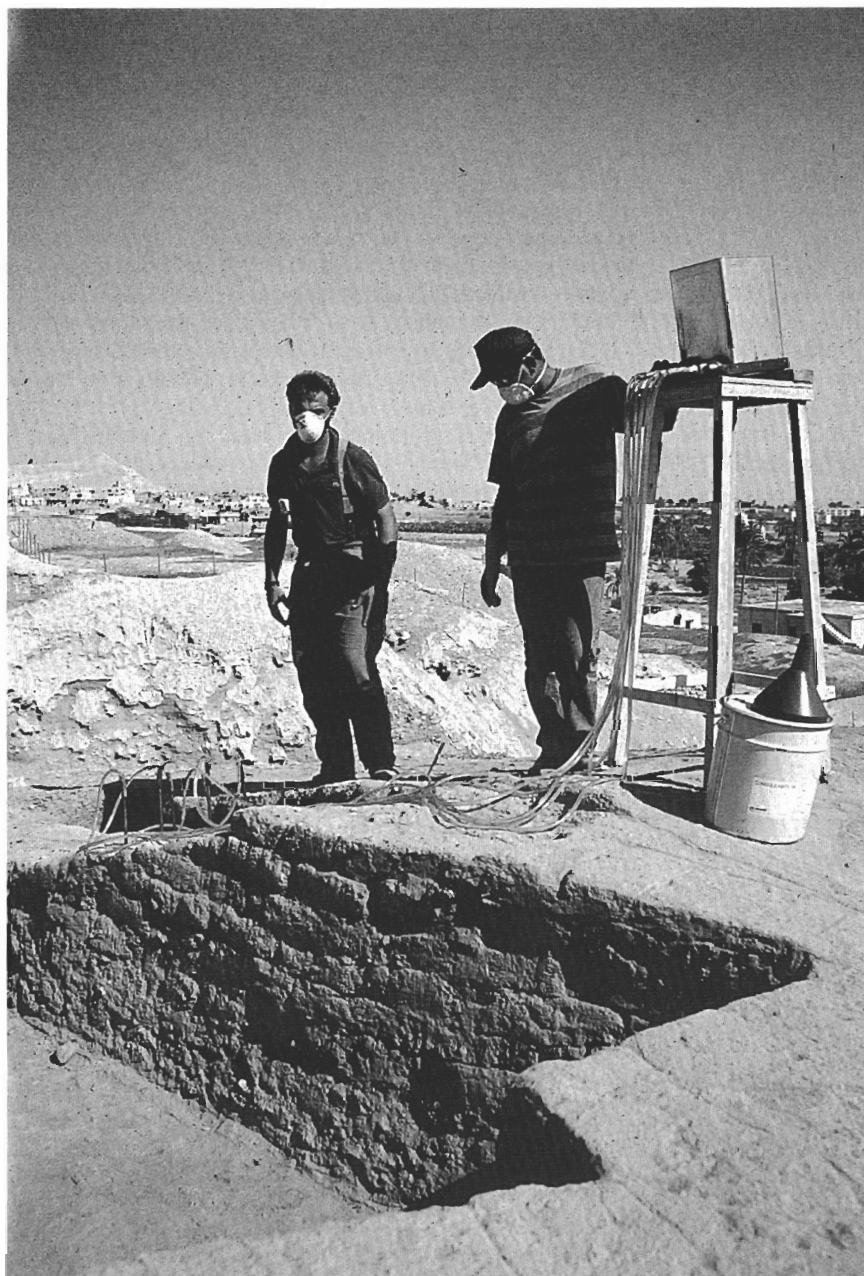


Fig. 4 Applying the ethyl-silicate by gravity fed injection using a container placed above.

APPENDIX B FAUNAL REMAINS OF THE 1998 EXCAVATION CAMPAIGN AT JERICHO

Francesca Alhaique*

Introduction

During the 1998 excavation campaign at Jericho, a total of 1231 animal remains have been collected from L.303, and L.305 (area F), F.39b (Area B), and F.162 (Area A). L.303, L.305 (Area F) and F.39b (Area B) dated to the Early Bronze III, while F.162 belongs to the Middle Bronze II. In this analysis the different *loci* will be investigated separately: this small-scale approach will help to understand better details of the daily life of the inhabitants of Jericho. The vast majority of the osteological samples were collected from the latest layers of utilization of Houses, L.305b-a and L.303b-a.¹ The assemblage is in general very fragmented and often the resulting NISP (Number of Identifiable Specimens) values are inflated by such fragmentation. For this reason in the case of the largest assemblages, also MNE (Minimum Number of Elements) and MNI (Minimum Number of Individuals) have been calculated as a measure of species abundance.

Room L.303

Room L.303 was identified in a residential area of the Early Bronze IIIA (Period IIIc1, 2600-2450 BC).² A total of 467 specimens were collected from L.303, but only 170 resulted to be identifiable (Table I).

Table I
L.303 - Number of Identifiable Specimens

Species	NISP	%
Pisces	1	0.6
<i>Anas</i> sp.	1	0.6
<i>Columba livia</i>	1	0.6
Cf. <i>Struthio camelus</i>	1	0.6
<i>Capra hircus</i>	5	2.9
<i>Ovis aries</i>	12	7.1
<i>Ovis</i> vel <i>Capra</i>	71	41.8
<i>Bos taurus</i>	19	11.2
<i>Gazella gazella</i>	9	5.3
<i>Sus scrofa</i>	4	2.4
<i>Hippopotamus</i> sp. ³	8	4.7
Small Ungulate	36	21.2
Medium/Large Ungulate	1	0.6
Large Ungulate	1	0.6
Total	170	100.0

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¹ The faunal materials were hand-collected; therefore the resulting assemblage may have been partially biased by this procedure (e.g., loss of smaller specimens such as carpals, tarsals, and phalanges or the remains of small mammals).

² Nigro, this volume: 40-44.

³ It includes the long bone shaft fragments tentatively attributed to the hippopotamus.

The ovicaprines (*Capra hircus*, *Ovis aries*, *Ovis vel Capra*) represent the majority of the assemblage both in number of specimens and number of individuals. These animals were killed at different ages: two young individuals (one 3-6 months old and the other between 6 and 12), one about 2 years old, and two older than three years (one between 3 and 4). No senile individuals were recovered. At least two goats and one sheep were identified.

The cattle is the second most abundant species for number of remains, but it is represented only by one individual between 2 and 3 years old. *Sus scrofa* is rare and the only individual, probably a wild boar, is younger than 3.5 years. Also the presence of some gazelle remains indicates that, although the economy was based mainly on the exploitation of domestic animals, some hunting was still practiced. On the basis of the horn core morphology (Ducos 1968, Tchernov *et al.* 1986/87) the species represented is *Gazella gazella* rather than *Gazella cf. dorcas* (Fig. 1). This is in agreement with the reanalysis made by Tchernov *et al.* (1986/87) of the materials from the old excavations of Jericho in contrast with the previous identification by Clutton-Brock (1971, 1979). The individual is an adult male.

Very interesting is the presence of fragments a calcaneum belonging to *Hippopotamus* sp.; also some long bone shaft fragments, found in the same area, could be tentatively attributed to the same species on the basis of size, texture and morphology. Unfortunately these specimens are badly damaged, therefore the diaphysis could not be identified more precisely. The epiphysis of the calcaneum is fused, but if the diaphyseal fragments, which are still unfused, belong to the same animal; the individual was probably a young-adult. The animal is most probably *Hippopotamus amphibius* that is the only species present in Southern Levant during the Holocene. The hippopotamus had not been previously reported among the faunal remains of Jericho (Clutton-Brock 1971, 1979).

The presence of hippopotamus remains in this area is very important, since Jericho represents the most inland site where bones of this species have been recovered (Horwitz, Tchernov 1990). In the coastal plain several hippopotamus bones and teeth have been identified in Holocene sites while in inland sites only teeth, used as raw material for the production of artifacts, had been so far recovered. In fact it is commonly assumed that the genus *Hippopotamus* became extinct in Jordan valley during the Pleistocene, but it was present on the coast until the Bronze and Iron Ages (Tchernov 1988, Horwitz, Tchernov 1990). However, the discovery of hippopotamus bones in Jericho could suggest that some small populations of this species survived in the Jordan valley, although it is also possible that some body portions of these animals, and not only teeth, were traded from the coast.

The fish remain is a fragment of a premaxilla, probably of a fresh water fish.

Three bird specimens⁴ were recovered in this *locus*: a distal tibia of a duck (*Anas* sp.), a diaphysis of the ulna of a rock dove (*Columba livia*), and a proximal fragment of the phalanx of a very large bird, probably of an ostrich (*Struthio camelus*). The duck, which is an aquatic species, may have been hunted in the area near Jericho and therefore it should represent a food residue. The rock dove sometimes nests on buildings and it could be either the result of natural accumulation or of human hunting. Interesting is the possible presence of the ostrich which could have also been hunted. However, no human modifications were detected on these remains.

The dimensions of the measurable specimens are reported in the following tables⁵.

⁴ Bird species identification was done by Dr. Alexandra Recchi, whom I wish to thank.

⁵ Measurements were always taken in mm, following Von den Driesch 1976.

Table II
***Capra hircus* - Measurements**

Element	LG	BG	SLC
Scapula dx	32.5	22.5	22.4
Element	GL		
Calcaneum dx	57.5		
Calcaneum sx	56.8		

Table III
***Ovis aries* - Measurements**

Element	Bp	Dp
Metatarsus sx	19.3	21.1

Table IV
Ovicaprines - Measurements

Element	L	B			
m ² dx	18.7				
m ² dx	16.3	10.1			
Element	Bd	Dd			
Humerus sx	34.4				
Tibia sx	26.5	19.8			
Element	GL	Bp	Dp	SD	Bd
1 st phalanx	36.7	12.6	14.6	9.8	11.6
1 st phalanx	33.8	10.7	13.8	9.1	9.8

Table V
***Bos taurus* - Measurements**

Element	L	B			
p ₃ sx	20.2	12.0			
Element	GL	Bp	Dp	SD	Bd
1 st phalanx	52.7	23.1	26.5	19.2	19.7
2 nd phalanx	32.0			22.9	21.2

Table VI
***Gazella gazella* - Measurements**

Element	GL	Bp	Dp	SD	Bd
1 st phalanx	40.2	10.3	13.9	7.2	9.4

For the ovicaprines most of the skeletal elements are represented (Table VII) suggesting that portions of the animal were introduced in this *locus* and then processed. The remains of the other species are too rare to provide useful information.

Table VII
L.303 - Minimum Number of Elements

Element	Ovicaprine⁶	<i>Bos taurus</i>	<i>Sus scrofa</i>	<i>Gazella gazella</i>	<i>Hippopotamus</i> sp.
	MNE	MNE	MNE	MNE	MNE
Horn	1			1	
Cranium	2				
Mandible	3				
Teeth	5	3			
Atlas	1				
Axis					
Cervical vert.	2	1			
Thoracic vert.	2		1		
Lumbar vert.	2				
Sacrum	1				
Rib	4		1	1	
Pelvis	2	1			
Scapula	2	1			
Humerus	1				
Radius	1				
Ulna	1				
Carpus	2				
Metacarpus	1				
Femur	1		1		
Tibia	1				
Tarsus	4	1			1
Metatarsus	3				
Metapodial				1	
Phalanges	3	2	1	1	
Long Bone					1
Total	45	9	4	4	2

Human modifications are present on 10.2% of the ovicaprine remains. Disarticulation marks were identified on two carpal bones, on the proximal scapula, on the distal humerus and proximal ulna, and on the acetabulum; filleting marks are instead present on some ribs, on a thoracic vertebra, and on a pelvis fragment. No impact cones produced for marrow extraction have been identified in this assemblage. Disarticulation and filleting marks are present on a *Bos* scapula, while a fragment of ischium appears to have been separated from the rest of the pelvis by a sharp blow. A thoracic vertebra and a rib shaft fragment of *Sus scrofa* show filleting marks. Furthermore, it is interesting to note that also a fragment of the anterior portion of the articulation of the calcaneum of the hippopotamus displays disarticulation marks on the lateral surface. This location is quite common on ungulate remains and therefore this species was processed just like the other animals. The use of hippopotamus as food may support to the hypothesis that this species was acquired locally and not imported from the coast.

⁶ This includes *Capra hircus* and *Ovis aries*.

Many bones are burned, but in most cases this is probably not the result of the cooking technique employed because combustion is not localized on portions of the bones in contact with fire during roasting. Furthermore, burning is often very intense and some of the bones are even calcined. Consequently it is possible that some of these fragments were discarded in the hearth that was found in this *locus*.

Carnivore damage is almost completely absent and gnaw marks were identified only on the tuber calcis of the calcaneum of an ovicaprine.

Room L.305

Room L.305 has a square shape and belongs to the same residential area of L.303, dated to the Early Bronze IIIA (Sultan IIIc1, 2600-2450 BC).⁷

This *locus* yielded the largest faunal assemblage analyzed in this study (N=580). However, fragmentation is always heavy and only 266 specimens resulted to be identifiable (Table VIII).

Table VIII
L.305 - Number of Identifiable Specimens

Species	NISP	%
<i>Grus grus</i>	1	0.4
<i>Corvus corone</i>	1	0.4
<i>Capra hircus</i>	11	4.1
<i>Ovis aries</i>	12	4.5
<i>Ovis vel Capra</i>	60	22.6
<i>Bos taurus</i>	139	52.1
<i>Gazella gazella</i>	3	1.1
<i>Sus scrofa</i>	7	2.6
Small Ungulate	9	3.4
Medium Ungulate	1	0.4
Medium/Large Ungulate	3	1.1
Large Ungulate	19	7.1
Total	266	100.0

The domestic species represented are the same of L.303, but the ovicaprine/cattle ratio changes if abundance is calculated on the basis of NISP, MNE or MNI. When the Number of Identifiable Specimens (NISP) is used *Bos taurus* (52.1%) appears to be the dominant species followed at a great distance by ovicaprines (31.2%).

In order to avoid the effects of fragmentation on measurements of species abundance, Minimum Number of Elements (MNE) have been calculated for the main ungulate species (Table IX).

⁷ See Nigro, this volume: 28-34, fig. 1:3.

Table IX
L.305 - Minimum Number of Elements

Element	Ovicaprine ⁸	<i>Bos taurus</i>	<i>Sus scrofa</i>	<i>Gazella gaz.</i>
	MNE	MNE	MNE	MNE
Horn	2			
Cranium		1		
Mandible	2	3		
Teeth	10	3		
Atlas	1	2		
Axis		2		
Cervical vert.	2	4		
Thoracic vert.	2	5		
Lumbar vert.	1	1		
Sacrum				
Caudal vert.		1		
Rib	2	7	1	
Pelvis	2	2		
Scapula	3	3		
Humerus	3	2	2	
Radius	4	1	1	
Ulna	2	2		
Carpus				
Metacarpus	4	3		
Femur	2	1		
Patella		1		
Tibia	3	1		2
Tarsus		3		
Metatarsus	2	1		1
Metapodial		1		
Phalanges	6	5		
Total	53	55	4	3

As it is possible to observe from Table IX, if we compare the totals with the NISP values, it is evident that fragmentation affected mainly cattle bones. The frequencies of *Bos taurus* and *Ovis vel Capra* based on the minimum number of elements (MNE) are in fact more similar although cattle is still the prevalent species (Table X). For both animals almost all skeletal elements are represented, suggesting that more or less complete carcasses were introduced into this *locus*, sometimes after a primary butchery in some other place. When we then calculate the Minimum Number of Individuals (MNI) the situation changes completely because ovicaprids become the dominant species (Table X). In fact they are represented by 5 individuals: one 3-4 months old, one 6-12 months old, one about 2 years old, one between 3 and 4 years old, and one 4-5 years old. At least two goats and one sheep are represented. *Bos taurus* is instead present "only" with three individuals: one 15-20 months, one 2.5-3.5 years old, one about 5-6 years old. Nevertheless, the difference in meat yield of the two species has to be taken into account and under this perspective cattle is still the most important source of animal food. For both species no senile animals were identified.

⁸ This includes *Capra hircus* and *Ovis aries*.

Table X
L.305 - Main species abundance

Species	NISP	%	MNE	%	MNI	%
<i>Ovis vel Capra</i>	83	35.8	53	46.1	5	45.5
<i>Bos taurus</i>	139	59.9	55	47.8	3	27.3
<i>Sus scrofa</i>	3	1.3	3	2.6	1	9.1
<i>Gazella gazella</i>	7	3.0	4	3.5	2	18.2
Total	232	100.0	115	100.0	11	100.0

Sus scrofa is rare and two individuals were recovered: one adult, probably a wild boar, and the other less than 1 year old. Only one adult gazelle, older than 18 months (aging based on Davis 1980), was recognized.

Only two avifaunal remains have been identified⁹: a proximal coracoid of a crane (*Grus grus*) and a distal radius of a raven (*Corvus corone*). The crane, which nests in wet environments, may have been hunted in the surroundings of Jericho, while it is likely that the raven has not been eaten, but it may have been attracted to this *locus* by the presence of food debris. As in L.303 no traces of human activity were detected on bird bones.

The dimensions of the measurable specimens are reported in the following tables¹⁰.

Table XI
***Capra hircus* - Measurements**

Element	Bp	Dp
Radius sx		14.6
Metacarpus dx	20.9	13.5
Metacarpus sx	25.0	17.0
Metatarsus sx	19.8	18.6
Element	Bd	
1 st phalanx	12.8	

Table XII
***Ovis aries* - Measurements**

Element	GLP	BG	SLC		
Scapula dx	31.6	21.6	20.6		
Element	Bp	Dp			
Metacarpus dx	22.4	15.2			
Element	GL	Bp	Dp	SD	Bd
1 st phalanx	35.3	11.7	13.7	9.1	11.2
1 st phalanx	34.7	11.7	13.7	9.2	10.3
1 st phalanx	33.0	11.3	12.8	8.8	10.9
1 st phalanx	35.0	10.8	13.4	8.5	9.8
2 nd phalanx	20.4	11.0	10.4	6.9	8.0

⁹ Bird species identification is due to Dr. Alexandra Recchi.

¹⁰ Measurements were always taken in mm, following Von den Driesch 1976.

Table XIII
Ovicaprine - Measurements

Element	L	B		
p ² sx	8.0	6.5		
p ³ sx	9.0	8.2		
p ⁴ dx	9.2	8.6		
p ⁴ sx	10.4	9.4		
m ¹ dx	14.1	11.4		
m ¹ sx	13.7	11.1		
m ² sx	18.1	13.8		
Element	Bp	Dp	Bd	Dd
Humerus dx			31.0	
Humerus sx			29.3	
Humerus sx			29.2	
Radius sx	30.4	15.0		
Tibia dx				20.9
Tibia dx	49.3	46.8		

Table XIV
***Bos taurus* - Measurements**

Dorsals - Measurements					
Element	L	B			
m ₃ dx	36.9	15.4			
m ₃ sx	37.4	16.3			
Element	GLP	BG	SLC		
Scapula sx	64.7	54.6			
Scapula sx			36.4		
Element	Bp	Dp	Bd	Dd	
Tibia sx			65.9	48.7	
Metacarpus			50.2		
Metacarpus sx	54.2	31.6			
Element	GB	GD			
Scafocuboid dx	40.5	35.9			
Element	GL	Bp	Dp	SD	Bd
1 st phalanx					20.8
2 nd phalanx	35.0	25.8	30.0	23.1	12.5

Table XV
***Gazella gazella* - Measurements**

Element	Bp	Dp
Tibia dx	38.9	38.2

Some pathologies have been identified in the cattle on a rib shaft that had started to heal after a break and on the spines of three thoracic vertebrae (Fig. 2). This latter pathology might be related to the use of cattle as animal power.

The frequency of human modifications is 11.4% on *Bos taurus* and 10.8% on ovicaprines. In *Ovis* vel *Capra* skinning marks were detected only on the base of a mandible; disarticulation striae are present on a distal humerus and a proximal radius; filleting marks were identified on the ribs, on the shafts of radius and femur. Impact cones produced for marrow extraction were found on the femur. Some long bones shaft fragments that could only be attributed to a small ungulate, either ovicaprine or gazelle, show evidence that the marrow cavity was opened after the meat had been removed from the bone. As far as the cattle is concerned, skinning marks were detected on the premaxilla. Disarticulation striae occurred on the scapocuboids of two different individuals, exactly in the same location (Fig. 3); these marks were found also on the ascending ramus of the mandible, on the ventral aspect of the atlas, on the acetabulum, and on the glenoid of the scapula. Sometimes disarticulation of the head from the rest of the body was carried out by chopping through the neck as suggested by an atlas. Filleting is indicated by striae on ribs, thoracic vertebrae, scapulae, humerus and tibia shafts. Some of the long bones were also opened to extract marrow and impacts were detected on the femur and the humerus (Fig. 4); also some diaphysis fragments, identified as belonging to a large ungulate, show both impact cones and filleting marks. In *Sus scrofa* disarticulation striae were detected on the distal humerus, while filleting marks can be seen on a rib shaft fragment.

Burning is extremely rare and it is present only on 5 specimens in the whole assemblage (0.9%). As in L.303 it does not seem directly related to cooking, but maybe it occurred during the destruction of the room or as the result of discard practices.

Besides the two artifacts recovered during the, four more bone tools and bone tool fragments were identified in this *locus*. The first is a scapula of *Bos taurus* (Fig. 5) whose blade have been transversally cut and then used probably as a scraping implement. The specimen presents also filleting striae along the blade suggesting that the animal may have been first exploited as food source; carnivore gnaw marks were identified on the glenoid, but it is not possible to ascertain if these had been produced before or after the bone had been worked. No similar bone artifacts have been previously reported in the Early Bronze Age of Jericho (Marshall 1982). The shaft of a gazelle tibia was worked into a point; the proximal epiphysis is still present, but the pointed end was broken in antiquity. The edges of a bone fragment, probably a rib of a medium-large ungulate, appear to have been worked and used. Finally, the diaphysis of a long bone of a small ungulate was carefully scraped on the external surface; this modification seems to be related to the preparation of the shaft for the production of an implement rather than to meat removal.

Carnivore gnaw marks, probably produced by dogs, are present on 3.8% and 4.8% of the bones of *Bos* and ovicaprines respectively. A distal humerus of a wild boar shows on the epiphysis both gnaw marks and cut marks (Fig. 6): the bone was left to the dogs after the animal had been butchered by humans.

Locus F.39b

Locus F.39b belongs to Building B1 and is dated to the Early Bronze IIIB (Period IIIc2, 2450-2300 BC, fig. 2:1).¹¹

In this *locus* only 54 faunal remains have been collected and 45 of these were identifiable (Table XVI).

¹¹ See Nigro, this volume: 133-135.

Table XVI
F.39b - Number of Identifiable Specimens

Species	NISP
<i>Capra hircus</i>	3
<i>Ovis vel Capra</i>	42
Total	45

The bones of this sample belong all to ovicaprines with a minimum number of three individuals: two young ones between 6 and 12 months old and one adult; at least two of them are goats.

The dimensions of the few measurable specimens are reported in the following tables.¹²

Table XVII
***Capra hircus* - Measurements**

Element	Species	Bd
1 st phalanx	<i>Capra hircus</i>	2.6

Table XVIII
Ovicaprine - Measurements

Element	Species	L	B
d ⁴ sx	Ovicaprine	12.3	9.1
m ¹ dx	Ovicaprine	15.9	9.3
m ¹ sx	Ovicaprine	16.3	10.6
d ₄ dx	Ovicaprine	16.4	6.3

For the young individuals only cranial parts were recovered, while the adult is represented by a mandibular condyle and a first phalanx.

No traces of human activities have been detected on the bones, but this may be only the result of the anomalous skeletal representation pattern. None of the bones appear to have been burned although traces of fire were identified in this *locus*. Carnivore gnaw marks, probably produced by a dog, have been observed on the distal end of the adult phalanx.

Locus F.162

Layer F.162 represents the final destruction of the massive tower belonging to Building A1.¹³ The structure has been dated to Middle Bronze II (Sultan IVb, 1800-1650 BC) and in this layer of debris burnt materials as well as ceramic vessels and grinding tools were recovered (fig. 3:1).

The 129 faunal remains collected in this *locus* were associated to human remains belonging to at least three individuals (Santandrea, this volume). However, the relationship between humans and animals is not clear and the interpretation of the assemblage is difficult.

80 specimens resulted to be identifiable (Table XIX).

¹² Measurements were always taken in mm, following Von den Driesch 1976.

¹³ See Marchetti, this volume: 196-197.

Table XIX
F.162 - Number of Identifiable Specimens

Species	NISP	%
<i>Vulpes</i> sp.	46	57.5
<i>Capra hircus</i>	6	7.5
<i>Ovis vel Capra</i>	19	23.8
<i>Bos taurus</i>	5	6.3
Small Ungulate	4	5.0
Total	80	100.0

Ovicaprine are the main ungulate species and at least 4 individuals are present: two very young ones between 1 and 2 months old, a goat younger than 18 months, and one individual 2-2.5 years old. *Bos taurus*, probably an adult individual, is represented only by rib shaft fragments. All the other remains, corresponding to 57.5% of the total, belong to a single fox. The very young age of this individual does not allow a specific attribution; it is probably *Vulpes vulpes* also because this was the identification made for all the specimens recovered in the Kenyon's excavations (Clutton-Brock 1971, 1979), but other species, such as *Vulpes ruppellii* and *Vulpes cana*, are known from this region.

The dimensions of the few measurable specimens are reported in the following tables.¹⁴

Table XX
***Capra hircus* - Measurements**

Element	Species	Bp	Dp
Tibia dx	<i>Capra hircus</i>	45.8	44.3

Table XXI
Ovicaprine - Measurements

Element	Species	L	B
p ² dx	Ovicaprine	10.3	8.1
p ³ dx	Ovicaprine	9.0	8.0

Although the sample is small, the analysis evidenced some pathological bones: a distal tibia of a goat shows osteoarthritis on the articular surface and also a horn core of *Capra* probably shows some pathologies.

Butchering marks produced during the disarticulation are present only on the edge of the glenoid cavity of a goat scapula. The proximal epiphysis of a *Capra* metacarpal is abraded and it could have been used as a tool. Two different rib shaft fragments of *Bos taurus* appear to have been carefully sawed transversally to the main axis of the bone, probably in order to cut sections for the manufacturing of tools or objects (Fig. 7). Since all the few *Bos* remains recovered in F.162 are rib shaft fragments, these elements probably do not represent food debris here, but raw material for the production of artifacts. No other human modifications were identified.

¹⁴ Measurements were always taken in mm, following Von den Driesch 1976.

More than 30% of the fox bones were burned, but in this case it was not the result of cooking practices as suggested for the fox remains from the earlier periods of the Kenyon's excavations (Clutton-Brock 1979). In fact the whole level is burnt and also some of the human remains as well as other animal bones (18.2% of the total) show evidence of exposure to a great heat. From the analysis of these specimens it is not possible to tell for sure if the remains were already without flesh when the fire occurred, but the absence of localized burning and of strong deformation of the specimens seems to point in this direction.

Discussion and conclusions

In contrast with the previous studies on the Jericho fauna (e.g., Clutton-Brock 1971, 1979), where the materials were combined by period for the whole site, in the analysis presented here a small scale approach have been used and different *loci* have been considered separately. It is therefore difficult to make a direct comparison of the findings of this research with the data from the old excavation and also with other coeval sites, because of differences in perspective (i.e., *locus* vs. whole site) and sample size. Nevertheless, some general considerations can be made (Table XXIII).

The prevalence of *Capra* over *Ovis* in Jericho evidenced by Clutton-Brock (1979) seems to be confirmed, at least in terms of number of individuals. This is in contrast to what have been found in most other sites of the Southern Levant during the Early Bronze Age (e.g., Arad, Tel Yarmouth, Tel Erani; Horwitz, Tchernov 1989 with references). Only at Yiftah'el, but in an early phase of the EBA I, goat remains seem to be slightly more abundant (Horwitz 1998).

Sus scrofa is rare in this assemblage as in other sites of similar age (Horwitz, Tchernov 1989). Only wild boar is surely represented in the sample analyzed as indicated also by Clutton-Brock (1979) for the materials of the early excavations; the specimens belonging to the young individual do not allow to define the wild or domestic status of this animal. Also at Arad only wild boar have been identified (Lernau 1978), although domestic pig was already present in other coeval sites (Horwitz, Tchernov 1989; Horwitz 1998).

The presence in the "kitchen" area (L.303) of hippopotamus bones with cut marks suggests the use of this species as food. It is therefore likely that this animal was hunted in the area near the site rather than being transported from the coast.

In contrast to what was found by Clutton-Brock (1979) for the whole site, no equid remains have been identified in this sample; this may suggest that donkeys, horses and onagers were not used as food in these *loci* at this time.

Except for the fox in *locus* F.162, carnivore remains are absent from this assemblage. This happens probably because of the function of the *loci* investigated, in fact L.303 and L.305 are mainly related to food processing activities and it is possible that dogs were not used for consumption during the Early Bronze Age. Also the data collected by Clutton-Brock (1979) indicate that dog remains are not frequent in Jericho during this period.

Although L.305 is very close in space to the coeval *locus* L.303, the two faunal assemblages show very distinct features suggesting that different activities were taking place in the two rooms. The species represented are almost the same, but their frequencies change if we consider the NISP, MNE, or MNI (fig. 8).

The two faunal samples might be closely related: it is interesting to note that the ovicaprine age classes identified in the two *loci* are directly comparable. Also the age of the only cattle found in L.303 is represented among the individuals in L.305, it is therefore possible that the faunal remains recovered in the two *loci* belong the same animals (Table XXII).

Table XXII
Age and Minimum Number of Individuals
for Ovicapripnes and *Bos taurus* in L.303 and L.305

	L.303		L.305	
	MNI	Age	MNI	Age
OVICAPRINES	1	3-6 m	1	3-4 m
	1	6-12 m	1	6-12 m
	1	~2 y	1	~2 y
	1	3-4 y	1	3-4 y
	1	>3 y	1	4-5 y
Total	5		5	
<i>Bos taurus</i>			1	15-20 m
	1	2-3 y	1	2.5-3.5 y
			1	5-6 y
Total	1		3	

Looking more closely at the differences between the two rooms, a higher number of butchering marks was detected on the assemblage from L.305 (5.7% vs. 3.4% in L.303), and in particular impact cones for marrow extraction were identified only in this *locus*. Burning is instead more frequent in the sample from L.303 (3.9% vs. 0.9% in L.305). A possible explanation for the different patterns identified is that in L.305 mainly butchering activities were taking place as indicated also by the tools recovered and the two stone slabs. The different parts of the carcass were disarticulated, the meat was removed from the bones, especially those of larger animals such as *Bos taurus*, and then the shafts were fractured in order to extract marrow; the fragments were then discarded and left in the room. Some disarticulated portions with bones of the smaller animals (i.e., ovicapripnes), easier to manage and to fit into a pot, were instead transported to the place where cooking activities were carried out (perhaps L.303 where a hearth was discovered) together with cattle meat, marrow, and few bones.

The analysis of body part representation for *Ovis vel Capra* shows that, although in both *loci* almost all anatomical elements are present, there is a prevalence of limb bones in L.305 while the axial skeleton is more frequent in L.303 (Fig. 9). The treatment of the ovicapripnes could have been therefore variable: sometimes whole portions of these animals, including limb elements, were introduced into the cooking area, while in other cases long bones were processed more intensely in L.305, similarly to what happened with cattle, and only the axial portions, probably together with the meat and marrow of the limbs were transported to the "kitchen".

If we compare the ovicapripne body part frequency from both *loci* to that of *Bos taurus* from L.305 (figs. 10, 11), the latter seems to show a greater similarity with *Ovis vel Capra* from L.303 than with the ovicapripnes from L.305. Since *Ovis vel Capra* from L.303 could be considered the result of the selection of transported portions, also the cattle was introduced into L.305 already cut in parts, with a greater emphasis on the axial skeleton, after a primary butchery in some other place.

The choice of animals in the best age classes suggests the possibility that the inhabitants of this residential area belonged to a wealthy group. This may be also supported by the

presence of more "exotic" species such as the hippopotamus and the ostrich as well as marine shells.

As it was already mentioned, carnivore remains are completely absent from the assemblage recovered in L.303 and L.305. However, gnaw damage was identified on some of the bones. It is interesting to note that carnivore modification are much more frequent in L.305 (2.2%) than in L.303 (0.2%). A possible explanation for this pattern is that the dogs had easy access to the debris discarded after butchering, but they were not allowed in the "kitchen" area.

All bone tools and bone tool fragments were recovered from L.305; most of them are points, but their exact function is not known, although they are not necessarily related to butchering activities. It is not possible to establish if these artifacts were made *in situ* because there are no evident traces of the initial stages of the production of bone implements or debris produced during manufacturing.

The interpretation of the faunal assemblages from F.39b and F.162 is more complex because the samples are very small and the archaeological context is less clear. Therefore it was not possible to suggest any hypothesis on the function of these *loci*.

In F.39b the anomalous anatomical pattern with almost exclusive presence of head parts, the prevalence of young individuals, and the absence of human modifications, if not due to a recovery bias, may be related to the function of this *locus* which is at the moment still unknown, although limestone mortars and ceramic vessels were recovered.

The situation in F.162 is even more difficult because besides the small faunal assemblage, the human remains of at least three individuals were identified. The few cattle specimens represent residuals of bone working activities, while the fox could be intrusive in this *locus*.

On the basis of all these samples it is possible to suggest that the economy of Jericho was based mainly on herding of ovicaprines and cattle, but some hunting was still practiced as indicated by the presence of gazelle, the wild boar, and some birds.

The age classes for ovicaprines show a prevalence of young individuals, suggesting the possible use of these species for milk, however, the presence of young-adults and adults indicates also the exploitation of meat. Analyses on cortical thickness of the bones of sheep and goat from archaeological sites from the Chalcolithic to the Middle Bronze Age, indicate that although milking may have begun in the earlier periods, it is only with the Early Bronze that the exploitation became more intense (Smith, Horwitz 1984, Horwitz, Tchernov 1989). The absence of old animals, also for cattle, suggests that only the animals in the better conditions were used as food.

The pathologies evidenced on the neural spine of the thoracic vertebrae of cattle may indicate that this species was used both as source of meat and as animal power, while it is likely that dogs and equids were not exploited for consumption, at least in these *loci*.

The data presented here show the potentiality of a small-scale investigation with comparisons at the level of single *locus*. Of course the analysis of the faunal remains is only one aspect of the research and provides information only on the exploitation of animal resources; however, also other activities were surely carried out in these rooms. Further information (e.g., stratigraphy, paleobotanical data, typological, technological and functional analysis of pottery and lithic tools) also from future excavations should be therefore added in order to obtain a more complete and detailed picture of the daily life of the inhabitants of Jericho during the Early and Middle Bronze Age.

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Species	L.303				L.305				F.39b				F.162			
	NISP	%	MNI	%	NISP	%	MNI	%	NISP	%	MNI	%	NISP	%	MNI	%
<i>Pisces</i>	1	0.6	1	6.7												
<i>Grus grus</i>					1	0.4	1	6.3								
<i>Anas</i> sp.	1	0.6	1	6.7												
<i>Columba livia</i>	1	0.6	1	6.7												
<i>Corvus corone</i>					1	0.4	1	6.3								
cf. <i>Struthio camelus</i>	1	0.6	1	6.7												
<i>Vulpes</i> sp.													46	57.5	1	14.3
<i>Capra hircus</i>	5	2.9	2	13.3	11	4.1	2	12.5	3	6.7	1	25.0	6	7.5	1	14.3
<i>Ovis aries</i>	12	7.1	1	6.7	12	4.5	1	6.3								
<i>Ovis vel Capra</i>	71	41.8	5	33.3	60	22.6	5	31.3	42	93.3	3	75.0	19	23.8	4	57.1
<i>Bos taurus</i>	19	11.2	1	6.7	139	52.1	3	18.8					5	6.3	1	14.3
<i>Gazella gazella</i>	9	5.3	1	6.7	3	1.1	1	6.3								
<i>Sus scrofa</i>	4	2.4	1	6.7	7	2.6	2	12.5								
<i>Hippopotamus</i> sp.	8	4.7	1	6.7												
Small Ungulate	36	21.2			9	3.4							4	5.00		
Medium Ungulate					1	0.4										
Medium/Large Ungulate	1	0.6			3	1.1										
Large Ungulate	1	0.6			19	7.1										
Total	170	100.0	15	100.0	266	100.0	16	100.0	45	100.0	4	100.0	80	100.0	7	100.0

Table XXIII
Summary of Species abundance



Fig. 1 *Gazella gazella*: left horn core (L.303).

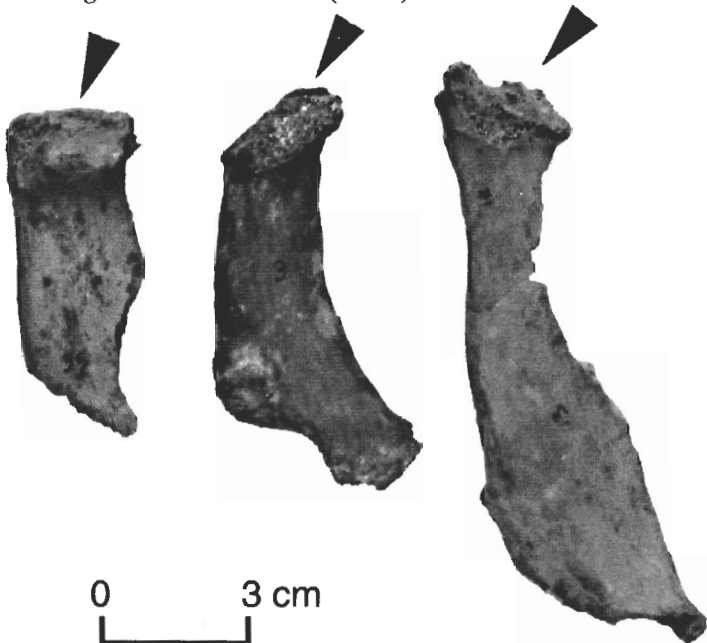


Fig. 2 *Bos taurus*: pathological thoracic vertebrae (L.305).

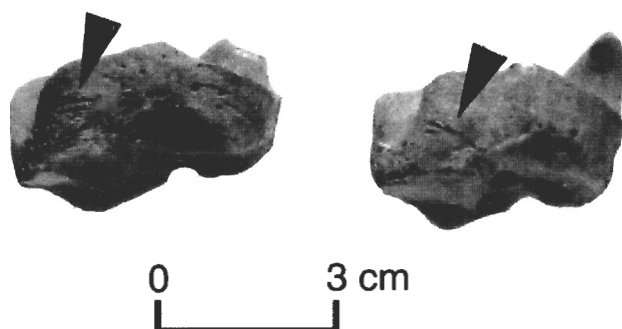


Fig. 3 *Bos taurus*: scapocuboids with cut marks (L.305).

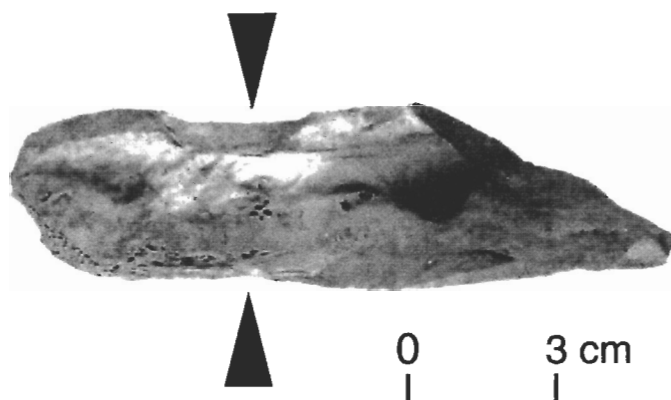


Fig. 4 *Bos taurus*: femur shaft fragment with bipolar impact cones (L.305).

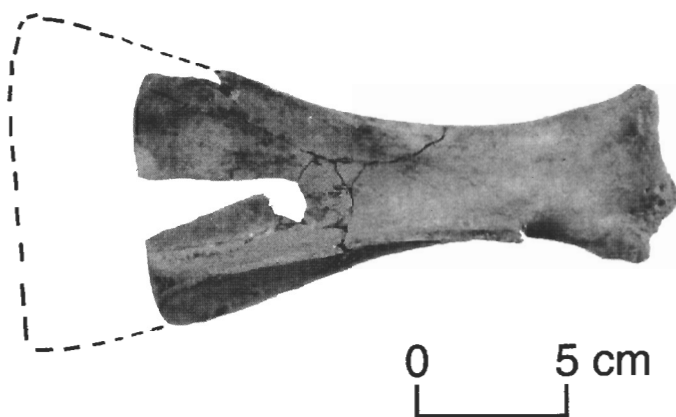


Fig. 5 *Bos taurus*: bone tool on a scapula (L.305).

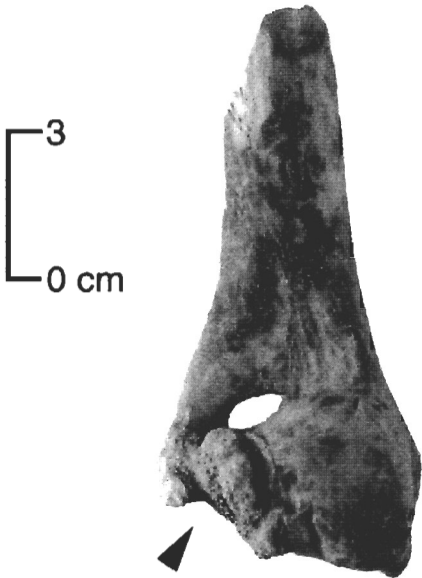


Fig. 6 *Sus scrofa*: distal humerus with gnaw marks and cut marks (not visible on the medial face) (L.305).

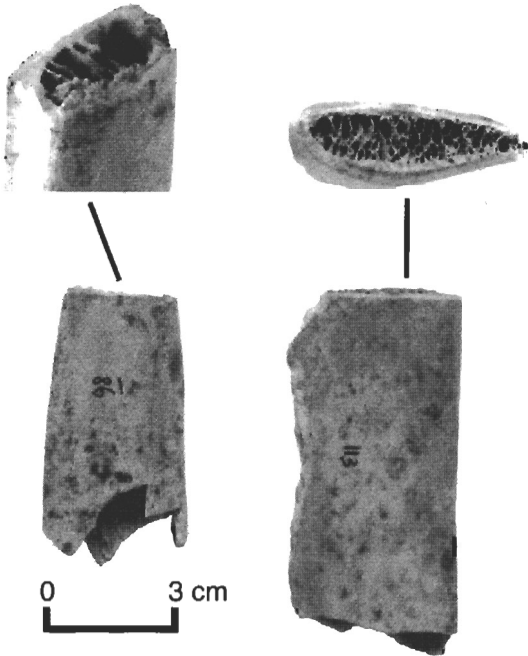


Fig. 7 *Bos taurus*: rib shaft fragments sawed transversally (F.162).

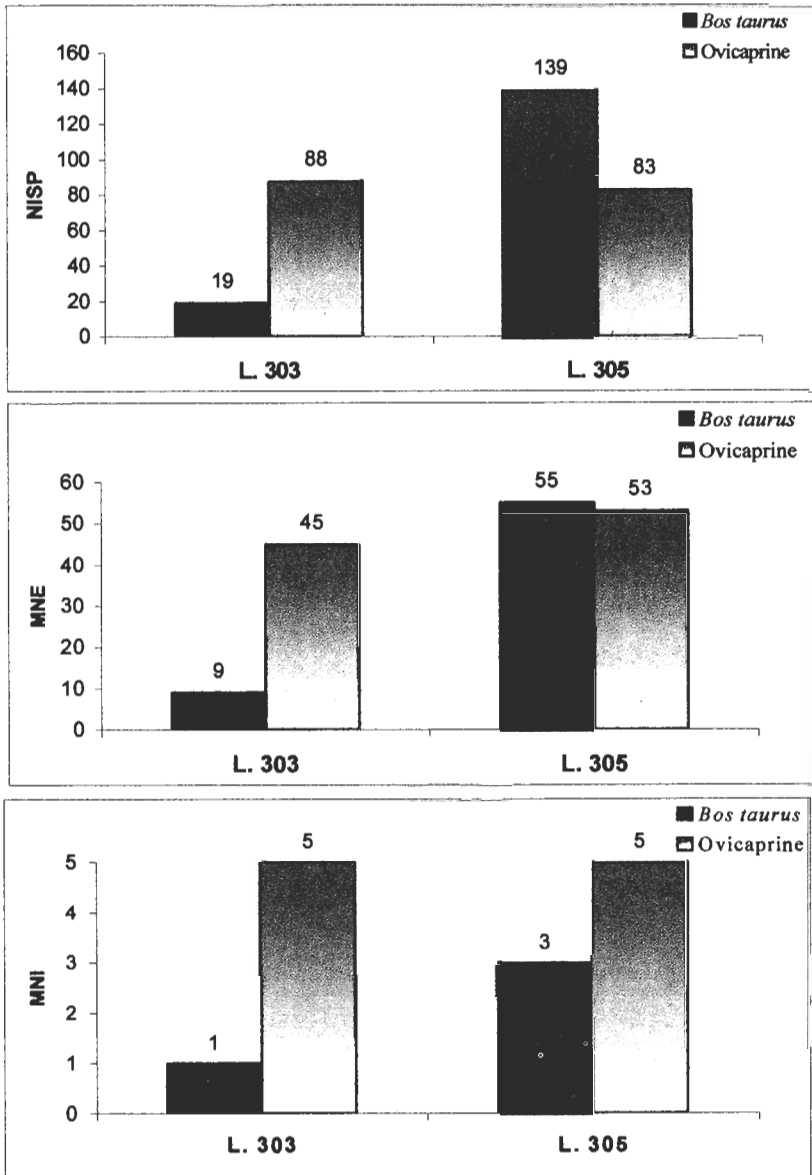


Fig. 8 Comparison of the abundance of *Bos taurus* and Ovicaprines in L.303 and L.305 based on Number of Identifiable Specimens, Minimum Number of Elements, and Minimum Number of Individuals.

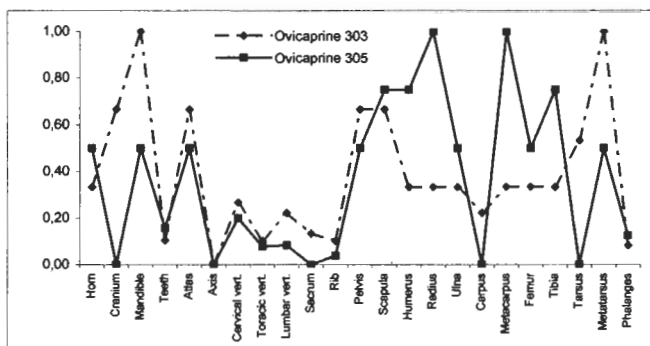


Fig. 9 Skeletal element frequencies (as Minimum Animal Units %): Ovicaprines L.303 vs. Ovicaprines L.305.

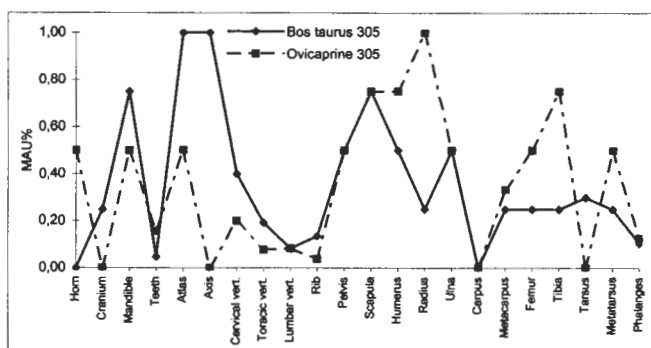


Fig. 10 Skeletal element frequencies (as Minimum Animal Units %): *Bos taurus* L.305 vs. Ovicaprines L.305.

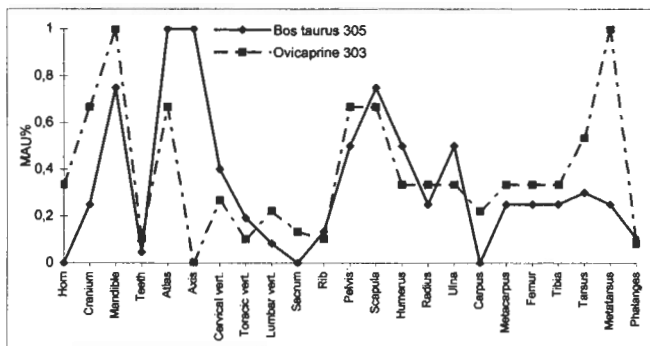


Fig. 11 Skeletal element frequencies (as Minimum Animal Units %): *Bos taurus* L.305 vs. Ovicaprines L.303.

APPENDIX C

HUMAN REMAINS FROM F.162 (BUILDING A1)

*Elena Santandrea**

INTRODUCTION

Some human remains were found inside the massive tower of Building A1 (Middle Bronze II, 1800-1650 BC) in a layer (F.162) of debris and burnt wooden beams (Marchetti, this volume: 193, 196-197). Such remains were retrieved incidentally. The condition of the discovery did not allow a detailed taphonomic and anthropological study; however, it has been possible to make a description of the specimens with some general considerations.

MATERIALS AND METHODS

The general state of preservation of the sample is poor: all the bones are incomplete and reduced into small sized fragments, with only few exceptions such as some phalanges. Despite of this general condition, fragments of cortical and cancellous bone from all skeletal districts have been identified: teeth, skull, scapulas and clavicles, vertebrae and ribs, long bones of upper and lower limbs, pelvis, and finally hands and feet. The first step of the anthropological analysis was the identification of the specimens, followed by their attribution to individuals on the basis of relative dimensions, diagenetic characteristics, laterality (i.e., the side and the possible similarity between left and right homologous element and/or between portions of both sides of bones), and articulation (i.e., the possibility of inferring anatomical connection between bones of the joints such as, for instance, knee, elbow and ankle). Most of the bones of the sample from F.162 belong to a minimum number of three individuals (MNI = 3): two adults (individuals A and B) and a child (individual C). However, some of the specimens could not be attributed with confidence to a specific individual because of the fragmentary nature of such bones (Tab.1). Many cranial and postcranial bones from this sample show traces of burning.

Sex estimation was based above all on morphology and relative robustness and gracility of the long bones, because the attribution of the cranial and pelvic bone fragments to one of the adult individuals (Ferembach et al., 1979) was impossible. Age estimation for the adults was based on the relative dimensions and cortical thickness of long bones because of the complete absence of teeth (Acsádi, Nemeskéri 1970). For the subadult it was instead possible to use dental eruption (Ubelaker 1989).

RESULTS

Individual A: adult (> 20 years old), probably female (Fig. 1).

This is the most complete individual, represented by the third medial portion of the shaft of the right humerus, a fragment of the head and the proximal part of the diaphysis of the left humerus, the right olecranon and a fragment of the shaft of the same ulna, two proximal fragments of both the radiuses and the distal epiphysis of the left one, the right first and third and three other metacarpals, the right femur (almost complete, without the

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third distal part of the shaft), the left femur (consisting of the third distal part of the shaft and two cortical fragments), the right tibia (almost complete shaft and fragments of both the epiphyses), the left tibia (lacking a small portion of the distal part of the shaft), and finally the calcaneus, the metatarsals and three phalanges of the right foot.

The bones are in relatively good state of preservation. The long bones of arms and legs have been attributed to this individual by comparison, checking the laterality and articulation and on the basis of diagenetic characteristics such as colour. The calcaneus, the metatarsals and the three phalanges of the right foot were attributed for their gracility. The shaft of the tibia is platycnemic (i.e. very flattened) (Table 2). The distal epiphysis of the left tibia (malleolus), the shaft of the left ulna and the distal epiphysis of the left radius are blackened, showing traces of combustion.

Individual B: adult (>20 years old), probably male (Fig. 2).

The bones are in fairly good state of preservation. Most of the remains were attributed for their robustness and for diagenetic characteristics, such as chromatic variation from dark to pale gray due to slight combustion. The skeletal remains are represented by a fragment of the left scapula with the coracoid, the spine and the glenoid cavity, fragments of the limbs, the hands and the feet. The arm is represented by a portion of the right humerus (third distal part of the shaft, without the trochlea) and by the first and third left and the second metacarpal bones. The lower limbs are represented by the proximal third of the shaft of a left femur, more robust than those attributed to Individual A, with relevant cortical thickness, the distal portion of the right tibia (with post-mortem broken epiphyses), and the right talus and part of the omolateral calcaneus, the first and the fifth right metatarsals and the first right phalanx, two fragmentary metatarsals, a cuboid, and three phalanges of the foot, all characterised by gray colour due to combustion. The femur of this individual is eurymeric: the proximal part of the shaft is rather rounded and not very flattened (see the value of the platymeric index, Table 2).

Individual C: infant (7-9 years old) (Fig. 3).

This individual was identified for the presence of fragments of the mandible and some teeth. The mandible is represented by three blackened and burned fragments (from the chin to the right ascending ramus) and a fragment from the left side of the body, with sockets for both the central and the lateral right permanent incisors, the right deciduous canine, first and second molars, and finally the permanent right first and second molar.

The second molar and the right first premolar are present, but still unerupted. The two deciduous molars are fragmentary and were identified on the basis of the roots. Also four small fragments of dental enamel and crown are present, but could not be identified more precisely because of the fragmentary state of preservation.

Also a left and a right infantile calcaneus have been retrieved, but their attribution to the individual C is uncertain.

Not attributed human remains

Many bone fragments could not be attributed to individuals A, B and C, because of the poor state of preservation and the difficulty to test with reliability, for example, the articulations and/or their pertaining to a specific skeletal unit (Table 1).

Cranial bones

Many cranial fragments were identified: among these a burnt petrous bone with part of the mastoid and two small fragments (one from the frontal) of an adult. Some cranial

fragments were identified as part of the occipital and the parietal bones belonging to infant/juvenile individual(s): some of them present an incrustation on the endocranial side.

Post-cranial bones

Some fragments of cortical and cancellous bone were not identified, due to the small size. Traces of burning were noted on a right clavicle with broken epiphyses, slightly blackened. Eighteen fragments of ribs were also identified, most of which from adult(s), two from subadult(s). Fragments of vertebrae are represented by two lumbar and two thoracic bodies (adult individual), small fragments of seven undetermined bodies, fragments of 4 thoracic and 5 lumbar vertebral arches, and 4 fragments of articular processes. Such ribs and vertebrae could be related to the same adult individual, due to colour and state of preservation.

Also few metatarsal and metacarpal bones were not attributed, but it is worth noting the presence of four metacarpal bones and three phalanges from rather slender hands.

Some pelvis fragments were recovered and most of them could be related to the same adult male: they are represented by part of a left iliac bone including the articular surface (with no pre-auricular sulcus), part of a left acetabulum and ischium, a small fragment of iliac crest and a fragment of the articular surface of a right ilium (with a light trace of a pre-auricular sulcus); the last one is slightly blackened on both the ventral and dorsal side.

Most of the long bones were attributed to one of the adult individuals, except for six shaft fragments of some fibulas: one of them (Fig. 4) shows a pathological condition, probably a periostitis (an inflammation of the outer bone tissue, called periosteum), one is blackened, and the last four fragments have not points of contact, although they were retrieved in the same area.

DISCUSSION

Although the condition of the discovery did not allow a detailed and complete taphonomic and anthropological analysis of the human skeletal remains recovered in F. 162 (Building A1), it was possible to identify the presence of specimens belonging to a minimum number of three individuals: two adults and an infant. In some cases bone fragments could not be attributed with reliability to a specific skeletal unit only on the basis of diagenetic and morphological data (laterality, articulation, relative dimensions, etc.).

Many of the specimens show traces of burning, with changes in colour from black to pale gray, probably corresponding to different stages of exposition to smoke and fire. Chromatic variation of bones are usually employed in anthropological and forensic studies to investigate temperature, time of exposition and location of cremation (Holck 1986). None of the bones from F.162 shows shrinkage and deformation, or the typical aspects of cremated skeletal remains, such as fragmentation, fissuring and reduction of size caused by the process of dehydration (McKinley 1994; Reverte Coma 1985). Therefore it is possible to suggest that combustion and/or exposition to high temperatures of the bones occurred after the decomposition of the soft tissues of the bodies. Since also other archaeological materials from the same context (animal bones, wooden beams, etc.) appear burned, it is perhaps possible that the combustion of the human bones was produced accidentally by a fire long after the deposition of the bodies.

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Remain	Individual A	Individual B	Individual C	Not attributed Adult(s)	Not attributed Infant(s)/Juvenile(s)
Cranium	-	-	-	Frontal, petrous, fragments	Occipital, parietals, fragments
Mandible	-	-	Fragmentary	-	-
Teeth	-	-	Unerrupted M2 and P3	-	-
			2 deciduous molars		
Post cranial					
Clavicle	-	-	-	Right	-
Scapula	-	Left	-	-	-
Ribs	-	-	-	16 fragments	2 fragments
Vertebras	-	-	-	Lumbar, thoracic, fragments	-
Humerus	Right, left	Right	-	-	-
Radius	Right, left	-	-	-	-
Ulna	Right, left	-	-	-	-
Hand	Right, left		-	Metacarpals, phalanges	-
Pelvis	-	-	-	Fragm. of left, right ilium, ischium	-
Femur	Right, left	Left	-	-	-
Tibia	Right, left	Right	-	-	-
Fibula	-	-	-	6 fragments	-
Foot	Right	Right, left	Calcaneuses?	Metatarsals	-

Table 1 The F.162 human skeletal sample.

		Indiv.A		Indiv.B
	Diameter	Left	Right	Left
FEMUR	(6) Anterior-posterior d. midshaft	27.3	28.1	
	(7) Mediolateral d. midshaft	24.0	24.5	
	(10) Subtrochanteric anterior-posterior d.			24.1
	(9) Subtrochanteric mediolateral d.			27.6
	(16) Anterior-posterior neck d.		19.7	20.8
	(15) Vertical neck d.		28.1	27.8
	Platymetric Index (10/9)			87.3
TIBIA	(8) Anterior-posterior d. midshaft	29.6	29.8	
	(9) Mediolateral d. midshaft	18.2	18.1	
	(8a) Anterior-posterior nutrient foramen d.	32.3		
	(9a) Mediolateral nutrient foramen d.	18.9		
	Platynemic Index (9a/8a)	58.5		

Table 2 Individuals A and B: post-cranial measurements according to Martin, Saller 1957.

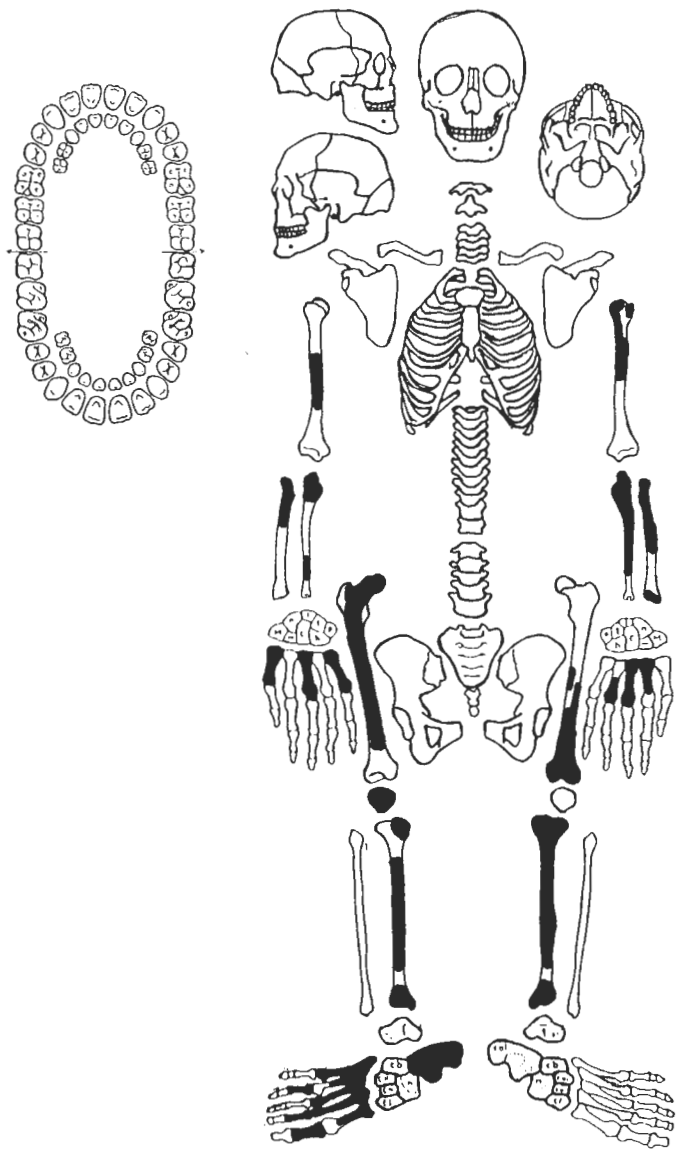


Fig. 1 Filled areas correspond to bones attributed to Individual A.

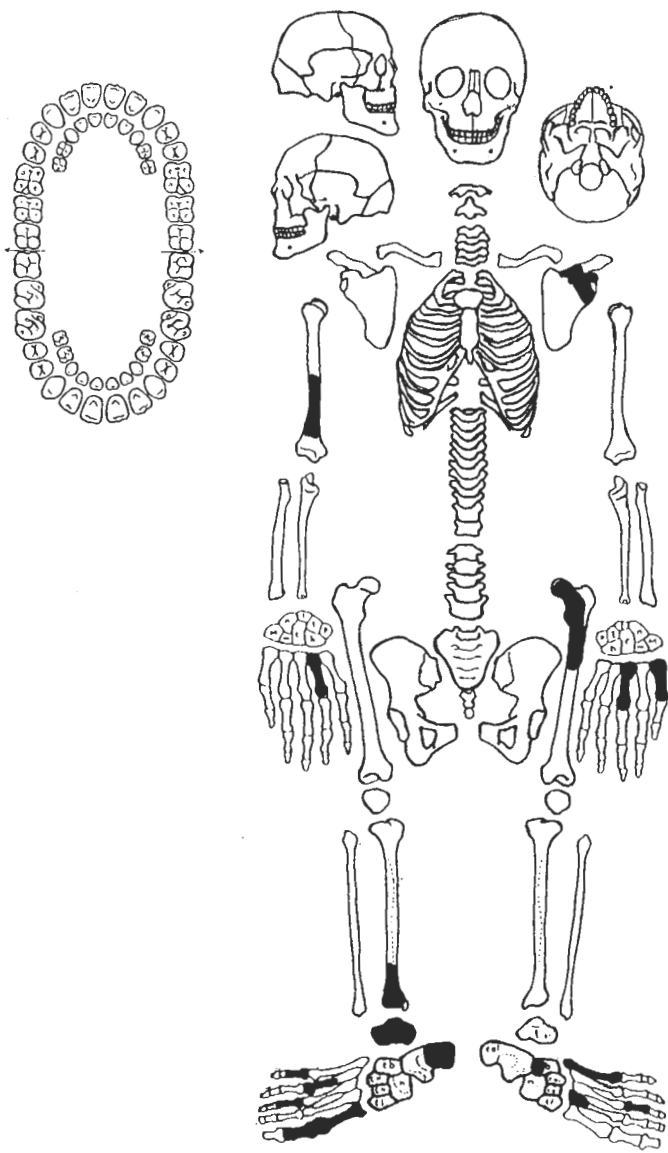


Fig. 2 Filled areas correspond to bones attributed to Individual B.

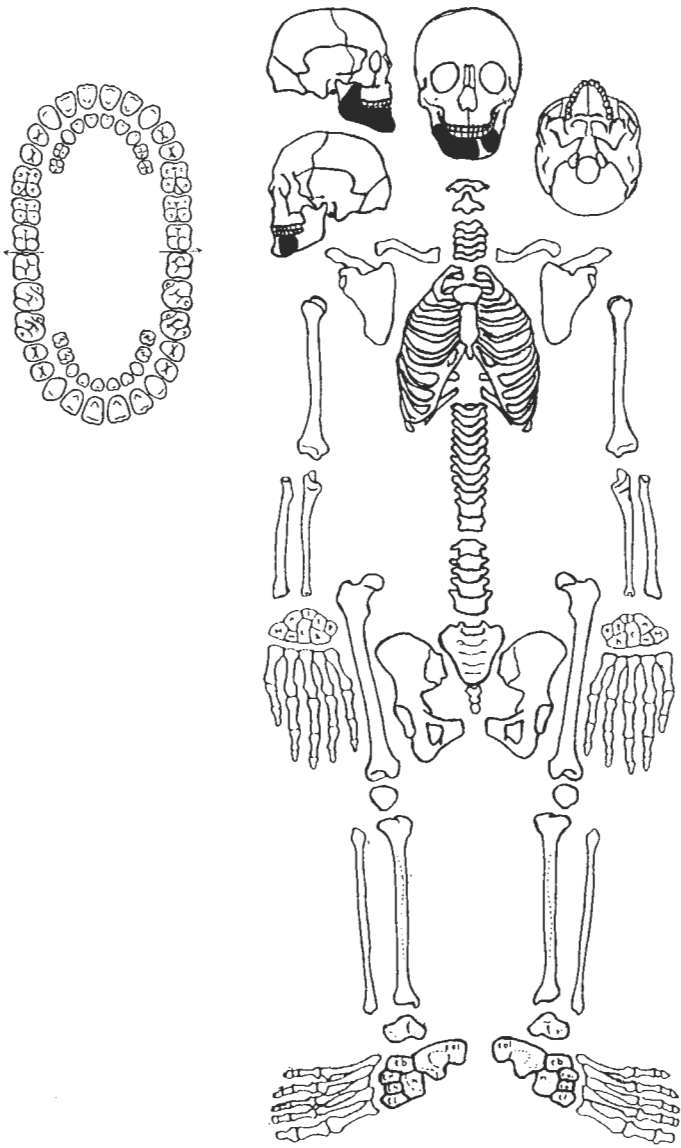


Fig. 3 Filled areas correspond to bones attributed to Individual C.

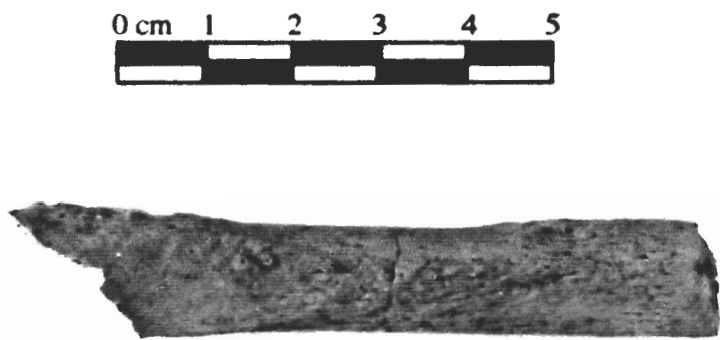


Fig. 4 Fragment of a fibula with pathological inflammation of the periosteum.

APPENDIX D
NEW RADIOCARBON DATES AND ASSESSMENT
OF ALL DATES OBTAINED FOR THE EARLY AND MIDDLE
BRONZE AGES IN JERICHO

*Miriam Lombardo, Alfredo Piloto**

ABSTRACT

We report the new radiocarbon dates measured on four charcoal samples and a list of previous radiocarbon dates obtained from samples excavated from stratified levels in the Tell of Jericho. The new samples were processed at the Department of Earth Sciences Radiocarbon Dating Laboratory of "La Sapienza" University (Rome). The calibrated age of the samples is also given.

RADIOCARBON DATING

The radiocarbon dating, which includes four determinations, was addressed to integrate the archaeological chronology carried out by the Italian-Palestinian Archaeological Expedition in Jericho. We specifically studied new data from Areas A and F.

We used liquid scintillation counting (LSC), following sample conversion to benzene (Calderoni, Petrone 1992).

To make the charcoal samples rid from any likely contaminant component, a preliminary chemical protocol, chosen according to the nature of samples, was adopted. The potential of contamination by younger organic material is undeniably greater on sites such as Jericho having a history of virtually continuous human occupation extending nearly over 10,000 yrs (Burleigh 1983). Furthermore there is also the possibility of unrecognized contamination with aged organic matter (thus not coeval with the sediment where it was trapped) in the form of macromolecular compounds featuring enhanced geochemical mobility. Systematic age errors introduced by contamination of the sample by older or younger carbon was constrained by means of reasonably straightforward, well-established procedures and, although obviously there are individual exceptions, they were considered to be generally effective. The procedures included exhaustive sample decarbonation along with long lasting hydrolysis in acidic medium to remove the bulk of organics too mobile to be reliable in ^{14}C dating.

The ^{14}C decay rate of the unknown samples was measured during over 2500' circa simultaneously with those of modern reference carbon and background by a 5000-channel spectrometer.

Ages were calculated on the basis of the 5568 yrs ^{14}C half-life using NBS Oxalic Acid I as modern carbon standard, corrected for isotopic fractionation and expressed in conventional ^{14}C yr (BP) relative to AD 1950, according to the suggestions of Stuiver and Polach (1977). Quoted error ($\pm 1\sigma$) accounts only for the uncertainties in activity measurements of sample, standard and background.

As is well known, due to the variations of the production of ^{14}C in the Earth's atmosphere over past millennia, radiocarbon years do not necessarily correspond to calendar years. Radiocarbon ages can be converted to true calendar years (calibrated ages) by means of the calibration based on an independent ^{14}C measurement of dendrochronologically dated trees.

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For this purpose the Radiocarbon Calibration Program (Rev.3.0.3. C; Stuiver, Reimer 1993) based on the high-precision Decadal Data Set (AD 1950-6000 BC; Stuiver, Becker 1993) was adopted.

RESULTS AND DISCUSSION

In order to give a clearer picture of the coherence of the radiocarbon chronology obtained, we show in table 1 both the calibrated ages concerning the Italian-Palestinian Archaeological Expedition (Areas A and F) and the archaeological phases in Jericho to which they refer. The samples Rome-1177 and Rome-1178 (2465-2204 and 2467-2211 cal. yrs BC, respectively aged) excavated from the same level in Area F, have the same age and are approximately coherent with the archaeological context from where they were found (end of Period IIIc1, Early Bronze Age IIIA, 2500-2450 yr BC circa). On the contrary, samples Rome-1175 and Rome-1176 (1432-1262 and 1688-1506 cal. yrs BC, respectively aged), also collected from the same level in Area A, are not coeval; furthermore while the second is coherent with the archaeological context from which both the samples come from (Middle Bronze Age II, 1800-1650 yr BC circa; Marchetti, Nigro 1998), the first shows a younger age. Subsequently we may suppose at first glance, that a contamination by a younger organic material has taken place, but to explain correctly this data we think necessary to increase the measurements on new samples from the same level.

To complete the list of radiocarbon analysis on the samples collected by the Italian-Palestinian Archaeological Expedition to Jericho, we also include the sample Jericho 1 (2572-2465 cal yr BC; Lombardo, Piloto, Calderoni 1998) from Area B. The archaeological level in which this charcoal sample was found is attributed to Early Bronze Age IIIB (2450-2300 yr BC circa) by Nigro (this volume: 137-138).

In table 2 we show the radiocarbon dates obtained from samples of Kenyon's expedition to Jericho (Burleigh 1981; 1983) listed in the table by period (Early and Middle Bronze Ages). These samples, regarding other sectors of the tell, can be correlated from the pottery with the samples processed from Areas A, B, and F. The calibrated ages reported in the table were recalculated by means of the Radiocarbon Calibration Program (Rev.3.0.3. C; Stuiver, Reimer 1993). Comparing the radiometric ages of the samples from the Areas A, B and F (table 1) with that of samples collected during previous expeditions (table 2), it is relevant to observe that a connection exists.

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Lab. identifier	Material	Area	Locus	Op.	C-14 age	Calibrated age	Archaeological phase
					Yrs. BP $\pm 1\sigma$	Yrs. BC (error= 1σ)	
Rome-1178	Charcoal	F	L 305	5a	3890 \pm 60	2467-2211	End of Period IIIc1
Rome-1177	Charcoal	F	L 305	5a	3875 \pm 60	2465-2204	End of Period IIIc1
Jericho 1*	Charcoal	B	L 39c	4c	4000 \pm 60	2572-2465	Beg. of Period IIIc2
Rome-1176	Charcoal	A	F 162	4a	3330 \pm 60	1688-1506	End of Period IVb
Rome-1175	Charcoal	A	F 162	4a	3110 \pm 60	1432-1262	End of Period IVb

Table 1 Radiocarbon dating and archaeological chronology from the Italian-Palestinian archaeological excavations (1997-1998).

Stage/phase*	Lab identifier	C-14 age	Calibrated age **
		Yrs. BP $\pm 1\sigma$	Yrs. BC (error= 1σ)
Early Bronze Age			
XIV, xliva	BM-548****	4175 \pm 48	2883-2603
XV, li-iii	BM-549****	4204 \pm 49	2889-2639
XVI, lxi-lxii	BM-550****	4126 \pm 50	2866-2498
XVI, lxv-lxvi	BM-551****	4080 \pm 42	2832-2489
XVII, lxviii	BM-552****	4115 \pm 39	2842-2497
XVIII, lxxii	BM-553****	3922 \pm 78	2538-2232
XIX, lxxvi	BM-554****	4170 \pm 42	2879-2603
XVI, lxii-lxiii	BM-1778*****	4080 \pm 70	2839-2473
XVI, lxii-lxiii	BM-1779*****	4160 \pm 80	2886-2500
XVII, lxviii	BM-1780*****	3890 \pm 60	2467-2211
XIX, lxxvi-lxxviii	BM-1781*****	4120 \pm 40	2844-2499
XVIII, lviii	BM-1783*****	3940 \pm 80	2558-2235
Middle Bronze Age			
MB	GL-5****	3270 \pm 110	1686-1411
MB	GL-6****	4100 \pm 150	2887-2466
MB	GL-56****	3370 \pm 115	1768-1498
MB	GL-64****	3330 \pm 90	1727-1464
MB	GL-33****	3510 \pm 110	2007-1643
MB	GL-30****	3220 \pm 50	1523-1411
XII, li	BM-1790*****	3080 \pm 40	1407-1260

* Previous expeditions: Kenyon 1981; Kenyon, Holland 1983.

** Recalculated by means thr Radiocarbon Calibration Program (re.3.0.3.C; Stuiver, Reimer 1983).

*** Italian-Palestinian Expedition.

**** Burleigh 1981.

***** Burleigh 1983.

Table 2 Recalibrated radiocarbon dates obtained from samples of previous expeditions at Jericho (Burleigh 1981; 1983).

APPENDIX E

IDENTIFICATION OF THE WOODEN SPECIES OF SOME CHARCOALS FROM THE 1998 EXCAVATIONS AT JERICHO

*Simona Lazzeri, Nicola Macchioni**

Foreword

This is the second year of collaboration between this Institute and the Italian-Palestinian Expedition at Jericho of the Palestinian Department of Antiquities and the University of Rome "La Sapienza". The samples from the first excavation campaign were few, even if identified species were three, all belonging to the local flora (Fineschi 1998).

Materials and methods

The examined material came from three excavation areas, belonging to two different ages: Areas B and F from Early Bronze Age, Area A from Middle Bronze Age.

From each area many excavation units gave charcoal samples. We examined material from a total of 12 excavation units, as listed in table 1. The amount of samples from each unit was variable from few pieces to a very large number (units 92 and 93).

The normal procedure for charcoal identification foresees a first observation through the binocular stereomicroscopic at high magnification (x 40 – 60), in order to precisely orient the samples. This first observation allows a good evaluation of the wooden tissue and therefore to gather in groups the species. From each group only one sample is then precisely identified. This procedure has been followed by all the samples from units 1 to 87. The samples from units 92a, 92b, 93a, 93b were too much to be all observed, thus we randomly selected 6 samples to be examined.

Identification of wooden species has been subsequently performed through comparison between the microscopic observations and fresh reference material from the microxylotomic collection of Istituto per la Ricerca sul Legno (C.N.R. Florence) and also specialistic references (Abbate Edlmann, De Luca, Lazzeri 1994; Ilic 1991; Giordano 1981; Nardi Berti 1979; Schweingruber 1978 and 1990), taking into account the deformations due to the carbonisation (Schweingruber 1978). The description of the anatomical features followed the IAWA recommendations (Wheeler, Baas, Gasson 1989), English name of species were suggested by Vaucher (1986).

The microscopic observation has been done by means of Scanning Electron Microscope (SEM XL20 PHILIPS) of the three principal anatomical surfaces (transversal, radial longitudinal and tangential longitudinal). These surfaces have been obtained through simple fracture, since the compactness of the material allowed obtaining clear surfaces, easily legible.

Results

The following species (or group of species) have been identified:

- Ficus sp.p* (probably *Ficus carica* L.);
- Laurus nobilis* L. – Laurel;
- Olea europaea* L. – Olive tree;
- Populus sp.p.* – Poplar;
- Spartium junceum* L. – Spanish broom;
- Tamarix sp.p.* – Tamarisk.

* Consiglio Nazionale delle Ricerche - Istituto per la Ricerca sul Legno, Florence.

Many samples showed on their sections deformations due to collapses (e.g. figs. 5, 8, 10); Table 1 shows in which excavation unit the different species have been found.

Species	Excavation unit												Total
	1	2	5	9	26	28	75	87	92 a	92 b	93 a	93 b	
<i>Ficus sp.p.</i>	1				1					1			3
<i>Laurus nobilis</i> L		1	4										5
<i>Olea europaea</i> L							1						1
<i>Populus sp.p.</i>					1			2	6	5	6	6	26
<i>Spartium junceum</i> L				1									1
<i>Tamarix sp.p.</i>		1	1			3	2						7
Total	1	2	5	1	2	3	3	2	6	6	6	6	43

Legend for the excavation unit:

1 = Area B	Square ArIV5 + ArIV5	Locus: F.39b	Operation 4b
2 = Area B	Square ArIV5	Locus: F.39c	Operation 4c
5 = Area B	Square AsIV5+ArIV5	Locus: F.39b	Operation 4b
9 = Area F	Square Bg II10	Locus: L.305	Operation 5a
26 = Area F	Square Bf III1	Locus: L.305	Operation 5a
28 = Area F	Square Bf III1	Locus: L.305	Operation 5a
75 = Area F	Square Bf III1	Locus: L.305	Operation 5a
87 = Area A	Square AsIV13	Locus: F.162	Operation 4a
92a = Area A	Square AsIV13	Locus: F.162	Operation 4a
92b = Area A	Square AsIV13	Locus: F.162	Operation 4a
93a = Area A	Square AsIV13	Locus: F.162	Operation 4a
93b = Area A	Square AsIV13	Locus: F.162	Operation 4a

Table 1 Location into the different excavation units of identified species.

Ficus sp.p. (Moraceae) – FIG (figs. 2-3-4)

Growth ring boundaries indistinct.

Diffuse-porous, vessels circular-oval, solitary or in short radial (2, 4) multiples, uniformly distributed. Simple perforation plates. Libriform fibres thin-to thick-walled. Abundant axial parenchyma vasicentric in broad tangential bands, storied parenchymatic cells. Rays generally 3 to 4 seriate, occasionally narrower or wider, sheath cells present. Monoseriate rays present. Prismatic crystals in upright rays cells and in axial parenchyma.

Laurus nobilis L. (Lauraceae) – LAUREL (figs. 5-6-7)

Growth ring boundaries distinct.

Diffuse-porous, rarely semi-ring-porous vessels circular- oval, solitaru or in short radial (2, 4 or more) multiples. Simple perforation plates predominate, scalariform plates rare. Libriform fibres thin walled. Axial parenchyma generally vasicentric. Rays generally 3 to 4 seriate. Monoseriate rays present. Oil cells associated with ray parenchyma and among fibres. Styloid crystals in ray parenchyma.

Olea europaea L. (Oleaceae) – OLIVE TREE (figs. 8-9)

Growth ring boundaries often indistinct.

Diffuse-porous, vessels circular-oval; pores generally in short radial multiples of 2 to 4 pores, rarely solitary. Simple perforation plates. Libriform fibres thin-to thick-walled. Axial

parenchyma mostly unilateral paratracheal, often vasicentric, generally also with a marginal parenchymatic band with 1 to 3 cells. Rays generally 2 to 3 seriate, rarely uniseriate; rays with multiseriate portion as wide as uniseriate portion, all uniseriate ray cells upright or square.

In heartwood vessels coloured inclusions.

Populus sp.p. (Salicaceae) – POPLAR (figs. 10-11)

Growth ring boundaries distinct.

Diffuse to semi-ring-porous, vessels circular-oval; pores solitary, in groups or in short radial multiples. Simple perforation plates. Libriform fibres thin-walled. Axial parenchyma sparse, apotracheal; occasionally in uniseriate, terminal discontinuous bands. Rays uniseriate, homogeneous. Ray-vessel pits large and simple.

Spartium junceum L. (*Leguminosae Papilionaceae*) – SPANISH BROOM (figs. 12-14)

Growth ring boundaries distinct.

Semi-ring to ring-porous, vessels circular-oval; earlywood pore ring loosely packed with medium sized pores in small groups. Simple perforation plates. Spiral thickenings conspicuous. Libriform fibres thick-walled, vascular tracheids present. Axial parenchyma apotracheal diffuse and in small, uniseriate, tangential bands; more frequent paratracheal parenchyma in oblique, occasionally net-like groups together with vascular tracheids. Rays generally 3 to 4 seriate, mostly homogeneous, rarely with square marginal cells. Heartwood vessels with coloured inclusions.

Tamarix sp.p. (Tamaricaceae) – TAMARISK (figs. 15-16)

Growth ring boundaries distinct.

Ring-porous to semi-ring-porous, vessels circular-oval; pore solitary or in small groups. Simple perforation plates. Libriform fibres thick-walled. Axial parenchyma storied, paratracheal vasicentric or in large groups, also frequently in wide, tangential bands. Rays heterogeneous with 1 to 2 rows of square and upright marginal cells; 6-20 seriate, up to 2 mm high.

Discussion and conclusions

A total of six different species has been identified, for three of them the identification reached the species, while for the other three the anatomical characteristics allowed only the identification of the genus.

Compared to the previous identifications, the Spanish broom (*Spartium junceum*) has never been identified before at Jericho, while all the other species or group of species have been already recorded (Western 1983; Lazzeri, Macchioni 1998).

Our previous identification recorded also *Fraxinus ornus* L., never present in this year samples.

About the group of species, the same comments, as last year, must be done: the various species belonging to the *Tamarix* and *Populus* genus cannot be differentiated from the anatomical characters. About *Ficus sp.*, vessel dimensions and axial parenchyma distribution are typical of *Ficus carica*, but the overlapping of some other anatomical characters, in common with *Ficus sycomorus*, makes the identification less sure.

All identified species (or group of species) still belong to the local flora.

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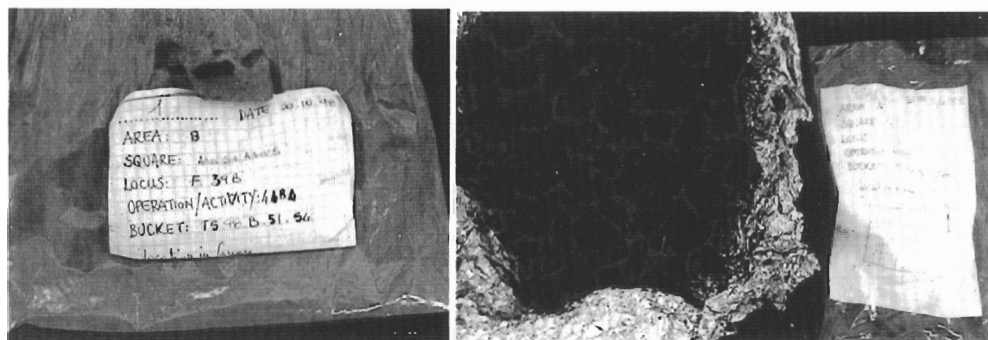


Fig. 1 The smallest (left) and the richest (right) samples from the 1998 excavations.

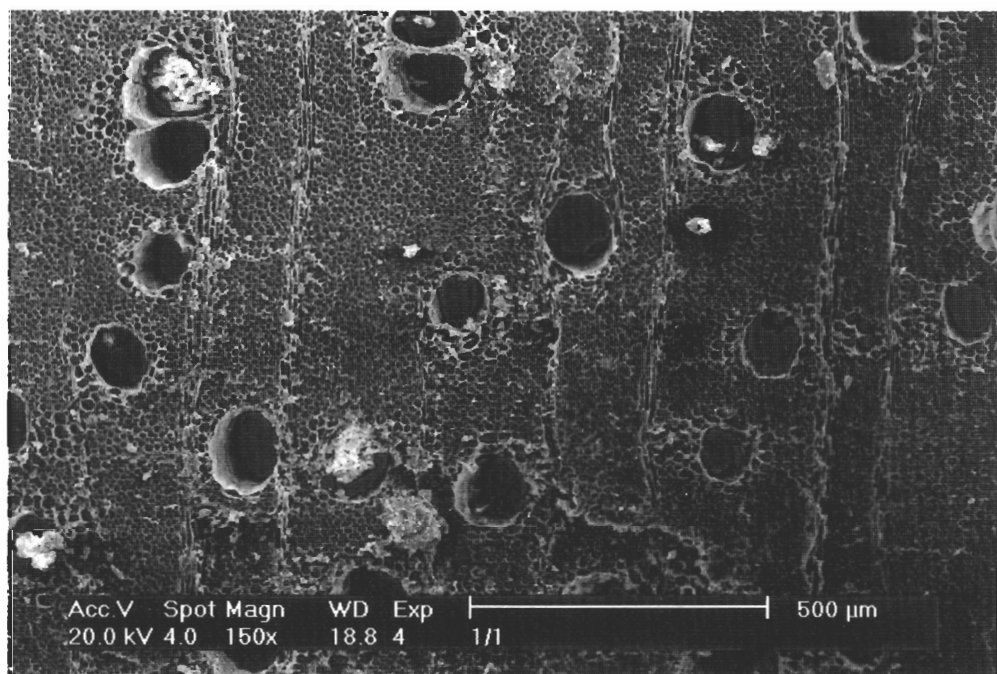


Fig. 2 *Ficus sp.p.*, transverse section (measure bar 500μ).

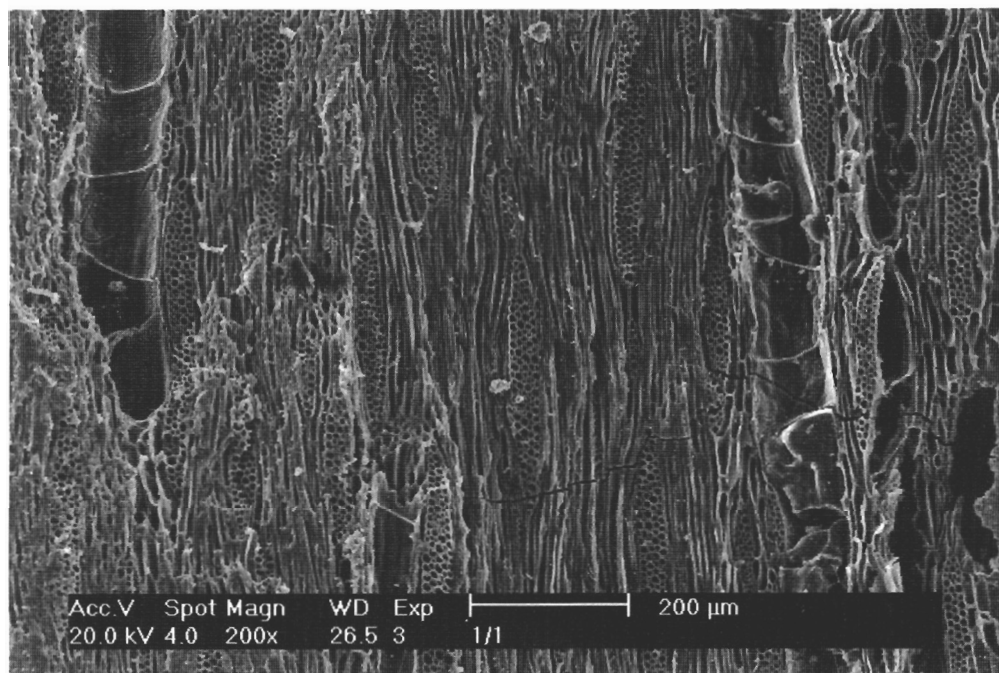


Fig. 3 *Ficus sp.p.*, tangential section (m.b. 200μ).

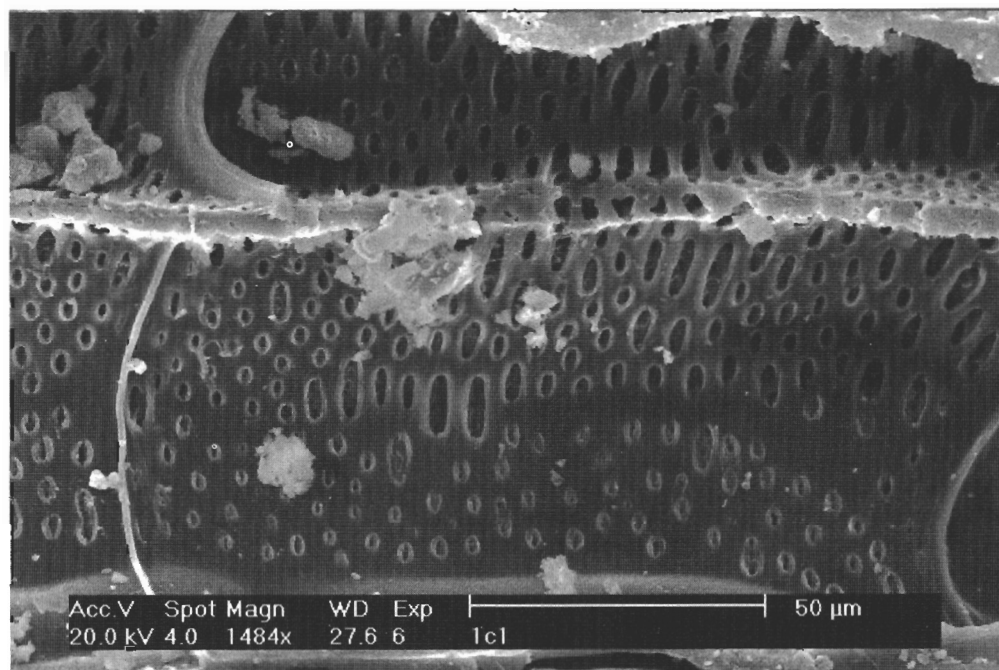


Fig. 4 *Ficus sp.p.*, radial section (m.b. 50μ).

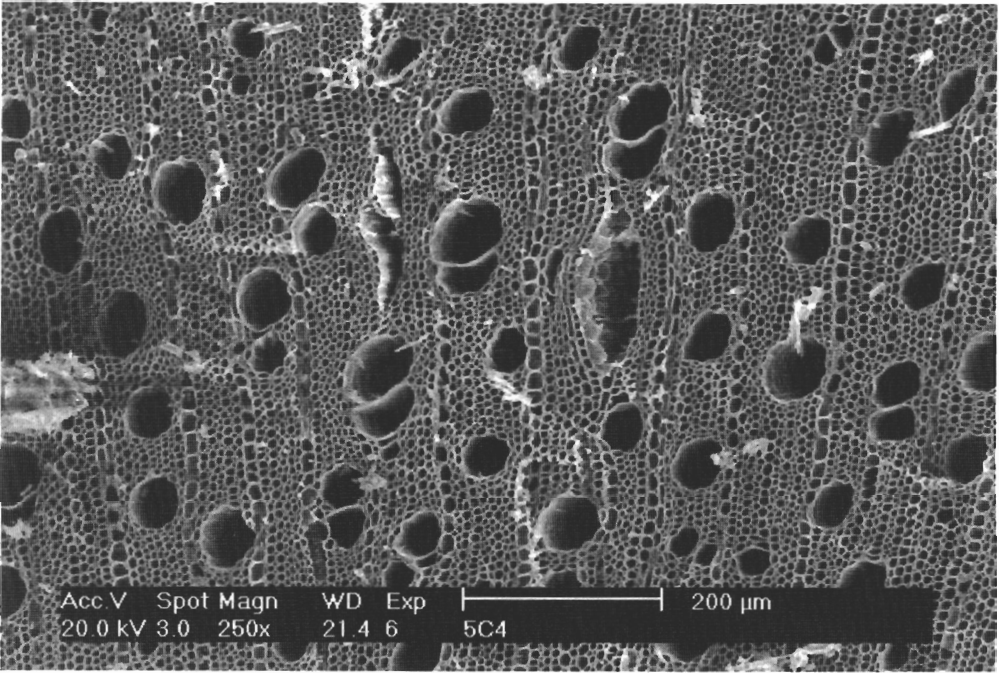


Fig. 5 *Laurus nobilis* L., transverse section (m.b. 200μ).

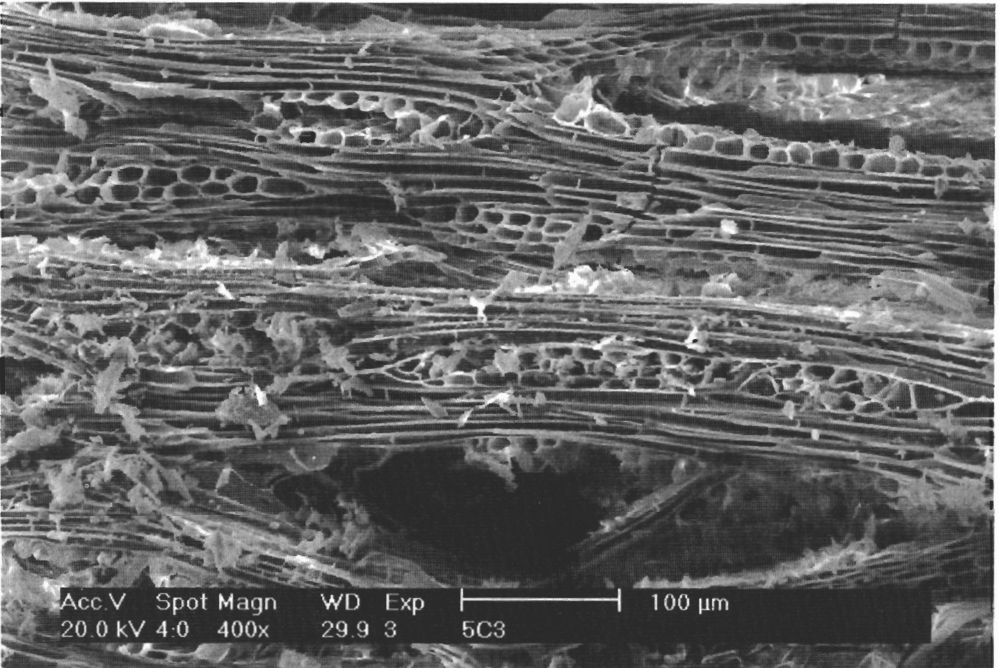


Fig. 6 *Laurus nobilis* L., tangential section (m.b. 100μ).

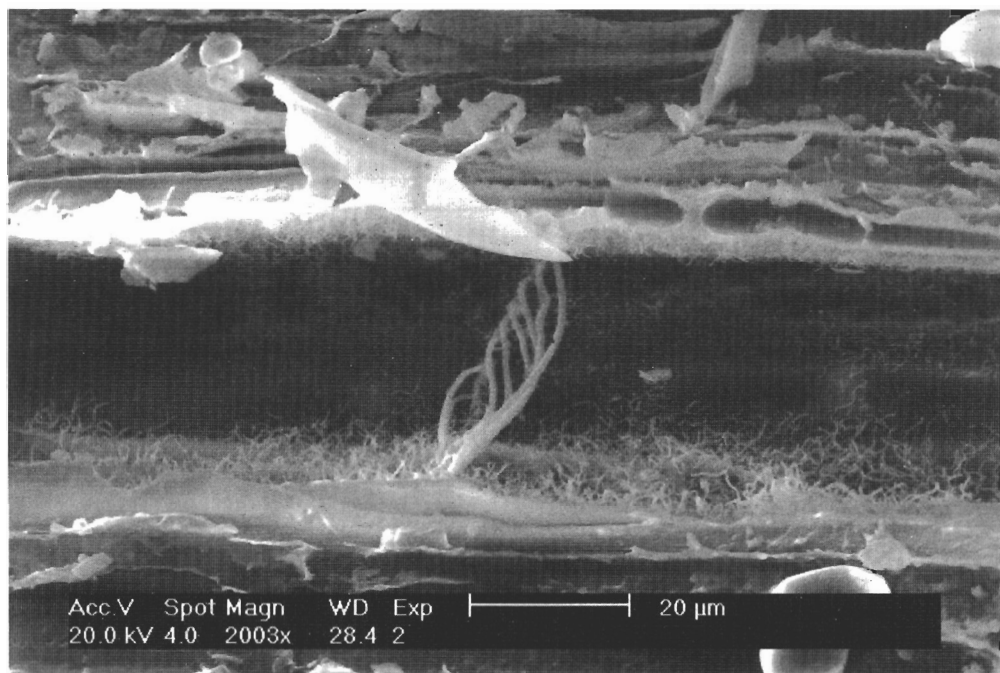


Fig. 7 *Laurus nobilis* L., radial section (m.b. 20μm).

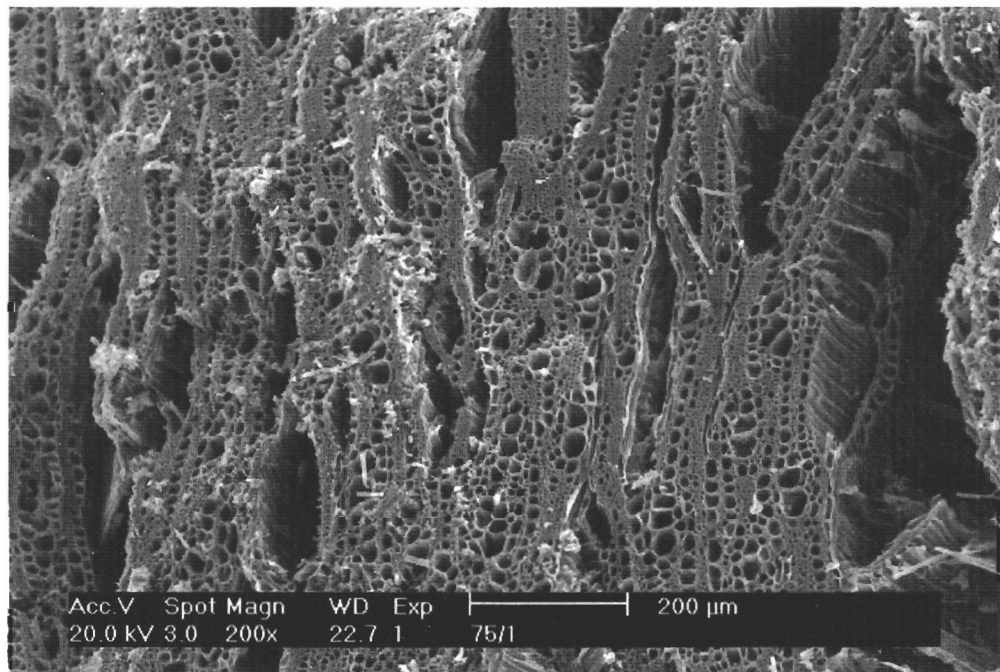


Fig. 8 *Olea europaea* L., transverse section (m.b. 200μ).

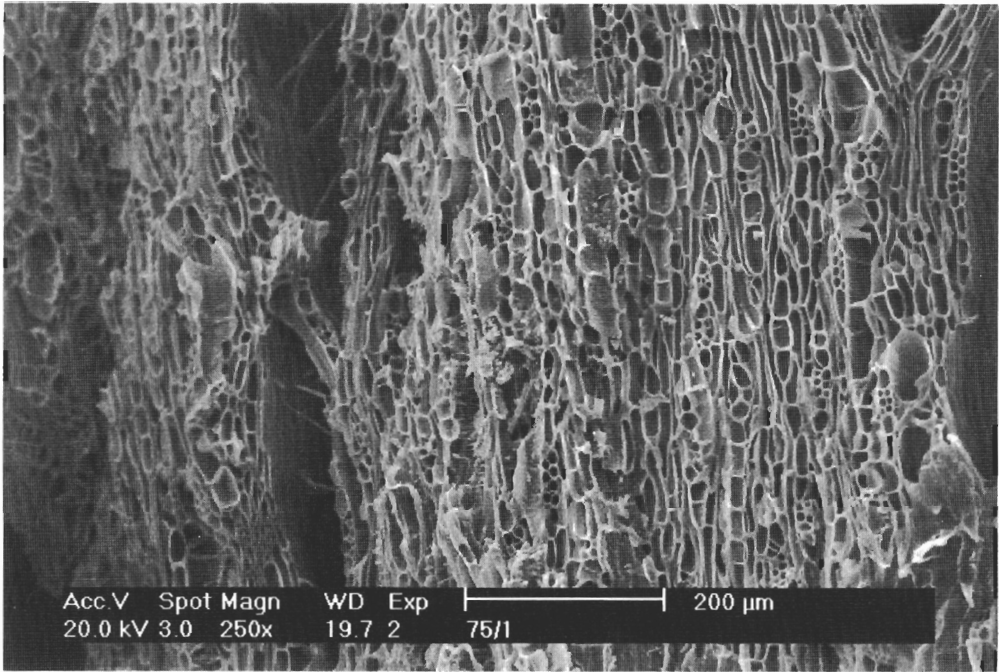


Fig. 9 *Olea europaea* L., tangential section (m.b. 200μ).

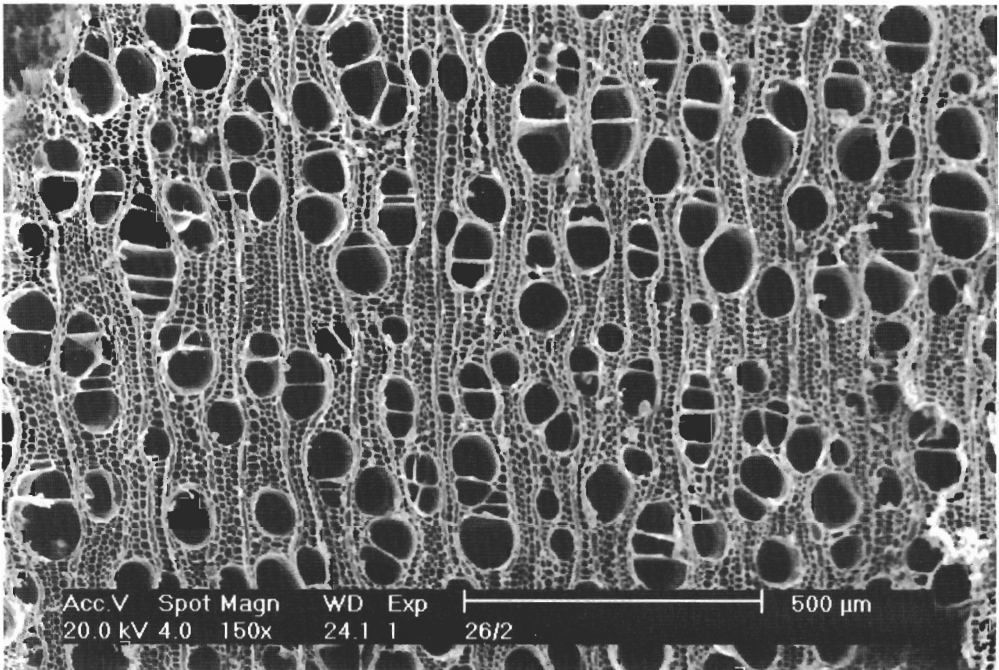


Fig. 10 *Populus sp.p.* L., transverse section (m.b. 500μ).

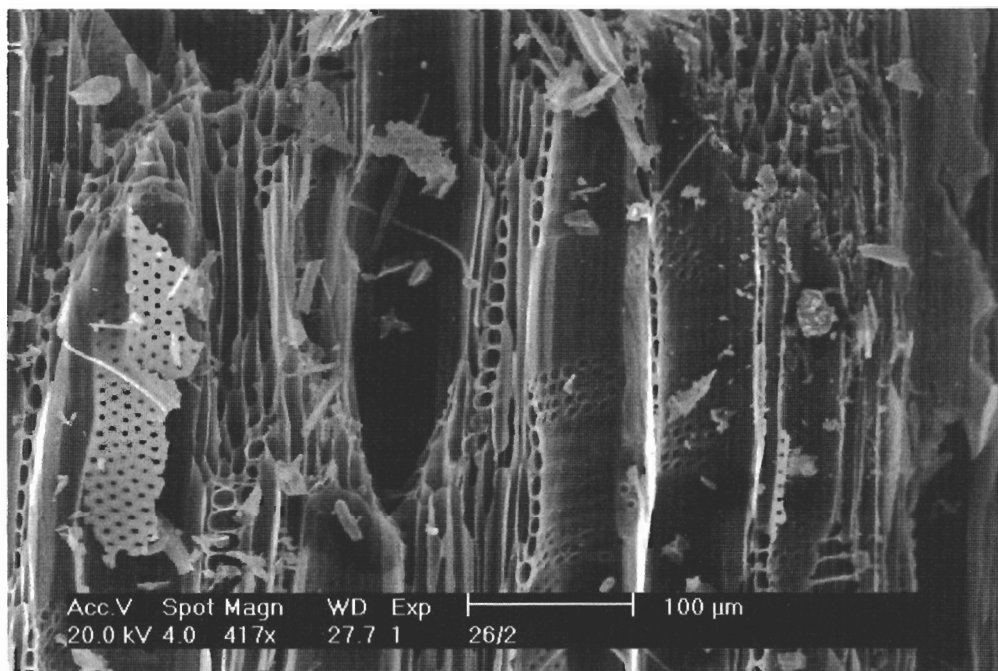


Fig. 11 *Populus sp.p. L.*, tangential section (m.b. 100μ).

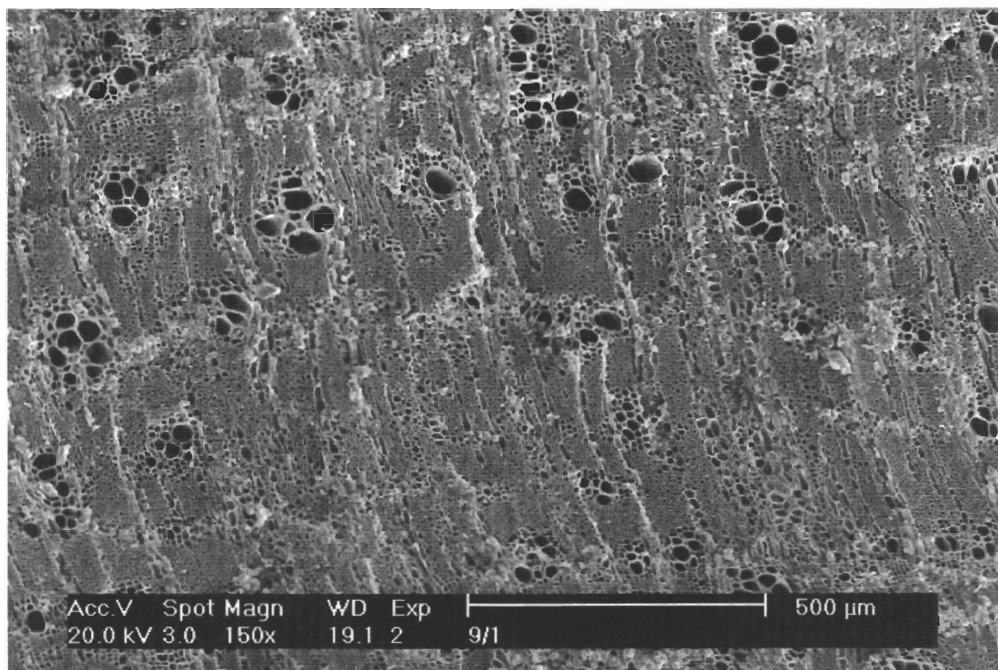


Fig. 12 *Spartium junceum L.*, transverse section (m.b. 500μ).

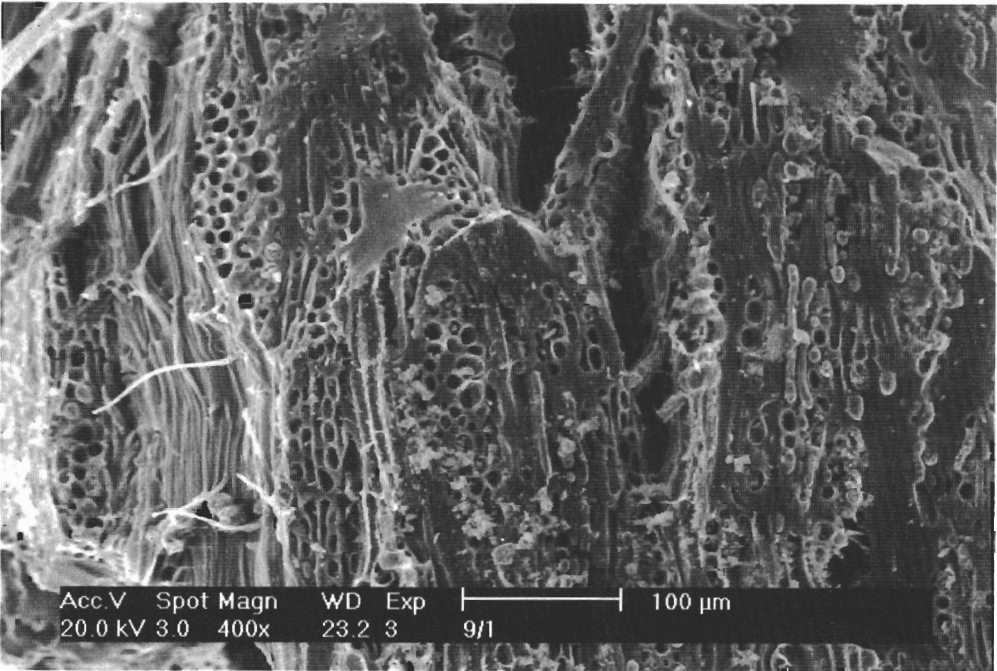


Fig. 13 *Spartium juncum* L., tangential section (m.b. 100μ).

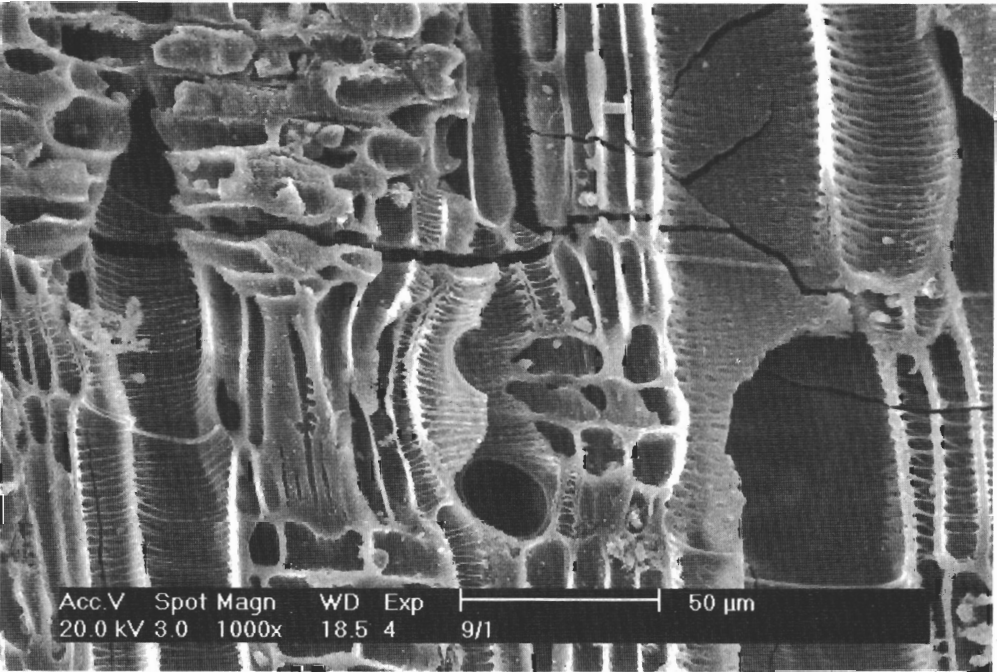


Fig. 14 *Spartium juncum* L., radial section (m.b. 50μ).

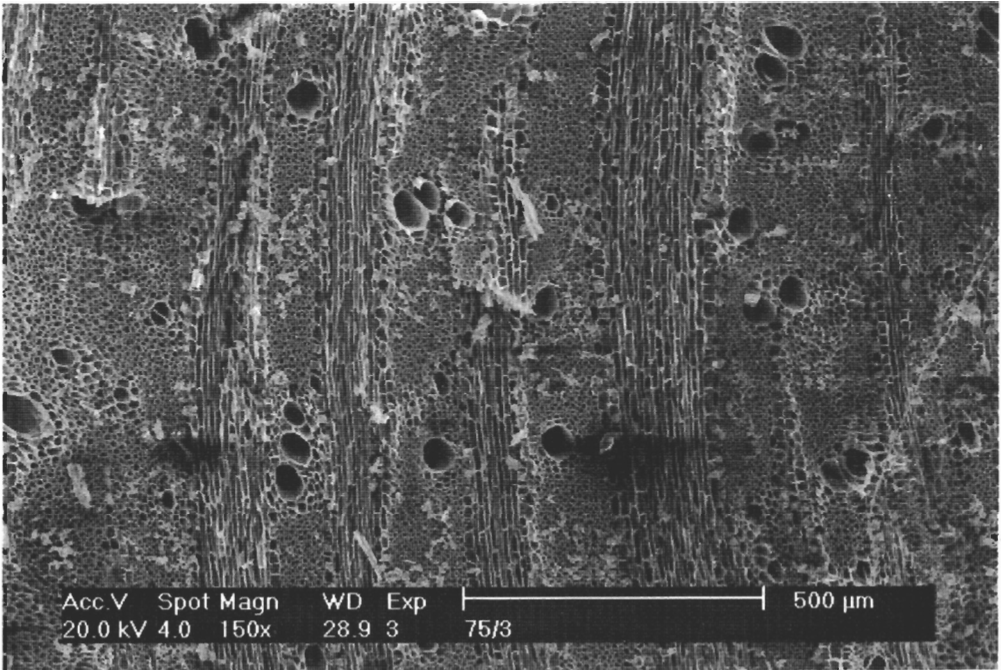


Fig. 15 *Tamarix sp.p. L.*, transverse section (m.b. 500μ).

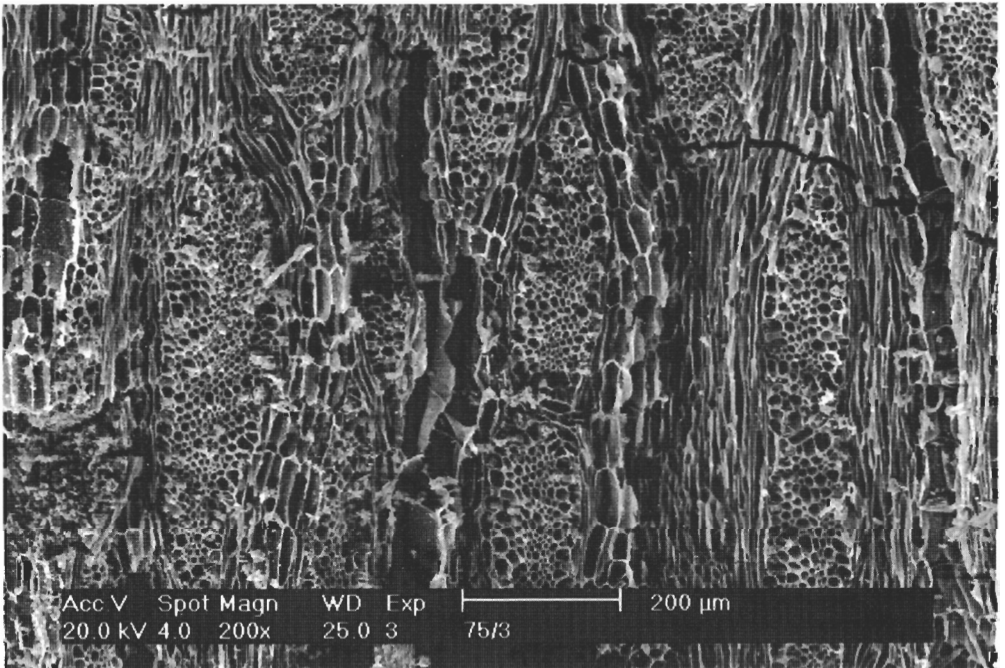


Fig. 16 *Tamarix sp.p. L.*, tangential section (m.b. 200μ).

APPENDIX F

PALYNOLOGICAL ANALYSIS

OF SOIL SAMPLES FROM TELL ES-SULTAN (JERICHO)

*Rosanna Caramiello**

INTRODUCTION

The palynological analysis on a settlement may supply information on the cultivated and natural species from the immediate neighbourhood; information on the vegetation growing at longer distance is more hardly achieved.

The study of pollen in archaeological environment is usually difficult because of the paucity of material in the soil and often by its bad conservation, particularly in the case of calcareous substrate or aerated profiles.

The advantage of these investigations, compared to the macro plant remains ones, consists in the lower causality of the pollen readings in respect to the findings of fruits, seeds or other plant remains. The sedimentary pollen rain represents, in fact, the general situation of the vegetation and the cultures along a certain period.

The previous excavations carried out by Sellin and Watzinger at the beginning of the century and by Kenyon between 1952 and 1958 do not report biological data. A first series of data on plant remains was given by Hopf in 1969. The same author in 1983 gave an analysis of plant materials found in recent excavations so accurate to allow the identification of the main cultivation in the Jerico Area.

Researches carried out in archaeological sites in Magna Grecia and in various other Mediterranean areas showed that it is possible to realise a diachronic pollen outline which allows to understand the floristic-vegetation variations in qualitative, sometimes quantitative, way.

Palynological readings on 8 soil samples collected by the archaeologists during the 1998 excavation campaign in Tell es-Sultan in the areas named A, B and F are carried out.

MATERIAL AND METHODS

Table I shows the samples analysed. pH in H₂O was measured; in consideration of the high values, which reduce the conservation of the granules and lead to the disappearance of the most delicate ones, and for the prevailing sandy texture of the substrate, the granules were extracted with three different methods, including enrichment procedures.

Method of Girard & Renault-Miskowsky (1969) modified after Bertolani Marchetti (1960)

At Turin University the method of Bertolani Marchetti (1960) modified by Girard & Renault-Miskowsky (1969) is commonly used.

This method treats 10 g dry sediment samples with 20% HCl for 30 min, cold 40% HF for 24 h and boiling 10% NaOH for 10 min. After these chemical passages, if necessary, a physical treatment using a heavy liquid (Thoulet: CdI₂+KI+H₂O) is used. The Thoulet liquid is used at a density between 2.0-2.1 and it allows recovering pollen and spores, separating them from the mineralogical particles. After two passages, the Thoulet liquid

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with spores and pollen is filtered on a siliceous fiber filter then dissolved by cold 48% HF for 10 min.

The number of pollen grains per unit weight of sediment (Absolute Pollen Frequency: APF, Faegri & Iversen, 1989) was calculated by the volumetric method of Cour (1974), in order to obtain comparable data with the other two methods. At Turin University, usually, the *Lycopodium* tablet method (Stockmarr, 1971) is adopted. However, it is commonly known that these methods often give considerably different results (Forster & Flenley, 1993; Regnell & Everitt, 1995). It is for this reason that we did not adopt the *Lycopodium* method in the present study.

Method of Goeury & de Beaulieu (1979)

This method is commonly used at Marseille University.

Wet samples are first treated by cold 36% HCl for 4 h (or more, for calcareous sediments), and by boiling 10% NaOH for 10 min. The samples are then acidified by a HCl and hot water solution and subjected to the physical separation by Thoulet heavy liquid at density 2. The liquid part (including the floating material) is recovered by a glass fiber filter. Then the filter is removed by a 70% cold HF treatment for more than 4 h. This step also serves to destroy the siliceous (minerogenic) particles recovered by the Thoulet. The residue is then treated with acetic acid (dehydration) and is subjected to acetolysis: 1 part H₂SO₄+9 parts (CH₃CO)₂O for 7 min.

Method of Nakagawa (1998) modified after Yasuda (1978)

This method was proposed by Yasuda (1978) and modified by Nakagawa (1998). The method is now commonly used in IRCJS, Kyoto. It is a method directed to the complete elimination of all the particles (both minerogenic and organic materials) except for pollen and spores.

Wet samples are treated by 36% cold HCl for 12 h, and by 10% boiling NaOH for 10 min. The samples are then subjected to 6-20 times of repeated rinsing. After acidification (36% HCl treatment for few minutes), the Thoulet heavy liquid was used twice at density 2 (this step is called "dense-media separation"). The density 2 was particularly adopted in the present study because the treated samples were mostly poor in organic debris. But the original paper (Nakagawa *et al.*, 1998) suggests the use of density 1.88, especially when the best separation of pollen grains from the organic matrix is principally intended. In this present study, the use of the density 2 resulted in the higher recovery of the siliceous particles. Therefore we had to do a 70% boiling HF treatment for 1 min. The residue is then rinsed, dehydrated with CH₃COOH, and acetolysed for 3 min.

Botanic nomenclature follows *Flora Europaea*.

RESULTS AND DISCUSSION

The most frequent pollen is Gramineae of *Avena-Triticum* type, in all the samples. This is in concordance with the evidences from macroremains (Hopf 1983).

The specific entity could not be ascertained. Pollen of *Hordeum* type was also found.

Period IIIc (Early Bronze III) samples from Area F

In the samples from Early Bronze granules from arboreal species were found; among these, *Pinus halepensis* type and *Quercus suber* type. Three granules of *Populus* sp. and 2

of *Salix* sp., together with a small number of granules referable to the genus *Cedrus*, were also found. One single granule of *Tamarix* sp. was seen, although this genus is highly represented in anthracological samples. Pollen of Oleaceae is present, although so highly altered to render impossible a more precise identification.

Among the shrubby species, *Myrtus communis* was found in two samples.

Period IVb (Middle Bronze II) samples from Area A

In the samples dated to Middle Bronze II granules of *Pinus halepensis* type, 3 of *Tamarix* sp., 2 of Rosaceae (*Prunus* type), 1 of *Populus* sp. and 1 of *Acacia* sp. were recognised. The component referable to herbaceous cultivated species is somewhat higher; among these, Gramineae *Hordeum* type, Leguminosae (*Lens*, *Vicia*), *Allium*, *Linum*. The spontaneous herbs indicate anthropic dry habitats: Polygonaceae, Cichorioideae and Cheno-Amaranthaceae. These last may have been used as vegetables. A small number of spontaneous Gramineae is also present. No pollen of *Vitis* has been found in any of the samples.

Conclusions

Some considerations can be drawn:

1. - Goeury & de Beaulieu (1979) proved to be the best extraction method;
2. - the paucity of findings, for sure influenced by soil texture and pH, does neither allow to build a pollen histogram, or to evaluate the absolute pollen frequency (APF);
3. - a decrease of the pollen granules of arboreal species between Early and Middle bronze is anyway noticed;
4. - the cultivation of Gramineae is substantially similar in the two periods; in Middle Bronze the granules referable to other alimentary species increase.
5. - No granules of *Olea* (in concordance with available data on macrorests) and of *Vitis* (in contrast with the same data) were found;
6. - Traces of spontaneous flora are scarce, and are represented by Gramineae and ruderal species. Among these last, Chenopodiaceae may have had alimentary interest;
7. - The presence of *Populus* sp. and *Salix* sp. is confirmed.

Most of these results agree with data reported by Hopf (1983) on plant macrorests. A further analysis on the sediments could be based on phytoliths. These are silicified cells, present and morphologically differentiated in several families: as their conservation is not influenced by pH, their maintenance in the soils is probably better than in the case of pollen granules. Their study can give a further hint for the identification of the local floristic composition.

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NO.	SAMPLE	AREA	SQUARE	DATE	pH	pollen grains in () the number of grains in the sample
42	soil	F	BgII10/11 +BfII 10/11	EB IIIA	8.2	1(1), 2(1), 10(1)
60	soil	F	BgII10/BfII10	EB IIIA	8.1	1(3), 2(2), 5(1), 11(3)
109	soil	F	BgII10 /BfII11	EB IIIA	8.3	3(1), 4(2), 8(1), 13(2)
55	soil	B	AsIV5+ArIV5	EB IIIB	7.7	1(2), 3(1), 7(1), 10(1), 11(1)
61	soil	B	AsIV5 + ArIV5	EB IIIB	8.1	2(1), 7(2), 8(1), 11(3), 13(3), 14(1)
108	soil	B	AsIV5+ ArIV5	EB IIIB	8.3	1(1), 3(1), 6(1), 11(1), 13(2)
64	soil	A	AsIV13	MB II	8.3	9(2), 13(2), 14(2), 16(1), 17(2), 18(1)
95	mudbrick coat	A	AsIV13	MB II	8.8	3(1), 12(2), 13(2), 14(2), 16(1), 19(2)

Table 1 Samples, localization and results of the pollen analysis.

1 *Pinus halepensis* type; 2 *Quercus suber* type; 3 *Populus* sp.; 4 *Salix* sp.; 5 *Tamarix* sp.; 6 *Cedrus* sp.; 7 Oleaceae; 8 *Myrtus communis*; 9 *Prunus* type; 10 *Acacia* sp.; 11 *Avena-Triticum* type; 12 *Hordeum* type; 13 Gramineae; 14 Leguminosae; 15 *Allium* sp.; 16 *Linum* sp.; 17 Polygonaceae; 18 Cichorioideae; 19 Cheno-Amaranthaceae.

APPENDIX G

ANALYSIS OF MUDBRICK SAMPLES FROM TELL ES-SULTAN (JERICHO)

*Tiziano Cerulli**

Introduction

Part of the collaboration between MAPEI and the group of archaeologists working at Jericho involved an experiment that was conducted both in the laboratory and on site in order to verify the consolidating action of ethyl silicate on mudbrick walls.

During the first phase of the study, the composition of some mudbrick samples was analysed to check how effective the ethyl silicate was in consolidating them. Several sections of walls were subsequently subjected to the treatment in order to verify its efficacy directly on the site.

The consolidating treatments achieved results that varied from section to section. Four months later new specimens were gathered and subjected to laboratory analysis in order to clarify what processes and variables influenced the success or failure of the operations.

Examined samples

Six specimens, each taken from a different section of walls, were examined. These specimens were found to be in different states of conservation as shown in table 1.

- Specimen 02, from sector 6: it is a sample subjected to the consolidating treatment with ethyl silicate. After four months' exposition to air this got broken because of loss of cohesion.
- Specimens 03, 04 and 10, from sector 1: they are in a good state, apart from the fact that they were treated or not and from the different conditioning.
- Specimens 07 and 13, from sector 4: they show a rather complicated situation. After four months' ageing not exposed to the environment, the mudbrick 07, treated with ethyl silicate, is in a worse state than the mudbrick 13, that wasn't consolidated.

Analyses

The above mentioned specimens were subjected to the following analyses:

- X-Ray Diffraction (XRD): the samples were ground with an agata grinder with a medium finesse of at least 10 microns, put into a tablet press and then introduced into the diffractometre. The program used a scansion from 5° to 40° (2 θ).
- X-Ray Fluorescence (XRF): 8 g of sample finely ground and added with boric acid were analysed with the spectrophotometer.
- Conductibility and pH: 5 g of sample were added to 20 g of tap water and constantly maintained under agitation. After 30 s the electrodes for the pH/conductibility measure were immersed into the mass. The values were collected after the stabilisation.
- Thermogravimetric Analysis (TGA): the sample was heated from 20°C to 950°C, in air, at a speed of 50°C/min and the loss of weight was recorded.
- BET: the specific surface area was determined by means of the quantity of nitrogen necessary to fill the voids among the specimen particles by applying the BET model.

* Responsabile del Laboratorio Analitico del Centro Ricerche e Sviluppo MAPEI, Milano.

Sample	02	03	04	07	10	13	NOTES
Sector	6	1	1	4	1	4	B= Broken NB= Not Broken
State of conservation	B	NB	NB	B	NB	NB	
Treatment with ethyl silicate	Yes	Yes	Yes	Yes	No	No	All samples were aged for four months
Exposed to environment	Yes	Yes	No	No	Yes	No	
Quartz	XX	XXXX	XXX	XXX	XXX	XXX	XRD analysis Keys: X = traces XX = present XXX = rich XXXX = relevant
Calcite	XXXX	XX	XX	XXX	XX	XXXX	
Feldspars	X	XX	XXX	X	XXX	X	
Clay filosilicates		XX	XX		XX	X	
Gypsum		X	X	X			
pH	7,88	8,18	8,00	7,85	8,44	8,26	
Conductibility (mS)	3,04	4,49	1,47	10,41	2,48	8,11	
BET (m ² /g)	1,65	0,51	0,72	1,00	36,77	6,61	

Table 1 Results of the analyses.

Sample	02	03	04	07	10	13	NOTES
MgO	2,65	6,31	5,84	4,31	6,39	1,76	XRF Analysis The value indicates the %, by weight, of the element
Al ₂ O ₃	6,04	13,02	12,65	10,12	14,63	10,90	
SiO ₂	34,26	54,57	52,32	47,70	46,93	38,29	
SO ₃	0,70	0,26	0,27	0,62	0,31	0,77	
K ₂ O	1,34	1,29	1,31	2,42	1,56	3,41	
CaO	52,37	19,08	22,16	30,12	23,94	38,55	
TiO ₂	0,66	1,53	1,51	1,27	1,79	1,64	
MnO ₂	0,09	0,18	0,19	0,18	0,20	0,21	
Fe ₂ O ₃	1,66	3,39	3,61	3,10	4,11	4,29	TGA/DSC Analysis The value indicates the % of loss of weight; % calculated from the above results
25-100°C range	0,78	1,19	1,62	2,98	2,66	3,63	
100-250°C range	1,34	3,7	2,9	4,35	0,73	1,46	
500-950°C range	26,22	15,15	16,97	19,07	17,32	24,20	
CaCO ₃	59,5	36,7	38,5	43,3	39,3	55,1	

Table 2 Results of the analyses.

Discussion of the results

The mudbricks from walls at Jericho consist of raw earth sediment that was moulded while wet and then dried in the sun.

The nature of the raw materials used and their ratios in the mixture play a role of first importance in the quality of the final product.

Detailed studies indicate that mixtures of sand and clay in ratios of 4:1 to 3:1 by weight represent the best solution for mechanical strength and durability when exposed to atmospheric agents.

It should be pointed out that as clay we mean not only the finest grained type but the entire range of argillaceous minerals that confer the brick a series of characteristics peculiar to this group of minerals.

Characterization of the bricks

Laboratory analysis showed that a sediment of marine origin was used to make the bricks of Jericho. The mixtures are composed of fragments of fossiliferous limestone, organogenic residues, quartz and feldspar sands that represent its skeleton, in a carbonatic body or matrix that contains only slight traces of silicates and a rather limited amount of argillaceous particles.

Several important differences were found even between mudbrick specimens sampled from the same wall sections; this is an indication of poor homogeneity of the mixture probably due to an insufficient mixing of raw materials.

One of the differentiating factors found was the fact that in some specimens the component of argillaceous minerals is practically absent, in particular in samples 02 and 07.

In the body of the samples the spatial and ponderal ratios between skeleton and matrix are also variables. We have, for example, a situation of total contact among the coarsest grains and another one in which the skeleton is completely supported by the body.

Effects of the ethyl silicate treatment

The effectiveness of the consolidating treatment with ethyl silicate varied from section to section of the walls and, more importantly, even from brick to brick.

Four months after treatment some bricks (02 and 07) had badly deteriorated, while others, that had not been treated, and yet were exposed to the same climatic conditions, were perfectly preserved (samples 10 and 13).

One of the performed analyses, the evaluation of the specific surface area (BET), shows the physical change in the specimens after treatment. The untreated specimens have BET measurements 70 times larger than the treated ones.

The decrease in specific surface area is linked to the fact that the precipitated silica fills and saturates the pores, especially the micropores, which greatly influences the results.

Considering the analytical results and the above statements and assuming that the treatment in the job-site was effected in the same way (same quality, quantity and application system) for all the specimens, we can state that the different response to the consolidating intervention of the bricks strongly depends on the nature and on the ratios among the components.

In particular the content of clays plays an essential role both for the durability of the bricks and for the effectiveness of the ethyl silicate treatment.

When the wet mudbricks are moulded, the clays absorb intramolecular water and swell up.

When the mixture dries, the argillaceous particles make the mixture very cohesive through the action of the surface tensile strength (Coulomb forces), mainly of electrostatic nature, among OH groups.

These OH groups present on the surfaces of the argillaceous minerals are responsible for the consolidating effect of ethyl silicate. Due to this interaction the particles of material form a continuous three-dimensional network.

The presence or absence of the argillaceous fraction in the treated specimens has an essential relevance for the efficacy of the treatment.

At the same time it was proved that bricks with sufficient clay content, whose raw materials are mixed in proper proportions, retain their mechanical characteristics unaltered and, if carefully protected from the exposure to atmospheric agents (for ex. rainwater), they confirm excellent mechanical durability.



Fig. 1 Micrograph SEM 1000X. The absence of connections among the grains, that compose the mass, is evident. There is no trace of the typical needle structure of the hydraulic binding systems which confers them the mechanical resistance.

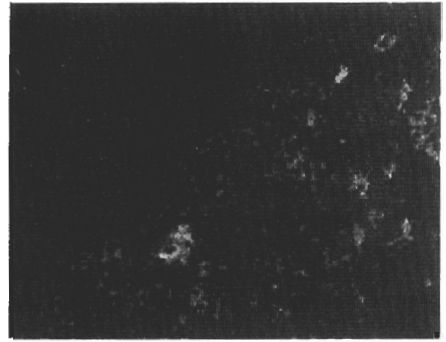


Fig. 2 Distribution map of aluminium. Aluminium is concentrated in the “continuum” area of the binder. It is bonded with silica to the feldspars present in the brick. It is homogeneously distributed.

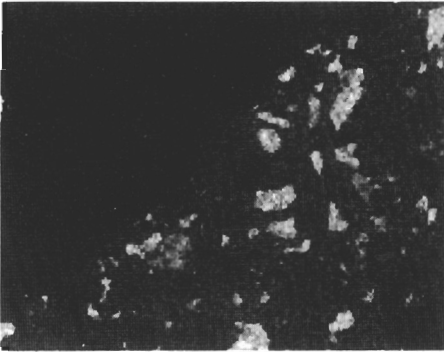


Fig. 3 Distribution map of silica. It is the second element as regards its quantitative presence. 99% of this product is concentrated, together with aluminium, in the “continuum” that surrounds the various islands of aggregates present in the brick. The areas with a stronger coloration are probably related to the presence of quartz.

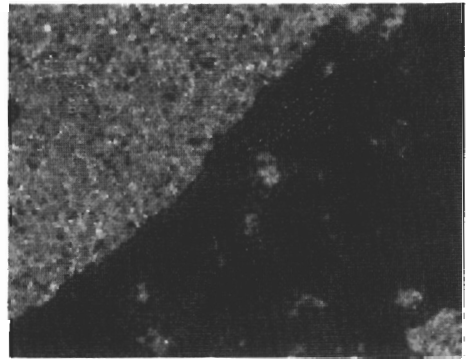


Fig. 4 Distribution map of calcium. It is the main element and it is mostly concentrated in the homogeneous area that refers to the carbonatic agglomerates. It is present also in the “continuum” as feldspars.

Note that the analyses of the maps refer to the most important elements.

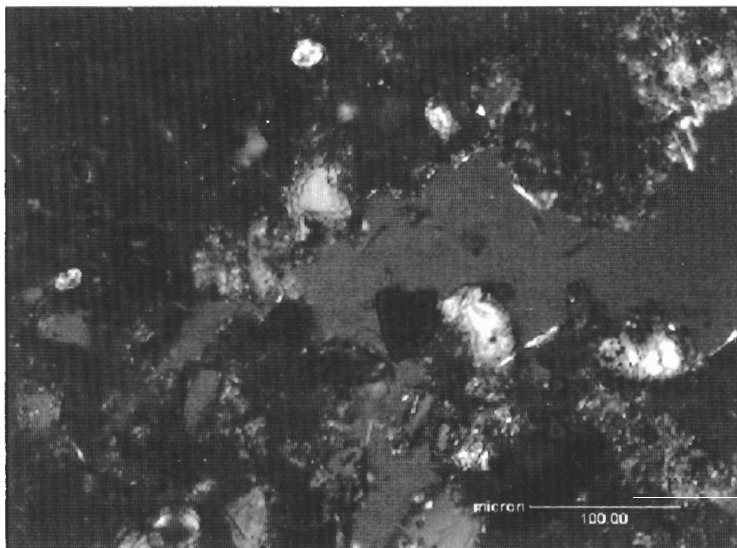


Fig. 5 Untreated original brick.

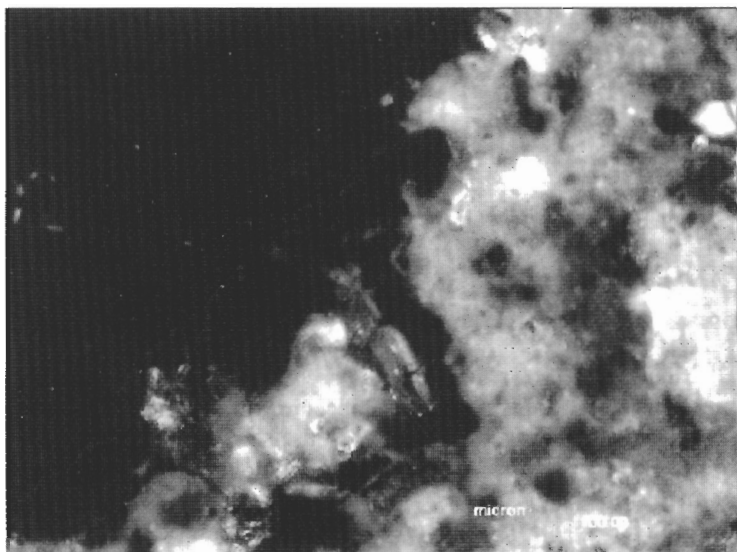


Fig. 6 Original brick treated with ethyl silicate. Silica gel bridges, connecting different parts of the bricks, are clearly identified.

APPENDIX H

REMARKS ON THE BYZANTINE OCCUPATION OF TELL ES-SULTAN

Francesca Zagari*

Introduction

The main goal of this paper is to analyze and evaluate the topography and the type of occupation during the Byzantine Period at Tell es-Sultan (Period IX). More specifically, this paper deals with the evaluation of the outskirts of the Byzantine site, documented by interesting findings unearthed at Tell es-Sultan.

Three different localizations of Byzantine Jericho existed within the same area. The site on the flanks of Wadi Qelt seems to represent the position of the Roman town. The Byzantine settlement has to be located where present day Jericho is (fig. 1). This latter location is mainly based on Eusebius' words - according to whom the Christian town was separated from the Roman one -, on Theodosius' report - which places it two kilometres far away from Elisha's source -, and, finally, on the Madaba map.

The Roman town is in fact located to the south-west of the Byzantine one. Near the Roman city there were the Hasmonean royal palaces and the castle of Kypros; moreover, between the palaces and the castle, there were various small villas. Furthermore, ancient sources also mention an amphitheatre and a hippodrome.¹ However, when Emperor Vespasianus campaigned in Palestine in year 68 AD, Tell es-Sultan was deserted. The surrounding area, according to an inscription, was possibly a settlement for the Roman army within the years 161-169 AD.²

Under the rule of Emperor Justinian, between 530 AD and the end of the VI century AD, while many of the *castra* built by Diocletian were abandoned, other ancient castles were transformed into wealthy towns also exceeding their ancient quadrangular walls.³

For this period the main topographical source is the already mentioned Madaba map; this map can be dated after the year 542 AD according to its style and since it represents also the *Nea Theotokos* which was built by Justinian at that time.⁴ The Madaba map shows Jericho as a small town surrounded by walls and with two towers beside the main gate. Inside the city walls, roofs of red tiles are recognizable. Moreover, beside the town one can see a church, again with a roof of red tiles, with two towers and a stream which flows from the Southern tower towards the town; its inscription says "TO TOY AGIOY ELISEAIOY", that is Elisha's place.⁵ This church was probably connected to the monastery mentioned by Procopius beside Elisha's source and which was restored by Justinian. Procopius, however, wrongly located this building in Jerusalem instead of placing it in Jericho.⁶

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¹ For an updated synthesis of findings from the Hellenistic to the Byzantine periods in the Jericho area see *NEAEHL*, pp. 681-697; see also Bartlett 1982: 17-28, 115-125.

² Augustinovic' 1951: 49-55, 64-66.

³ Sodini 1993: 142.

⁴ Augustinovic' 1951: 57-63.

⁵ Piccirillo 1990: 82, 91.

⁶ Avi-Yonah 1954: 22, 44.

Thus, also in respect of the Byzantine history of Jericho, the christianization of the urban space, attained through the building of holy places, has to be regarded as a turning point. This development proceeded according to the Early Christian and Medieval pilgrimages. In fact, Jericho was placed along the pilgrimage route because of its biblical and christian relevance and for its vicinity to Jordan river and Jerusalem. Therefore, the place where the miracle of the blind man occurred, Zacchaeus' sycamore, Rahab's house and Elisha's source ('Ain es-Sultan) became the foundation points of the new Christian urban space. Their importance is actually stressed by the continuous restauration they suffered during their entire history. Zacchaeus' house and sycamore were mentioned into the Roman town since the IV century AD, but from the XII century AD onwards, they are fully inside the Medieval village, located to the east of the Roman one. Moreover, already during the VI century AD (*Anonymus Placentinus*, about 570 AD), Zacchaeus' sycamore was surrounded by an oratory.⁷

Jericho had a very old christian community which originated during the persecution of St. Paul. In the year 325 a bishop of Jericho is mentioned and the town was a monastic centre until the middle of the VII century when it was destroyed by Persian and Arabic invasions. The survivors gave birth to a scattered settlement between the old town and the Jordan river, perhaps larger than the one indicated by Augustinovic'.⁸

Notwithstanding the fact that no archaeological evidence of the existence of cult places had been yet unearthed at Tell es-Sultan, various findings of churches, monasteries and *xenodochia* are attested to within the town outskirts (mainly in the south-eastern part). Exactly in this direction there was the route to the Jordan river. Since this river was a pilgrimage place this fact it is not a mere chance.

Within the area of Jericho, several Byzantine chapels have been identified (fig. 1). They had the typical shape of basilicas with one or three naves. Mosaic with Greek inscriptions are generally frequent (church of St. Andrew, church of Antimos, oratory of St. George, church of Theotokos). These mosaics, dating between VI and VII centuries AD, are modest, possibly made by itinerant masters (fig. 2).⁹

The same decoration style occurred in contemporary synagogues as proven by that one discovered south-east of Tell es-Sultan (VIII-beginning of IX century AD). Also such building has three naves, one apse and a mosaic with an Aramaic inscription in Hebrew letters and a medallion with the seven arms candelabrum.¹⁰ The iconography of vegetal and animal kingdoms, as well as the representation of Zodiac and Seasons, remained the same one of the Greek-Roman tradition.¹¹

Among churches, there are that one of Antimos (from the name of the owner) -a VI century AD three naves church to the south of Tell Abu Hindi-, the church of St. Andrew near Wadi Qelt, the oratory of St. George (founded by the *egumenos* Ciriacus as proven by the funerary inscription dated 566) and that one discovered at Tell Hassan, north of the present day one.¹² This church was long more than 25 metres and about 20 metres wide. It had three naves with a double *bema* and a portico surrounded by two rooms. The rest of a mosaic allows the reconstruction of the church plan. The stone of the walls had been reused during the Arabic occupation as building material. These remains represent the church

⁷ Augustinovic' 1951: 57-63.

⁸ Augustinovic' 1951: 5-92.

⁹ Donceel-Voûte 1999b: 113-115.

¹⁰ Avi-Yonah 1937: 73-77.

¹¹ Donceel-Voûte 1999b: 113-115.

¹² Augustinovic' 1951: 5-92.

dedicated to the mother of God (*Theotokos*).¹³ This church was mentioned by Procopius as being consistently restored by Justinian around year 560 AD.¹⁴

The churches fittings and liturgical equipments have several possible comparisons in the Near East.¹⁵

The scanty evidence concerning Byzantine churches at Jericho is however sufficient to draw some general conclusions and to stress general trends. The prevailing model is the longitudinal one, built with local stone. Other general features such as narthex, raised shrine, *pastoforia*, hexagonal pulpit (placed in the Southern aisle or in front of the presbytery) and *memoria* (cave, rock...) were not yet evident. However, these elements belong to the so called "second phase" of Palestinian religious architecture. This phase arrives after Emperor Costantine's building activity. From the V century AD onwards, foreign influences started to become stronger in the region.¹⁶

Nevertheless, in many places several findings can be regarded as relative to Byzantine cult places: to the south-east of present day Jericho relevant agglomeration of pottery and mosaics fragments at Tell el Qos and in the Wadi Qelt, to the west of the castle (Burg er-Riha) and to the south of Tell Hassan funerary inscriptions, capitals, fragments of both columns and mosaics.

The presence of water tanks at Tell el Qos and south of Tell Hassan can also indicate the presence of monasteries, as it was thought about St. Andrew church (fig. 3). In this case it can be identified with the "Stranger's monastery".¹⁷ In fact, the monks lived in complex buildings which included church, infirmary, stabs, dormitory, refectory, courtyard, garden and tanks. These latter elements, often located beside rivers, together with the monastery real estate, permit to feed the monastery populace and the pilgrims. All the monasteries of the region were built in connection with water: near rivers which from Judean desert arrive to the Dead Sea or the Jordan river valley; in the area east of Hebron, with the Wadi Qereitun; in Cedron and Jericho areas, with the Wadi Qelt.

The *laura* was one of the most famous monastery form. It consisted of a mixture between ascetic and cenobitic life. The monks' caves were located within one kilometre from the main common buildings.¹⁸ An example of that type is apparently the "Duka" founded around year 340 AD and located, according to Augustinovic', on Jebel Quruntul, in the caves nearby the place of the first temptation, early nucleus of a future monastery. On the top of the mountain, where the third temptation took place, there should be a IV century AD church which was probably destroyed during the VII century AD, as attested to by Byzantine walls, capitals, and liturgical fittings.¹⁹ One of these capitals (fig. 11) finds a comparison with one lying on the surface of Tell es-Sultan (fig. 12), in the south-eastern zone of the site.²⁰ Both of them are Severian, probably *spolia* of Roman villas.

The Byzantine occupation of Tell es-Sultan and its historical significance

During the 1998 season, the restoration of two small cisterns in the south-eastern zone of the tell was undertaken. This has suggested to make a fresh evaluation of the results of the German expedition at the beginning of the XX century, which gave significant

¹³ Baramki 1936: 82-89.

¹⁴ Haury 1964: 168-169.

¹⁵ Acconci 1998: 493, fig. 4: 492, 498.

¹⁶ Testini 1980: 714-718.

¹⁷ Augustinovic' 1951: 77-83.

¹⁸ Donceel-Voûte 1999a: 84-87.

¹⁹ Augustinovic' 1951: 103-104, 123-137.

²⁰ Augustinovic' 1951: 135-137, fig. 45.

quantities of Byzantine pottery and interesting objects, with the aim of better defining under the historical profile the occupation of Tell es-Sultan during that period (fig. 4).

The above mentioned two circular structures (fig. 5) were probably part of a Roman villa which occupied the south-eastern portion of the site. The building, apparently, had different rooms roughly paved opening on a court. Inside one of these rooms were found the two circular basins (fig. 6). In the opinion of Sellin and Watzinger they should be interpreted as for storage of olive oil and of olives.²¹ The basins are placed upon the south-east part of the slope and the one located towards the west is higher than the other. Both have a diameter of about one meter. Inside, their walls have a thick layer of white plaster. The second and lower one was built with bricks and, according to the first excavation report, it had a narrow opening into its top part. The other one is instead made of square stone blocks bonded together with mortar. The upper part is here lacking. No pipes or connections between the two basins or to the outside have been found.

The inner lining is generally suitable for liquid containing. However, the small capacity of them -around 1000/1500 litres- makes it is difficult to argue that these basins were used to store water, possibly supplied from the nearby source by beasts of burden. Therefore, it is possible they were used for the storage of olive oil. Thus, the basins seem to be in the working part of a villa: in fact, immediately to the north of these structures, there is a mortar pavement which has been identified as a "working place" (fig. 6) and that has yet to be reexcavated.

Within Roman and Byzantine rural settlements of the Near East there are of course several comparable olives and grapes presses and water storage basins.²² In a Roman villa 6 kilometres far from Caesarea, for example, 5 metres south from the main building a bell-shaped water storage basin was found. This basin was initially made together with the rest of the buildings but was restructured during the Byzantine period. Its capacity was around 700 m³. The building technique is accurate and stone blocks, covered with reddish clay mixed with pottery fragments, were used. Beside that, there is another tank with a rough mosaic floor made of white *tessera*. Moreover, 50 m south from the villa, there is another basin with a diameter of about 3-4 meters and 3.5 m deep, with a mouth of 0.8 m.²³

All the Byzantine buildings discovered by Sellin and Watzinger at Tell es-Sultan apparently pertain to a rural settlement scattered in the oasis: country houses, portions of a possible terrace wall and graves are the main archaeological structures. Several portions of walls were identified by Sellin and Watzinger as houses remains, but they are too fragmentary for such a sure interpretation (Southern trench, south-east area). However, what remains of the houses points to a poor building technique and architecture and consists of buildings formed by few square rooms opening on a court (South-eastern trench) or located along a line (north-eastern area; fig. 7). Stairs are frequent since some of these houses insist on the slope of the hill (western area of east-west trench, north-western zone; fig. 8).

The building technique was based on the use of bricks, regular stone blocks, but also of *opus incertum* and mortar, made either with lime or earth. The pavements are roughly made of earth or stones. This building method can be assumed as Byzantine for the evidence associated with such structures. It is, moreover, relevant to stress the presence of a mixed building technique which made use of a stone foundation upon which there was a weak

²¹ Sellin, Watzinger 1913: 84, fig. 50: 83.

²² Mayerson 1985: 75-80; Frankel 1986: 88-91; Frankel 1987: 63-80; Porath 1988-1989: 1-3; Hirschfeld, Birger-Calderon 1991: 8-111; Frankel 1992: 39-71; Sodini 1993: 150.

²³ Hirschfeld, Birger-Calderon 1991: 81-111.

structure. Some of these buildings present features typical for rural activities, such as the two basins, the building with the main court (western zone of east-west trench; fig. 8), and that to the north-east with rooms which look like stables and store-rooms (fig. 7).

Moreover, the presence especially in the central part of the tell of bread ovens, water tanks and, possibly, corn silos and lime furnaces has to be interpreted in the same way.²⁴ In addition to this, the rural character of the site is also stressed by the absence of large infrastructures, by a canalization near the spring and by the southern orientation of the rooms of the building discovered within the north-eastern area of the tell (fig. 7).²⁵ However, it is impossible to state whether this orientation is by chance or because there was a connection with a road network: in any case, in such an environment it does not seem realistic that such an orientation was chosen for obtaining a better exposure to sunlight.

The structure of these houses is, thus, that of the "simple house" typical for Roman-Byzantine Palestine which had a single wing opening on a courtyard. Much more complex and comfortable was, indeed, the "complex house", with 2 or 3 wings around a court, and the "courtyard house", with 4 wings and rather typical for urban contexts.²⁶ Possibly, a residence of the second type could be recognized in the area surrounding the spring for the better environment. Generally, the buildings' features recall local traditions and the very same building plan lasted until the Islamic period, from the VII century AD to the IX century AD. Other similarities with Jericho houses have to be found in building techniques since that during the Roman-Byzantine period stone was the main building material.²⁷

However, the same building typology and plan are apparently widely common within the entire Byzantine world as it is proven by some Sicilian (Southern Italy) examples, among which the most relevant one is that of Kaukana.²⁸ This is a small harbour on the Southern coast of Sicily and was used as a navy base by Belisario against the Vandals.²⁹ The harbour docks are presently under sea level, while the various houses were gathered around cult places (fig. 10). The main portion of the settlement has been located on the coast and can be dated between the beginning of the IV and the beginning of the VII centuries AD. The site is an open settlement where the different buildings are distant from each other. These have a simple rectangular plan, with two or more rooms, or more complex ones with large courtyard and stairs for reaching the first floor (fig. 10). However, they are rural houses built either in *opus incertum* or in *opus quadratum*. These buildings were for single family units and had water pits.³⁰

The urban plan of Kaukana is totally different in respect of the classical one of Greek-Roman origin which was indeed based on regular blocks which were connected by right-angled streets and included different residences.³¹

A similar situation has also been identified in the region between Siracusa and Ragusa in Sicily. Here remains of several stone-built rooms, made with local stones and without any mortar, and with a rectangular plan without any interconnection, courtyards and fences. The only common infrastructures were the southern main side of the houses, the church, the cemetery and few water tanks.³² This same type of scattered settlement is also attested

²⁴ Sellin, Watzinger 1913: 83-92.

²⁵ Sellin, Watzinger 1913: 87-90.

²⁶ Hirschfeld 1995: 21-24.

²⁷ Hirschfeld 1995: 218-219.

²⁸ Schmiedt 1977: 92-93.

²⁹ Procopius, *De Bello Vandalico*, I, 14.

³⁰ Guillou 1976: 140-154.

³¹ Pelagatti 1966: 28.

³² Messina, Di Stefano 1997: 116-119.

to along the Ionic area of Calabria (Southern Italy), between the VI and VII centuries.³³

Not at all clear is the situation of the south-eastern sector of Tell es-Sultan. A sort of terrace wall has been located just onto the slope of the hill, the dating of which is not yet possible.³⁴

The distribution of tombs at Tell es-Sultan hints at a division of the site population into different small family groups. Three graves were discovered in the south-eastern area, while at least eight were found within the north-eastern one (fig. 9). In both cases the tombs were located on the slope of the tell. For the second group of graves, it is apparently possible to establish a correspondence between the grave location and the social rank of the deceased. Within this burial area, there are two different zones diverging for the quality of the grave-goods. In the main room the graves possibly also had coffins and, outside, *mensae* for *refrigerium*. Fragments of glass vessels, a spearhead and a small pottery cup were found in the other room. However, it is not yet clear whether these tombs are original structures or if they had been used several times with different utilization.

As it was common for all the rural settlements of the Byzantine period, at Tell es-Sultan there was not a common cemetery but each family group had its own burial area near its house. Moreover, the rural character of the site is also witnessed by the findings of several carpentry tools, which would indicate a handicraft specialization within this group of tombs, perhaps in connection with the nearby oasis. Generally, the grave-goods suggest a modest standard of life.³⁵

The situation is rather different in respect of the other group of tombs where, in fact, fragments of capitals, shafts and plinths of columns were found (fig. 12).³⁶ This fact is important because it could also identify a cult place directly connected to burials. However, at this stage of research it is impossible to carry this hypothesis farther.

The distribution of houses and of agricultural structures is rather homogeneous within the tell. In fact, the hill's surface is occupied by single family houses or single production units, possibly in part on the structures of a Roman villa (south-eastern area). This situation is particularly evident along the eastern slope of the hill (towards the spring) and in the middle of the settlement. Thus, this part of a scattered rural settlement had a direct connection with the spring.

The spontaneous agglomeration of houses around a water source is, however, a general feature of rural landscape from the V century onwards both in the West and the East.³⁷ As a part of the same phenomenon must also be regarded the shift of scattered rural settlements from the coast towards the areas in the interior. Possibly, this landscape restructuring was connected to a trend of agricultural specialization such as wine and olives production.³⁸ This change of the agricultural landscape, from corn mono-cultivation to different and diverging cultivation strategies, was indeed a general trend for the entire Byzantine world affecting, from the VI century AD onwards, Syria, Egypt, Palestine and Sicily.³⁹

A relevant example of this situation is again the villa of Caesarea which had several wine cellars and a wine press, about 40 m far from the main building. This villa, built between the I century BC and the I AD, was then used during the Byzantine period (V-VII

³³ Di Gangi, Lebole-Di Gangi 1997: 211-214.

³⁴ Sellin, Watzinger 1913: 83.

³⁵ Sellin, Watzinger 1913: 91-92.

³⁶ Sellin, Watzinger 1913: 84.

³⁷ Guillou 1976: 148-149.

³⁸ Messina, Di Stefano 1997: 116-119.

³⁹ Guillou 1976: 140-154.

centuries AD) when, according to the archaeological evidence, it belonged to rich christianized lords.⁴⁰ Ecclesiastic buildings often included production plants as it is proven by the discovery of a wine press within a church courtyard at 'Ain el Jeide (VI-VIII centuries AD).⁴¹

However, Jericho's situation is far from being similar to the rich rural area of Northern Syria. In fact, in that region there is a wider and quantitatively higher range of settlement typologies: it includes noble villages, peasants' ones, settlements with great real estates and peasants' dwellings, great villages constituted of large scattered farms and of a defensive tower, and transit villages placed according to the road network.⁴²

On Tell es-Sultan were found different ceramic, glass and metal objects of post-Roman date. The pottery production of Jericho witnesses a long-lasting tradition at least from the Roman period onwards. This thesis is supported by the new evaluation of three pottery rings found north of Tell es-Sultan. These findings were previously regarded as lamps,⁴³ while they are now considered to be kiln stands. Their typology can be compared to that of Samos red slip ware.⁴⁴

Byzantine pottery is well represented at Jericho and basically it includes coarse pottery (with or without red or white painted decoration), little amphorae with small spout, cooking pottery, red slip ware and pottery lamps.

First of all, various amphorae of L.R. 5-6 type are attested to. These were excavated by Sellin and Watzinger and they mainly came from funerary sets (fig. 13). Their height is between 36 and 48.5 cm.⁴⁵ They have a typical bag-shaped form with ribs, cylindric neck, and ear-shaped handles. Their origin is most probably Palestinian even if now the possibility of an Egyptian provenance has been suggested.⁴⁶ Among this category, three different types have been distinguished according to the fabric colors (red, black and light red). The most common is the first one;⁴⁷ these types have numerous comparisons both in the West and in the East. However, their trade have to be basically appointed to areas not far from production centres, reaching Southern Greece as farthest place, as it is proven by the findings of such a type of amphora in the Athenian agora (VI century AD).⁴⁸ Concerning their function and use, it has been again suggested that they were containers of Palestinian wine.⁴⁹ Their use as watertanks should be a secondary function.⁵⁰ This typology is attested to until the VI century AD, with a peak between the V and VI centuries AD. In the West, this type is attested to from the IV century, although mainly between the V and the VI century AD, at Rome, Ravenna, Naples and Milan, for example.⁵¹

Similar types were produced until the VIII-IX centuries AD. To explain such a long-lasting tradition in pottery production, it is possible to imagine that the Palestinian bag-

⁴⁰ Hirschfeld, Birger-Calderon 1991: 81-111.

⁴¹ Hamilton 1935: 111-117.

⁴² Guillou 1976: 148-149.

⁴³ Bennet 1965: 539-544.

⁴⁴ Brown 1971: 95-96.

⁴⁵ Sellin, Watzinger 1913: 160.

⁴⁶ Ballet, Picon 1987: 57-62; Villa 1994: 407.

⁴⁷ Johnson 1988: 137-226.

⁴⁸ Robinson 1959: 115. The black type, with white decoration, unearthed at Mount Nebo dates from VI/VII centuries AD (Schneider 1950: 44).

⁴⁹ Panella 1993: 613-697.

⁵⁰ Johnson 1988: 137-226.

⁵¹ Johnson 1988: 137-226; Panella 1998: 201-202.

shaped amphorae acted as models for similar vessels also after the Arab occupation. The main difference with the previous kind has to be found in the trade network: this was for sure on a smaller scale in comparison to the Late Roman one; moreover, the Arabic production was circulating within the Islamic world. In fact, several Islamic examples were found in Syria and also at Khirbet al-Mafjar in the area of Jericho (second half of the VIII century AD).⁵²

Among the coarse pottery, the most common type has the following main feature: a long cylindric neck which is a bit shallow, a flap-like drop rim, small ear-shaped handles and a concave base.⁵³

As far as reddish decorations are concerned, spirals and vegetal elements were found on a Jericho jar (fig. 14) and they are similar to the elements on a yellow-brownish bag-shaped vessel from Mount Nebo, with a rounded omphalos base and a cord type neck. The first jar has a dark red painted plant between two spirals on each side of the body, and little ones under each handle. Its neck has a wavy decoration. The diameter is about 30 cm and the height is 39.5 cm. The Jericho evidence comes from a grave where it was excavated together with several L.R. 5-6 amphorae and IV-V century coins.⁵⁴ Since all the pottery is more recent, it is self evident that these coins remained in use long after they were struck.

This geometrical and floral style is apparently again a general trend within the Byzantine world and particularly for the Eastern Mediterranean. Its chronology reaches the VIII century AD, as it has been shown at Nebo-Siyagha and for the Italian pottery "Crecchio type". The latter originated from V-VIII centuries AD models and was probably imported from Kellia (Egypt) into Abruzzo (Italy) by the Byzantine army; it was then reproduced by local craftsmen, as it is proven by kiln slags.⁵⁵ Since traces of wine, grapes and figs were discovered inside this type of pottery, its function can be identified as cooking pottery.⁵⁶

Spirals are as well a typical decoration of Byzantine pottery, probably because they were easy to do, as proven by different findings at Jericho, Mount Nebo and the region of Locri (Calabria, Italy).⁵⁷ Within the same decoration, the vessel shape could vary according to local trends. The findings from the region of Locri are dated between the VI century AD and the mid of VII century AD,⁵⁸ while those of Mount Nebo dated approximately from 643 AD.⁵⁹

The small amphorae with spout, dating from the VI century AD, are also well represented (fig. 18). A VI century AD jug was found in St. Andrew church west of present day Jericho (fig. 15)⁶⁰ and similar findings are attested to at Mount Nebo.⁶¹

The only open forms to be found within Jericho area are in African slip ware and L.R.

⁵² Arthur 1986: 655-669.

⁵³ Sellin, Watzinger 1913: pl. 44, B.1. Two similar examples were discovered at the Memorial of Moses on Mount Nebo. The first one (n. 47) is complete in a poorly fired light buff fabric and has a very shallow rim. Its height is 22.5 cm. The other one (n. 48) is fragmentary. They were found together (Schneider 1950, pl. 154,2-3, nn. 47-48: 34, fig. 2.1: 32).

⁵⁴ Schneider 1950: pl. 147,1, n. 62: 35,1, fig. 2,4: 32. There are other similar examples from Mount Nebo (Piccirillo 1990: 346, n. 2 and Piccirillo 1998).

⁵⁵ Staffa 1993: 45-48.

⁵⁶ Ballet, Picon 1987: 17-48; Staffa 1993: 45-48.

⁵⁷ Sellin, Watzinger 1913: pl. 44, B.3.

⁵⁸ Lebole-Di Gangi 1991: 575-598, figs. 8, 9: 583.

⁵⁹ Schneider 1950: 46.

⁶⁰ Augustinovic' 1951: 75-76.

⁶¹ Schneider 1950, pl. 154, nn. 387, 393, 394: 94.

C and some of them are also rather older in respect of the other mentioned vessels. African red slip ware bowls and dishes with decorations have been found (figs. 19-21). They are characterized by circles combined with rectangles or chevrons (A style),⁶² dating between the mid of the IV and the V century AD (fig. 16), and in another case by a moulded cross with double borders (E style),⁶³ dating between the V and the VI century AD (fig. 17).

The carinated bowls are all of type L.R. C, H3 (VI century AD) and they have heavy triangular rims, thick walls and a thick and bright layer of paint inside (fig. 17).⁶⁴ A similar example comes from a VI century AD deposit in Athens.⁶⁵

As general trend, L.R. C ware became predominant in the eastern part of the Mediterranean between the mid of the VI century AD and the beginning of the VII century AD. This pottery replaced African production for at least one century and, even after the African production revival, it maintains its position. The fabrics are rather homogeneous and, thus, it is possible to think to one single place of origin for this type of pottery: Pergamus or the Dardanelis. Certainly, this same production is connected to Constantinople, its main market-place, and, moreover, its beginning during the IV century AD can be directly linked to the foundation of the new capital of the Empire.⁶⁶ Its wide distribution and the relevant quantity of this type of findings all over Asia Minor, Greece and Near East hint at a trade network, organized on coastal trade, the basis of which were the harbours on the Anatolian coast. Such a situation lasted until the end of the VI and the beginning of the VII centuries AD.⁶⁷

At Jericho has also been unearthed an example of a cooking vessel very common in the area, with often white grits in the fabric: a pot with everted rim, lightly concave or with groove around upper surface (fig. 19). This type had a long-lasting tradition too. The Jericho pot finds its comparisons in a pot found at Jalame and in a Mount Nebo more recent one.⁶⁸ The first one is in a dark red clay and has an external surface mottled and discoloured in patches and shallow shoulders. Its diameter is of 21 cm and the height of 21.5 cm.

The very same chronology is testified by the evaluation of the lamps found within the tell area.⁶⁹ These objects apparently belong to the Late Roman - Early Byzantine phase of the site. This period presents, on the one hand, the persistence of types of Roman origin, but, on the other, demonstrates the spreading of the slipper-shaped type (particularly in Judah and Samaria). The latter, decorated by lines in relief placed all around the *infundibulum*, will undergo, during the VII century AD, a renovation which involved the application of a "nozzle channel".⁷⁰

⁶² Hayes 1972: 234, 236, 241-243, first decoration: n. 27, h (i), fig. 40: 234-235, A style, ii (350-420 AD), iii (410-470 AD) and n. 69, c, tav. 42: 241-242, Aii (350-420 AD), Aiii (410-470 AD); second decoration: n. 29 (k.l), fig. 40: 234, 236, A style, ii (350-420 AD).

⁶³ Hayes 1972: 221-222, n. 311, fig. 56: 276-277, E style, i (480-540 AD), ii (530-600 AD).

⁶⁴ Hayes 1972, nn. 28-29: 335, 338, fig. 68: 332.

⁶⁵ Mid of the VI century (n.29); at the first half of the same century (n. 28).

⁶⁶ Hayes 1972: 368-370.

⁶⁷ Panella 1993: 657-673.

⁶⁸ The vast majority of the Mount Nebo cooking pottery comes from Northern and Western wings of the building and can be dated between the V and the VI centuries AD (Schneider 1950: pl. 150,28, n. 209: 58, pl. 150,19, n. 19: 56, fig. 4,1: 57). Jalame evidence dates back to 351-383 AD (Johnson 1988: 137-226).

⁶⁹ Sellin, Watzinger 1913: nn. II,1, II,2, II,5, pl. 45.

⁷⁰ Sellin, Watzinger 1913: n. II,2; Rosenthal 1978: 112. A rather complete study on Palestinian lamps is offered by the British Museum Catalogue. Particularly important are the findings from Jerusalem and its outskirts. These lamps always have a long oval form and a large *infundibulum* decorated with concentric

Another Jericho lamp⁷¹ has also its comparison with a boot-shaped one which lacks, however, its loop. The clay is red and its form is circular. The upper part, along the *infundibulum*, is higher than the usual slipper-shaped type. It has no decorations.⁷²

According to pottery, Tell es-Sultan thus shares all the general trends of the Near East during the Byzantine period: this epoch was characterized by low level of imports and the increase of local productions. This situation is also witnessed by the architectural and economic analyses made above.

In addition to this, the reduction of vessels dimensions (amphorae above all) has to be stressed. This change in pottery size has, possibly, to be connected with the restructuring of trade during Late Roman and Early Byzantine periods. Apparently, trading ships decreased their size as well (examples are those of Yassi Ada, Turkey, and Marzamemi, Italy). Thus, the smaller dimensions of these amphorae are directly related to this change and rearrangement of trade: their size fit better the new trading conditions. The routes to Constantinople were the main ones, but there were intermediate harbours, reached by little ships (for coastal trade) or by carts, mules, and barges.⁷³

As far as glass is concerned, the evidence of Tell es-Sultan, mainly originating from grave-goods, consist of small bottles (the average height is 10 cm). Their colors range from green to brownish-yellow. Probably, they are table equipments. Again, there is a direct connection between these objects and wine, one of the Palestinian main products during the Byzantine period, since grape grains had been found inside them.⁷⁴ These bottles of Jericho can be compared to a large bottle from Jerash which is dated from around 500 AD and which is considered of Syrian origin (fig. 20).⁷⁵

These findings of Jericho were unearthed together with IV/V century coins. In fact, from the V century AD onwards, it is rather common in Byzantine contexts to find coins older than the other goods. It is then possible that these coins, similar to the Byzantine ones, remained in use longer for the lack of low currencies during the Byzantine period. Thus, the Late Roman coins (IV/V century AD) were in use until the VI and VII centuries AD. Such a situation is attested to in numerous Byzantine contexts such as the Crypta Balbi in Rome, Carthage and Jerash.⁷⁶

Another glass vessel,⁷⁷ with a globular body, short neck and large mouth (fig. 21), it is again similar to a little bottle found at Jerash (h. 5-6 cm). Its colour is light green and it finds another comparison with an object in the Metropolitan Museum of New York.⁷⁸

Still among the glass objects, there are as well bottles with crinkly or plain collars on

circles and ring base. The dating is placed between the second half of the V century AD and the beginning of the VII century AD. The most recent evidence -two objects from the Hawran (Syria)- differ from the other types for the already mentioned nozzle channel and for having Greek letters on them. Their decoration, composed by oblique lines surrounding the *infundibulum*, has been regarded by some scholars as a metaphorical image of the seven arms candelabrum (Bailey 1998: III: 281-282). Several examples were found also in Italy (Bacchelli, Pasqualucci 1998: 347-350).

⁷¹ Sellin, Watzinger 1913: pl. 45, II,3.

⁷² Saller 1941: pl. 143,9, n. 60: 328.

⁷³ Panella 1993: 613-697.

⁷⁴ Sellin, Watzinger 1913: pl. 45, III,1.

⁷⁵ This bottle has a shallow sphere-shaped body and a short, narrow, and cylindric neck with an everted outward rim. The present height is 9.2 cm and the diameter 10.5 cm (Craeling 1938: n. 84 (790): 540, n. 790, fig. 29: 541, pl. CXL,b).

⁷⁶ Rovelli 1993: 333-334, note 4: 334.

⁷⁷ Sellin, Watzinger 1913: pl. 45, III,2.

⁷⁸ Craeling 1938: n. 71 (Room A14): 536, fig. 31: 545.

the neck (fig. 22), for which there is a wide range of comparisons in the Near East. In fact, the same type of decoration was found on two objects from Mount Nebo. The first is made of blue glass; the second one has a blue body, while the decoration is yellow.⁷⁹ Similar bottles were also discovered at Jerash⁸⁰ and inside the Byzantine synagogue near Tell es-Sultan (beginning of VIII century AD).⁸¹

Moreover, the tombs of the Byzantine period yielded a relevant quantity of metal objects as well.⁸² These findings offer a glance into everyday life tools of the community of Jericho: table equipments and fittings are in bronze (bowls, cups, little spoons, handles, hinges), while iron was used for carpentry tools (like prooning-hooks, fig. 23, saws and axes), weapons (spearheads), domestic fittings (two knives) and building material such as nails. Following the evidence of the north-eastern complex of graves, one can argue that these graves belonged to a carpenter's family.

The bronze censer was found out of context (fig. 24). It was suspended since on the rim there are three small rings. Its body is grooved and it is 4.5 cm high and has a diameter of 9 cm. This object should belong to a church, as it is hypothesized for the capitals and fragments of columns found on the tell. Similar Byzantine bronze censers were discovered at Constantinople and Giza.⁸³

Among metallic findings, also the above mentioned group of small bronze coins has to be stressed. It was unearthed near the *mensae* of the main tomb. Probably, these coins were preserved inside a leather bag and they were connected to the *refrigerium* rite. In this period the funerary use of coins seems to have two different functions: the *obolus Carontis*, inside the tomb, and the "offer" (outside, together with the rest of *refrigerium* elements). Generally, the first coins were older than the other ones.⁸⁴ Unfortunately, there is no precise evidence relative for the function of these coins.

Stones and bones were used to make few containers and craftsmen's tools. The vast majority of these objects came from the north-eastern burial area, together with fragments of wooden fittings, marble and plaster.⁸⁵

The latest evidence from the 1998 excavations are a pottery lamp with moulded relief decoration (found in area E; see § 4.1 in this volume and fig. 4:3) and several fragments of Early Islamic pottery. The lamp and its context are important evidence for the evaluation of the continuity of life on the tell. It consists of the upper portion of a flat oval vessel with a groove onto its pointed spout and an animal (stag) and vegetal motives. This artifact in a well-fired and reddish fabric has been made in a bivalve mould. A similar type, with two lions on it, was discovered at en-Nitla within the surface layers of a church, pertaining to an ephemeral occupation of the site: it has been deemed a Mamluk lamp dating from the XIII/XIV centuries, like the specimen from Area E (Sultan Period Xb).⁸⁶

⁷⁹ Saller 1941: pl. 141, 24-25, nn. 369-370: 320.

⁸⁰ They were found inside the latrine of the baths built by bishop Placcus in 454-55 AD, restructured in 584 AD: Craeling 1938: n. 64 (Room B 48): 534, fig. 30: 265-269.

⁸¹ Avi-Yonah 1937: pl. XXI, 1 (central photo).

⁸² Sellin, Watzinger 1913: 165-167.

⁸³ Wulff 1909: nn. 973-974: 204, pl. XLVII.

⁸⁴ Simoni 1992: 138-140.

⁸⁵ Sellin, Watzinger 1913: 167-168.

⁸⁶ Piccirillo 1990: 347, n. 2.

The dating of the lamp is significant in light of the contemporary occupation of nearby Tawahin es-Sukkar,⁸⁷ the sugar mills dating from the Mamluk period lying to the west of Tell es-Sultan (see fig. 1 for the exact location). At that time several factories of the same kind were established in the Jordan river valley, as the for example found in the Wadis Yabis and Zarqa surveys on the opposite side of the valley to the north.⁸⁸

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⁸⁷ Information on the site of Tawahin es-Sukkar was kindly provided by Nura Barakat, who has undertaken a thorough study of it.

⁸⁸ See most recently Palumbo, Kafafi et al. 1997 for a summary of the results and earlier bibliography.

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Fig. 2

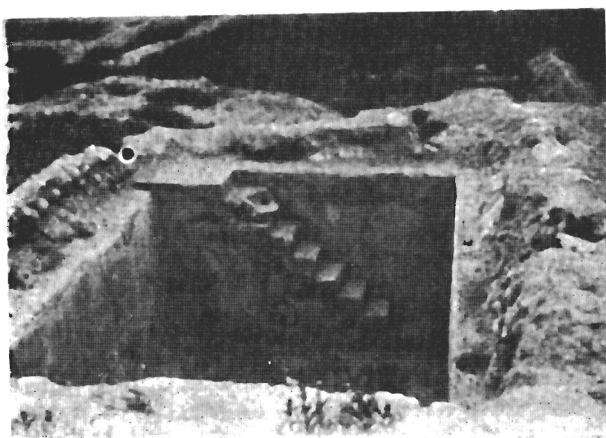


Fig. 3

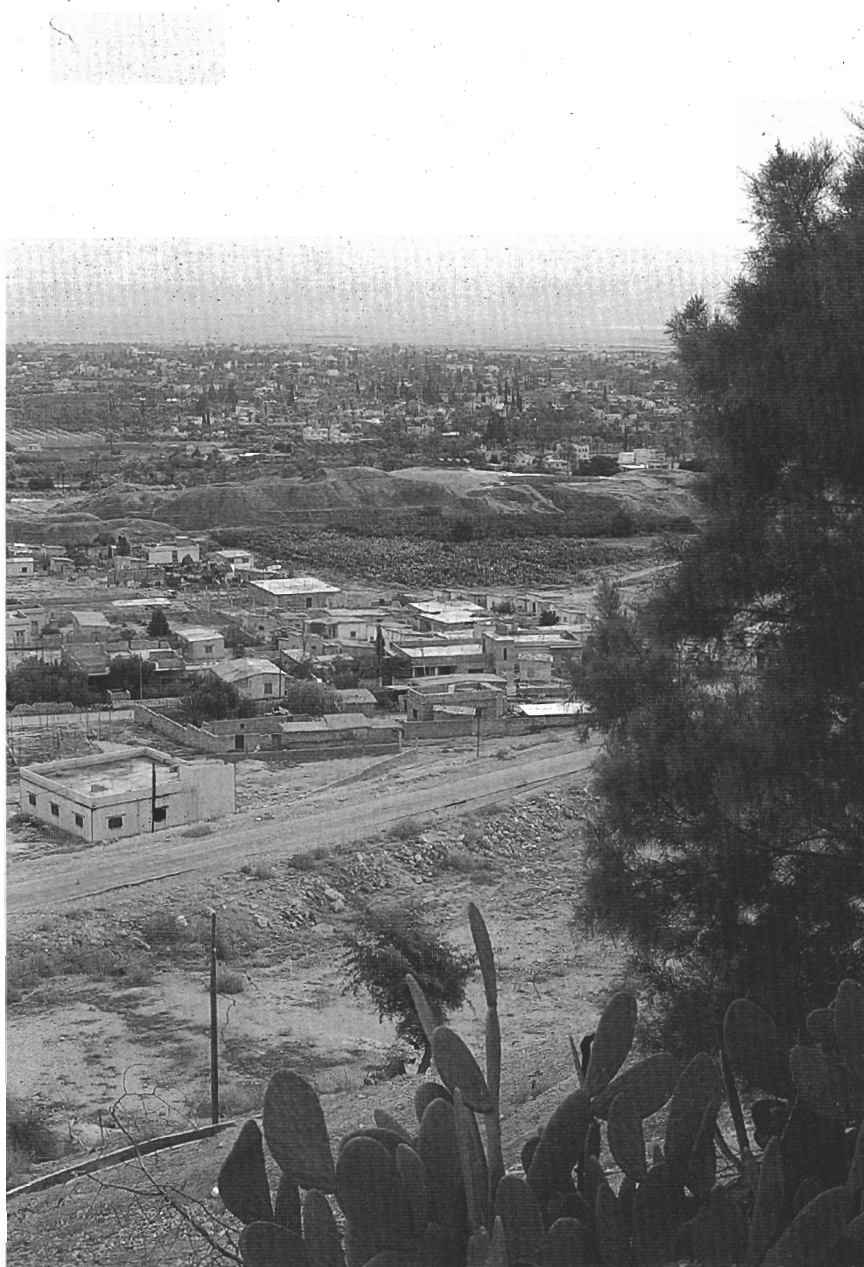


Fig. 4



Fig. 5

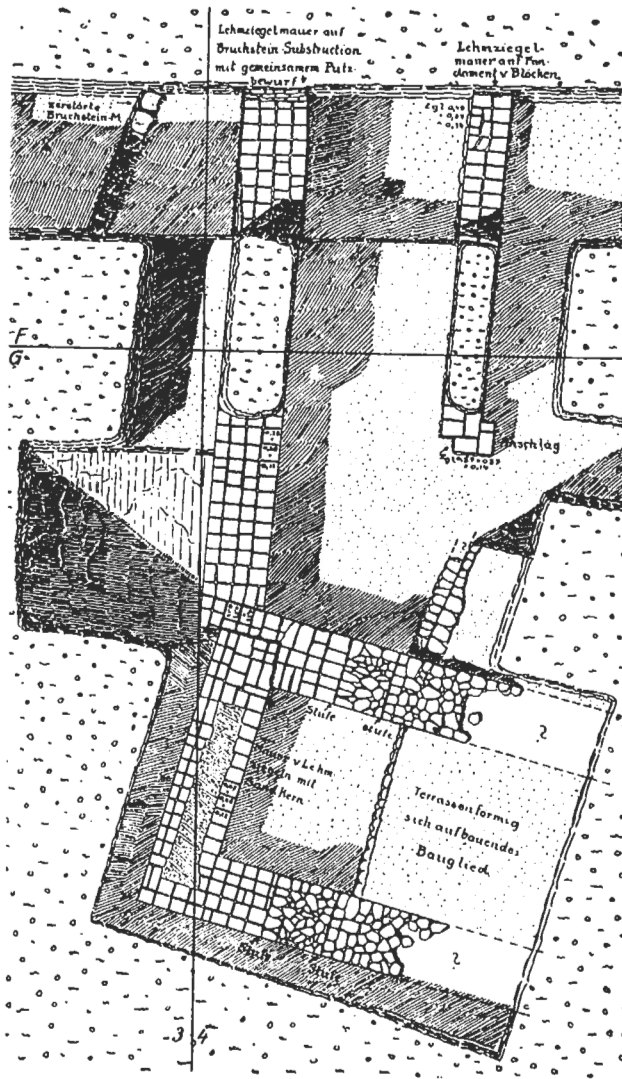


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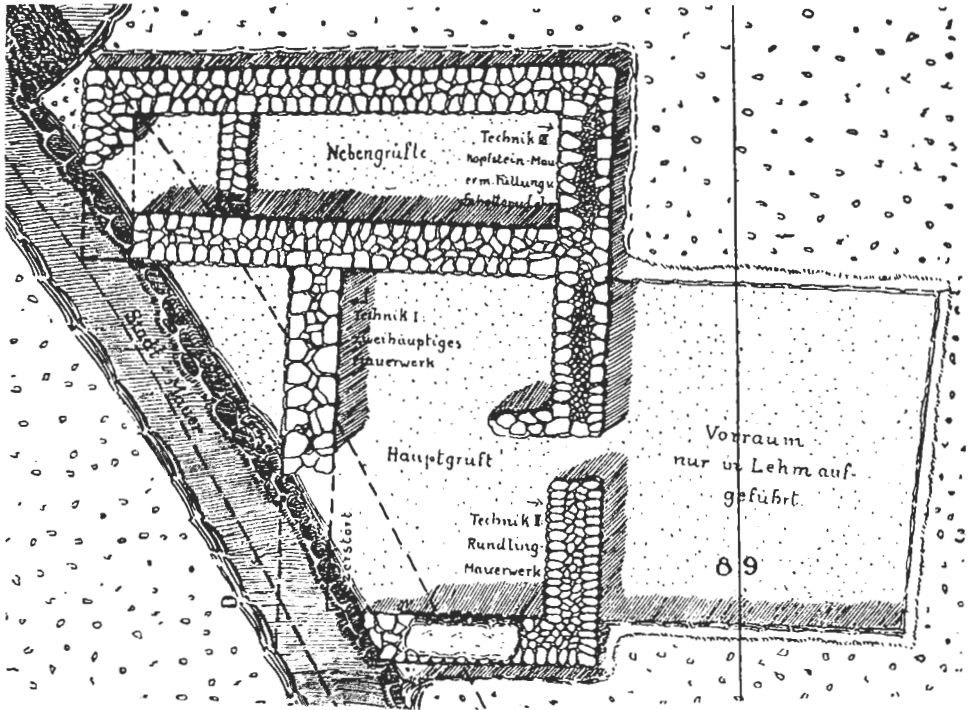


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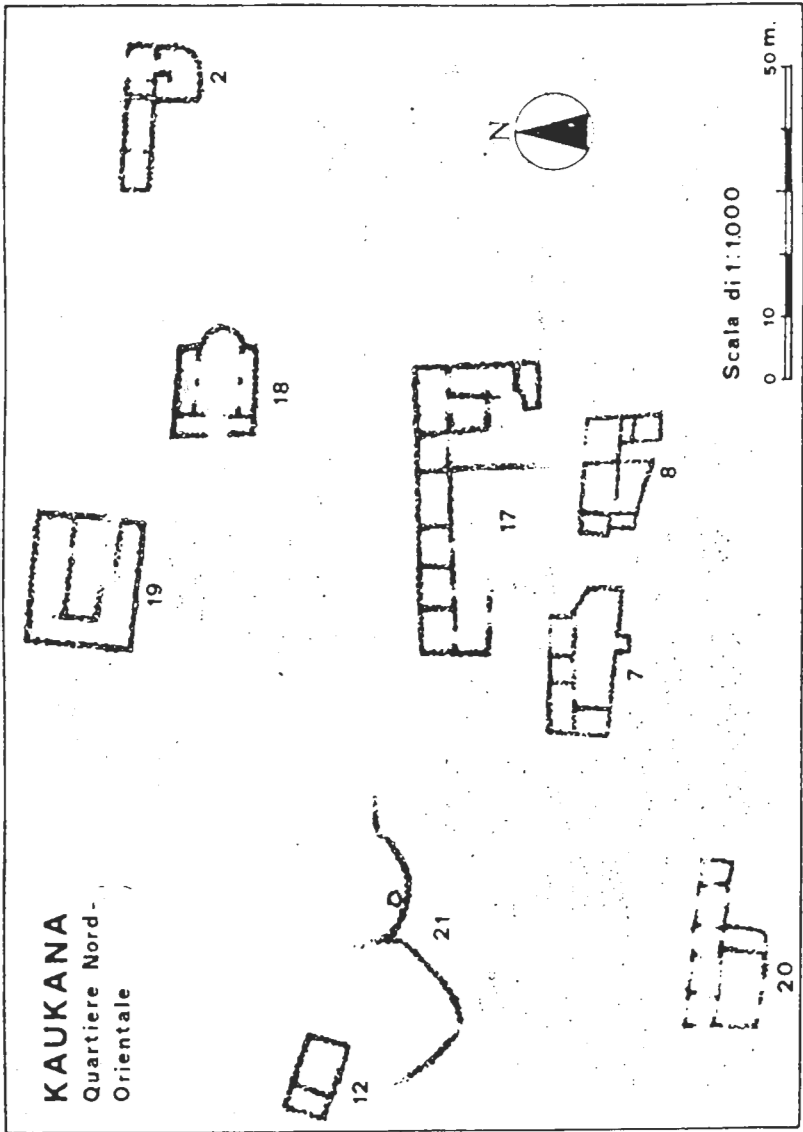


Fig. 10



Fig. 11



Fig. 12

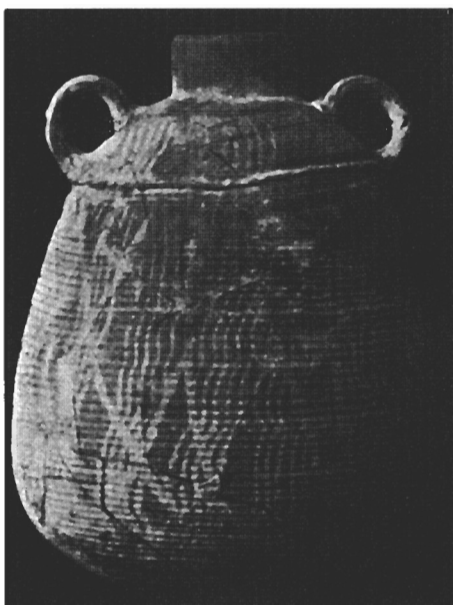


Fig. 13

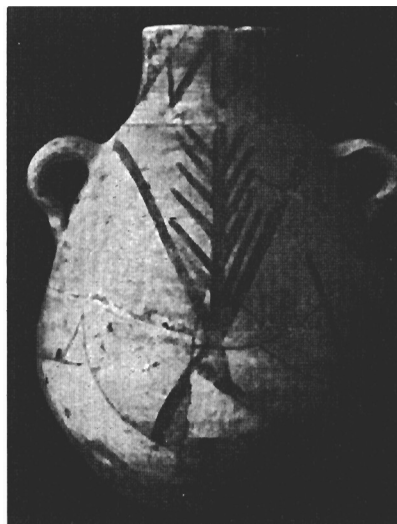


Fig. 14

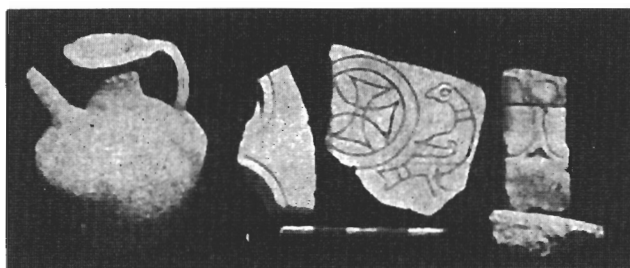


Fig. 15

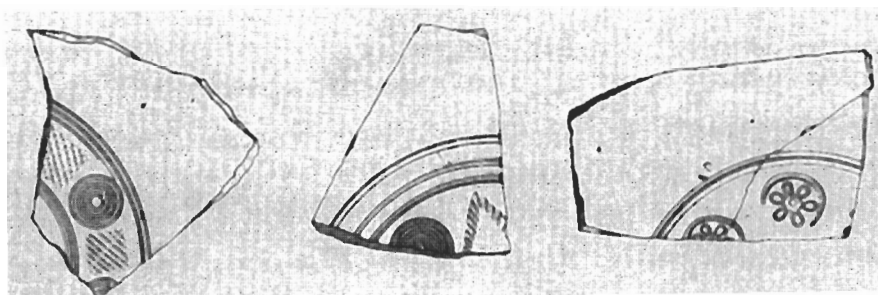


Fig. 16

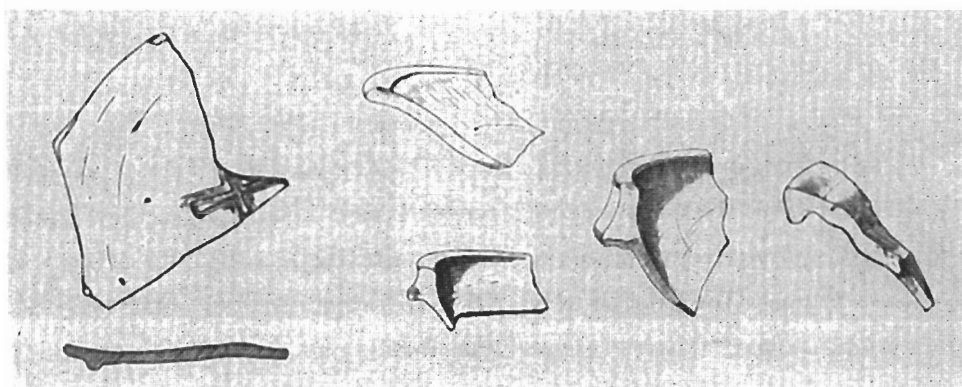


Fig. 17



Fig. 18



Fig. 19

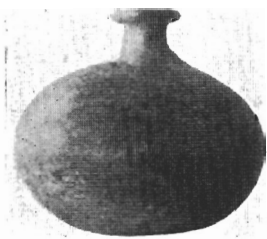


Fig. 20



Fig. 21



Fig. 22

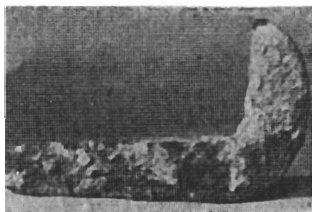


Fig. 23



Fig. 24

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