British Academy Monographs in Archaeology No. 10

BELMONT CASTLE

The Excavation of a Crusader Stronghold in the Kingdom of Jerusalem

Richard P. Harper and Denys Pringle

Published for
THE COUNCIL FOR BRITISH RESEARCH IN THE LEVANT
by OXFORD UNIVERSITY PRESS

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The Excavation of a Crusader Stronghold in the Kingdom of Jerusalem

by
Richard P. Harper and Denys Pringle

in collaboration with
Anthony Grey and Robert Will

and with contributions by
Joanne Clarke, Paul Croft, Shimon Dar, Shimon Gibson, Kathryn Knowles,
Michael Metcalf, Alan Millard and St John Simpson

Published for
the Council for British Research in the Levant
by Oxford University Press

Oxford University Press Walton Street, Oxford OX2 6DP
Oxford New York Toronto
Delhi Bombay Calcutta Madras Karachi
Quala Lumpur Singapore Hong Kong Tokyo
Nairobi Dar es Salaam Cape Town
Melbourne Auckland Madrid
and associated companies in
Berlin Ibadan

Oxford is a trade mark of Oxford University Press

Published in the United States
by Oxford University Press Inc., New York

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British Library Cataloguing in Publication Data
0-19-727009-3

Typeset by Meeks & Middleton
Printed by Bookcraft (Bath) Limited,
Midsomer Norton, Somerset

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PREFACE

During the nine decades that followed the conquest of Jerusalem by the army of the First Crusade in 1099, the landscape around the city was transformed as a result of an influx of western Christians, both religious and lay people, eager to settle near to the places associated with Christ's life, death and resurrection. By the 1160s, the property market was such that one Westerner who wanted to purchase an estate in the area with which to support himself and his wife was told by his agent, the Hospitallers of St John, that they could find nothing available. In recent years archaeological fieldwork has begun to enhance considerably our knowledge of these settlement activities, which are known otherwise mainly from documentary sources alone. In addition to documenting on the basis of pottery finds those sites and villages that were occupied during the twelfth century, a range of building types clearly associated with Frankish settlement has also been identified, including towers, hall-houses, courtyard buildings or manor houses, castles, churches and religious houses. However, since few of these sites have been excavated by modern methods, it is often difficult to understand fully their sequence of development and the uses to which they were put. Furthermore, the study of individual sites and buildings, if carried out in isolation, does not go far to explain how those who built them or lived in them would have related to the landscape round about and to the rural population that they found already inhabiting it. The excavations which took place at Belmont Castle (Suba, Zova) over four summer seasons between 1986 and 1989 and the landscape survey carried out in 1998 were intended to respond to these general questions.

The excavations were sponsored by the British School of Archaeology in Jerusalem, with additional support from the British Academy and from the Society of Antiquaries of London. A survey of other Crusader castles, carried out in conjunction with the Belmont Castle project in 1989, was also supported by a grant from the Royal Archaeological Institute. The School's successor body, the Council for British Research in the Levant, is grateful to the Israel Antiquities Authority for granting excavation licences over four seasons and a survey licence in 1989, and for allowing access to archive material housed in the Rockefeller Museum.

The excavation was directed in the field by Richard P. Harper, at that time the Director of the British School of Archaeology in Jerusalem. Denys Pringle advised on historical and architectural aspects during the brief periods when he was able to visit Jerusalem, and also supervised the work on the pottery. The major part of the post-excavation work on the finds was carried out under Richard Harper's supervision by Anthony Grey, who also drafted a data structure report on the excavation. The latter forms the basis for the final excavation report by Robert Will that is published here (Chapter 4). The monograph has been edited for publication by Denys Pringle.

Among the many individuals and organizations who have contributed to the successful completion and publication of this project the authors would like to thank: Dr Amos Kloner, then Area Archaeologist of the IAA, for his initial advice and continuing encouragement; the members of Kibbutz Zova, and in particular their designated representative, Mr Reuven Kalifon, for their hospitality and assistance during the excavation; Dr Lindy Grant, for help in obtaining access to the photographs of the late Dr R.C. Smail, housed in the Conway Library of the Courtauld Institute, University of London; Dr John Healey, former monographs editor of the British School of Archaeology in Jerusalem, and Dr Piotr Bienkowski, monographs editor of the Council for British Research in the Levant, for their assistance in seeing the volume through the press.

The excavation was carried out with only a very small contribution from paid labour. It is therefore even more than usually apposite to thank most sincerely the teams of volunteers, mostly from British universities but also including some from as far away as Australia and Canada, who annually faced Belmont's wilderness of giant rubble and spiky plants to bring the remains of the castle to light. Architectural survey in all four seasons was undertaken by Matthew Pease. Additional publication drawings were produced by Henny Piezonka, David Swan and Peter E. Leach. The drawings of the clay pipes (Chapter 13) are by St John Simpson.

Shimon Gibson, Shimon Dar and Joanne Clarke are grateful to Yaacov Hatzubai of Kibbutz Zova for his help during their excursions in the surrounding landscape (Chapter 2). Mark Roughley joined them on two of their field trips and drew examples of lamps from the pottery kiln. They are also grateful to Dr Eric Lapp for his advice regarding the lamps from the pottery kiln. Financial support for their excursions was provided by the Ingeborg Rennart Centre of Jerusalem Studies, Bar Ilan University, and they express their thanks to Professor Joshua Shwartz for his assistance. They are also grateful to Dr Rupert Chapman and Ms Felicity Cobbing for help during examination of archival material in the Palestine Exploration Fund, London.

Anthony Grey thanks Dr Juan Souto for contributing several of the illustrations to the unglazed pottery report (Chapter 6), and Dr Ilani and Dr Naomi Porat of the Geological Survey of Israel for their evaluation of the non-glass objects (Chapter 12). St John Simpson expresses his gratitude to the Council of the British School of Archaeology in Jerusalem for a grant which enabled him to study the clay pipes from Belmont (Chapter 13), and thanks Andrew Petersen, Heather Nixon, Anthony Grey, John Wood and Rebecca Robinson for their assistance. Paul Croft (Chapter 14) thanks Sven Mathiasson for kindly allowing him access to comparative faunal specimens in the Natural History Museum, Gothenburg, Sweden. Denys Pringle also thanks Christoph Maier and James Metcalf for their assistance in surveying *Aqua Bella* in 1986.

R.D.P., Edinburgh
R.P.H., Durham
25 July 1999

CHAPTER 1
THE SITE AND ITS HISTORY
Denys Pringle

The remains of the Crusading castle of Belmont lie today beneath those of the Arab village of Suba (Palestine Grid ref. 1620.1324), abandoned by its inhabitants since 1948. The site occupies the summit of a conical hill, rising 750m above sea level and commanding views in all directions (Fig. 1.1; Pls. 1.1–1.3). To the north-west it overlooks the Jaffa to Jerusalem road, where it winds up through the village of Abu Ghosh (Qaryat al-'Inab) and its fertile valley. To the south-east is the deep valley in which lie 'Ain Karim and the route to Bethlehem. To the north-east, the hills of Qastal and Nabi Samwil stand out on the skyline, in the twelfth century being occupied respectively by the Hospitaller castle of *Belveer* (Pringle 1997: 118, no. R15) and the Premonstratensian abbey of St Samuel, founded by King Baldwin II sometime before 1131 (Pringle 1993: II, 85–94, no. 159). To the south the landscape falls away in a series of massive undulations towards the ravine of the Wadi as-Sarar (Nahal Soreq), which represents, as the nineteenth-century builders of the Jaffa to Jerusalem railway realized, the easiest natural route of penetration from the coastal plain to Jerusalem and Bethlehem.

The strategic significance of Jabal Suba, clear enough to anyone willing to climb its summit, would have made it from early times a prime position for settlement. The place may perhaps be identified with Σωρης or 'Εωβης (*Σωβης), which is mentioned in the Greek version of the Book of Joshua (15.59a) in the town list for Judah, under the district of Bethlehem; but attempts to equate it with Zobah (1 Samuel 14.47; 2 Samuel 23.36) appear to be unfounded (Aharoni 1979: 287, 355, 443; Haldar 1962; Kallai 1986: 392–5; Abel 1967: II, 423–4). At a later date, it may be possible to identify the site with *Sebô'im*, a village mentioned in rabbinical sources of the later Roman period (Avi-Yonah 1940: 11; 1976: 94; *contra* Abel 1967: II, 424, 452). The survival of rock-cut tombs and remains of a mosaic pavement also indicate occupation of some kind in the Iron Age and Byzantine period (Conder and Kitchener 1881: III, 18, 158; Guérin 1868: I, 265–6; Saller 1946: 82 n.2, 87 n.1; Kloner 1982).

Their ignorance of any certain antique or Biblical identification for Suba, however, did not deter the Westerners who settled in Palestine in the twelfth century from finding one for themselves. At the time when the pilgrims of the First Crusade began the final stage of their journey from Lydda to Jerusalem in June 1099, the burial place of the Maccabees at Modein (today al-Midiya) was pointed out to them in the vicinity of *Emmaus-Nicopolis* ('Amwas), the ruined Byzantine city lying at the foot of the hills of Judaea where they meet the Shephelah (William of Tyre, VIII, 1 (*CCCM*, LXIII, 381; trans. Babcock and Krey, I, 339); Fulcher of Chartres, I, 25 (*RHC Occ*, III, 354; trans. Ryan, 115); cf. Abel 1967: II, 391; Pringle 1993: II, 6). Sometime during the first four decades of the twelfth century, however, an alternative location for Biblical Emmaus was established at Abu Ghosh (Qaryat al-'Inab), a former Roman and Abbasid road-station closer to Jerusalem, where around 1140 the Order of St John constructed a new church of the Resurrection (cf. Abel 1967: II, 420; de Vaux and Steve 1950; Weyl-Carr 1982; Pringle 1993: I, 7–17, no. 1). As a result of the topographical shift of Emmaus from 'Amwas to Abu Ghosh, the hills of Modein (*mons/montes Modin*) were also now 'relocated' to that general area (cf. *Descriptio locorum* (*c.*1131–43), XLIII (*IHC*, II, 106); Fretellus (1137), LXIX (ed. Boeren, 39); Eugesippus (*c.*1148) (*PG*, CXXXIII, 1002–3); John of Würzburg (*c.*1160–65), XXIII (*CCCM*, CXXXIX, 108); Burchard of Mount Sion (1283), X (*IHC*, IV, 202)).

Plate 1.1. Belmont (Suba): the village viewed from the E in the early 20th century.

Plate 1.2. Belmont (Suba): the village seen from the NE in the 1930s.

Plate 1.3. Belmont (Suba): aerial view of the village, taken in the 1930s.

The pilgrim Theoderic, writing in 1169 or 1172, identifes the hills of Modein as lying between 'Ain Karim and the valley in which Abu Ghosh lay. Having described the holy places in and around 'Ain Karim, he continues:

> Near this place are the hills of Modein (*montes Modin*), in which Mattathias stayed with his sons when Antiochus was conquering the city and the children of Israel. Those mountainous regions are called *Belmont* by people today. Near these hills lies the village of Emmaus (*castellum Emaus*), which people now call *Fontenoid*, where the Lord appeared to two disciples on the same day as His Resurrection. (ch. XXXVIII (*CCCM*, CXXXIX, 184))

Although Theoderic does not mention the castle of Belmont, it is evident that it existed by 1171/2 (and perhaps by 1169/70), when its Hospitaller castellan is mentioned in a letter, addressed by the convent of the Hospital to Pope

Figure 1.1. Location map.

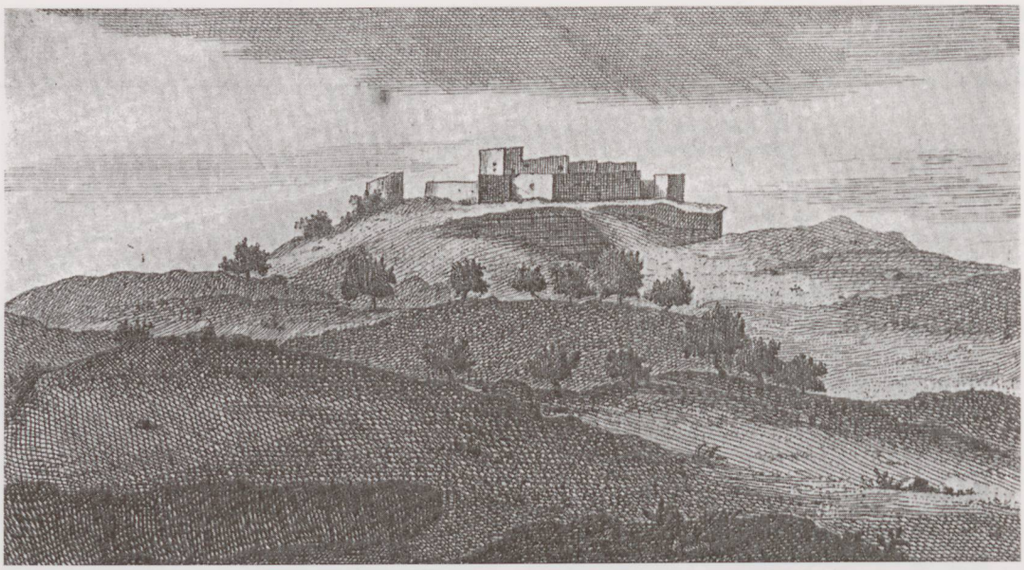


Plate 1.4. Belmont (Suba), as viewed from the NE in an engraving by Cornelius van Bruyn (1698).

Alexander III, as having played a part in attempting to resolve the crisis brought about by the resignation of the master, Gilbert of Assailly, two years before (Hiestand, *Vorarbeiten*, II, 222–7, no. 19; cf. *CGOH*, I, 276–7, no. 403; Paoli, I, 229, no. 186; *RRH*, 126, no. 480; cf. Riley-Smith 1967: 61–3). An earlier castellan may also plausibly be identified in William of Belmont (Willelmus de Bellomonte/de Belmont), another Hospitaller brother. In 1157, he is found assisting the order's treasurer and preceptor in a property transaction in Jerusalem (*CGOH*, I, 188–9, no. 249; *RRH*, 85, no. 329); and, on 16 August 1162, he appears as witness to a charter which Baldwin of Mirabel issued with the consent of his brother, Hugh of Ibelin, lord of Ramla, concerning the grant of a house in Jaffa (Kohler, *Chartes*, 35, no. 32; *RRH Ad*, 22, no. 370b). In April 1186, the castellan of Belmont was Brother Bernard (de Asinaria), who from 1163 had been master of the *Asnerie*, the Hospital's large extramural hospice located near St Stephen's church just outside the north gate of the city (*CGOH*, I, 503, no. 803; *RRH*, 173, no. 651; cf. *CGOH*, I, 226, no. 312 (1163); 255, no. 372 (1167); 311, no. 450 (1173); 319, no. 464 (1174); 322, no. 469 (1175); 349, no. 508 (1177); IV, 248–9, no. 372 (1167); *RRH*, 103–4, no. 391 (1163); *RRH Ad*, 27, no. 434a (1167)).

In the 1160s, the Hospitallers seem to have possessed a number of properties in the area around Belmont (cf. Beyer 1942: 180–81). Sometime between 1163 and 1169, their master, Gilbert of Assailly, offered the income from four neighbouring villages, *castellum Emaus* (Abu Ghosh, Qaryat al-'Inab), *Aqua Bella* (Kh. 'Iqbala, Dair al-Banat), *Belveer* (Qastal) and *Saltus Muratus* (probably Qaluniya), to Bela, duke of Hungary, in return for a gift of 10,000 bezants, so that the duke and his wife could maintain themselves while they were on pilgrimage in the Holy Land (*CGOH*, I, 222–3, no. 309; *RRH*, 120–21, no. 458). As it turned out, the duke never set foot in Palestine and the properties remained in the hands of the Hospital. The date at which the Hospitallers first acquired these and perhaps other nearby properties, however, is more difficult to assess, though the dating of the church at *castellum Emaus* suggests that this site at least was in their possession by *c.*1140 (Pringle 1993: I, 15–17). The same may have been true of Belmont, to whose castellan and garrison would have fallen the responsibility for administering and protecting the estates in the region, besides assuring the security of travellers on the road from Ramla to Jerusalem that passed through Latrun and Abu Ghosh (cf. Riley-Smith 1967: 320, 429; Benvenisti 1970: 229; Fischer, Isaac and Roll 1996: 335–6, fig. 42; Pringle 1998: 108–9).

In late July 1187, following the destruction of the Frankish army at the Horns of Hattin on 4 July, it was evidently down that same route (*per descensum montis Modin*) that a party of Turks, escorting Christian refugees from Mirabel (Majdal Yaba) to Jerusalem, were driven after being attacked and routed by Templars and men from Jerusalem at Nabi Samwil (*Mons Gaudii*) (*Libellus de expugnatione Terrae Sanctae* (*RS*, LXVI, 230)). Belmont (*Ṣūbā*) itself, perhaps already abandoned by its Hospitaller garrison, fell to Saladin in August 1187 (Abū Shāmā (*RHC Or*, IV, 303); 'Imād al-Dīn (trans. Massé, 99)), though it is falsely claimed by one source that it was only surrendered at the time of the fall of Jerusalem itself, early in October, when Balian of Ibelin supposedly added it and four other castles to the ransom of 30,000 gold dinars that he paid for the release of 7,000 Christian prisoners (Röhricht 1874: I, 189; 1898: 459 n.2; Rey 1883: 383; cf. Runciman 1951: II, 465–6).

In September 1191, *Bellum Montem* was included in a list of fortresses which Saladin was supposed by Western writers to have commanded his brother, al-'Ādil, to destroy on the approach of the army of the Third Crusade (*Itin. Ric.*, IV, 23 (*RS*, XXXVIII.i, 280); Ambroise, line 6857; cf. Conder 1897: 279). Whether the Crusaders ever reached it is uncertain, though in June 1192 King Richard himself is reported to have been at Abu Ghosh (*la fontaine d'Esmals*), where he surprised a group of Muslims, pursuing them to within sight of Jerusalem (Ambroise, line 9846; *Itin. Ric.*, 49 (RS, XXXVIII.1, 369)). A certain Hospitaller knight, Geoffrey of Belmont (Gaufridus de Bellomonte), who witnessed a charter in Antioch in 1203, may perhaps have been a surviving member of its garrison (*RRH Ad*, 51–2, no. 792a). Thereafter Belmont disappears from the records.

The village of Suba, however, continued to exist and is mentioned around 1225 by the Arab geographer Yāqūt (Le Strange 1890: 538; Marmardji 1951: 119). Its precise location at this time is unknown, though it would be logical to expect the villagers to have made use of the security of the dismantled hilltop castle from an early date. It is uncertain whether or not the village was reoccupied by the Franks during the period between 1229 and 1244 when Jerusalem was again in their hands. It cannot be readily identified with any of the villages around Jerusalem and Bethlehem that are listed in Richard of Cornwall's letter recording his treaty of 1241 (Matthew Paris, *Chron. maj.* (*RS*, LVII.iv, 142–3)).

Nothing is known of Suba during the Mamluk period (1250–1516), but in Ottoman times the sources become more informative. In 1557, for example, the tax burden falling on the village was temporarily lightened, following an attack made on two of its leaders by the *sipahi* Sinan, who was farming part of its revenues (Singer 1994: 107–8). Another *sipahi* of Suba, Yusuf Ibn 'Abdallah, is also mentioned in the sixteenth century bringing a case before the *qadi* in Jerusalem against two peasants of Maliha, who had allegedly planted grape vines without his consent (Singer 1994: 93). The Ottoman taxation survey of 1596/7 records *Ṣūbā* as having a population of 60 Muslim and 7 Christian families, amounting probably to around 335 souls. The taxes on agricultural products also suggest an evenly balanced agrarian economy, divided almost equally (in terms of the value of the products) between arable cultivation in the valley bottoms, and orchards, vineyards and rough pasture (supporting goats and bees) on the terraced hill-slopes and wastes above. The most valuable commodity of Suba was grape syrup, to which, it may be suspected, the Christian inhabitants would have applied their own particular processing methods. The relative values of the different products suggested by the taxation returns are indicated in the following table (Hütteroth and Abdulfattah 1977: 115, no. Z170):

Products	**% value**
Wheat	27.27
Barley	22.91
Grape syrup	28.36
Olives and olive oil	3.27
Goats and bees	18.18

The hill on which the village stood was still being identified as Modein of the Maccabees as late as the eighteenth century, though Richard Pococke, who was also aware of this supposed association, correctly judged it to be mistaken (1743: II, 46–7; cf. Maundrell 1697: 460–1; Mariti 1769: IV, 324–5). An engraving, made in 1698 by Cornelius van Bruyn (Pl. 1.4), shows the village to have been strongly built with a rectangular inner core and a number of tower-like stone houses (1698; 1725; cf. Schiller 1981: 148). In 1691, the inhabitants of Suba (*Modin*) are recorded conspiring with those of neighbouring villages to mount an attack on the people of 'Ain Karim, whom they accused of having accepted bribes from the Franciscans in return for allowing the latter to re-establish a monastic house at the church of St John's birthplace (Saller 1946: 59 n.1; cf. Pringle 1993: I, 32).

In the nineteenth century, Suba and the area around it was visited by an increasing number of European travellers. One such was the Revd. J.D. Paxton, who was resident in Palestine between 1836 and 1838. He describes Suba as

> a cluster of buildings on the top of a hill, called the tomb of the Maccabees. It looked like a fort, or place of defence, and was, so I am told, not long since, the residence of Aboo Goosh, who used to make free with the property of other people; in other words, was a notorious robber. But Ibrahim Pasha has taught such gentry a good lesson. (1839: 111; cf. Thomson 1878: 665–6)

James Finn, the British consul, also visited Suba in 1858, ascending the steep hill to a small lookout tower on the summit.

> In the village we found remains of old masonry, most likely the basement of a fortification of early Saracenic or the Crusaders' era; besides which there was a piece of wall in excellent condition of the best character of Jewish rabbeted stones. One man invited us to see some old stones inside of his house; but they formed a portion of the basement above-mentioned, against which the rest of the house was built. The people were unanimous in declaring that there was nothing else of such a nature in the village. (1868: 426)

In the 1860s, Victor Guérin estimated the size of Suba as scarcely more than 800 inhabitants:

> This mountain, isolated and of conical shape, was crowned on its summit by a small town, now reduced to the status of a simple village, which is also called Sûbâ. Before the invasion of Ibrahim Pasha [1832], is was a strong point, surrounded by former ramparts perfectly constructed in magnificent and well-dressed blocks; but, in 1834, after a lively resistance, it was stormed by Ibrahim and almost completely dismantled. None the less, there exist still in certain points complete stretches of wall almost intact, attesting by the regularity and large dimensions of their courses the beauty of the *enceinte* which used to surround the town and which at that time, even though it would already have suffered greatly from the passage of time and more so of men, was still well enough preserved to offer, despite its numerous breaches, a sufficient shelter to the inhabitants of Sûbâ. On top of the hill stands a small modern tower, of which only the foundations are in part antique; it was rebuilt some twenty years ago. In a number of houses where I penetrated, I observed a certain number of fine well-squared blocks used in the construction, which came either from the ramparts or from former ruined buildings. In a house which is used today for the reception of strangers, the inhabitants assured me that they had seen in former times some ancient tombs, now fallen in. If one can believe them, there was a fairly vast funerary crypt, of which they speak with nothing but admiration. (1868: I, 265–6)

The remains of the fortification seen by Guérin were identified as Crusader work by the officers of the Survey of Western Palestine, who visited Suba in May 1875:

Plate 1.5. Belmont (Suba): site of the castle gate, as seen by a party of visiting Dominicans in the early years of the 20th century. Note the village women carrying jars of water from 'Ain Suba on their heads.

Plate 1.6. Belmont (Suba): site of the castle gate, as it appeared in the 1930s.

> There are remains of a Crusading fortress at this place. Nearly at the top of the hill to the east is a rocky scarp, 20 feet [6.1m] high, sloping, and fitted with a sloping masonry revetment of good-sized drafted masonry. The draft has a diagonal dressing like that on twelfth century masonry. This fortress was destroyed by Muhammed Aly, and rebuilt by Abu Ghosh. It was again destroyed at a later period. There are remains of Crusading buildings in all parts of the village, and a stone altar, with steps, marks the probable position of the church. The central tower, which is very conspicuous, seems also Crusading work, and one of the streets has a wall of roughly-dressed large stones, with joints packed (as at Kuryet el 'Enab [Abu Ghosh]) with small chips. A little to the west of the village is a large vaulted building, with drafted stones in the walls. (Conder and Kitchener 1881: III, 157–8, cf. 18)

Conder and Kitchener also identify Suba as the village or district known as Belmont in the twelfth century (1881: III; 18–19; cf. Rey 1883: 383–4).

A romantic view of the site appears in Sir Charles Wilson's *Picturesque Palestine* (see Pl. 2.2). The remains of the castle gateway were also illustrated by Ch. Clermont-Ganneau (compare Pls. 1.5–1.6), who provides some notes on the

Plate 1.7. Belmont (Suba): the NE corner of the outer *enceinte*, as seen in the first decades of the 20th century.

Plate 1.8. Belmont (Suba): rock-cut *talus* of the W side of the outer *enceinte*, looking S.

medieval masonry and masons' marks from the Crusader castle (1896: I, 23, 480–81; cf. de Sandoli 1974: 240; Pringle 1981: 183). It may or may not be significant that the closest correlation of these, as a group, is with those recorded on the tower of the church of the Holy Sepulchre, a building securely dated to the second half of the twelfth century (Pringle 1981: 196–7, fig. 7).

The Muslim shrines of Suba are described by Chester C. McCown, an American scholar who visited the site in November 1920. Two lay outside the village itself (see Ch. 2 below), and another two, besides the mosque, inside:

> The *weli* of the 'Forty Martyrs' (*el arba'in sahid*) is a small, half-underground room on the hillside, among the hovels of the village. On one side the hill makes a wall, on the other is the dooryard of a house. The roof is level with the floor of the house above. What remained of the entrance, abutting on one of the village alleyways, had been walled up to keep the chickens out, so we were told. They said there was nothing inside. The fourth *weli* was called the 'reformers (or 'pious ones') of the gate' (*sullah el-bab*). It was merely an angle where a short piece of ruined wall joined another. The lowest course of masonry was probably the remains of one of the Crusaders' buildings; above, other courses had been piled by later hands using some of the stones from Crusading times. At this corner there was a considerable whitewashed spot where it was customary to offer sacrifice to the *weli*... The village mosque, which stands on the highest part of the hill where the Crusaders' church once stood, looked almost deserted. It was not named with the other [Muslim] shrines'. (1921–22: 56, pl. 13 [showing the fourth *weli*])

The Palestinian ethnographer Tewfik Canaan also describes the *weli* which McCown had called *sullah el-bab*:

> In Soba the Arb'in Mghazi are represented by a small shallow hole in the old masonry. This was also called *mgharah*. Here lights and incense are burnt. (1927: 59)

The remains of the castle have also been noted by various other writers from the time of the British Mandate onwards (e.g. Johns 1937: 24 (J5); Deschamps 1939: 15, 20-21;

Palestine 1948: 155; Langé 1965: 94, 179, fig. 43; Benvenisti 1970: 229; Hoade 1978: 601; Pringle 1997: 96 (no. 207), fig. 53) (see Pls. 1.7–1.8).

The census carried out in 1931 records the population of Suba as 434, all of them Muslim (Mills 1932: 43); the number had risen to 620 by 1944/5 (Khalidi 1992: 317). Already before the period of intercommunal strife towards the end of the Mandate, however, a disagreement within the Arab comminity in Suba had resulted in a part of the population leaving the village to settle at 'Ain Rafa, 1.5km away downhill to the north-west. During the war of 1947–8, these fugitives were joined by the remainder. After failing to take the village in April 1948, Israeli forces finally captured it during the night of 12–13 July (Khalidi 1992: 318). They later proceeded to destroy part of the outer ring ring of village houses and to install among the ruins a system of defensive trenches and command posts, turning Suba once again into a strategic military position defending Jerusalem's lifeline to the sea. Kibbutz Zova (originally Ameilim), founded in 1948 on the lower promontory just west of Suba, represented the civilian counterpart to this military outpost.

Today Jabal Suba is state land, enclosed by the lands of the kibbutz. The military have departed, and the site lies abandoned.

CHAPTER 2
THE ARCHAEOLOGICAL SETTING AND THE SURROUNDING LANDSCAPE

Shimon Gibson, Shimon Dar, and Joanne Clarke

Introduction

Suba is one of a number of small Palestinian villages located west of Jerusalem, within the Bani Malik District, many of which were abandoned or destroyed following the 1948 war (Thompson, Gonçalves and Van Cangh 1988: 104–5; Khalidi 1992). Few of them have been subject to proper archaeological investigation, except for the present site and neighbouring Sataf (Gibson, Ibbs and Kloner 1991).

Suba and the surrounding villages were situated close to natural springs of water, and were provided with numerous rock-hewn cisterns for the storage of rainwater. A network of fenced paths linked the villages with each other and with the fields (Fig. 2.1). Four kinds of agricultural field systems characterize the region: terracing on steep slopes used for the growing of olives and vines; block-fields enclosed with stone fences located on the flat shoulders of hills for dry farming; well-levelled slope terraces used for irrigated crops and orchards; and terraced check-dams in the wadis for cereal cultivation (for further details, see Gibson 1995; 1998). The prevalent soil type is *terra rossa* and the average precipitation for the area is about 600 mm. A large percentage of these lands have now been reclaimed for modern agricultural purposes or have undergone reafforestation with pine trees, inevitably resulting in the destruction of the former traditional land divisions. Intermediate zones between village lands were used for the grazing of animals, quarrying, and lime- and charcoal-burning. An early investigation of the terraced landscape surrounding Suba was conducted by the geographer Zvi Ron in the early 1960s (1966: 119–20, fig.12; 1985) (Pl. 2.1).

Early Travellers' Accounts

A useful source of information about Jabal Suba and its immediate environs are seventeenth- to nineteenth-century travelogues. Travellers and pilgrims on the road from Jaffa to Jerusalem frequently remarked on the conical hill after having passed Abu Ghosh and before reaching the spot where they were able to obtain their first glimpse of Jerusalem (e.g. Wood 1880: 375). The name of the hill was given in these accounts as Suba, Soba, Shoba, Zoba, or even Zerba. Travellers also remarked on the hill during excursions in the hills to the west of Jerusalem, after first visiting Bait Jala, the Monastery of the Cross, the spring of St Philip ('Ain Haniya), Bethar (Battir), 'Ain Karim, Sataf, and the Monastery of St John in the Wilderness ('Ain al-Habis).

The interest that travellers had in the site was not owing to any specific singularity in its antiquities, but was because of its supposed identification with Modein which was the hometown and final resting place of the Maccabees (see Chapter 1, for the early origins of this identification). Henry Maundrell, for example, following his visit to the region in 1697, wrote, that while travelling through the countryside of the Wilderness of St John on his way to 'Ain Karim,

> we had in sight Modon, a village on the top of a high hill, the burying place of those heroical defenders of their country, the Maccabees. (1703: 92)

However, Richard Pococke who visited the region was much more critical:

> and to the north west, is a village on a high hill, called Zuba, which, some say, was Modin, where the Maccabees were born and interred; but they seem to be mistaken. (1743: II, 46)

The identification of Suba with Modein persisted until the middle of the nineteenth century with the site being referred to at different times as the 'fort', 'palace', 'family-house' or 'tombs' of the Maccabees; but few people actually visited the site (Richardson 1822: 383; Anon 1823: 307; Stephens 1856: 119). Many travellers were simply satisfied by viewing the mountain from a distance and combining this with garbled bits of information provided by guides or dragomen (Monroe 1835: 124). Buckingham in 1815 wrote:

> Mudden, or Modin, a small town on the summit of the south-western hills, was seen from thence [i.e. 'Ain Karim], and pointed out to us as being the spot which contained the tombs of the heroical Maccabees. (1821: 228)

Enjoying 'the cheerful sky, the charming sun, the deep green foliage', the German Countess Hahn Hahn approached the site from the south in November 1843, and wrote:

> The mountain of the Maccabees, Modin, is on the other side of the valley, and bears upon its summit ancient walls. It is not known whether these form part of a stronghold, or of tombs of these great and good heroes. (1845: 163)

Another example is Tischendorf, who, while travelling through the region in 1844, was given incorrect information from a guide who had clearly confused Nabi Samwil with Suba (1847: 168).

The Modein/Suba identification continued to appear in the accounts of travellers during the second half of the nineteenth century, notwithstanding more realistic new identifications which were being proposed by scholars placing Modein much further west at Emmaus/Latrun or at Khirbat al-Midiya near Lydda (for these identifications, see

Figure 2.1. Belmont (Suba): plan of the modern village and field system (drawn from an air photograph by M. Pease). See Table for descriptions of features (F1–F8).

Plate 2.1. Belmont (Suba): aerial view taken in the 1970s, after demolition of most of the village houses and the construction of a water tank.

the summary in Shwartz 1991: 61–3; for a new suggestion that ancient Modein should be identified at Khirbat al-Burj/Titura, a site some 2km east of al-Midiya, see Gibson 1999). It is only during the final decades of the nineteenth century that the identification of Suba as Modein among travellers began to become unfashionable (Burton 1875: II, 28; Geikie 1887: I, 43). The identification of Suba with biblical Ramathaim-Zophim (see, for example, Ritter 1866: 234–5) was also sometimes set forth in travellers' accounts (Osborn 1868: 300), but there were also dissenters (Wylie 1850, 154). In addition, the site was sometimes identified with the biblical places of Zuph and Kiriath Jearim (Conder 1879: I, 22–3; 1880: 201).

Although Suba was frequently mentioned by travellers, only a handful of these visitors provide information of any significant archaeological value. At the beginning of the eighteenth century, Nathaniel Crouch (also known by his pseudonym Robert Burton), having described 'Ain Karim, went on to mention 'the tombs of the Maccabees, which we saw at a distance, and being ruinated, appear as so many arches' (1719: 93). The reference is probably to the medieval fortifications at the site. These 'arches' may also be the same as the obscure 'aqueduct' mentioned by de Lamartine during his 1832–33 visit. Passing below Suba he described it as 'a barren mountain, surmounted with some ruins of an aqueduct'. Wilson, who passed through the region in 1820, visited Suba very briefly and wrote that

> excavations of the solid rock had lately been made, when several vaulted chambers were discovered. The walls of Modin are most substantial, the lower part, for many feet in height, being cut out of the rock. (1831: 282).

In 1857, Thomson visited the site, stating that the 'whole region is rough and rocky in the extreme, especially along the path from 'Ain Karim to Soba' (1878: 665–6).

The quality of the descriptive detail regarding Suba and its antiquities was very different in the case of the writings of James Finn, British Consul in Palestine in the mid 1850s, but this should not be surprising when one considers that his wife, Elisabeth Finn, was a founding member of the Jerusalem Literary Society which served at that time as a magnet for resident and visiting scholars, explorers and writers alike. In 1858, Finn made an excursion to Suba with his son and a party of friends, passing first through 'Ain Karim and Sataf (Finn 1868: 423–6). Finn was of the opinion that the Suba-Modein identification was extremely tenuous. Having left Sataf, they reached the main spring, which he described as 'dribbling from the rocks', and noticed lemon and orange plantations near by. Further up the slope were vineyards with a few pomegranate trees interspersed. Eventually he ascended the steep hill to a small lookout tower on the summit. Descending the hill, Finn and his companions

> saw a number of olive trees dead of age; none of us, however long resident in Palestine, had seen such before or

> elsewhere; we concluded them to have been withered by age from their bearing no visible tokens of destruction, while the ground was well ploughed around them, and from finding others near them in progressive stages of decay, down to the utter extinction of foliage. (1868: 423–6)

In the 1860s, during his travels through the region, Victor Guérin described Suba as well as the various remains beyond the village itself:

> Outside the town, I noted a number of antique tombs cut into the rock; they are caves, now blocked up, which are still being used by the inhabitants of Suba for burying their dead. The opening is for this reason closed up with large stones, which they remove whenever they have to insert another body. In front of one of these burial caves, which enclose, I was told, a sizeable number of coffin recesses, there extends a platform made by flattening out the rock, which is transformed into a threshing floor at harvest time. One can observe there the slots once intended perhaps to receive the foundations of structures.
>
> Continuing around the upper part of the mountain, I distinguished a second similar platform in front of some other burial caves, either blocked or destroyed. At the foot of the mountain, towards the east, a magnificent holm-oak has been for several centuries the usual meeting-point of the inhabitants. Its immense branches form, in effect, a vast shelter, impenetrable to the sun's rays. Round about lie a certain number of Muslim tombs.
>
> ... Lower still, there extend in a valley cool gardens planted with various fruit trees, such as quinces, oranges, lemons, and pomegranates. I also had pointed out to me there some tombs cut in the rock. These orchards are irrigated by the waters which come down from an ancient spring, where the women of Soba go down continually to fill their jugs or their water-skins. (1868: I, 265–6)

C.R. Conder visited the site during the Survey of Western Palestine in May 1875 (Fig. 2.2). He wrote of it:

> Soba is one of the most picturesquely situated places in Palestine. The village crowns a conical knoll rising from a dark ridge clothed in thick copse of mastic and oak, and the topmost tower forms a conspicuous landmark on all sides. The modern name is exactly descriptive of the site, the word 'sobah' indicating one of the conical heaps of grain which may be seen in the centre of a Syrian threshing-floor in August... There can be no doubt that Soba is an ancient place. Rock-cut tombs of the most ancient form used by the Jews are to be found among the vineyards south of the village, and rock-cut wine presses exist near them. (1880: 201; cf. Neil 1881: 229, regarding the word *sobeh* referring to a conical heap of grain on a threshing floor)

Elsewhere, Conder reported that

> the peasantry say it [Soba] was the palace of the Sultan of the Fenish [i.e. the Philistines], and that his daughter lived at a certain ruined convent near the road, which we saw surrounded with ancient trees — the wilderness formed from its original garden. (1879: I, 21)

In the Survey of Western Palestine *Memoirs* published by the Palestine Exploration Fund, Conder described some of the remains that they encountered in the immediate vicinity of the village:

> South of the village there are rock-cut tombs. One of these was newly opened in 1875. It had nine *kokim* [*loculi*], each of which had a slab closing the end, still in place, and 4 inches [12cm] thick. The roofs of the *kokim*, were arched. Near this was a fine rock-cut wine press with several chambers. Vineyards still exist round the village...South of Soba are the ruins of a Khan. (Conder and Kitchener 1881: I, 158)

From Conder's description it would appear that the rock-cut tombs are typical *loculi*-tombs dating from the Early Roman period (Kloner 1980). Fr Saller later reported seeing the openings to several tomb chambers on the south slope to the west of 'Ain Suba. He also mentioned a shaft-tomb containing a lead coffin, which is clearly of Late Roman period, found in the area of Suba's car park: presumably this is in the area to the east of the hill (1946: 82 n.2; 87 n.1).

Results of Survey

Preliminary reconnaisance work was undertaken by the present authors in the summer of 1998 with the view to organizing at some future date a more thorough field survey within the immediate surroundings of Jabal Suba. The following are some interim conclusions based on observations made during several excursions. Identifiable remains were given feature numbers using a methodology successfully developed during the Dor and Modein projects (Gibson, Kingsley and Clarke 1999; Gibson 1999).

We know from the accounts published by explorers and travellers that in the nineteenth century the hill of Suba was terraced from top to bottom and this was also true for the adjoining hills and valleys (see, for example, the engraving of Suba and its surroundings reproduced in Conder 1880: 198). This is no longer the case. Since the founding of Kibbutz Zova (Ameilim) in 1948, immediately west of the ancient site, the surrounding agricultural lands have been transformed quite substantially with the use of mechanical equipment. Large areas to the east and south, for example, have been cleared of their terraces and fenced walls to make way for modern orchards and it is no longer possible to determine the original layout of the fields without recourse to early aerial photographs. The terraces on the upper slopes of the hill immediately below the medieval fortifications are still in existence, but these are in a very bad state of decay and collapse, and their surfaces have become heavily overgrown with expanding areas of cactus plants. However, they still deserve study, as well as the terraces used for irrigation which are fairly well preserved in the immediate vicinity of the spring of 'Ain Suba and as far south as Wadi ash-Shammarin (also known as Wadi Isma'il). Work at Sataf, a village located two kilometres to the south of Suba, has shown that terracing

Figure 2.2. Jabal Suba and its surroundings in an engraving from the nineteenth century (Conder 1880: 201).

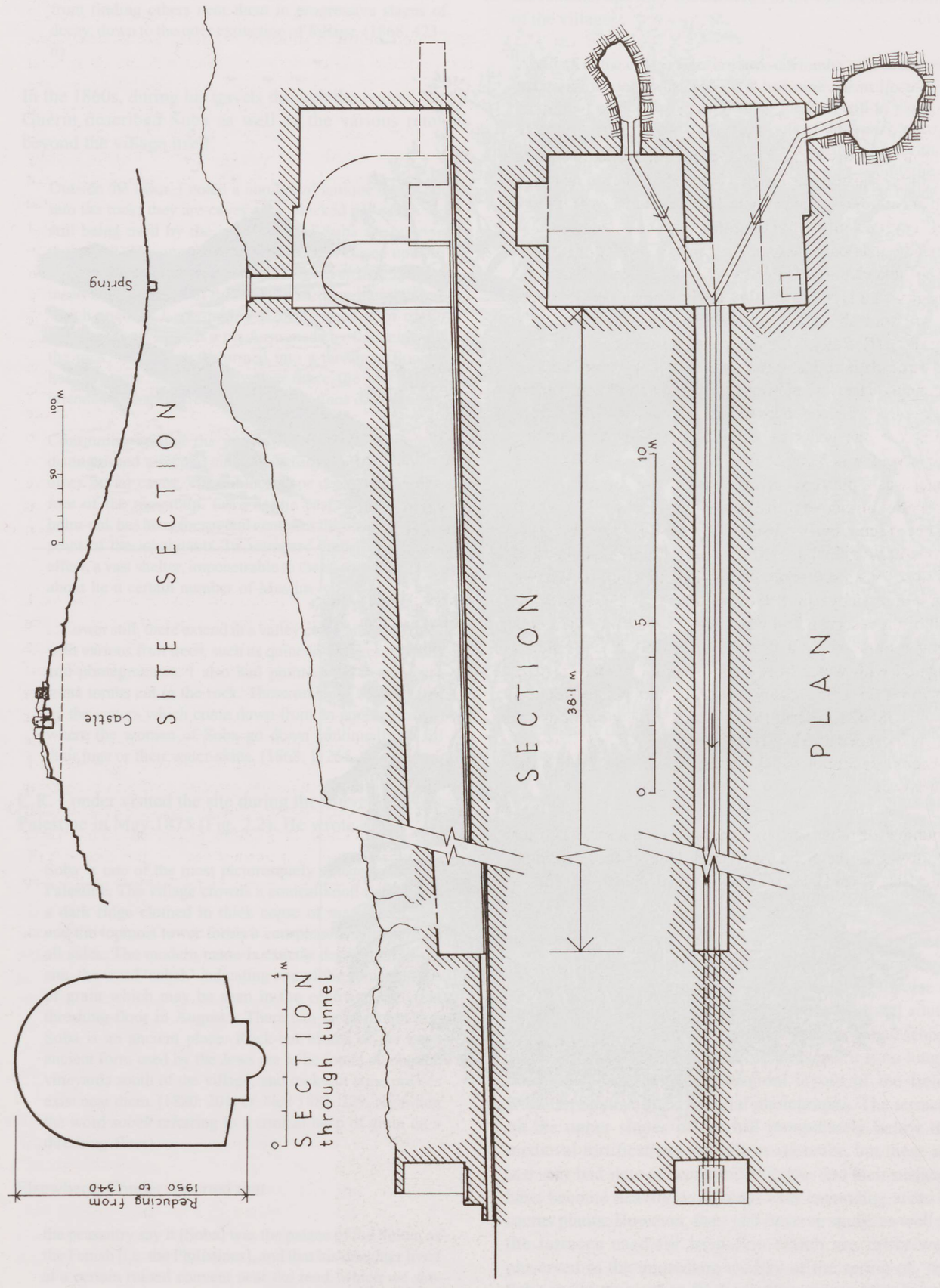


Figure 2.3. 'Ain Suba (F3): the spring, plan and sections (drawn by M. Pease).

was the cumulative result of rural building activities extending over many thousands of years, from the Early Bronze Age to Ottoman times (Gibson, Ibbs and Kloner 1991).

The principal spring, 'Ain Suba (F3), is located on the lower south-eastern slope, a distance of some 400m from the summit of Jabal Suba. A well-defined path once linked the settlement with the spring (SWP 1880: sheet XVII; SP 1934). In the nineteenth century, H.E. Osborn referred to this spring as 'a little clear-running brook' (1868: 300).The spring issues from an aquifer, with channels drawing the water from two rock cavities into a rectangular underground chamber divided into two rooms (see Fig. 2.3). Incorporated into the roof of this chamber is a barrel-vault with smooth dressed masonry of a type resembling Early Roman period vaults known from above the entrance to the Siloam spring in Jerusalem (R. Reich: personal communication) and Tall al-Ful (unpublished excavations by S. Gibson and Z. Greenhut). The chamber was partly rebuilt with iron girders and cement in 1939. A flow tunnel extends for 38.10m to the south-east; the walls were built of field stones and the arched roof was built of flat ashlars. In the floor of the tunnel was a plastered channel. It led to a small washing pool below an alcove with a pointed arch (see Pl. 2.2), which has been rebuilt fairly substantially recently. From this pool, an open channel supported by a wall ran to the south and fed water, via a settling tank, into a rectangular rock-hewn reservoir (*c.*10 by *c.*6m). Two outlets are visible in the south wall of the reservoir and water was conveyed to the fields along a channel by a process of gravitation. Orchards irrigated with water from the spring are known to have grown on the adjacent terraces in the nineteenth century (Finn 1858: 423; Guérin 1868: I, 265–6; these orchards are clearly indicated on SWP 1880: sheet XVII). These irrigated terraces descend southwards down to Wadi ash-Shammarin.

A number of other springs feeding from the same aquifer are known in the Suba hinterland. One of these springs, 'Ain al-Harib (or Harab) (F8), is located on the lower south-south-eastern slope of Suba, at a distance of some 150m from 'Ain Suba, and consists of a flow tunnel extending for approximately 15m to a plastered pool overlooking terraced fields on the slope below. Much of the flow tunnel is located below a modern orchard and is nowadays inaccessible (two modern manholes indicate its general alignment). Some 30m further down the slope are the remains of a large rock-cut area which may have served as an open pool. A small cave exists in the back wall. Early Roman potsherds (first century BC to first century AD) were recovered from fills when mechanical equipment was used by kibbutz members to cut a sondage next to the travertine-covered back wall of the installation. Another spring, 'Ain al-Badawiya, is located about 500m to the north-west of the hill (SP 1934), but it was not found during our field trips. A very small spring (F5) is located on the south-western outskirts of Kibbutz Zova, less than 1km to the west of ancient Suba (SP 1934). It consists of a small cave with water flowing out of the back wall, but only during the spring months; in the summer it is usually dry. The Suba springs belong to a group of some 87 spring-irrigated terrace systems in the hills west of Jerusalem, which, according to Ron (1985: 151), represent 0.6% of the total of terracing in the same region. Terraced lands used for irrigation have previously been explored during archaeological work at different locations in the highlands of Palestine (Gibson and Edelstein 1985: 143; Dar 1986: 199–200).

On the southern slope of Suba, immediately below the track which presently leads up to the site from the west, are the remains of a large barrel-vaulted structure (F7) in an area referred to on maps as Esh Sheikh Ibrahim (SP 1934) and by Canaan (1927, 51 n.1) as Es Sultan Ibrahim. Its roof largely collapsed in 1956 following a harsh winter (personal communication from Yaacov Hatzubai). The debris from within the structure was recently removed with the use of mechanical equipment revealing circular crushing stones belonging to an oil-press. These circular stones were taken to the grounds of Kibbutz Zova where they are displayed in a garden next to the dining hall. This vaulted structure is apparently the 'khan' mentioned

Plate 2.2. 'Ain Suba (F3): the spring, with Jabal Suba behind.

by Conder (Conder and Kitchener 1881: I, 158), and the 'long underground vault used as an oil press' which was observed by C.C. McCown in 1920 (1921–22: 56). A report with photographs filed by an Inspector of the Palestine Department of Antiquities, evidently sometime between 1920 and 1947, provides important details regarding this interesting building:

> South of the village of Soba (which is placed on the top of a high hill) are the remains of Crusading works. The original building seems once to have been a rectangular structure, but considerable portions of it have been destroyed.
>
> There is at present to be seen a long barrel-vaulted chamber open at the east and built of rough blocks of stone. It was formerly plastered inside. The chamber measures roughly 28m long by 9m wide and 9m high. At the end of this (so the inhabitants informed us) is a storeroom filled up with rubbish. North of the chamber referred to and adjacent to it, is a smaller chamber 4m wide by 9m high. This was perhaps originally as long as the first chamber, but one end has been destroyed and is now blocked up with modern masonry.
>
> The dimensions of the original building must have been roughly 34m long east–west and 24m wide north–south. The bottom courses of the north-east corner are the best preserved. Medium sized blocks are used with large irregular bosses. The drafting is also very irregular. South-east of the building just described is a well-preserved chamber, the roof of which is supported by a square pier at its centre. This last appears to be of Saracenic work. The chamber measures approximately 13m north–south by 9m east–west. It has a groined roof with herring-bone angles constructed of small blocks of roughly dressed stone. There is a pilastered column in the middle of the north and south walls in line with the pier in the centre. These columns project for about 0.5m into the chamber. The centre pier is constructed of small blocks, well-cut and dressed. A square rib runs across from this pier north and south to the pilasters in the walls. (Archives of the IAA, Rockefeller Museum, Jerusalem: File No.178, Suba)

The structures described here may be the same as the one illustrated in a photograph inserted into the same file, which has a caption describing it as 'Crusading stables on path to spring east [*sic*] of village' (Pl. 2.3). Whether it was originally a stable also seems open to question.

Immediately to the south of the vaulted structure, is the Muslim cemetery of Suba and a number of very ancient trees (an oak and an olive).The tombs which are covered with piled stones are scattered and barely visible. Tombs belonging to two holy men, Shaykhs Shada and Mas'uda, were apparently located within this cemetery (Canaan 1927: 59 n.2). The oak tree is the same as the one with immense branches that greatly impressed Guérin in the 1860s (1868: I, 265–6), but it is now in a very bad state of decay and the base of its trunk is rotting away. The olive tree is of wide girth and was perhaps one of a number of ancient olive trees which Finn remarked upon in 1858 (1868: 423; see also the ancient olive tree shown in the engraving of Suba in Conder 1880: 198). Chester C. McCown visited the area in 1920 and wrote:

> On the opposite [southern] side of the town, on the level, just beyond a long underground vault used as an oil press, is a small walled enclosure, with an oak tree growing in the center and a *mihrab* in the south wall. This was the *weli* of Sheikh Ibrahim. (1921–22: 56; for further information on holy trees in Ottoman Palestine, see the bibliography given in Hepper and Gibson 1995).

This place and another one, also named after Shaykh Ibrahim, which was located about 100m further to the west (shown on SP 1934, but not visited by us), mark the two spots where the pious man had offered prayer during his lifetime. Canaan described the second place as follows:

> a square place with a *mihrab*, a large fig tree ... and a small enclosure (*huwetiyeh*) in the north-west corner. In the *taqah* situated in the west wall are found various pits of broken pottery, in which incense was burned. (1927: 51 n.1)

Plate 2.3. Barrel-vaulted structure in the area of ash-Shaikh Ibrahim, photographed in the 1930s.

McCown also referred to a sacred olive tree, named after Shaykh al-'Amauri, located in the environs west of Jabal Suba next to the path leading towards al-Qastal.

> The *muhtar* [of Suba] said that poor people who were in straits for fuel had not hesitated to cut wood from the tree. (1921–22: 55–6, pl.14)

A number of ancient agricultural installations have been recorded from Suba and its vicinity. Conder had already remarked on the existence of rock-cut wine-presses on the southern slope of the site in the nineteenth century (Conder 1880: 201; Conder and Kitchener 1881: III, 158); but these installations have not yet been located. However, we were able to examine another rock-cut wine-press on the western edges of the kibbutz (F5) and next to it was a partly-quarried circular crushing basin for an oil-press. On the SWP map (1880: sheet XVII) a watchtower is indicated in the area immediately to the east of this wine-press, at a location now within the present-day kibbutz grounds. Watchtowers of this sort, which were generally located within vineyards, have been investigated at a number of different locations in the region (Solimany and Weiss 1993). Another wine-press, which we did not have time to investigate, is located about 1km to the north-east of Jabal Suba (personal communication from Yaaqov Hatzubai).

About 400m to the north of the hill of Suba is a very large and flat expanse of rock (F1), known in Hebrew as *bamat ha-sela*, with signs of shallow quarrying, gaming boards, cupmarks, and channels leading into an adjacent cistern. Near by is a section of a fenced path which extends to this area from Jabal Suba and continues to the northeast towards 'Ain Rafa. A few sherds of Byzantine or Umayyad date were visible on the ground surface. This is the place mentioned by Guérin as the 'platform made by flattening out the rock', which was transformed into a threshing floor at harvest time (1868: I, 265–66). The 'slots' referred to by Guérin are clearly the separation channels from the quarrying activities.

Below the rock expanse (F1) are terraced fields and the openings of a number of burial caves. The area is named after Shaykh Mustafa. McCown, who visited the place in 1920, wrote:

> No tomb [of Shaykh Mustafa] is visible, but on one side there is a wall and above it a sort of terrace, the whole overgrown with trees and shrubbery, amid which are various bits of broken pottery used as lamps or for incense to be burned in honor of the sheikh. (1921–22: 56, pl.15)

Canaan wrote that

> under the terebinth tree of es-seh Mustafa (Soba) irregularly scattered stones were said to represent the tomb of the *weli*. But I could not distinguish any characteristic of a tomb. The scattered stones were shaped like ordinary field stones. (1927: 56)

One of the rock-cut burial caves (F2) located in this area may be dated on morphological grounds to the Iron Age. It consists of a rectangular chamber with benches around three of the walls with head-rests carved at opposite ends. Beneath the back bench was a rounded bone repository. Cut into the side wall was a second chamber, smaller and more irregular in shape than the previous one, with benches around the walls and with a rounded bone repository cut into the far wall. This tomb had previously been examined by Kloner (1982) who found potsherds inside dating from the late eighth and seventh centuries BC. Another tomb of similar plan and also with head-rests cut into the benches is known to exist in the neighbourhood. According to Guérin, some of these tombs at the time of his visit were being reused by the local inhabitants for burying their dead (1868: I, 265–6). A cistern was also investigated in the same vicinity as the burial caves. It was covered with a rectangular capping stone with a central circular opening. Cut into its surface were cupmarks, presumably supports for jars, with channels leading back into the cistern opening. The shape and dimensions of the cistern are unknown. Carved into the corner of the capping stone was a short Arabic inscription which has not been deciphered. Near by was a square structure built over a rock-cut and plastered cave (fed by an external rock-cut channel) and a number of stone clearance heaps. Scattered pottery from the vicinity of these remains was dated to the following periods: Iron Age II, Late Hellenistic or Early Roman, and Byzantine or Umayyad.

About 500m to the south of Suba, close to the steep base of the hill, are the remains of a pottery kiln (F4), which appears to have been built in front of a cave. The cave is packed to its ceiling with a considerable quantity of fill and debris; part of its upper roof is visible, showing signs of substantial discolouration and surface melting resulting from high firing temperatures.The kiln itself is completely buried and its shape and dimensions are unknown. Scattered for a distance of some 50m downslope from the kiln is a fill containing large quantities of wasters, slag and fragments of partly-fired ceramic vessels (Figs. 2.4–5). Most of the vessel fragments are of lamps of the candlestick variety (nos. 1–8) and roof tiles (some with circular potter's marks: no. 10), with a few bowl, basin (no. 9) and jar rims evident as well. A small moulded figurine (no. 11), perhaps a toy, was also found. It had stamped eyes and forehead markings similar to the potter's marks on the roof tiles.The ceramic vessels suggest that the kiln was active in the late Byzantine period, that is to say in the sixth to early seventh centuries AD. It is likely that some of the Byzantine-period candlestick type lamps found during the excavations on the summit of Suba (see below, Chapter 8) were made in this or other kilns in the vicinity.

Conclusions

Although isolated flint implements of Neolithic date have been reported from the general vicinity of Suba (Stekelis 1956), none was found during the present reconnaisance work. Settlement remains from the Chalcolithic/Ghassulian and Early Bronze I periods were well represented alongside

Figure 2.4. Finds from pottery kiln (F4): lamps (nos. 1–8) (drawn by M. Roughley).

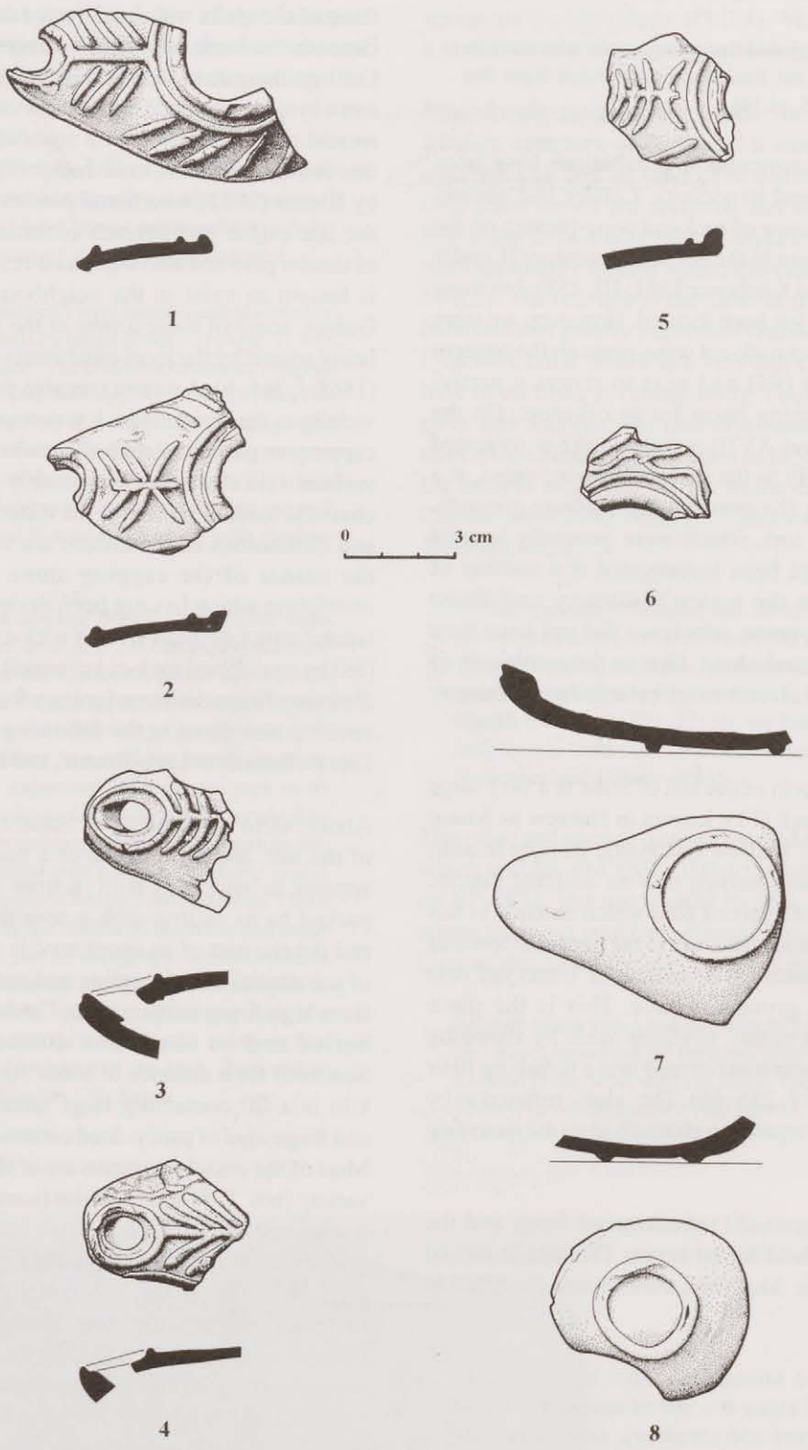
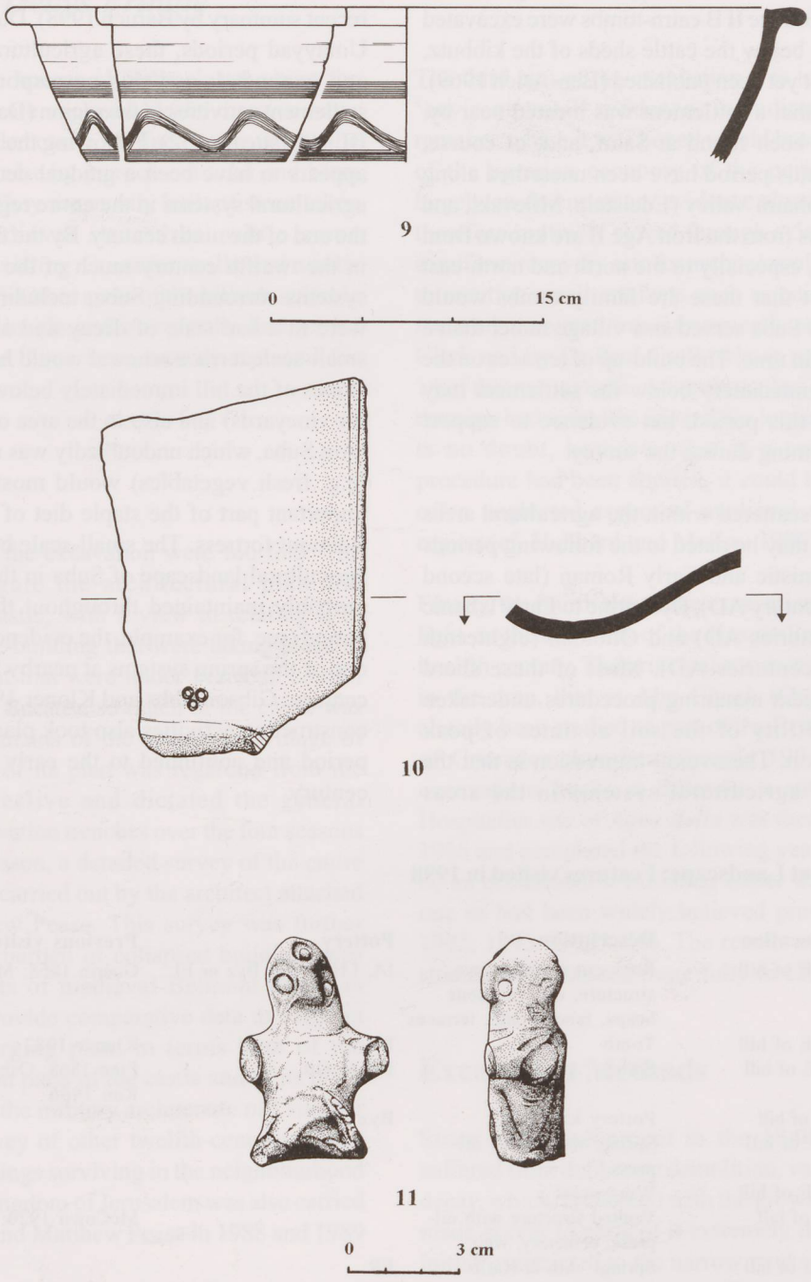


Figure 2.5. Finds from pottery kiln (F4): a basin (no. 9), a roof tile (no. 10) and a figurine (no. 11) (drawn by M. Roughley).



the springs at the nearby site of Sataf (Gibson, Ibbs and Kloner 1991). Hence, future fieldwork will need to examine closely the areas around the springs of Suba to see whether protohistoric remains are to be found clustering there as well. Three Middle Bronze II B cairn-tombs were excavated to the west of Suba, below the cattle sheds of the kibbutz, but the finds have not yet been published (Ben-Arieh 1969). It may be assumed that a settlement was located near by. MB II sherds have been found at Sataf, and, of course, large villages from this period have been unearthed along the banks of the Rephaim Valley (Edelstein, Milevski, and Aurant 1998). Tombs from the Iron Age II are known from the vicinity of Suba, especially to the north and north-east of the hill. The fact that these are family tombs would perhaps suggest that Suba served as a village rather than a fortress at this point in time. The build-up of terraces on the slopes of the hill immediately below the settlement may have begun during this period, but evidence to support this was not forthcoming during the survey.

Most of the pottery scattered within the agricultural areas surrounding the hill may be dated to the following periods of time: Late Hellenistic and Early Roman (late sceond century BC to first century AD), Byzantine to Early Islamic (sixth to eighth centuries AD) and Ottoman (eighteenth to early twentieth centuries AD). Most of these sherd scatters reflect frequent manuring procedures undertaken to improve the fertility of the soil at times of peak agricultural expansion. The overall impression is that the original layout of agricultural systems in the areas surrounding Jabal Suba, including the construction of spring systems, is to be attributed to the Late Hellenistic or Early Roman periods (for information on the western agricultural environs of Jerusalem in the Early Roman period, see the recent summary by Baruch 1998). During the Byzantine and Umayyad periods, these agricultural systems intensified and expanded; and this corresponds with the peak of settlement activities in the region (Dauphin 1998: II, fig. 16; III, 902, site no.132). Following the Umayyad period there appears to have been a gradual decline in the use of the agricultural systems in the entire region, which lasted until the end of the ninth century. By the time the Franks arrived in the twelfth century much of the extensive agricultural systems surrounding Suba, including the spring systems, were in a bad state of decay and abandonment. Initially, small-scale terrace renewal would have taken place on the slopes of the hill immediately below the fortress (perhaps for vineyards) and also in the area of the spring system of 'Ain Suba, which undoubtedly was rebuilt. Irrigated crops (e.g. fresh vegetables) would most likely have been an important part of the staple diet of the inhabitants of the Belmont fortress. The small-scale but intensive use of the agricultural landscape of Suba in the twelfth century was probably maintained throughout the following Mamluk period (see, for example, the evidence for the rebuilding of one of the spring systems at nearby Sataf in the fourteenth century: Gibson, Ibbs and Kloner 1991). Renewed terrace construction activities also took place during the Ottoman period and continued to the early part of the twentieth century.

Table. Suba/Belmont Landscape: Features visited in 1998

Feature no.	Location	Description	Pottery	Previous visitors
F1	NE of hill	Rock-cut installations, structure, cistern, stone heaps, fenced path, terraces	IA, LH or ER, Byz or EI	Guérin 1868; McCown 1920
F2	NE of hill	Tomb	IA	Kloner 1982
F3	SE of hill	Spring: 'Ain Suba	LH to Ott	Finn 1868; Osborn 1868; Guérin 1868; Ron 1966
F4	S of hill	Pottery kiln	Byz	
F5	W of hill	Spring, wine-press, oil-press		
F6	NE of hill	Wine-press		
F7	S of hill	Vaulted structure with oil-press, cemetery, weli		McCown 1920; Canaan 1927
F8	SE of hill	Spring: 'Ain al-Harib	ER	

Key: IA = Iron Age II, eighth–sixth century BC; LH = Late Hellenistic, second–first century BC; ER = Early Roman, late first–early second century AD; Late Byz = Byzantine, sixth–early seventh century AD; EI = Eary Islamic/Umayyad, seventh–mid eighth century AD; Ott = Ottoman, eighteenth–twentieth century AD.

CHAPTER 3
THE EXCAVATION STRATEGY

Robert Will and Denys Pringle

The abandoned village houses of Suba cluster about the summit of the hill and are enclosed by the massive outer *enceinte* of the Crusader castle, defined even where the wall itself does not survive by its rock-cut *talus* and berm (Figs. 3.1–2; Pl. 3.1). They are mostly built of stone taken from the ruined medieval structures, while some incorporate parts of existing Crusader walls and vaults (Figs. 3.3–4; Pls. 3.2–3). Other areas of the hillside suitable for the purpose, both inside and outside the line of the castle's outer *enceinte*, have been heavily terraced for agriculture (Pl. 3.4).

Project Aims

The principal aims of the excavation were fourfold. The first was to investigate the architectural plan and development of the castle, with a view to relating it to developments in castle-building that were taking place in the areas of the Levant that were under Frankish control in the twelfth century. Because so much of the castle was encumbered by the remains of the abandoned village of Suba, the elucidation of its plan was regarded from the start as a prime objective and dictated the general positioning of the excavation trenches over the four seasons of work. In the first season, a detailed survey of the entire village and castle was carried out by the architect attached to the project, Matthew Pease. This survey was further elaborated as the overburden of collapsed buildings was removed and elements of medieval Belmont began to emerge. In order to provide comparative data to assist in interpreting the emerging plan, in terms both of the function of the different parts of the castle and of its place in the development of the military architecure of Crusader Palestine, a rapid survey of other twelfth-century castles and other secular buildings surviving in the neighbourhood and elsewhere in the kingdom of Jerusalem was also carried out by Denys Pringle and Matthew Pease in 1988 and 1989 (Pringle 1989; 1991).

The second aim of the excavation was to recover datable groups of artefacts, in particular pottery, in order to provide a firmer basis for the archaeological dating of medieval sites in the region and to increase our knowledge of Frankish material culture in general. As Belmont is known from historical sources to have been slighted by the Ayyubids in 1191 after a Frankish occupation which lasted probably little more than half a century, the castle appeared to provide ideal opportunities for recovering such material. As it turned out, however, its rocky hilltop location had not favoured the accumulation of neat sequences of stratified material. Indeed, in many places twentieth-century material was found directly overlying bedrock; and twelfth-century contexts, where they survived *in situ*, tended to be shallow and heavily compacted.

The third aim of the excavation was to obtain samples of 'environmental' evidence, including faunal and plant remains, which it was hoped would broaden understanding of the agrarian economy of the period, based hitherto largely on documentary evidence alone. All deposits were therefore routinely sieved through a 5mm mesh to ensure a uniform recovery rate for archaeozoological material (not to mention small artefacts such as coins and beads). The material recovered was subsequently studied by Dr Gillian Clark and by Dr Paul Croft, whose report forms Chapter 14 of this monograph. Attempts to deal similarly with plant remains had to be abandoned for logistical reasons. There is no doubt, however, that if a consistent sampling procedure had been applied, it could have illuminated an often neglected aspect of medieval archaeology in the region (cf. Hubbard and McKay 1986).

Finally, the fourth aim of the excavation was to shed further light on the activities of the Hospitallers in the area in the twelfth century. The principal surviving Hospitaller church in the area, that at Abu Ghosh (Qaryat al-'Inab), had already been studied as part of the British School's survey of Crusader churches (Pringle 1993: I, 7–17). When excavations began at Belmont, a survey of the nearby Hospitaller site of *Aqua Bella* was therefore also begun in 1986 and completed the following year; this revealed it to be an ecclesiastical building, rather than a purely secular one as had been widely believed previously (cf. Pringle 1992; 1993: I, 223–50). The results of these comparative studies are discussed more fully in Chapter 15 below.

Excavation Methods

Since its abandonment in the 1940s, the village had suffered from deliberate demolition, vandalism and general decay, which, combined with the growth of trees and scrub, made access to parts of it extremely difficult. Access was initially restricted to the narrow tracks that circled the hill. Access to the courtyard or village square was limited to one narrow lane on the east side, through which all spoil and overburden from the excavation in the inner ward had to be removed. A great deal of time and energy therefore had to be spent removing the recently collapsed rubble and overburden, both to make access easier and to reach the archaeological deposits below. As the village had been built over and among the remains of the castle, elements of which had been incorporated into village houses, the location of trenches tended to be restricted to areas between or within surviving houses. In some areas, however, the walls of partly demolished and abandoned village buildings were removed, both on the grounds of safety and to gain access to the material stratified below them.

Figure 3.1. Belmont (Suba): plan of the structures surviving in the core of the village (after M. Pease).

Figure 3.2. Belmont (Suba): sections through the castle and village (after M. Pease).

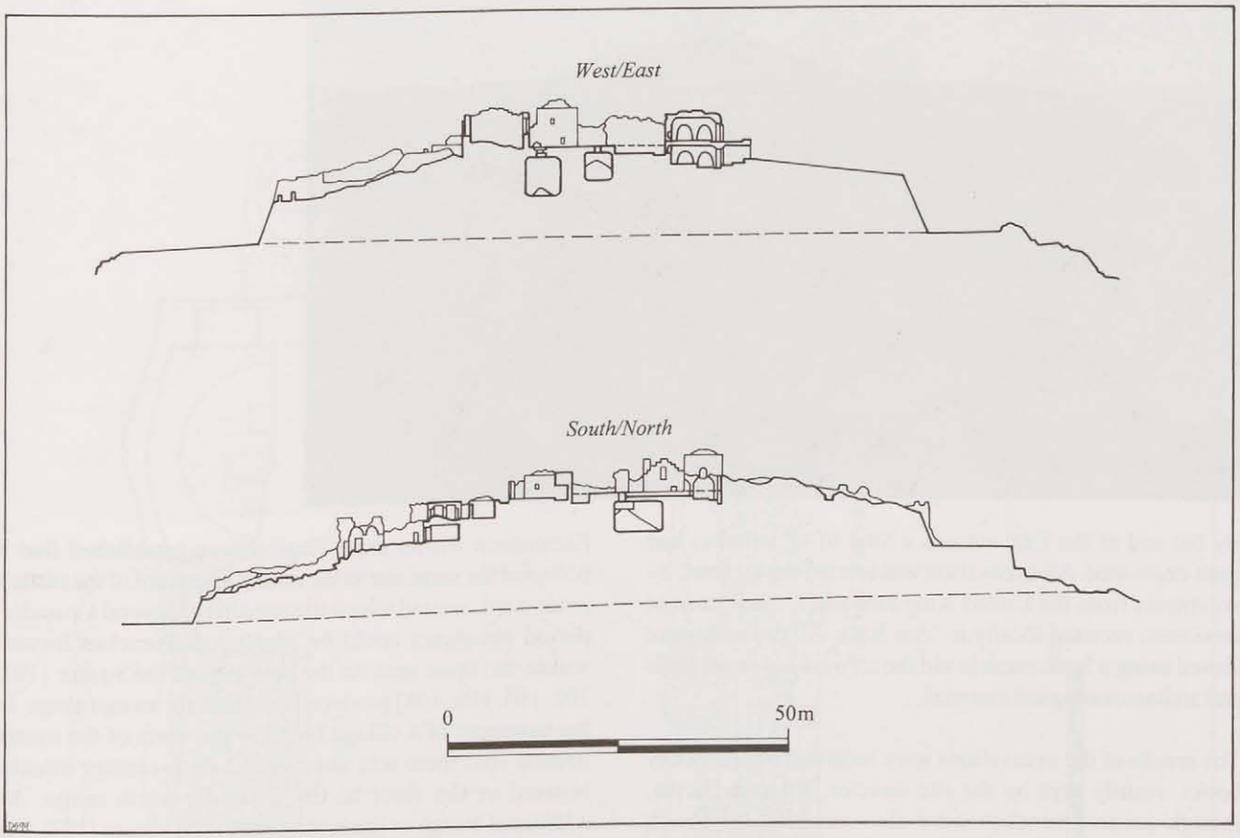


Plate 3.1. Belmont (Suba), as seen from the E in the 1980s.

By the end of the four seasons a total of 47 trenches had been excavated. All excavation was carried out by hand, by volunteers from the United Kingdom and a small team of workmen, recuited locally in 'Ain Rafa. All deposits were sieved using a 5mm mesh to aid the recovery of small finds and archaeozoological material.

The results of the excavations were recorded on site in day books, mainly kept by the site director, Richard Harper, though several trenches were also recorded by trench supervisors. Trenches were drawn to a scale of either 1:20 or 1:50. The main photographic record used black and white print film, though colour slides were also taken. The village survey was carried out by Matthew Pease, working with a theodolite, with the results logged in a day book and additional field sketches and notes showing dimensions.

All finds (pottery, animal bone, glass, metalwork, stone, miscellaneous) were recorded daily in a finds register, along with a brief description of the soil conditions where the material was recovered. A separate register was also used for the pottery; this recorded the numbers of sherds of each type present in each context and included sketches of significant features. Due to the large quantity of pottery recovered (over 250,000 sherds by the end of the four seasons) not all of the pottery was retained; discarded material was returned to the site for disposal.

1986. The first season

As little was known about the internal layout of the castle or the depth or state of preservation of the deposits before excavation began, the principal aim of the first season was to assess the main areas of the castle, so that the areas of greatest archaeological potential could be targeted for subsequent seasons. A series of sondages and small trenches were therefore placed to obtain the maximum amount of information on the nature and phasing of the structures and deposits within the bounds of the former Crusader castle (for the location of trenches, see Figs. 3.5–6).

Excavation within the village square established that it occupied the same site as the central courtyard of the castle's inner ward, around which the remains of several Crusader-period structures could be identified. Trenches located within the open area on the east side of the square (101, 102, 104, 106, 108) produced evidence for an east range. In the basement of a village house to the north of the square (trench 103) there was uncovered a sixth-century mosaic, re-used as the floor to the Crusader north range. An additional trench in the north-east of the square (107) was located to investigate the extent of this range. Two trenches were located along the southern boundary wall of the square (105, 109) to investigate two blocked doorways within this wall. This wall appeared to be part of a south range of the castle, with Crusader masonry surviving below the walls of standing village houses.

Trenches were also excavated at the foot of the castle's outer wall (203) and on the terrace at the top of the outer wall (202) to investigate whether there may have been any contemporary stuctures, such as a tower, associated with the outer wall.

An architectural survey of the surviving village houses was also started, to record the extent of the village and attempt to determine its stages of development. (The 1986 season was reported in Harper 1987; 1988; Harper and Pringle 1986; 1987; 1988.)

1987. The second season

In the second season, a great deal of rubble and demolition debris was removed from the streets and roads leading from the south-east gateway of the village, making access to the village square much easier. Rubble and collapsed masonry from village-period houses in the square and from the destroyed village mosque located in the south-west corner of the square was also removed.

In the inner ward of the castle, two trenches (112, 113) were excavated inside village-period houses in an area

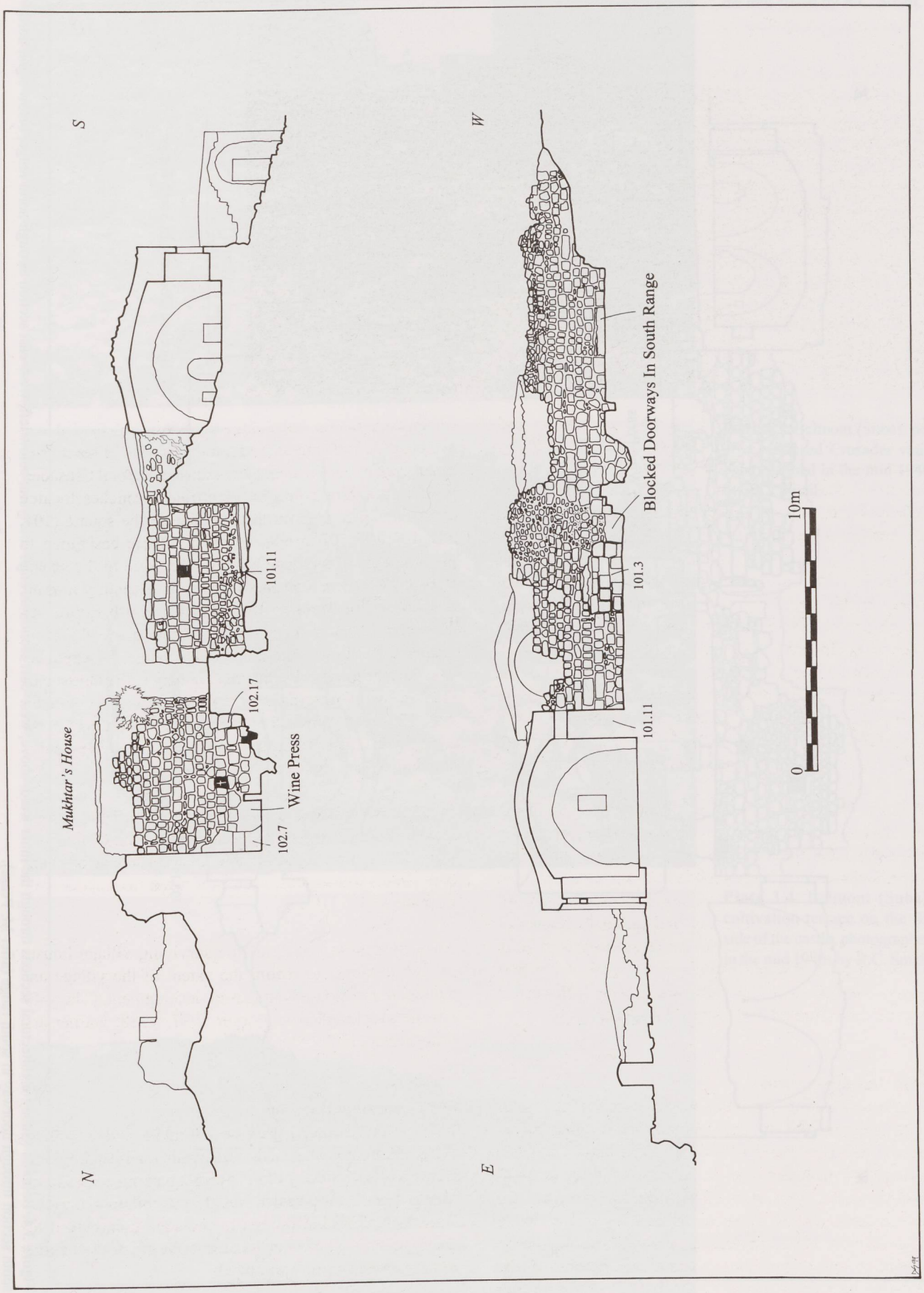


Figure 3.3. Belmont (Suba): architectural sections through the inner ward: above, north–south section; below, east–west section (after M. Pease).

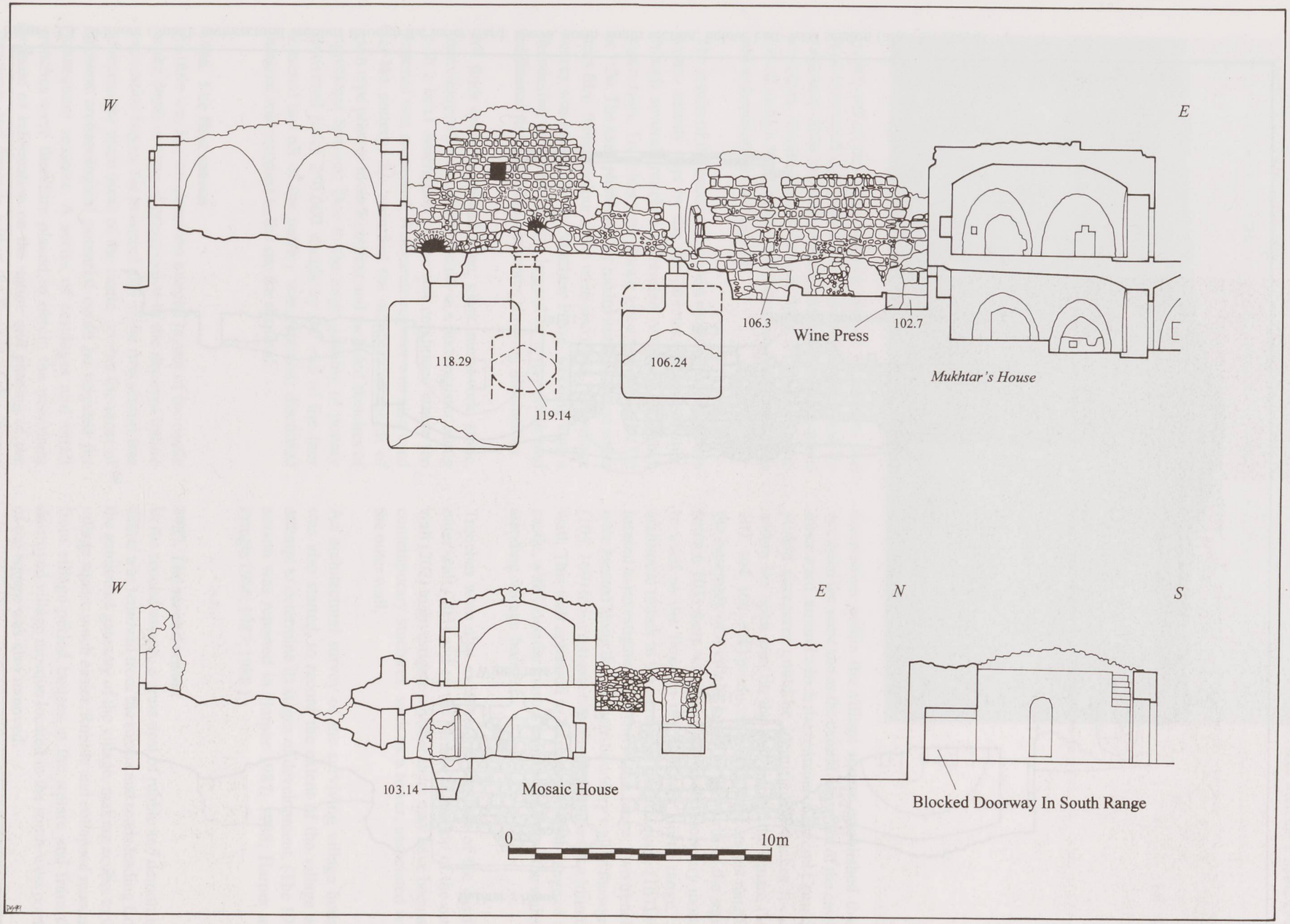


Figure 3.4. Belmont (Suba): architectural sections through the inner ward: above, west–east section through courtyard; below left, west–east section through north range; below right, north–south section through doorway in south range (after M. Pease).

Plate 3.2. Belmont (Suba): village houses, photographed in the mid 1940s by R.C. Smail.

Plate 3.3. Belmont (Suba): part of a collapsed Crusader vault, photographed in the mid 1940s by R.C. Smail.

Plate 3.4. Belmont (Suba): cultivation terrace on the SE side of the castle, photographed in the mid 1940s by R.C. Smail.

corresponding with the south range. One trench (111) was also excavated in the remains of the village mosque in the south-west corner of the square, and a trench was dug between village houses to the north of the square (110).

To the south-east of the inner ward, two trenches (301, 302) were excavated to investigate an arched doorway of Crusader date, surviving in a house wall bordering a village street. This revealed that the door had formerly opened into an outer vaulted range running parallel to, but separate from, the outer wall of the castle. The fallen voussoirs of the door were skilfully replaced in position by a team of masons from the 'Awqaf Authority, Jerusalem, to allow excavation to continue safely underneath. A separate trench (303) was located to the south of the inner ward, beside village-period houses that had been built reusing Crusader-period masonry, including a number of ashlars with mason's marks. This confirmed that the house itself was post-Crusader in date, but that it partly overlay the south-western continuation of the outer range identified in trenches 301–2.

Two further trenches (304, 307) were excavated to uncover the remains of the gateway at the south-east corner of the outer *enceinte*. (The 1987 season was reported in Harper 1989a; Harper and Pringle 1989.)

1988. The third season

In 1988, work concentrated on excavating large areas of the courtyard of the inner ward and the buildings surrounding it that had been investigated previously by small trial trenches. A series of trenches linked to existing trial trenches was excavated within the village square to reveal the whole of the Crusader-period courtyard (115, 117–19, 121–5), while a trench (114) in the north range linked the two previous trenches (107, 110) to expose further sections of the mosaic floor. Two trenches (116, 120) to the west of the square revealed a large area of the west range. A small trench (501) was excavated to investigate a blocked doorway visible in the surviving north wall of the Crusader north range that had been incorporated into the wall of the village house containing the mosaic floor.

The trench initially excavated in the southern part of the outer ward (303) was extended to the east (306) to reveal further evidence of a Crusader-period vault between the courtyard or inner ward and the outer curtain wall. A small trench (307) was also excavated above the wall flanking the south-east gateway. (The 1988 season was reported in Harper 1989b; 1990; cf. Wolff 1991: 534–5.)

1989. The fourth and final season

The main trench excavated this season (126) was located to the east of trenches 110 and 114, in the north range of the Crusader inner ward. Its purpose was to investigate the north-east corner of the building, which was largely covered by village-period houses. In the east range, trench 122 was extended (127) to investigate a robber trench that had led into a large rock-cut water cistern below the east range and was now filled with rubble. Two trenches, one (204) in the alley that was the main access route into the village square from the east and the other (308) in the basement of the house forming the south wall of the alley, were excavated to investigate the foundations of an east gate, defended by a rectangular turret, which gave access into the inner ward.

In the south-eastern part of the outer ward, repairs to the arch of the doorway within trench 301/302 enabled the doorway to be unblocked and the layers that had built up in the street to the west of it to be investigated (310). A westward extension to trench 303/306 uncovered further Crusader remains relating to vaulted rooms of the outer ward (309).

The main area of investigation of the final season was the excavation of four linked trenches, 5m wide, that joined trench 501 immediately to the north of the Crusader courtyard to the outer curtain wall to the north (502–505).

Figure 3.5. Belmont (Suba): plan of the village core, showing the layout of excavation trenches (1986–9).

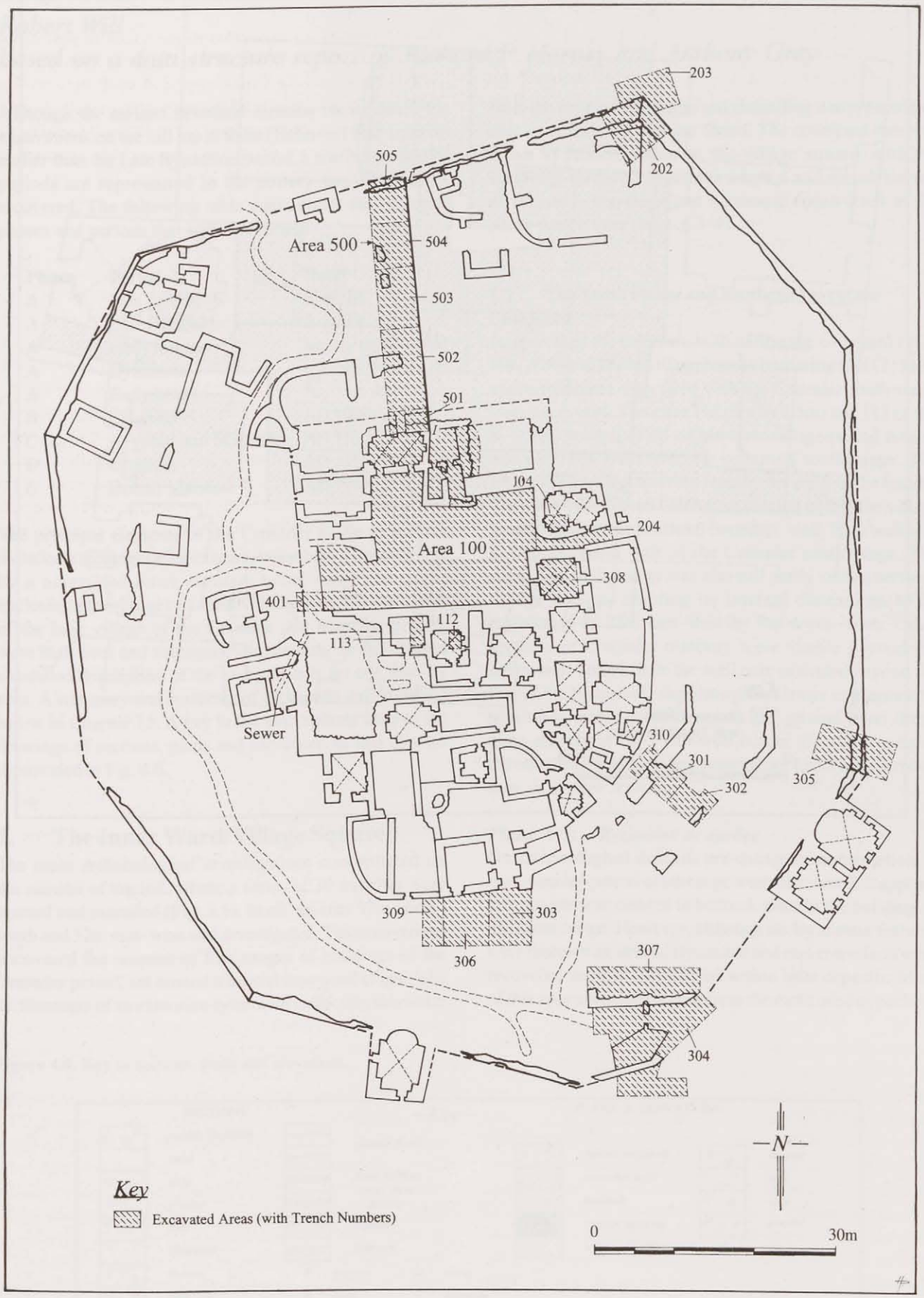
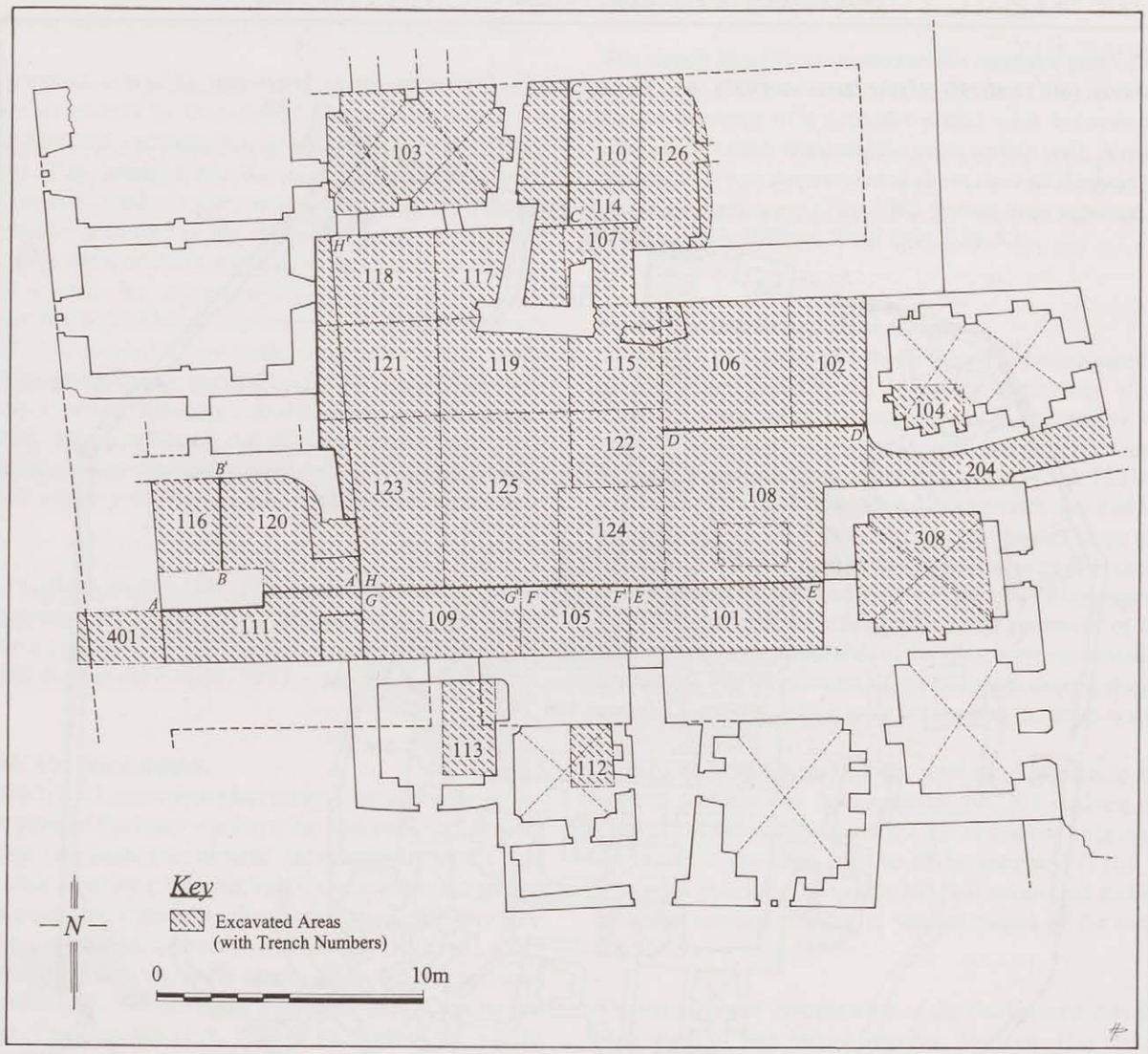


Figure 3.6. Belmont (Suba): plan of the central courtyard, showing the layout of excavation trenches (1986–9).



CHAPTER 4
THE STRUCTURAL DEVELOPMENT OF THE SITE

Robert Will
based on a data structure report by Richard P. Harper and Anthony Grey

Although the earliest structural remains identified in the excavations on the hill top at Suba (Belmont) date from no earlier than the Late Byzantine period, a number of earlier periods are represented in the pottery and other finds recovered. The following table summarizes the principal phases and periods that were identified:

Phase	Period	Date
A	Iron Age II	8–6c. BC
A	Late Hellenistic	2–1c. BC
A	Early Roman	late 1c.–early 2c. AD
A	Byzantine	mid 5c.–7c. AD
A	Early Islamic	7c.–11c. AD
B	Crusader	AD 1099–1187
C	Ayyubid and Mamluk	AD 1187–1516
D	Ottoman	AD 1516–1917
E	British Mandate	AD 1917–48

The principal elements of the Crusader castle to survive included a rectangular inner ward on the hilltop, surrounded by a nine-sided outer *enceinte* lower down the slope, enclosing other ranges of vaulted buildings. The buildings of the later village of the Ottoman and Mandate periods were built over and amongst these remains. In this chapter a detailed description of the excavation is set out, area by area. A summary and synthesis of the results will be found below in Chapter 15. A key to the conventions used in the drawings of sections, plans and elevations in this chapter is provided in Fig. 4.0.

1. The Inner Ward/Village Square

The main archaeological investigations concentrated on the summit of the hill, where a series of 30 trenches were opened and extended (Fig. 3.6). In all, an area 37m north–south and 32m east–west was investigated. The excavations uncovered the remains of four ranges of buildings of the Crusader period, set around a central courtyard (Figs. 4.1–2). Elements of an extensive system for collecting rainwater from the roofs of the ranges and chanelling it to pre-existing rock cut cisterns were also found. The courtyard survived down to modern times as the village square, with the surviving medieval structures adapted and rebuilt for use as domestic buildings and a mosque constructed at the south-west corner (Figs. 4.3–4).

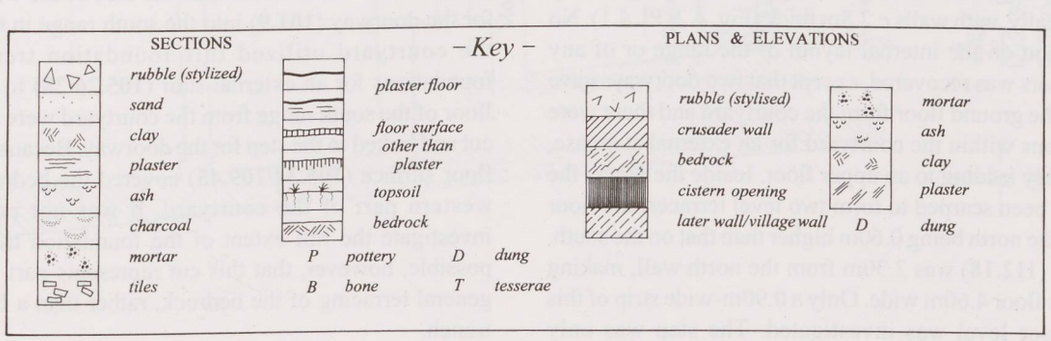
1.1 The South Range and Southern Part of the Courtyard

In several of the trenches, both within the courtyard (101, 105, 109) and in the village houses bordering it (112, 113), various features associated with the Crusader south range were uncovered. Trenches 112 (3m by 1.5m) and 113 (3.8m by 1.8m) were located within later village-period houses that had been built over the collapsed south range. The size of the trenches was restricted by the walls of the houses. Trenches 101, 105 and 109 were located within the village square, against the southern boundary wall. This wall was in fact the north wall of the Crusader south range. The south wall of the range was also still partly visible between village houses, enabling its internal dimensions to be established as 25m east–west by 8m north–south. Other sections of Crusader masonry were visible beyond the south-west corner; here the wall core extended beyond the line of the main wall, suggesting the former existence of a projecting turret or buttress. As the ground level drops quite sharply at the south-west corner this thickening of the outer wall may have been carried out for structural rather than defensive reasons.

Phase A Byzantine or earlier

No archaeological deposits pre-dating the construction of the Crusader-period south range were uncovered. It appears that the site was cleared to bedrock prior to the building of the south range. However, although no Byzantine features were discovered, several Byzantine and earlier artefacts were recovered as residual material within later deposits. Most of this appears to have come from the earth used as packing

Figure 4.0. Key to sections, plans and elevations.



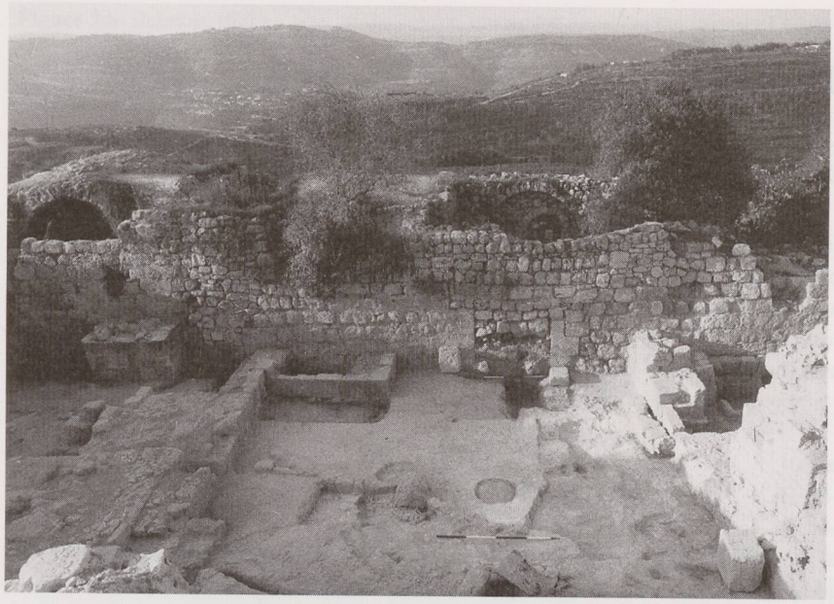


Plate 4.1. Belmont (Suba), inner ward: coutyard and S range, looking S.

Plate 4.2. Belmont (Suba), inner ward: E door into S range seen from the S, showing remains of the intersecting vault.

for the collapsed medieval vaults. The material included a ceramic tile with a 'horseshoe' stamp (Ch. 12, no. 25) and various types of pottery, including wheel-made fine wares (Ch. 6, no. 58), red-painted coarse wares (no. 65), hand-made red burnished wares (no. 69), alkaline glazed wares (no. 111), and ceramic lamps (Ch. 8, nos. 1, 3, 6, 12, 15, 19).

Phases B–D Crusader to Ottoman

The south range was rectangular in plan, measuring 25m by 8m internally, with walls *c.*2.5m thick (Fig. 4.2; Pl. 4.1). No information on the internal layout of the range or of any upper floors was recovered, except that two doorways gave entry to the ground floor from the courtyard and there were foundations within the courtyard for an external staircase, presumably leading to an upper floor. Inside the range, the rock had been scarped to form two level terraces, the floor level on the north being 0.60m higher than that on the south. The step (**112.18**) was 2.30m from the north wall, making the lower floor 4.60m wide. Only a 0.90m-wide strip of this lower floor level was investigated. The step was only uncovered in trench 112, as trench 113 did not extend far enough into the building. A rock-cut drain (**109.42**) ran into and through the south range from the western side of the courtyard, beneath a blocked doorway.

Excavation within the courtyard (Figs. 4.3–5) uncovered what may have been a rock-cut foundation trench for the north wall of the south range. A section excavated west of the pier base in trench 101 (**101.22**) revealed that the rock had been cut 0.35m wider than the face of the wall. A step for the doorway (**101.9**) into the south range in the east of the courtyard utilized this foundation trench. The foundations for an external stair (**105.26/28**) to the upper floor of the south range from the courtyard were also rock-cut and linked to the step for the doorway. Because a plaster floor surface (**105.34/109.45**) covered the bedrock in the western part of the courtyard, it was not possible to investigate the full extent of the foundation trench. It is possible, however, that this cut represents part of a more general terracing of the bedrock, rather than a foundation trench.

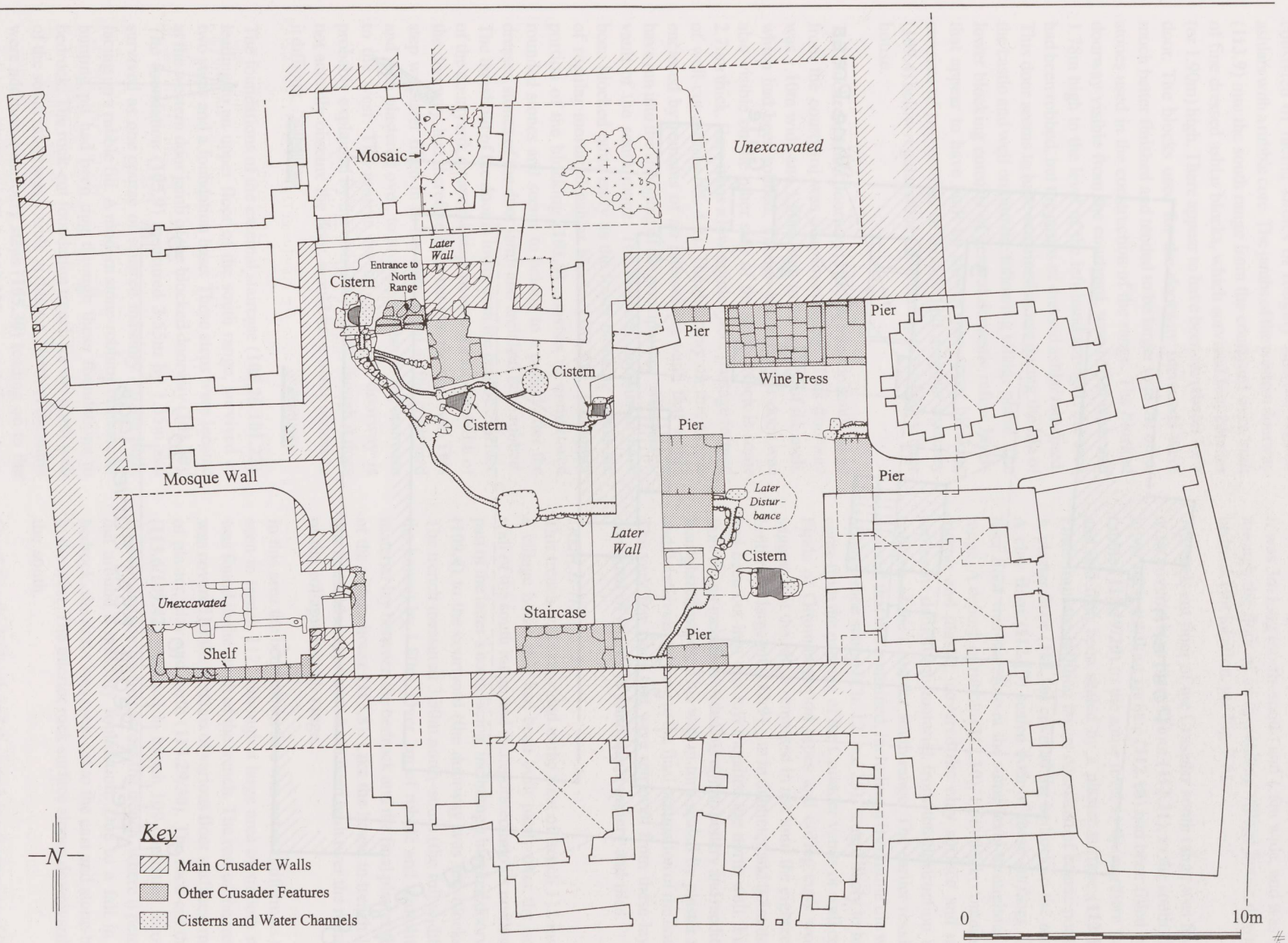
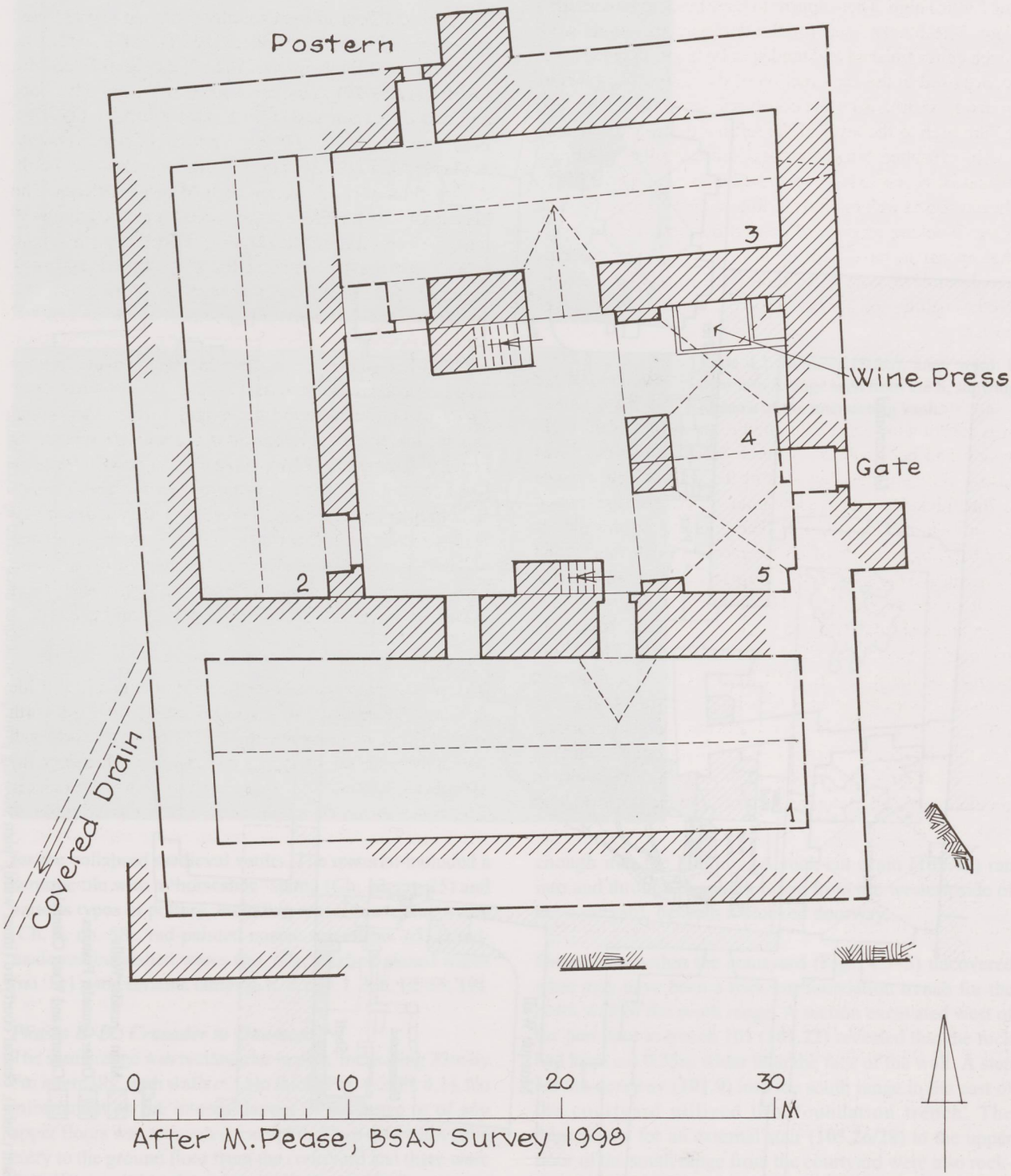


Figure 4.1. Belmont (Suba), central courtyard (inner ward): plan showing principal structures uncovered by excavation.

Figure 4.2. Belmont (Suba): plan of inner ward of the Crusader castle.



The north wall of the south range (**101.2/109.2**) was built directly on to bedrock. The wall was 2.70m thick and consisted of facing stones of roughly squared regular ashlars with a rubble core. The jambs of the western doorway (**113.9**) into the south range from the courtyard were built of fine dressed ashlar blocks, which survived four courses (or 1.90m) high. There appear to have been no rebates for a door. The blocks used for the doorway surrounds were much better finished and tended to be larger than the other stones used in the construction of the range. The blocked doorway visible from the courtyard, was 1.93m wide and 1.78m high to the level of the left-hand springer; the arch had been robbed, but the jambs of dressed ashlar remained. This door seems to have remained in use during the life of the castle and well on into the following village phase. The lower blocking consists of general domestic refuse layers that appear to have built up slowly. The upper blocking consists of two courses of loosely laid irregular masonry (**109.4**) below regular stonework relating to the later village house.

The blocked eastern doorway (**101.29**) into the south range from the courtyard was also investigated. This doorway was 1.10m wide and 1.50m high to the spring of the arch, which had been robbed. Though blocked, this door was also visible on the other side of the wall, which is some 2.70m thick. Here it has a low-pointed door passage formed of well-cut ashlars (Pl. 4.2). The doorway on this side is enclosed by remains of an intersecting vault that would have run into the springing of the principal east–west barrel-vault of the south range. The doorway appears to have been blocked quite early as the lower blocking stones are of regular mortared ashlar blocks (**101.21**). The upper portion of the blocking (**101.9**) consists of unmortared rounded stones and seems to belong to a period after the dressed stones of the door jamb and arch had been robbed. The threshold of the door is lower than the bedrock surface of the courtyard; an access step, covering half the width of the doorway, had therefore been cut into the bedrock. This step was later filled in to the same level as the courtyard and then plastered over, to provide access to the staircase to the west. The motive for blocking the doorway is probably explained by the staircase, which, though it does not actually obscure the door, would have made access to it difficult.

The foundations of the external staircase (**105.26/101.22**), leading to an upper floor of the south range, survived as two steps and a foundation base. These steps were located at the western door jamb of the blocked doorway (**101.29**). The foundation (**105.9**) measured 3.55m by 1.55m and survived as one course of squared masonry *c*.0.4m high, facing up a rubble fill. A modern stone-robbing or treasure-hunting pit had been dug through these foundations to bedrock. The rock-cut foundation trench for the north wall of the south range was visible in this pit. North of the stairs were additional masonry steps (**105.30**) leading on to the staircase; a plaster surface (**105.23**) covered these steps. Within the levelling deposit (**105.22**) above bedrock, east of the stair (**105.30**), was found the keystone from an arch.

TRENCH 112

This trench was excavated inside the south range of the inner ward, against the south side of the range's north wall. It was 3m long (north–south) and 1.5m wide, and was dug through the floor of an upstanding village house down to bedrock (for location, see Fig. 3.6).

The rock-cut floor of the Crusader south range was found to be covered by a plaster floor (**112.21**), to the south. The lower rock-cut floor surface (**112.18**) had been filled with rubble (**112.19/20**) to the same level as the northern floor and had then been sealed by a plaster surface (**112.15**). Finds from the infilling layers consisted of coarse pottery. A plaster floor (**112.16**) covered the bedrock to the north. A clay floor (**112.13**) sealed both of these surfaces. The later floor was therefore at the same level throughout the range. A deposit of rubble (**112.10**), 1.5m thick, containing mortar and plaster, covered the clay surface and may represent demolition material from the destruction and collapse of the Crusader south range. The earlier residual material that this contained, including a Byzantine tile with a horse-shoe stamp (Ch. 12, no. 25), seems likely to have come from the packing of the Crusader vaults or wall core. Finds of Ottoman-period pipes and coffee cups would suggest that the range remained in use until the eighteenth century. A large pit (**112.9**), 1m in diameter and 0.8m deep, had been cut into this layer against the north wall. Finds from the pit included residual *sgraffiato* pottery and medieval lead-glazed wares. This was in turn sealed by plaster and soil floor levels, relating to the final occupation of the house. The very few finds that were retrieved from these layers consisted of sherds of hand-made pottery and tiles.

TRENCH 113

This trench was excavated to the west of trench 112 inside a village house that had been built partly over the north wall of the south range and incorporated into its north wall part of the latter's north facing, including a blocked doorway (**109.4**) to the courtyard (the doorway was left blocked). The trench measured 3.80m north–south (the full width of the house) by 1.80m. Over 2m of rubble and demolition material lay between the bedrock and the final plaster floor of the village house (**113.5**). Like the house in trench 112, this house also appears to have been built over the remains of the collapsed south range.

In this area the bedrock surface was not as uniform as that seen in trench 112, although a large area of smooth rock was found in the south of the trench. The rest of the trench was covered by the remains of various floor surfaces, made of plaster, clay and earth (**113.29/30**). The rock-cut drain (**113.6/109.42**) recorded in trench 109 continued through the door and southwards across the trench, where it petered out around a masonry foundation. Due to a fall in the bedrock, the drain was rock-cut to the east and stone-built to the west. The interior rock surface slopes downwards to the south.

Overlying the bedrock and the surviving fragments of floor surfaces was a deposit of soil up to 0.5m deep (**113.24**), containing flecks and lenses of charcoal and ash. This also

Figure 4.3. Belmont (Suba), inner courtyard: plan of the western part, as revealed by excavation.

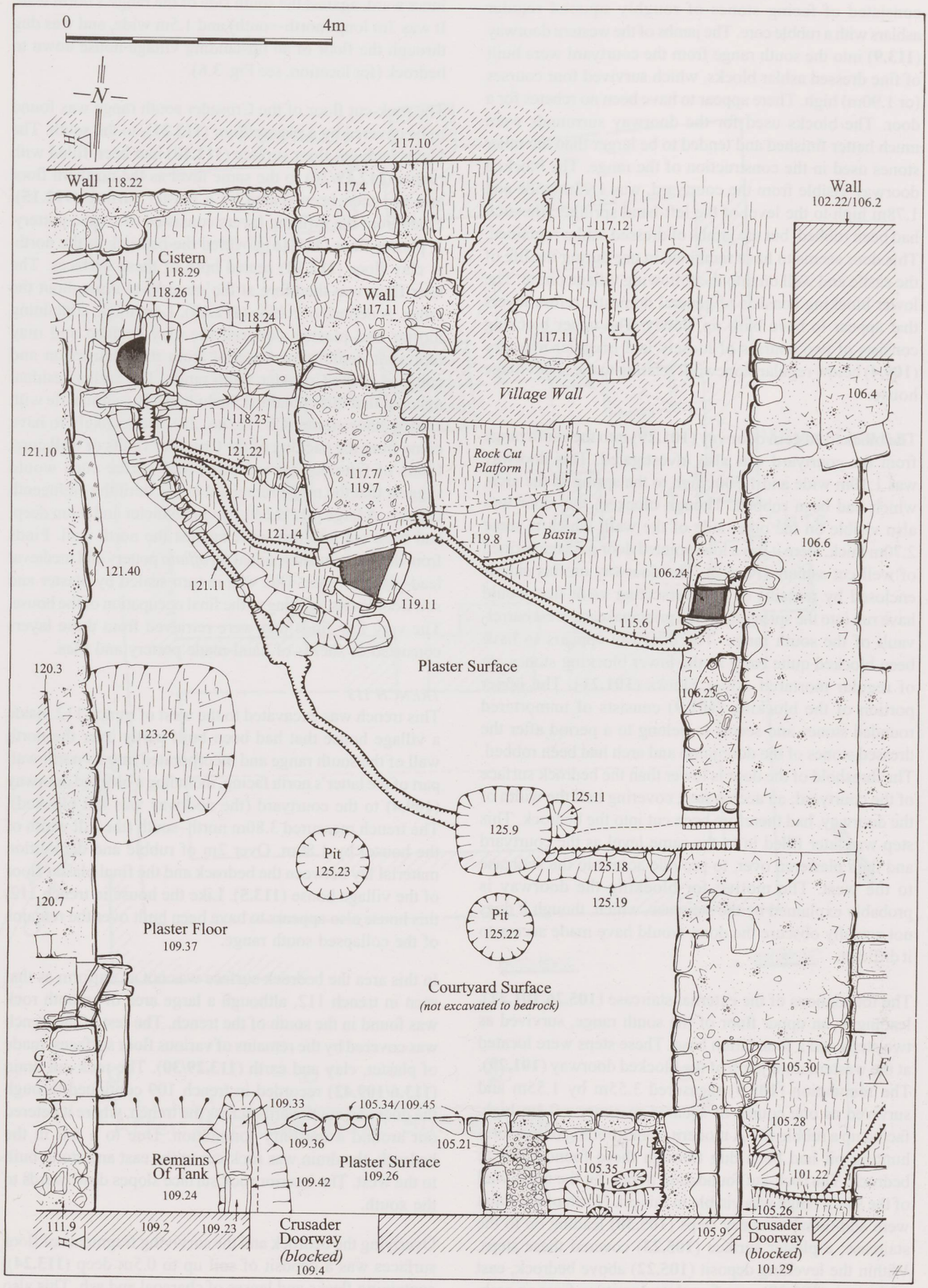


Figure 4.4. Belmont (Suba), inner courtyard: plan of the eastern part, as revealed by excavation.

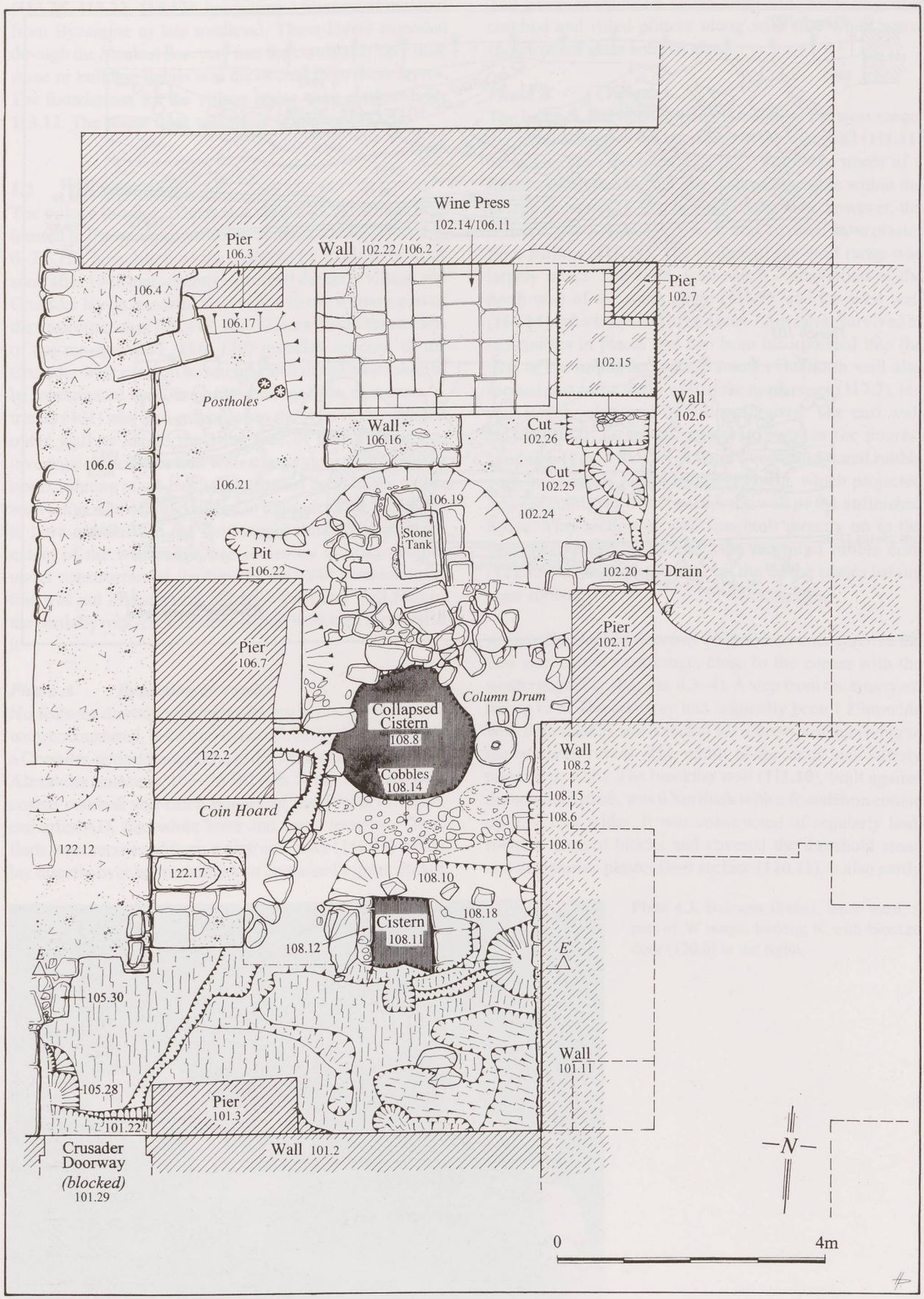
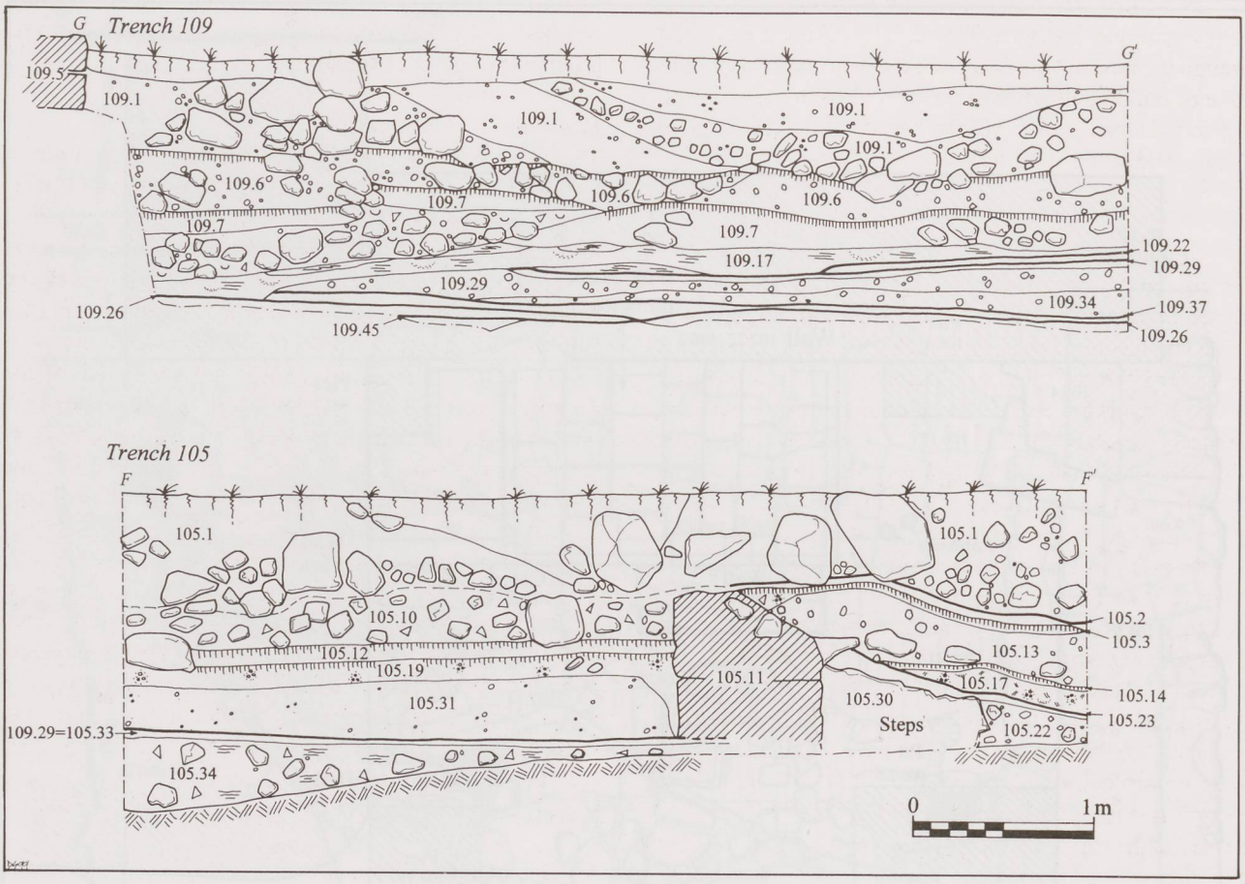


Figure 4.5. Belmont (Suba), southern part of inner courtyard: west–east sections in trenches 109 (G-G') and 105 (F-F').



contained a large amount of Byzantine, Crusader and post-Crusader material. Over this were other layers of soil (**113.25**, **113.22**, **113.12**), containing a mixture of material from Byzantine to late medieval. These layers extended through the blocked doorway into the courtyard. Very little stone or building debris was uncovered from these layers. The foundations for the village house were cut into layer **113.12**. The house floor was made of plaster (**113.5**).

1.2 The West Range

The village mosque, which also served as the school, was located in the southern part of the village square (Figs. 4.1, 6–7). The demolition of the building by explosives in or soon after 1948 had severely disturbed the early village and Crusader layers beneath. Excavation in the western part of the square (trenches 109, 118, 121, 123) and below the remains of the mosque (111, 116, 120) revealed remains of the Crusader west range. The internal area of the west range to be investigated was 7m north–south and 8m east–west. A trench (401) was also excavated to the west of the western outer wall to locate the west face of that wall and to investigate a possible link with a large stone-built drain or sewer running north-east to south-west downhill from the west range. This drain could be of Crusader date, but seems to have remained in use until recent times. The northern extent of the west range was sealed by a village house, under construction at the time of the 1948 abandonment; this was not investigated, although the outer wall face of the partially rock-cut Crusader-period west wall survived in it.

Phase A Byzantine or earlier

No features directly relating to the early phases of the site were encountered, but a trial trench (1.5m by 1.5m) through a Crusader-period floor (**111.29**) did recover a silver coin of Alexander Jannaeus, 103–76 BC (Ch. 5, no. 3), along with coarse combed and rilled pottery of the fourth to eighth centuries AD, fine white ware and some *tesserae*. These finds were recovered from a dark soil layer (**111.32**) which lay directly over bedrock and also contained a great deal of animal bone. This was sealed by a layer of gravel (**111.31**), used to form a foundation for the plaster floor overlying it. The gravel contained a saucer lamp and sherds of coarse combed and rilled pottery along with fine white ware, fragments of glass and flat tiles.

Phase B Crusader

The bedrock had been utilized in building the west range, the lower section of the outer face of the west wall (**111.11**) being cut from the rock (Fig. 4.2). Similarly, traces of a foundation trench for the east wall were visible within the village square (**121.33**). In most of the area, however, the bedrock was not revealed, as it was covered by a plaster floor surface (**111.29**). The outline of the west range was largely intact. The south wall was a continuation of the north wall of the south range (**113.9**), and the west wall (**116.14**), which seemed to be about 1.5m thick, survived to ten courses in places and had been incorporated into the wall of the unfinished village house. The north wall also formed part of the south wall of the north range (**117.7**), but was largely obscured by village houses. The east wall (**111.9/120.7**), facing the courtyard, was in the poorest condition (Fig. 4.8). Part of it survived as mortared rubble with three ashlar facing stones (**121.41**), which projected into the courtyard from beneath the wall of the unfinished house. This section of wall was built directly on to the bedrock. Further south only the mortared rubble core (**121.23**) of the wall survived, all the facing stones having been robbed.

A partially blocked doorway (**120.6**) was uncovered in the east wall of the west range, close to the corner with the south range (Fig. 4.6; Pls. 4.3–4). A step from the courtyard led up to it. The doorway had originally been 1.89m wide with 8cm rebates and a socket for a door-post surviving in the northern reveal. The width of the door was latterly reduced to 0.9m. The blocking wall (**111.10**), built against the southern jamb, was 0.8m thick with a foundation course up to 0.15m wider. It was constructed of regularly laid, roughly dressed blocks and covered the threshold stone and the internal plaster floor surface (**120.11**). It also partly

Plate 4.3. Belmont (Suba), inner ward: S part of W range, looking N with blocked door (120.6) to the right.

Figure 4.6. Belmont (Suba), inner ward, southern part of the west range: plan as revealed by excavation.

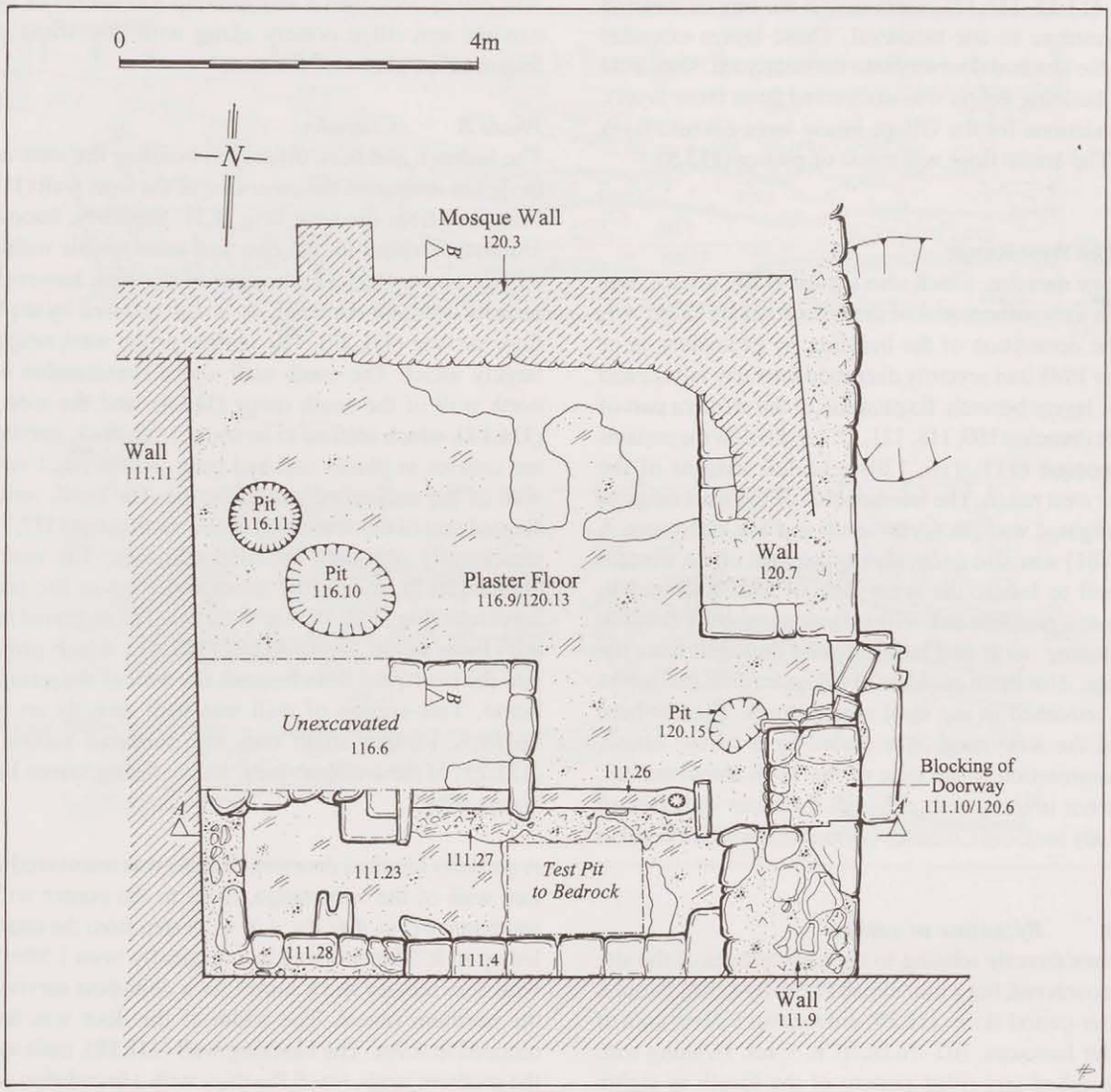
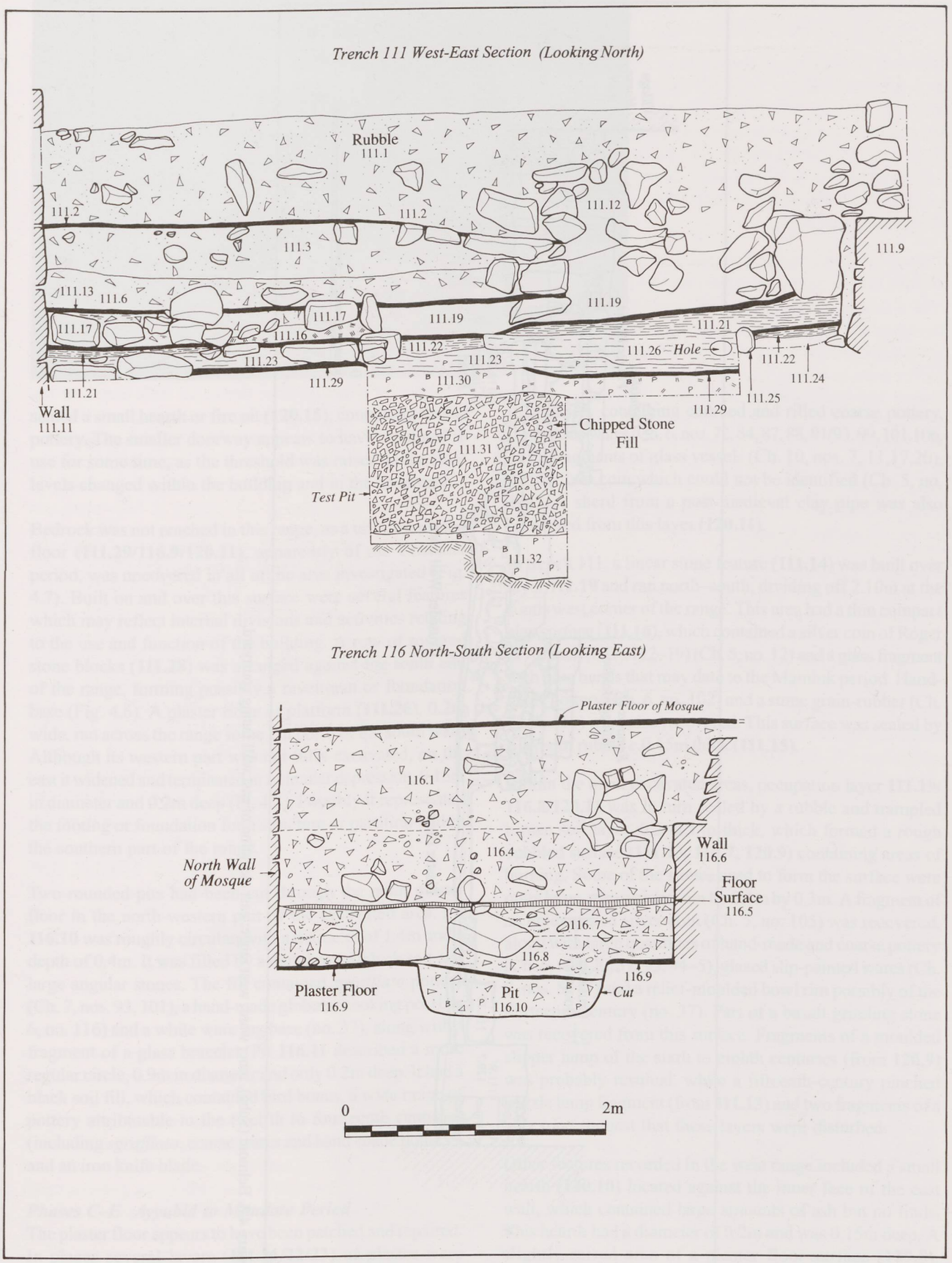


Figure 4.7. Belmont (Suba), inner ward: (a) west range, trench 111: west–east section, looking north; (b) west range, trench 116: north–south section, looking east. For location see Fig. 3.6.



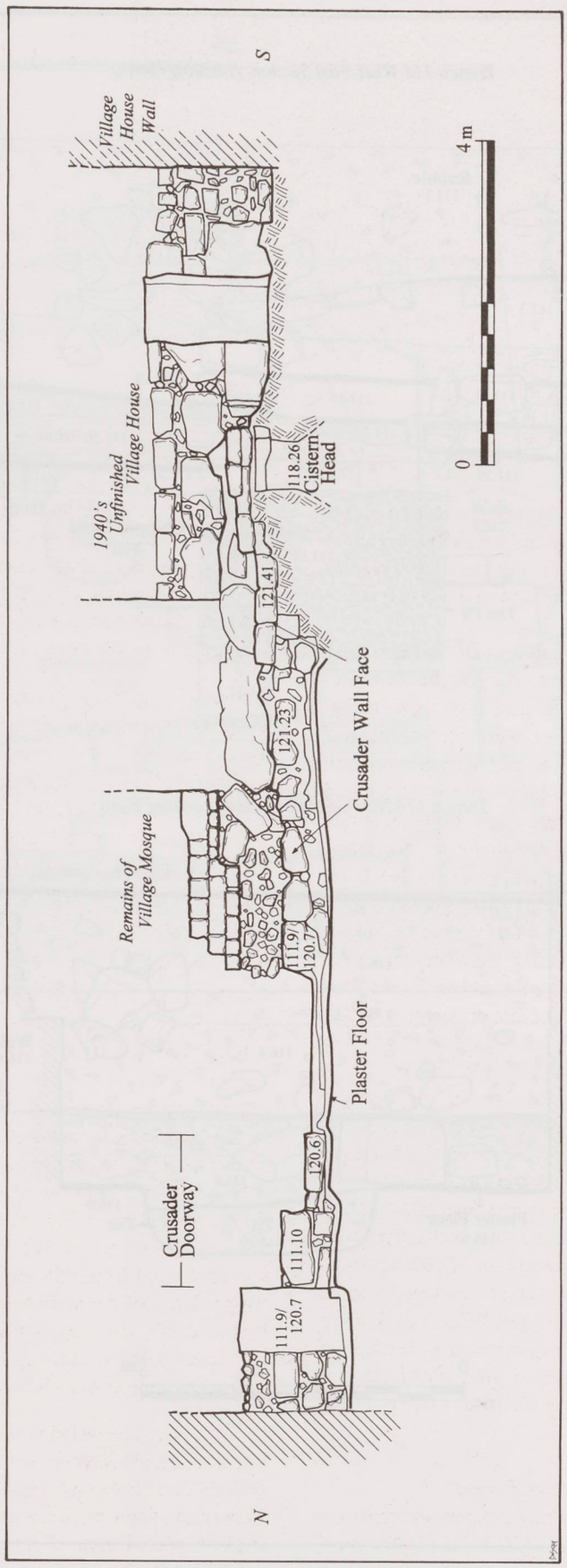


Figure 4.8. Belmont (Suba), inner ward, west range: east elevation of east wall facing courtyard.

Plate 4.4. Belmont (Suba), inner ward: blocked door (120.6) into W range.

sealed a small hearth or fire pit (**120.15**), containing coarse pottery. The smaller doorway appears to have remained in use for some time, as the threshold was raised as the floor levels changed within the building and in the courtyard.

Bedrock was not reached in this range, as a uniform plaster floor (**111.29/116.9/120.11**), apparently of the Crusader period, was uncovered in all of the area investigated (Fig. 4.7). Built on and over this surface were several features which may reflect internal divisions and activities relating to the use and function of the building. A row of squared stone blocks (**111.28**) was arranged against the south end of the range, forming possibly a revetment or foundation base (Fig. 4.6). A plaster ridge or platform (**111.26**), 0.2m wide, ran across the range some 2m north of the south wall. Although its western part was not fully excavated, on the east it widened and terminated in a circular depression, 0.15m in diameter and 0.2m deep (Pl. 4.3). Possibly it represented the footing or foundation for a structure or partition within the southern part of the range.

Two rounded pits had been cut through the main plaster floor in the north-western part of the excavated area. Pit **116.10** was roughly circular, with a diameter of 1.4m and a depth of 0.4m. It was filled by a dark brown-black soil and large angular stones. The fill contained *sgraffiato* pottery (Ch. 7, nos. 93, 101), a hand-made globular cooking pot (Ch. 6, no. 116) and a white ware jug base (no. 37), along with a fragment of a glass bracelet. Pit **116.11** described a more regular circle, 0.9m in diameter and only 0.2m deep. It had a black soil fill, which contained bird bones, a wide range of pottery attributable to the twelfth to fourteenth centuries (including *sgraffiato*, coarse wares and hand-made pottery), and an iron knife blade.

Phases C–E Ayyubid to Mandate Period

The plaster floor appears to have been patched and repaired. In places several layers (**111.21/22/23**) of plaster were uncovered, and the surface texture varied from rough to smooth. These surfaces were sealed by a compact occupation layer (**111.19/116.8/120.11**) of dark soil, up to 0.3m thick, containing combed and rilled coarse pottery, hand-made wares (Ch. 6, nos. 72, 84, 87, 88, 91/93, 99, 101,106, 107), fragments of glass vessels (Ch. 10, nos. 7, 11,17,20), and a silver coin which could not be identified (Ch. 5, no. 106). A sherd from a post-medieval clay pipe was also recovered from this layer (**120.11**).

In trench 111, a linear stone feature (**111.14**) was built over layer **111.19** and ran north–south, dividing off 2.10m at the south-west corner of the range. This area had a thin compact clay surface (**111.16**), which contained a silver coin of Roger of Antioch (AD 1112–19) (Ch. 5, no. 12) and a glass fragment with blue bands that may date to the Mamluk period. Hand-made pottery (Ch. 6, no. 102) and a stone grain-rubber (Ch. 12, no. 18) were also recovered. This surface was sealed by a layer of rubble *c.*0.15m thick (**111.15**).

Within the main excavated areas, occupation layer **111.19/116.8/120.11** was in turn sealed by a rubble and trampled brown soil layer, 0.2–0.3 m thick, which formed a rough cobbled surface (**111.13, 116.7, 120.9**) containing areas of burning. Some of the stones used to form the surface were quite large, measuring 0.6m by 0.4m by 0.3m. A fragment of an unidentified silver coin (Ch. 5, no. 105) was recovered, along with large quantities of hand-made and coarse pottery (Ch. 6, nos. 20, 57, 92, 94–5), glazed slip-painted wares (Ch. 7, nos. 56–7) and a relief-moulded bowl rim possibly of the thirteenth century (no. 37). Part of a basalt grinding stone was recovered from this surface. Fragments of a moulded slipper lamp of the sixth to eighth centuries (from **120.9**) was probably residual, while a fifteenth-century pinched nozzle lamp fragment (from **111.13**) and two fragments of a clay pipe suggest that these layers were disturbed.

Other features recorded in the west range included a small hearth (**120.10**) located against the inner face of the east wall, which contained large amounts of ash but no finds. This hearth had a diameter of 0.2m and was 0.15m deep. A slightly raised area of a plaster floor surface (**120.8**), measuring 2m by 1.5m, survived in the north-east corner of the trench next to the hearth but over the main rough surface. Against the south wall of the range, a stone shelf or

foundation base (**111.17**) had been built over a similar earlier stone-built structure **111.28** and had then been plastered over. The plastered upper surface was level with the top of the rubble layer (**111.15**).

In trench 116, the rough surface layer (**116.7**) was sealed by a thin trampled clay surface (**116.5**), which contained a pierced Ottoman coin (Ch. 5, no. 47) and under-glaze painted pottery of the thirteenth to fourteenth centuries (Ch. 7, no.115). The north face of a possible east–west dividing wall (**116.6**) had been built over rubble layer **116.7**. No south face for this wall was uncovered, as this lay within the unexcavated baulk.

These deposits were sealed by a comprehensive dark brown soil and rubble layer up to 0.6m thick (**111.5/116.4/120.5**), which formed the main layer of demolition material and masonry debris. The finds recovered from this material included Ottoman coins and eighteenth-century Turkish coffee cups, as well as Byzantine glass, faience and coarse wheel- and hand-made pottery. This rubble layer was in turn sealed by a rubble make-up layer for the foundations and concrete floor of the mosque. This material had been damaged by explosives when the mosque was partially destroyed. As a result, residual twelfth-century *sgraffiato* pottery, Ottoman coins and Byzantine rilled pottery were all recovered from this layer.

The main surviving elements of the mosque consisted of foundations for the walls and a concrete floor. The walls had been built over the remains of the Crusader masonry; the doorway from the courtyard appears to have remained in use, as the threshold was raised to the new floor level. The northern extent of the west range was not investigated, because of the construction of a village house that was left unfinished when the village was abandoned in 1948.

1.3 The North Range

Trenches to investigate the survival of the north range were dug within the basement of an upstanding village house (103), through the demolition rubble of village houses (110, 114, 126), and within the northern part of the village square (107, 117, 118, 119) (Figs. 3.6, 4.1–2). As a blocked doorway was visible in the outer wall of the north range, a trench (501) was also excavated outside the north range to investigate it. The corner with the west range could not be located because of the depth of rubble, but the line of the outer west wall was visible from the west range. At the east end of the north range the north and south walls were largely upstanding and had been incorporated into village houses, opening on to a small courtyard.

Phase A Byzantine or earlier

The main Byzantine features exposed in the north range consisted of sections of a mosaic floor and rock-cut cisterns. The first area of mosaic to be uncovered (measuring up to 3.5m by 2.5m) was within the basement of a village house, which adjoined the unfinished house in the west range (Fig. 4.9–10). The mosaic (**103.4**) was set in a light bedding of white lime mortar laid directly on the rock surface. It consisted of white *tesserae* decorated with florets of red and black in a diaper pattern (cf. Avi-Yonah 1933: 139, floret type F7). As the mosaic floor had remained in use right up to the final village period of occupation, no primary deposits had built up over the floor, though later walls did respect it.

Additional trenches to the east of the basement exposed a large fragment (4m by 3m) of mosaic floor (**110.26/27, 114.3, 126.6**) (Figs. 4.9, 11; Pls. 4.5–6). More detail of the design was uncovered, including the central motif of the panel, four buds set in a rosette, and edging which consisted of three lines of white *tesserae* (cf. Avi-Yonah 1933: 139, type F23); this allowed a tentative reconstruction of the whole panel, which may be dated to the fifth or sixth century AD (cf. Avi-Yonah 1933: 167–8, nos. 177–8; 170, no. 125; 174, no. 142; 176–7, nos. 151 and 157; 1934: 60–72). The main design section was removed for conservation and the rest backfilled once the excavation was finished. As before, the mosaic was found to have been laid on a white lime mortar bedding over bedrock. The mortar survived over a larger area than the surviving mosaic, and a great deal of loose

Plate 4.5. Belmont (Suba), inner ward: Byzantine mosaic (110.26/27), from E (compare Fig. 4.12).

Plate 4.6. Belmont (Suba), inner ward: Byzantine mosaic (110.26/27, 114.3, 126.6), from W.

tesserae were recovered from the various demolition layers covering the mosaic.

The foundations of walls associated with the mosaic were also uncovered in trench 103: an east–west wall (**103.5**) north of the mosaic and a north–south wall (**103.7**) to the west. The structure represented by these walls could not be further determined as the area had been built over by village walls and houses.

Other Byzantine or earlier features within the basement included small pits (**103.12**) and a large bottle-shaped cistern (**103.14**) cut into the bedrock. The latter was 5m in diameter and 6m deep. It seems to have remained in use during the history of the site and was relatively free of rubble and domestic rubbish, unlike the other cisterns which had largely been filled in. The circular shaft for another cistern (**103.3/103.8**) had been started to the west of the mosaic but was abandoned at a depth of only about 1.2m. Square rock-cut footings were visible on either side of the shaft and may represent the footings for rock-cutting equipment used to quarry it out. The remains of another possible cistern was represented by a 2m deep rock-cut trench containing the foundations for the north wall of the north range (**110.29**).

Phase B Crusader

The walls of the north range had been badly damaged and robbed for stone. The north wall (**110.24**) was exposed beneath the foundations of later village walls, where it survived to six courses. It was 1.66m thick. This wall also survived in the village house containing the mosaic, where it formed the north wall. In this instance the Crusader wall-core and external wall-face had been robbed, with the inner face surviving as a house wall. A blocked Crusader-period doorway survived in this wall and was investigated by an external trench (501). It was 0.78m wide, opening to a passage 1.07m wide. The corner of the west range and north range was obscured by later buildings, but the exterior wall-face survived as the west wall of the 'unfinished house' in the west range (**111.11**). The first course of the foundations for the east wall of the 'unfinished house' contained a large ashlar stone (**118.25**), which may mark the corner with the north range. The east wall of the north range was still standing above ground level, but was not excavated further on account of its unstable condition. It still displays one reveal of a simple splayed window.

The south wall survived well at the point where it abutted the east range (**102.22/106.2**); here it was 3.5m high and 2.7 m thick, the lower section being rock cut (Figs. 4.1, 4). West of this, beyond the east range, it had been almost totally removed, apparently when the village houses were built (Fig. 4.3). A fragment of the south wall did survive as a badly robbed rubble core with facing stones (**117.11**); and the original line of the wall could still be seen as a series of rock-cut foundation trenches (**117.12**). The rock rises slightly where the eastern opening into the north range was situated and the rock has been worn smooth. The eastern reveal of this opening survives as the western terminus of the main surviving section of wall, which also formed the north wall of the east range (see below). The reveal was constructed of dressed masonry blocks with the slight spring of an arch surviving; the absence of rebates suggests that it was a plain arched opening, possibly with no means of closure. The reveal and threshold on the west side survive as rock-cut foundation trenches.

Evidence for another opening into the north range was uncovered to the west of this. This consisted of a worn threshold stone (**118.23**) on which the outline of a door, 1.57m wide with 8cm rebates, could still be traced. The east jamb also survived but lacked any rebate, suggesting that it may possibly have been rebuilt (or alternatively that the threshold stone was in secondary use). Immediately west of the opening, within the line of the wall, lay a cistern head, to which the opening may possible also have given access. This cistern had remained in use after the doorway had collapsed or been demolished, as the cistern head had been repaired and raised, damaging the Crusader material beside it.

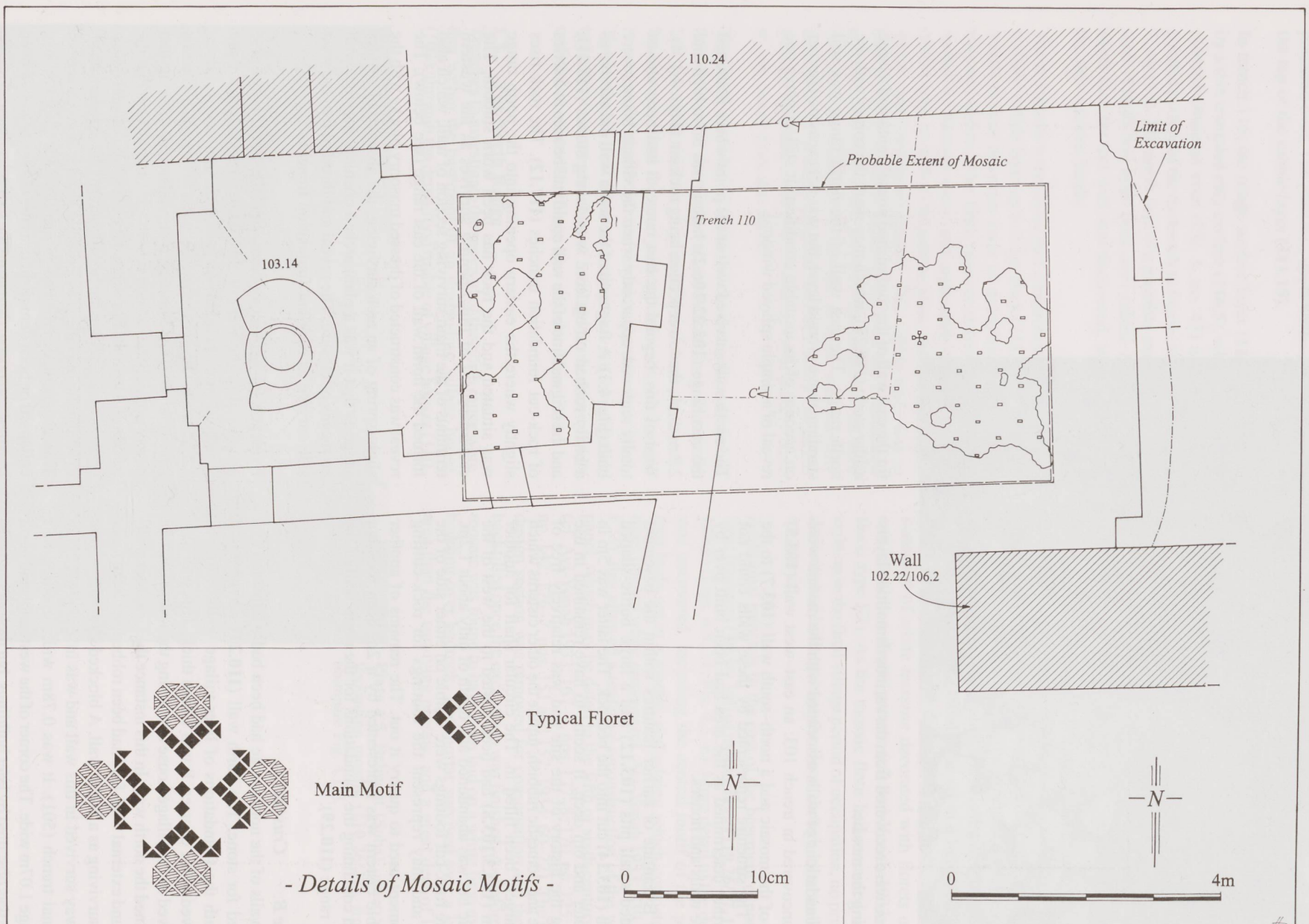


Figure 4.9. Belmont (Suba), inner ward, north range: Byzantine mosaic.

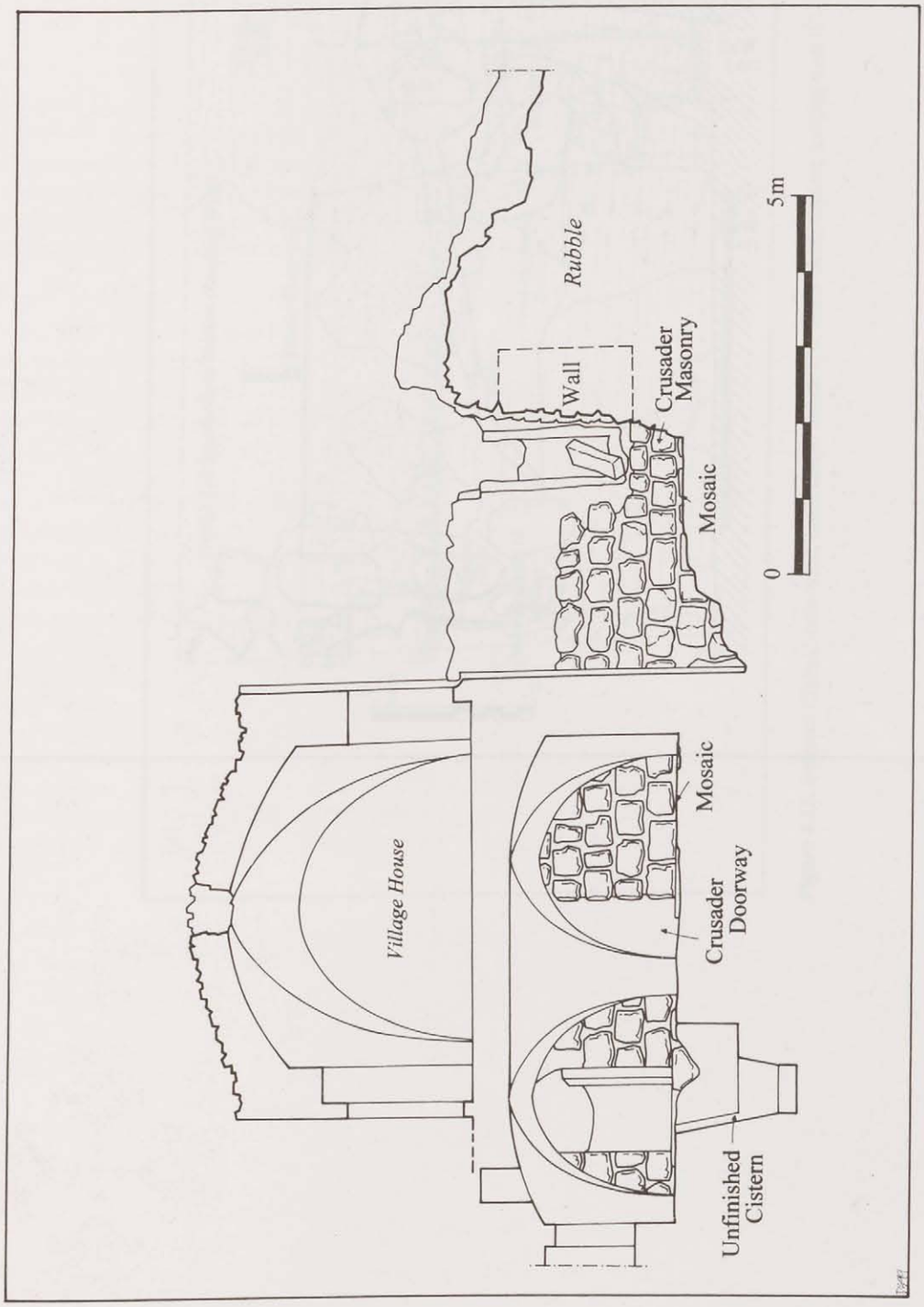
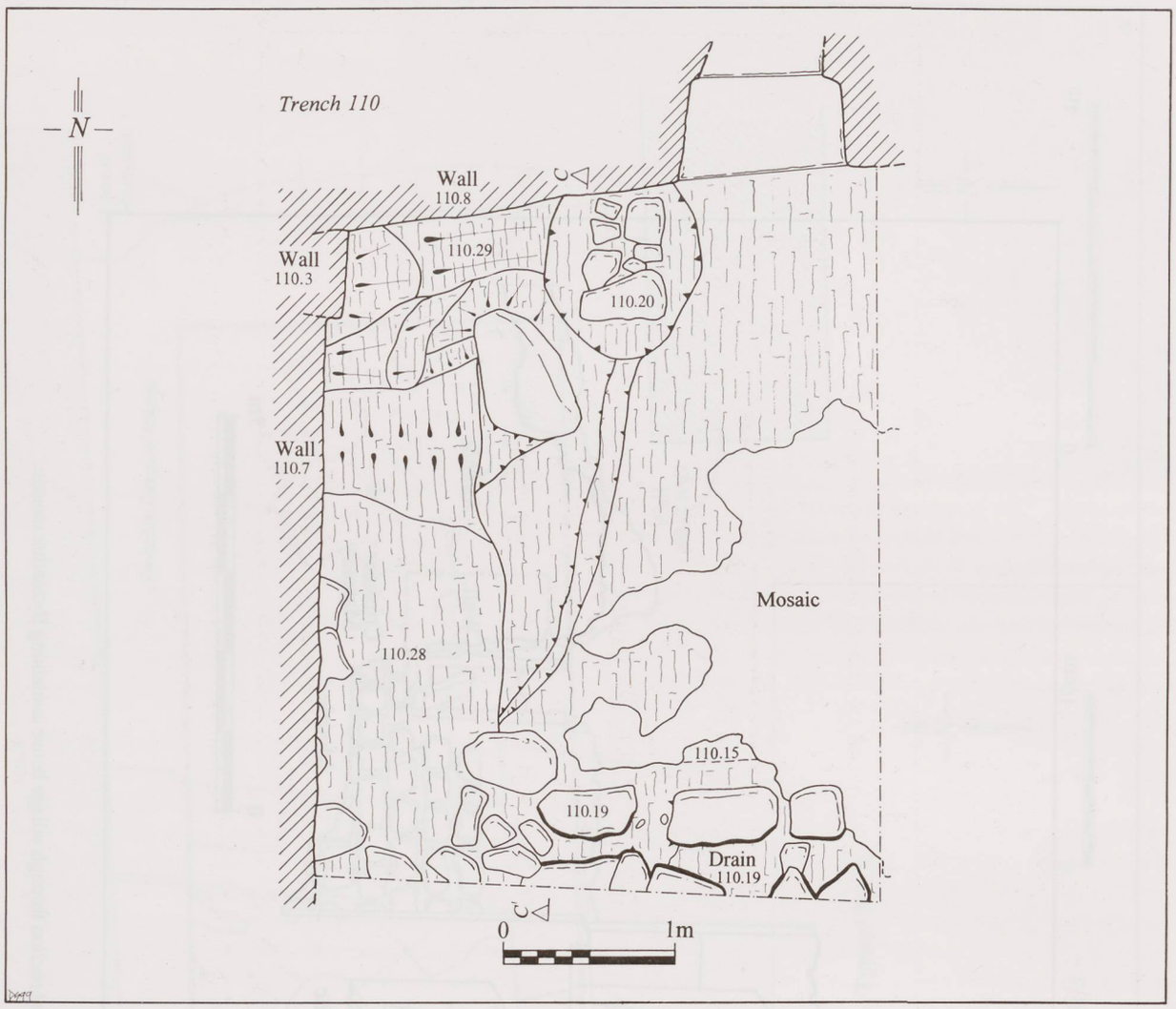


Figure 4.10. Belmont (Suba), inner ward, north range: west–east section through village house containing Byzantine mosaic.

Figure 4.11. Belmont (Suba), inner ward, north range: plan of trench 110.



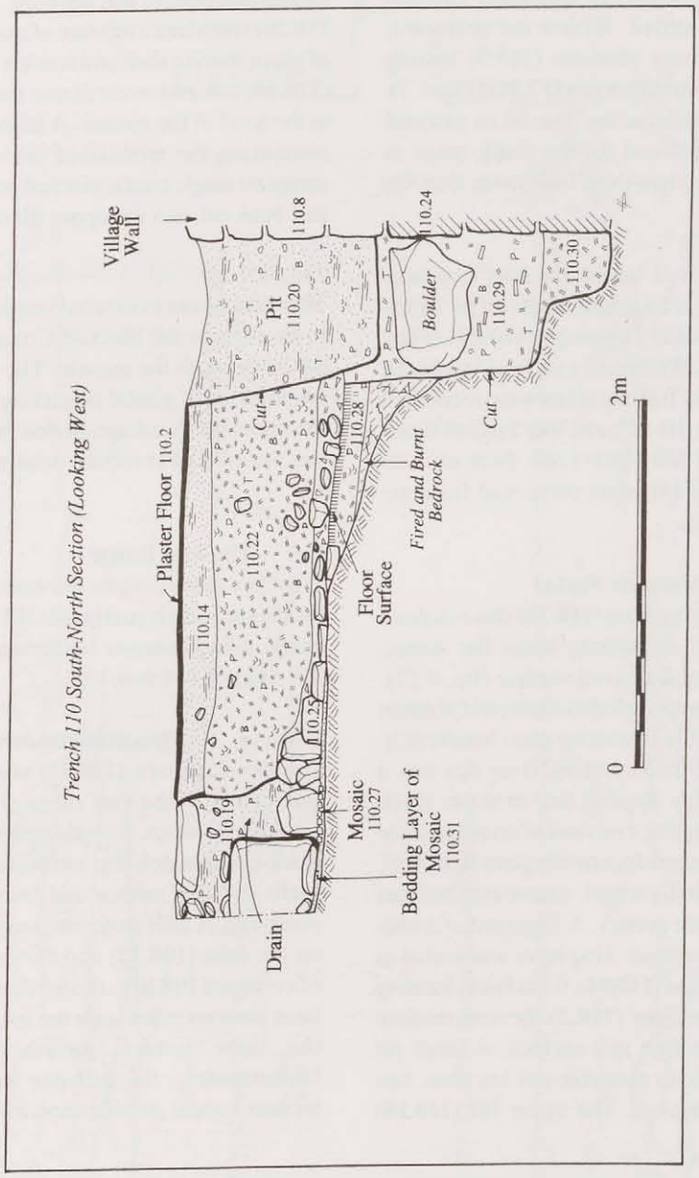


Figure 4.12. Belmont (Suba), inner ward, north range: trench 110, south–north section, looking west (C-C').

Fragmentary remains of an internal north–south internal dividing wall (**117.10**) ran from the south wall towards the surviving village house with the mosaic in its basement. Unfortunately, connecting doorways and other internal divisions could not be identified. Within the courtyard, excavation exposed a masonry platform (**119.7**) butting against the south wall of the north range (**117.11**) (Fig. 4.3). It seems likely that this represents the base of an external staircase similar to the one found for the south range in trench 105. Unlike the latter, however, little more than the foundation survived.

The mosaic, where it survived within the later Crusader north range, had been cut by a large late medieval pit which was filled by rubble and stone chippings (**110.29**) (Figs. 4.11–12). A clay floor (**110.28**) formed a surface, level with that of the mosaic. Two early Islamic coins were recovered from this surface (Ch. 5, nos. 10–11); and four English short-cross pennies of the period AD 1180×1247, three of them corroded together (nos. 13–14), were recovered from the mosaic at the edge of the pit.

Phases C–E Ayyubid to Mandate Period

Sealing the mosaic and the clay floor (**110.28**) was a deposit of rubble and soil (**110.25**), containing many flat stones, which may have once formed a paved surface (fig. 4.12). Finds recovered from this layer included a pierced Ottoman coin (Ch. 5, no. 44), a possible Byzantine glass handle (Ch. 10, no. 2) and coarse hand-made pottery. Over this was a substantial rubble and clay deposit, up to 0.6m thick (**110.22/107.6/126.5**), containing a mixture of *tesserae*, floor tiles and fragments of a Roman-Byzantine glass flask (Ch. 10, no. 8), along with a spindle whorl, coarse combed and rilled pottery and hand-made pottery. A fragment of a clay smoker's pipe was also recovered. This layer was sealed in turn by a make-up layer of sand (**110.14**), 0.2m thick, forming the foundation for a plaster floor (**110.2**). Several modern features had been dug through this surface. A large pit (**110.20**), for example, 0.9m in diameter and 1m deep, had been dug against the north wall. The upper fill (**110.18**) contained a mould-made slipper lamp with Greek letters in relief, datable to the sixth to eighth centuries (Ch. 8, no. 50), along with a stamp-impressed sherd and various fine wares, hand-made pottery and *tesserae*. The lower fill (recorded as **110.20**) contained a mixture of material, including fragments of glass, marine shell and smoker's pipe. A stone-built drain (**110.19**) ran east–west across the trench and had been dug to the level of the mosaic. A triangular-shaped pit (**110.15**), containing the articulated skeleton of a goat kid and a complete single nozzle pinched ceramic lamp (Ch. 8, no. 42), had been cut into the upper fill of the drain.

TRENCH 501

This trench was excavated outside the north range in order to investigate the blocked Crusader doorway leading into the house with the mosaic. The excavation uncovered the foundations of a solid projecting tower or turret, protecting the doorway. A village-period buttress had been built over this material. (For further details, see section 2.5 below.)

1.4 The East Range

Trenches to investigate the east range were located within the village square/courtyard (101–2, 106, 108, 122, 127) and inside village houses bordering the courtyard (104, 204, 308) (Figs. 3.6, 4.1–4, 13).

Phase A Byzantine or earlier

A rock-cut cistern (**108.11**) was uncovered in the south-east corner of the east range (Fig. 4.4). The cistern head was largely intact, with sloping sides cut from the bedrock. Rock-cut channels fed rainwater into the cistern from the south and east ranges and from the other cisterns in the courtyard. A later stone-built mouth for the cistern survived on the west (**108.12**) and the east sides (**108.13**). An area of collapse (**108.8**) to the north of the cistern mouth appears have corresponded with the location of a second mouth to the same cistern, possibly post-dating the first. Unfortunately, the collapse had destroyed much of the archaeological stratification in the central area of the east

Plate 4.7. Belmont (Suba), inner ward: E range, looking S.

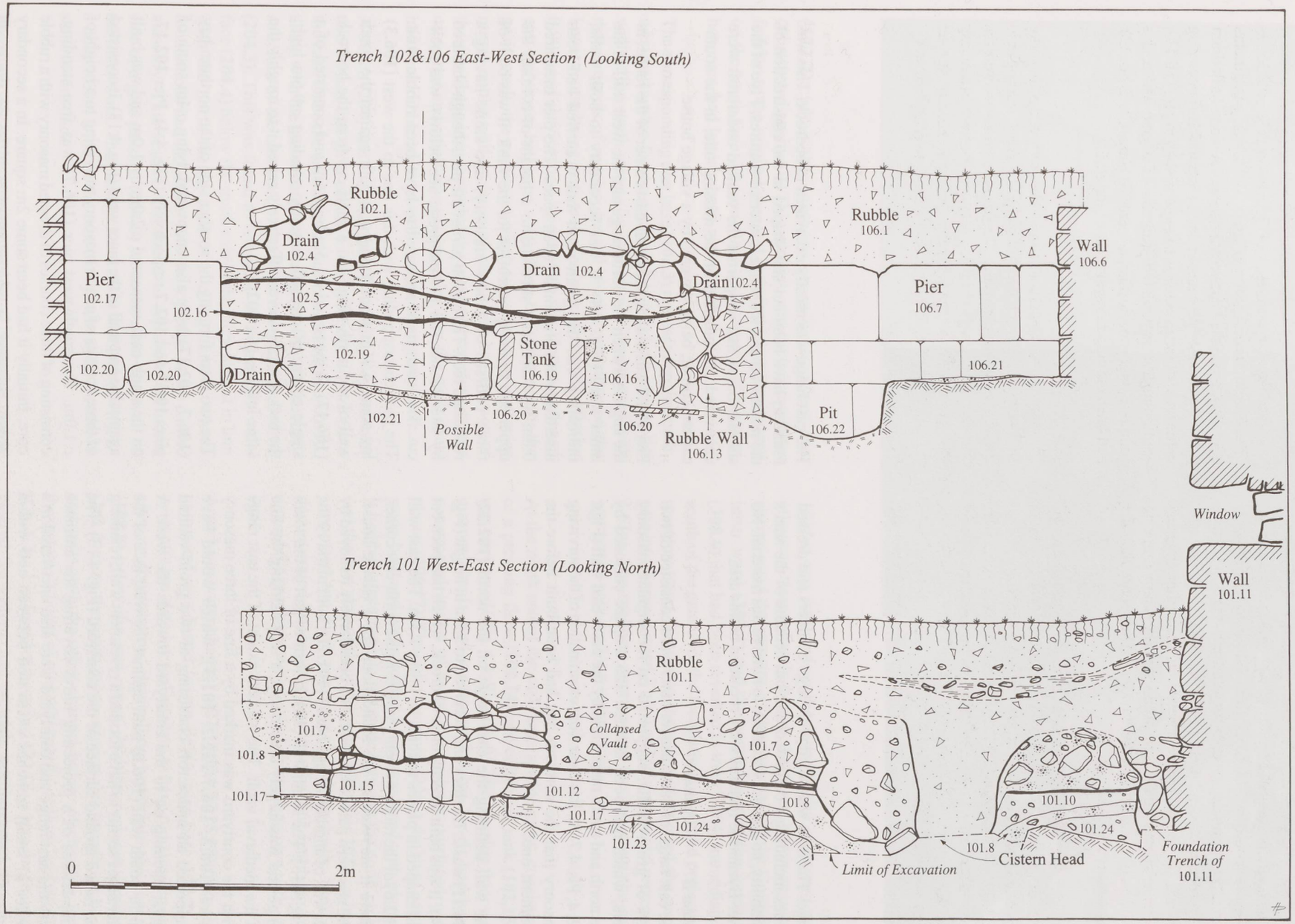


Figure 4.13. Belmont (Suba), inner ward: (a) east range, trenches 102 and 106: east–west section, looking south; (b) east range, trench 101: west–east section, looking north.

Plate 4.8. Belmont (Suba), inner ward: E range, looking N.

range. The hole was filled with large boulders and dressed stones including a column drum; but because of the area's instability, no attempt was made to remove this material. No other Byzantine features were recorded in this area.

Phase B Crusader

The east range of the Crusader inner ward consisted of two bays of groin-vaults, supported on rectangular masonry piers, which had been inserted into a space enclosed by the north and south ranges and by the outer east wall (Figs. 4.2, 4; Pls. 4.7–8). It is clear from examination of the surviving masonry that the northern bay had been built before the southern one.

The wall defining the east range on the north (**102.22/106.11**) was 2.7m thick and survived to 3.5m in height (Fig. 4.4). It was built directly on to bedrock, which had been cut and shaped in places to form its lower 1.5m. The east wall (**102.6**) of the range was only visible in the north-east corner, where it survived as the foundations for a village house. The southern part of this wall had been largely removed by the wall of another village house (**101.11**), built in the 1930s (Fig. 4.13). The south wall (**101.2**) formed part of the south range and was largely upstanding, a scar marking the line of the medieval vault. The western extent of the east range with the courtyard was marked by a line of three masonry piers (**106.3, 106.7/122.2, 101.3**), which would have supported an undercroft consisting of two groin-vaulted bays, opening on to the courtyard towards the west. A north–south wall (**106.6**) built against the west face of the pier bases seems to have formed a revetment wall, retaining the raised ground surface of the courtyard (Fig. 4.13). The foundations of a projecting turret covering the entrance into the east range and courtyard were also uncovered in a series of small trenches excavated between and within village houses (104, 204, 308).

The east range was mostly excavated to bedrock. This was found to have been cut and shaped in the construction of the north wall and the range's internal features. Five of the six pier bases that supported the vaulted undercroft were uncovered, the position of the missing one, in the south-eastern corner, being covered by a village house.

Pier **102.7** was built in the north-east corner of the range, in the angle between the north range and the west wall of the inner ward (Fig. 4.4). It was secondary to both walls, indicating that the groin-vault that it carried had been inserted into a previously open space. The pier measured 0.8m by 0.6m, and survived to a height of *c.*1.0m, the upper part forming a springer for the vault. It was built of three courses of ashlar masonry, one stone having a rusticated face. The lowest part of the pier, though obscured by later plaster (for a wine-press: see below), was rock-cut. The vault itself appeared to have been rubble built. The pier corresponding with this one to the west (**106.3**) lay some 4.96m from it and was built against the south wall of the north range, on a shelf cut from the bedrock (**106.17**). It measured *c.*1.5m by 0.6m and consisted of a single course of dressed masonry standing *c.*0.6m high; the rock shelf, however, effectively raised it to roughly the same level as pier **102.7**.

The two piers forming the souther side of the northern bay (**106.7**, **102.17**) were also uncovered, lying *c.*4m south of piers **106.3** and **102.7** respectively (Fig. 4.4). Pier **102.17**, on the south-east, measured *c.*2.0m by 1.0m and was built against the east wall of the inner ward (Fig. 4.13). It consisted of three courses of ashlar masonry, surviving to a height of *c.*1.0m. The south-west pier (**106.7**) was free standing, consisting of three courses of dressed masonry with a rubble core. Initially it had been some 2m square. In a secondary phase, however, it was widened by 1.2m on the south

Plate 4.9. Belmont (Suba), inner ward: E range, wine-press in NE corner.

(**122.2**), when the southern groin-vaulted bay was constructed against it. This addition was built in a similar fashion to the original pier and included a rusticated stone on the south face. The east face of both parts of the pier, however, had latterly been partly robbed.

The corresponding pier base (**101.3**) representing the south-western support for the southern bay was built against the wall of the south range (fig. 4.4). It was constructed with three courses of regular dressed blocks, one stone on the lower course being rusticated. This pier measured 2.30m by 0.90m and survived to a height of *c.*1.0m. On the north and east the stones had been cut to form the springers for the groin-vault, the profile of which was shown by a scar or raggle on the wall of the south range. The construction of the pier changed at the top of the surviving structure, traces of mortar and small stones suggesting that the vault itself had been rubble built, possibly with a facing of plaster.

A trench (204) was also excavated in the alleyway between two houses that gave access to the village courtyard from the east. Once the existing road surface had been removed, along with the immediate overburden (**204.1**), the masonry structure of the east wall of the inner ward was uncovered (**204.3**). This was found to terminate with a straight wall-face (**204.4**) below the south side of the alley, almost in line with the north-facing wall of a village house, whose foundations had in fact cut into the top edge of the earlier masonry. This feature was found to represent the north side of a gate passage (**204.6**) set in the outer east wall of the inner ward. The passage was 1.93m wide, narrowing to a door 1.69m wide on the east with jambs and a threshold stone 0.45m thick.

The south side of this gateway was found in another trench (308), excavated inside the house to the south of the alleyway. The floor of the house, which was built in the 1930s, was well below the level of the courtyard and alleyway. Immediately below the floor, however, were encountered the remains of the east wall of the Crusader inner ward (**308.4**) and the south jamb of the gateway (**308.6**) that had been revealed in trench 204. Immediately south of the gate were the foundations of a solid projecting masonry turret, similar to the one that covered the north gate into the inner ward. This was 1.96m wide and projected 2.63m. The roadway approaching the gate from the east was paved with well-cut stone blocks.

At the north end of the east range a wine-press, consisting of a pressing floor (**102.14**) and collecting tank (**102.15**), was uncovered (Fig. 4.4; Pls. 4.8–9). The pressing floor was masonry built, and measured 3.3 by 2m. It had been constructed on top of a shelf of bedrock, surfaced with plaster (**106.17**). The collecting tank (2 by 1.4m) was partly stone-built and partly rock-cut, and was lined with plaster. It had been inserted into the angle between the north range and the east wall of the inner ward after pier **102.7**, which supported the groin-vaulting, had been built. This is demonstrated by the way in which the tank had been cut around the pier base, which was left standing on a rock-cut base.

A rock-cut water channel (**122.18**/**124.7**/**125.18**) from the courtyard was found to run below pier base **122.2**; it evidently pre-dated it, and appears to have remained in use after its construction, channelling water into the cistern (**108.8**) below the east range. Another rock-cut channel (**101.2**) from the south range respects this foundation base and joins with the other channel before discharging into the cistern. A hoard of over 400 twelfth-century lead tokens (Ch. 5, no. 17), found at the point (**122.18**) where the channel entered the cistern, had possibly been secreted there by someone leaning over the cistern edge and pushing them up into the channel mouth.

Another drain (**102.20**), partly rock-cut and partly stone-built, was uncovered leading from a channel within the east wall of the range, around the north side of pier **102.17** and towards the same cistern (**108.8**). Its full extent was not recorded; it seems, however, to have been used to collect rain water from the roof of the east range. North of drain **102.20** were two connected rock-cut features. The northern one (**102.26**) had been squared off while the other was more rounded with sloping sides (**102.25**). No finds were recovered and the function of neither could be determined. The squared rock-cut feature seemed to run up to, if not under the wine-press.

Several mortar and plaster surfaces had been laid over the bedrock in the east range (**101.24**, **102.23**, **106.21**) (Fig. 4.13); traces of a rough flagstone or cobbled floor were also recovered (**101.18**, **101.25**, **106.20**, **108.14**, **122.17**). These surfaces were sealed by layers up to 0.4 m thick (**101.17**, **102.19**, **106.16**), containing residual Byzantine and Roman *tesserae*, tiles and pottery (Ch. 6, nos. 1–2), along with Crusader-period hand-made pottery (no. 109) and wheel-made glazed wares (Ch. 7, nos. 10, 19); a copper alloy pin (Ch. 11, no. 4) was also recovered. A monolithic stone tank (**106.19**) was found within layer (**106.16**); it was damaged and appeared to be out of position.

Phases C–E Thirteenth to Twentieth Centuries

Towards the south end of the range, a stub of masonry (**101.15**) was uncovered over the remains of a paved surface (**101.17**) (Fig. 4.13); this wall had been encountered at a higher level where the facing stones had been robbed and only the mortared core survived (**101.6**). Sealing these layers was a trampled plaster surface (**101.8/102.16**) containing an Ottoman coin (Ch. 5, no. 33), fragments of clay pipes, as well as hand-made and coarse combed and rilled pottery.

Other village-period features included the remains of an east–west wall (**106.16**) built against the southern edge of the wine-press. This butted against part of a north–south wall (**106.13**) running from the rock shelf west of the wine-press to pier **106.7**. Both walls only survived as 2m sections. A trampled surface (**106.14**) sealing these walls ran level with the top of the wine-press.

In the north-west corner of the area the foundations of a substantial wall (**106.4**) had been built over the remains of pier **106.3**, obscuring the full extent of it. The wall had been built from masonry blocks possibly robbed from Crusader features. A masonry foundation (**106.5**) had been built over the pressing floor of the wine-press. This masonry had been tied into the north wall of the east range and may represent a village-period building. These features were sealed by a thick layer of soil and rubble (**106.10**). A village-period hearth (**106.8**) had been built on this rubble, and was in turn sealed by a substantial modern rubble and topsoil layer (**106.1**).

The Crusader-period occupation layers were sealed by a thick layer of rubble (**101.7/102.10/102.13/102.19/106.10/106.16**) containing a mixture of Byzantine material (*tesserae*; *tegula*, Ch. 12, no. 27; glass, Ch..10, no. 5) and late medieval to modern finds, suggesting that this material relates to the collapse of the vaults. This was sealed by a compact plaster surface (**102.16/106.14**), level with the top of the wine press. This in turn was sealed by a deep deposit of modern rubble layers and lenses (**101.1**, **102.1**, **102.5**, **106.1**). Another stone-built drain (**102.4**) was exposed within the rubble layer **102.1**, on roughly the same alignment as the lower one (**102.20**); possibly the drain from within the fabric of the east wall was now flowing out at a higher level. This was sealed by a thick layer of rubble and topsoil (**102.1**).

1.5 The Courtyard

By the end of the four seasons of excavation the complete Crusader courtyard had been excavated (Figs. 4.1, 3–4; Pls. 4.10–13). The main features were a series of three underground cisterns spread across the northern half of the courtyard. As various layers and surfaces built up within the courtyard area the mouths of the cisterns were raised to accommodate the higher surfaces. The mouths of the cisterns were built of squared masonry and the water channels were covered over in some places by stone-built 'drains'. The three cisterns in the courtyard were linked by channels to a fourth in the Crusader east range.

Phases A–B Byzantine or earlier to Crusader

Three large cisterns (**118.29**, **119.11** and **106.24**) had been dug into the rock, apparently in Byzantine times; two are bottle-shaped and a third, which may be earlier, has an irregular shape. All three seem to have remained in use into the twentieth century, either as cisterns or as refuse pits. The north-west cistern was empty, which allowed it to be surveyed. The remaining cisterns were not excavated as they were filled with recent refuse and rubble. The cisterns were located across the courtyard and were connected by rock-cut channels that would have acted as over-flows, feeding the next cistern after the first was filled; other channels were arranged to feed rainwater from the buildings into the cisterns (Figs. 4.3–4).

In the north-west corner of the courtyard was uncovered the mouth of a bottle-shaped cistern (**118.29**). This cistern was largely empty with a flat floor. The surviving mouth of the cistern (**118.26**) was built of ashlar blocks and formed part of the threshold of the west door into the Crusader north range. A rock-cut channel (**121.11**) with capping stones (**121.10**) ran from the south of the cistern head and diverted water into the two other cisterns in the courtyard and the cistern within the east range. A channel (**121.22**) went eastwards under the foundations for the external stair (**117.7/119.7**) into the south range, where it appears to have joined another channel (**119.8/115.6**), which ran west into the central cistern (**119.11**) and eastwards to the cistern (**106.24**) located outside the east range. The central cistern (**119.11**) had a built triangular-shaped ashlar mouth, which utilized moulded lime plaster or mortar to direct water into it. The cistern head appeared to be of Crusader date, indicating that the cisterns and system of collecting channels remained in use during the Crusader occupation

Plate 4.10. Belmont (Suba), inner ward: courtyard, from SE.

Plate 4.11. Belmont (Suba), inner ward: W part of courtyard, looking NW.

Plate 4.12. Belmont (Suba), inner ward: W part of courtyard, looking N.

Plate 4.13. Belmont (Suba), inner ward: courtyard, seen from N.

of the site. A rock-cut basin and stone-lined channel (**119.8**), which included a Byzantine *imbrex* tile, directed water towards the cistern from the east. A channel (**121.14**) ran directly from the north-west cistern to the central cistern. Channel **121.11** continued diagonally across the courtyard to a square-shaped collecting tank or basin, located towards the centre of the courtyard (**125.9**). A drain (**125.18/124.7/122.18**) with a stone-built edge to the south ran eastwards under the revetting wall **106.6** and pier base **122.2** into the damaged cistern within the east range (**108.8**). This channel seems to have been re-used or built in the Crusader period, as the drain, where it is not rock-cut, is built over a possible Crusader plaster surface (**124.11**) overlying bedrock.

In the southern half of the courtyard several layers of plaster (**109.45**, **115.3**, **121.39**, **122.21**, **123.23**, **124.11**, **125.19**) and masonry features covered the bedrock (Fig. 4.5). In the south-west corner, a rock-cut drain ran northwards through the doorway and across the trench. This drain was in use during the Crusader period and was associated with a plaster surface (**109.26**) overlying plaster layer **109.45** which extended throughout the trench. The base (**109.24**) and part of the east wall (**109.23**) of a Crusader-period masonry and plaster tank uncovered in the corner between the south and west ranges was also associated with surface **109.26**. This surface dipped towards the remains of the tank and formed a lip at its northern extent. To the east of the tank, two dressed masonry blocks (**109.23**, **109.33**) aligned with the west jamb of the door into the south range, formed the western edge of the drain. Stone **109.23** had a chamfer along its upper east edge and has presumably been re-used. An east–west line of stones (**109.36**) at right-angles to **109.33** marked a rough step raising the courtyard level north of the south range by 1.20m. A shallow rock-cut rounded pit (**123.26**) against the west range contained *tesserae* and coarse hand-made pottery. Two circular rubbish pits (**125.22**, **125.23**), apparently of Crusader date, were cut through a plaster floor (**125.19**). These features were sealed by occupation layers and trampled surfaces.

Phases C–E Thirteenth to Twentieth Century

Activities relating to the later occupation of the village were represented by clay ovens (**105.3, 105.8, 109.8**) and rubbish pits within occupation layers and temporary trampled surfaces (Fig. 4.5). Bedrock was visible in the north of the courtyard, while levelling layers built up the ground level in the rest of the courtyard. Several layers and dumps representing occupation levels had built up over the plaster floor surfaces, with temporary trampled surfaces between them. The surviving cistern head (**118.26**) appears to be of a late date as it is cut from a higher floor surface. A pit (**118.10**) possibly relating to the construction of the unfinished house to the west was interpreted as a pit for slaking lime. This had severely 'burnt' the surrounding blocks on the west side of the Crusader doorway. Most of the courtyard was covered with a large deposit of modern rubble (e.g. **109.1, 125.1**), up to 0.8m thick and containing Crusader masonry, including a carved twelfth-century capital (Ch. 12, no. 4).

2 The Outer Ward

2.1 South-Eastern Quarter (Trenches 301, 302, 310)

To the south-east of the inner ward, trenches were excavated to investigate known surviving Crusader buildings in the area between it and the outer curtain wall (Fig. 3.5). The existing street or alley, some 2m wide, that leads to the village square on the hilltop, winds up through this area with houses and buildings on both sides. One blocked doorway forming part of a house wall on the south-east side of the street was identified as belonging to the Crusader period on account of its masonry, which bore distinctive twelfth-century masonry marks (see Clermont-Ganneau 1896: I, 23, 480–1). It appeared, in effect, to have opened into a long barrel-vaulted range, which followed a polygonal trace determined by the natural contours of the hill and parallel to the outer *enceinte*. A series of trenches (301, 302, 310) was therefore dug through the range, from north-west to south-east, in order to understand more of its character (see Fig. 4.14).

Phase A Byzantine or earlier

No features relating to the Byzantine period were uncovered, as the Crusader builders appear to have cleared the site to bedrock before building directly on it. It appears, however, that this cleared material had been used in the construction of the medieval vaults themselves; for amongst the debris of the collapsed vaulting (**301.1**, **301.2**, **302.1**) were numerous finds from the Byzantine period or earlier. These included a *Mosah* pottery seal (see Ch. 9, no. 1), a coin of Alexander the Great (Ch. 5, no. 1), late Roman red slip ware pottery (Ch. 6, no. 54), Byzantine fine ware pottery (no. 64) and late Roman/Byzantine glass (Ch. 10, nos. 10, 18).

Phase B Crusader

Excavation confirmed that the doorway led into a Crusader-period barrel-vault, 6.5m wide, which had survived intact until *c.*1948. The inner wall (**301.5**), in which the door was set, was 2.20m thick and showed evidence for the springing of the vault on its south-eastern face. The door itself was 1.8m wide and about 2.8m high, with a pointed-arched opening and low-pointed rear-arch (Fig. 4.14; Pl. 4.14). Those voussoirs from the arch that had been dislodged in recent times and were lying near by were reset in position in order to allow for safe excavation beneath (Fig. 4.15–16). Outside the door, the Crusader street level was found some 1.5m below the present one. From this the door threshold represented a low step up, with a raised outer lip. Inside, four stone-built steps (**301.6**) led down on to the floor inside the vault. This consisted essentially of roughly stepped bedrock on the uphill (north-west) side and a plaster surface (**302.11**) covering levelling layers (**302.13**) overlying bedrock towards the south-east. The outer wall (**301.6**) of the vault was also 2.20m thick. A row of damaged stone troughs (**302.10**), probably to be identified as feeding troughs or mangers for animals, was found lining the south-east wall of the vault. As these barely protruded above the level of the plaster floor, they should probably be associated with a rock floor at a lower level.

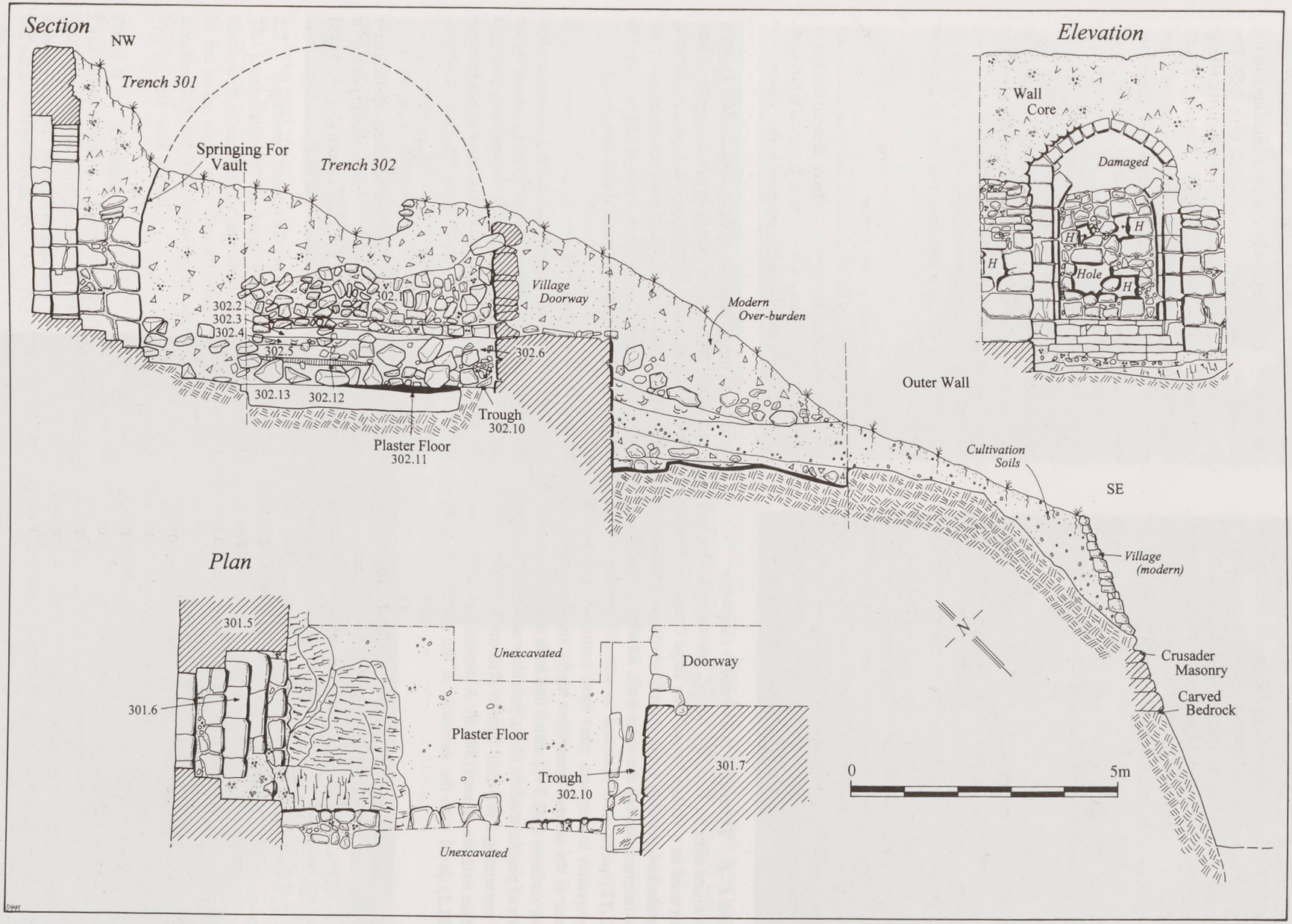


Figure 4.14. Belmont (Suba): plan and sections of the south-eastern quarter of the outer ward (trenches 301, 302, 310).

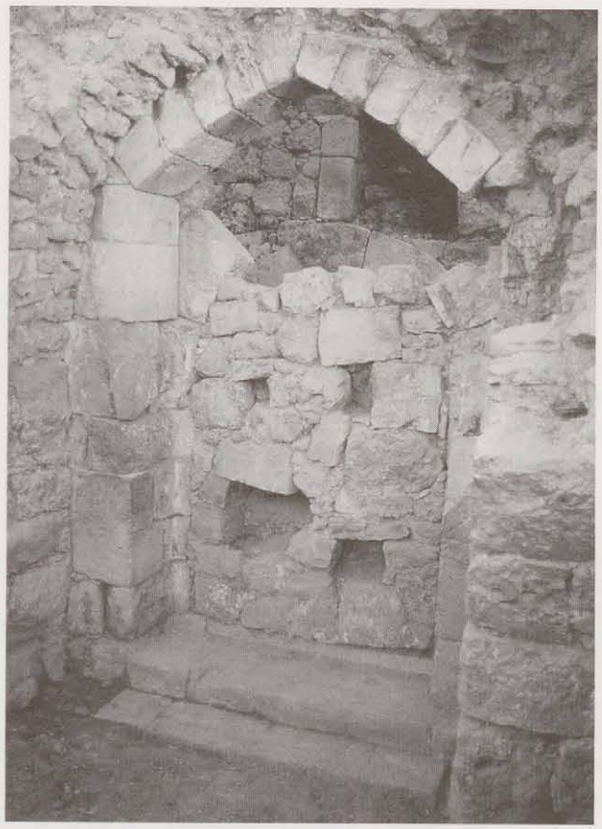


Plate 4.14. Belmont (Suba), outer ward, SE quarter: Crusader doorway as excavated.

Phase C–E Thirteenth to Twentieth Centuries

Sometime after the Crusader period, this vaulted space had been used as a village house. The large Crusader dorway was blocked, possibly as the street level rose, and a doorway was inserted through the outer wall; internal walls (**301.8/302.12**) were also inserted to sub-divide the space. Occupation in this area must have continued into recent times, as the several occupation layers and trampled earth floor surfaces (**302.3–7**) which had built up in it contained finds of plastic, modern china, porcelain and glass. A small pit containing a pre-natal human skeleton was also found within a rubble deposit (**302.6**). A cement and rubble floor (**302.2**), level with the threshold of the eastern doorway, represented the final phase of occupation of the vault. A small hearth was located on this floor against the south-east wall. This in turn was sealed by rubble and debris 2m deep (**302.1**), evidently derived from the collapse of the vault. This appears to have taken place *c.*1948, and into the collapsed debris a military trench had been excavated.

Outside the door, in the village street, excavation revealed what may have been a construction trench associated with the blocking, or possibly reblocking, of the door. In the northern part of the doorway, a section of walling set behind the main blocking may be part of an earlier wall relating to another structure.

Plate 4.15. Belmont (Suba), outer ward, SE quarter: Crusader doorway after excavation and reconstruction.

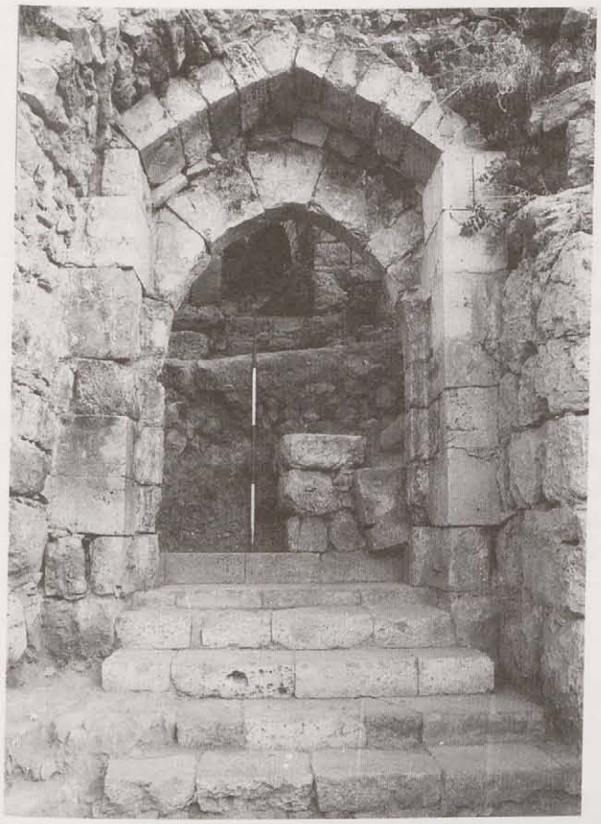


Plate 4.16. Belmont (Suba), outer ward, SE quarter: Crusader doorway after excavation and reconstruction.

Plate 4.17. Belmont (Suba), outer ward, S quarter: vaulted range (303.2/3), looking E from the gable wall.

2.2 Southern Quarter (Trenches 303, 306, 309)

The continuation of the barrel-vaulted range some 30m south-west of the area just described, or immediately south of the inner ward, was also investigated by a series of trenches (303, 306, 309), extending for some 7m north–south by 17m east–west overall.

Phase B Crusader

Excavation revealed a barrel-vaulted range, apparently representing the continuation of that investigated in trenches 301, 302 and 310, though only 5.6m wide internally and not as well preserved (Pl. 4.17). The inner or north wall (**303.2**) formed the foundation for a modern house, built largely of re-used Crusader blocks. The construction of this building appears to have entailed the removal of all the masonry of the wall, leaving only the rock-cut lower part, which preserved the springing of the vault. The south wall (**303.3**) was found to be 2.5m thick and built with regular facing blocks and a rubble core. The threshold for a doorway into the vault was uncovered in the western gable wall. It was worn smooth and had a mason's mark on its west face. Only the door's south jamb, rebated for a single-leaf door, was uncovered; and to the south of it another door opening without rebates has been slapped through the wall in a later period. The interior of the vault was not fully excavated. In an eastward extension to the trench (306), a bedrock surface was uncovered, into which was cut a drain (**306.12**), running from north-east to south-west and becoming wider and

Plate 4.18. Belmont (Suba), outer ward, S quarter: stone plaster-lined tank against S wall of vaulted range (303.2/3).

deeper in the north where it opened out into a roughly square shape. A rock-cut foundation trench was uncovered for the south wall (**306.13**). A plaster floor surface acted as levelling over the rock and became part of a cobbled floor (**306.3**). The remaining excavated interior features relate to the village-period use of the vault.

The vaulted range appears to have been extended to the west in a secondary phase. The only evidence uncovered, however, consists of part of the south wall; this abuts the south-western corner of the earlier vault and is noticeably thinner than the earlier wall (**303.3**) (Pl. 4.17).

Phases C–E Thirteenth to Twentieth Centuries

Within the vault were uncovered a monolithic stone tank and the base of an oven. The tank (**306.4**) had internal dimensions of 1m by 1m by 0.8m and was positioned against the south wall of the vault (Pl. 4.18). It was lined with plaster and had a drainage hole in its north side. Located beside the tank and plastered to it was a village-period clay oven (**309.2**). The oven (*tabun*) was built on a base of flat stones over the plaster floor. Although the oven and tank were attached, the foundations for a raised floor or an internal wall (**306.5**) suggest that they lay in different rooms or at least in separate working areas. A possible drainage channel was uncovered by the eastern side of the trench, running towards the south wall (**306.2**). Another area of a raised floor with paving stones was uncovered in the northern area of a raised extent of the trench (**309.4**). The base and east and west walls of a larger tank were visible in the south baulk and seemed to extend as far as the east baulk. The internal raised platforms and internal walls along with the oven evidently relate to village occupation of the vault. All the features were sealed with a thick layer of rubble comprising of the material from the collapsed vault (**303.1/306.1**).

2.3 Outer Curtain Wall (Trenches 201, 202 and 305)

Trenches were also dug in three places on the top of the outer curtain wall (Fig. 3.5). The objective was to investigate the inner face of the wall and the possibility of structures on the wall-head and to examine the area between the inner ward and the outer wall. In trenches 201 and 202, at the north-east corner of the outer curtain wall, the area had been badly disturbed by village-period houses, which had removed any traces of medieval features above bedrock. In trench 305, located on the east side of the *enceinte*, a flat area of bedrock with a possible Crusader-period plaster surface (**305.3**) was uncovered immediately below modern garden soil (Fig. 4.14). The main wall had been robbed down to the bedrock but the line of the inner face of the wall could still be seen. On the outer face, the bedrock had been cut and scarped to form the lower part of the *talus* with a flat berm in front of it. The flat area had been used as a village agricultural terrace.

2.4 South-East Gateway in the Outer *Enceinte* (Trenches 304, 307)

Two trenches (304, 307) were excavated around the surviving remains of the gateway on the south-eastern side of the outer curtain wall. This gate lay on the easiest line of approach to the hill top, which had remained in use as the entrance to the village long after its destruction.

Phase B Crusader

The gate represented a simple passage, some 3m wide, set at an obtuse angle of the outer *enceinte* (see Figs. 3.5, 4.15;

Pls. 1.5–6, 4.19–20). It was orientated east–west and obliquely to the wall-face, so that the approach to it was overlooked by naturally higher ground to the north. The lower parts of the gate, as of the outer *enceinte* in general, were rock-cut, as was the roadway.

To the south of the gate, the external wall-face stood only two courses high above a rock-cut *talus* 1.5m high. The lower course of masonry continued the slope of the *talus*, but the second had a vertical face. However, around the gate itself there appears to have been no *talus*; instead the wall-face was vertical. The wall in this section survived as one course of large roughly squared blocks, which returned to form the south side of the gate passage. To the north of the gateway, the rock-cut *talus* continued. However, the angle between the outer wall face and the north side of the gate passage had been damaged by the construction against it of a village-period house associated with some stone steps.

The north side of the gate passage ran west–east for some 13m. It stood some 4m high and consisted of three courses of large square blocks built on a rock-cut base about 1m high. The passage narrowed from about 3.6m to 3m, or less if one allows for the robbed gate jambs. The jambs and threshold high. The passage narrowed from about 3.6m to 3m, or less if one allows for the robbed gate jambs. The jambs and threshold were some 0.5m thick. They probably held a two-leaf door, secured by a draw-bar, the slot for which still survives in the north side of the passage.

The gateway had latterly been narrowed by the insertion of a stone forming a step 0.3m high. The south door jamb survived as a threshold stone for the reduced doorway.

2.5 The Northern Part of the Outer Ward

In the area north of the inner ward a series of trenches 5m wide was excavated to investigate the relationship between it and the outer curtain wall (Fig. 3.5; Pls. 4.21–22). In all, an

Plate 4.19. Belmont (Suba), outer ward: site of SE gate, from S.

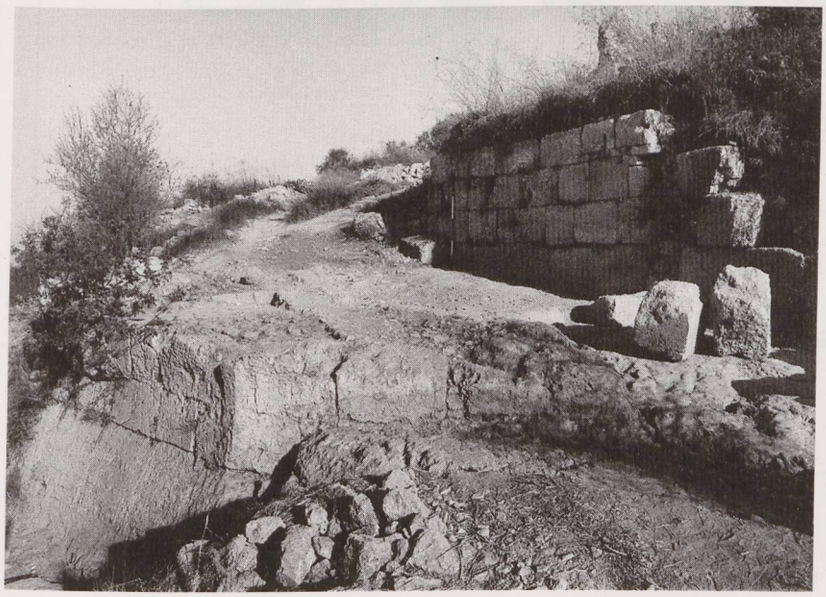


Plate 4.20. Belmont (Suba), outer ward: site of SE gate, from SE.

Figure 4.15. Belmont (Suba), outer ward: plan and section through south-east gate.

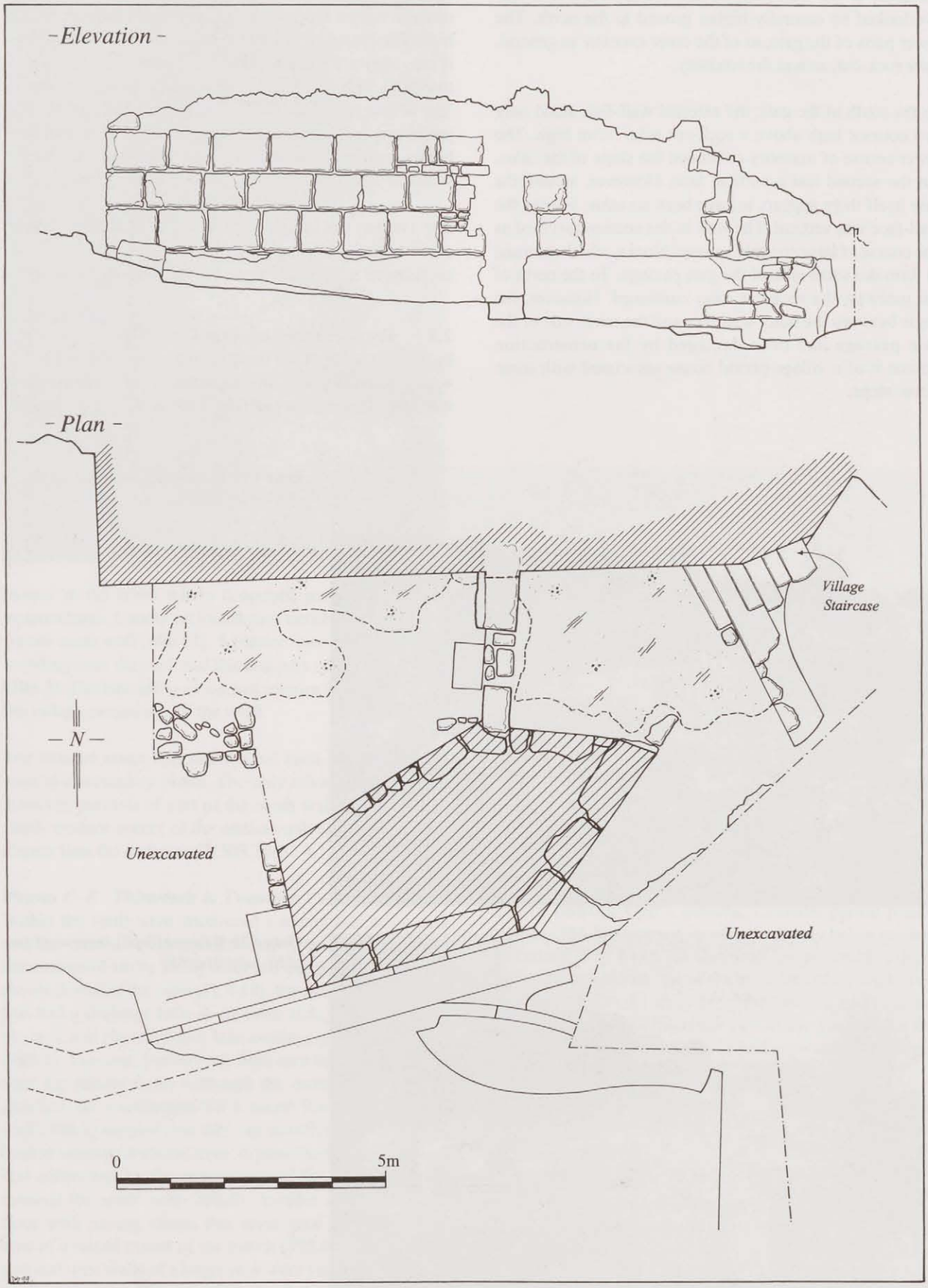


Figure 4.16. Belmont (Suba), northern part of outer ward: north–south section (trenches 501–505).

area 30m long was investigated. All the trenches were linked to form a complete section through to the curtain wall (Fig. 4.16). Several abandoned and derelict village houses within these trenches had to be dismantled; recent military trenches had also caused disturbance. A massive amount of rubble had built up in the area, not only from the Crusader buildings but from successive village houses that had been built on the remains of earlier ones; in some places this build-up was *c.*4m thick, which severely limited the scope of the excavation. A village track which circled the hilltop was also sectioned (trench 502).

Phase A Byzantine or Earlier

No features directly relating to the Byzantine or earlier period were uncovered, although a deep rock-cut channel uncovered in trench 503 could belong to this period. A levelling deposit (**503.22**) for a Crusader-period floor (**503.19**) uncovered in trench 503 did contain a Persian or Hellenistic *unguentarium* (Ch. 6, no. 52), while other later disturbed contexts (**502.21**, **502.37**, **502.42**, **503.15**) produced finds of glass (Ch. 10, nos. 3 and 19), pottery (Ch. 6, nos. 18, 118; Ch. 7, nos. 106–7) and lamps (Ch. 8, nos.18, 24). In addition, a javelin head, possibly dating to the Byzantine period, was recovered from context **502.37** (Ch. 11, no. 54).

Phase B Crusader

Immediately outside the blocked doorway in the north wall of the north range was uncovered the remains of a Crusader projecting turret (trenches 501–2) (Fig. 4.16). The north wall (**110.24**) of the north range survived as the wall of a village house, which had utilized the south face of the Crusader wall and part of its rubble core. Although the north face and much of the core had been robbed for building stone, the Crusader wall seems to have been 3.7m thick. The turret (**502.51**) projected at least 2.3m and was 3.3m wide; but although its north and west faces survived, much of the rest had been robbed. Furthermore, since its junction with the north wall of the inner ward had been masked by the construction over it of a village-period buttress and house structures, it was not possible to determine whether it was built with the wall (as seems likely) or was a later addition. The north-east quoin stones were found to have drafted edges.

A paved surface (**502.46**) laid over a rubble foundation ran out from the north wall of the projecting tower. A stone trough was built over the paved surface against the north wall (Pls. 4.23–24). The trough was constructed from Crusader-period blocks and used the wall-face as its back. The east end of the trough was constructed from a single dressed stone, which had been re-used from another stone tank and was thicker than the others used in the trough. The front of the trough was made from stone slabs set vertically on edge. The paved surface (**502.46**) only extended for 1.5m to the north of the trough, after which an irregular trampled earth and cobbled surface (**502.52**) extended for 1.5m before reaching a plaster floor surface (**502.38**) above bedrock. Over these surfaces was an occupation layer (**502.37**) containing an iron crossbow bolt

Plate 4.21. Belmont (Suba), outer ward, N quarter (trenches 501–3): looking N from the inner ward, with N postern and turret in foreground.

Plate 4.22. Belmont (Suba), outer ward, N quarter (trenches 501–3): looking S towards the inner ward.

(Ch. 11, no. 45) and an iron arrow- or spear-head (no. 52), as well as a possible Byzantine copper-alloy trilobate arrow-head (no. 54) and a large amount of coarse and fine pottery. This layer was sealed by a layer of rubble (**502.33/502.36/502.42**), over 1m thick, consisting large mortared masonry and debris possibly relating to the demolition of the castle. A twelfth-century lead token (Ch. 5, no. 15) and a stone with a 'snake' masonry mark was found within this layer.

The plaster floor (**502.38**) extended north to the remains of a Crusader-period building, defined by wall **502.9** to the south, wall **502.12** to the west and wall **502.18** to the north. The building appeared to continue beyond the eastern edge of the trench. The corner formed by walls **502.9** and **502.12** was the best preserved, surviving to six courses in height and including a rusticated stone at the base. (This wall had been re-used by a village house at a higher level.)

Wall **502.18** was built on bedrock and marked the southern edge of a deep rock cut ditch. Bedrock was exposed outwith the building and seems to have been used as a surface. Within the building, a levelling deposit (**503.22**) over bedrock containing Persian or Hellenistic material (e.g. *unguentarium*, Ch. 6, no. 52) formed the foundation for a Crusader-period plaster floor (**503.19/502.38**). This floor was sealed by a mortared rubble demolition layer (**503.20**).

Plate 4.23. Belmont (Suba), outer ward, N quarter (trenches 501–3): paved surface and stone trough built against turret.

Plate 4.24. Belmont (Suba), outer ward, N quarter (trenches 501–3): paved surface and stone trough built against turret.

Over this layer was a rough trampled surface (**503.15**) containing modern material, which sealed the remains of wall **503.18**.

The rock-cut shaft discovered between the two east–west Crusader-period walls (**503.6** and **503.18**) was excavated to a depth of 3.5m, but the bottom was not reached (Fig. 4.16). The Crusader wall (**503.18**) survives to a height of 3m within the rock-cut channel and the top of the Crusader surface (**503.19**). The opposite wall (**503.6**) is also built on bedrock, but at a much higher level, 0.4m below the floor level. No Crusader-period features were found associated with this wall to the north, implying that its function was related to the channel.

The channel was filled with various layers of sand, gravel and fine rubble, which appear to have been tipped in from the west. The upper fills were fully excavated, but only a trial trench was excavated to the lower levels. The lowest fill (**503.29**) consisted of sand and gravel and was below the level of the bottom of wall **503.18**. It was sealed by various other layers of sand and gravel, which were covered in turn by a burnt layer (**503.25**); over this was a trampled earth and mortar surface. The finds recovered from these layers appear to be from the thirteenth century at the latest, suggesting that this deep channel was deliberately filled in, possibly when a village house was built.

No other Crusader-period features were uncovered between wall **503.6** and the outer curtain wall, apart from possible foundation cuts in the bedrock and flat surfaces of bedrock. This area had been heavily disturbed by village-period houses, which were often built directly on to bedrock rather than over Crusader rubble .

Phases C–E Thirteenth to Twentieth Centuries

A village road 1.5m wide, north of wall **502.9**, circled the hillside, with village houses on both sides. The last village period surface (**502.8**) was 2.5m above the Crusader-period surface (**502.38**), though the build-up of rubble and levelling layers decreased downhill to the north, with village houses occupying the lower terraces. The walls of village houses survived, along with doorways and internal features; these included a stone bench and a cupboard recesses, still containing pottery and iron vessels. The houses were built around small courtyards, with trampled earth and plaster surfaces. The were of dry-stone construction which incorporated Crusader blocks; no evidence for interior plaster wall-surfaces survived.

TRENCH 503

This trench extended 7.5m northward from wall **502.9**. Much of it was taken up by a modern village house, built with three transverse roofing arches, the bases of which were visible in both trench sections. The east–west wall (**502.9**) in trench 502 formed a doorway into the room. The foundations for an internal or an earlier west wall survived at foundation level. The east wall survived to a height of 1.5m. Two cupboard recesses were built into the south wall and contained a bronze mortar (**503.3**) and a ceramic vessel. The floor level of this house was uncovered under 3m of rubble containing the collapsed roof as well as material from the walls and neighbouring collapsed buildings. Excavation within the floor levels revealed a

Plate 4.25. Belmont (Suba): NE angle of outer *enceinte* (trench 203).

step in the floor level, with the northern surface being 0.4m higher than that in the south; a light rubble-built internal wall (**503.7**) separated the two areas. Further excavation uncovered modern material within the make-up of the platforms forming the raised floors.

TRENCH 504

This trench continued northwards from trench 503 to the outer curtain wall. Excavation removed a great deal of demolition debris and rubble to expose the ruins of a vaulted room with corner supports surviving to roof level and a cement floor over bedrock. The walls had largely collapsed or been destroyed. Bedrock was exposed, with evidence for a Crusader-period rock-cut foundation trench, but no evidence for Crusader structures was found.

TRENCH 505

This trench ran over the outer curtain wall. The upper courses of the Crusader wall had largely been destroyed and the outer face of the curtain wall had subsequently been rebuilt in small stones as a retaining wall for an agricultural terrace. To the west of this trench, the outer *enceinte* had been almost completely destroyed.

2.6 The North-East Angle of the Outer *Enceinte* (Trench 203)

A small trench excavated at the base of the outer curtain wall at the north-east corner (Fig. 3.5) revealed the rock-cut base of the wall and a rock-cut horizontal surface forming a berm in front of it (Pl. 4.25). There was no evidence for any defensive ditch.

CHAPTER 5
THE COINS AND TOKENS

Michael Metcalf

Coin List

The following complete coin list is arranged by period and date order. The coin number, batch number/year of recovery, context number, phase, metal type, diameter (in mm) and description are given. Several non-coin items are also included as well as all coins pierced for wearing as ornaments.

Hellenistic

No.	Batch	Context	Phase	Metal	Diam. mm	Description
1.	3/87	301.1	E	Ar	27	tetradrachm, head of Alexander the Great with lionskin/Zeus seated with eagle in right hand, in exergue, to right A E AN POY, hill
2.	25/87	304.1	E	Ae	14	Hasmonean, Alexander Jannaeus, 103–76 BC
3.	37/87	111.32	B	Ae	18	?sheaf, ?in circle, ?Alexander Jannaeus,
4.	1/88	115.3	D	Ae	18	pierced, canopy/3 ears of barley, Agrippa I, AD 42–3
5.	7/86	101.12	D	Ae	19	3 ears of barley/illegible, Agrippa I

Roman and Byzantine

No.	Batch	Context	Phase	Metal	Diam. mm	Description
6.	6/86	102.5	E	Ae	22	Roman (worn), Hadrian/Sabina, *c.*138 AD
7.	4/89	502.22	D	Ae	16	Constantius II, AD 337–61
8.	29/87	304.1	E	Ae	14	Late Roman, ?4th–5th c.
9.	15/88	121.2	E	Ae	20	?6th–7th c.

Early Islamic

No.	Batch	Context	Phase	Metal	Diam. mm	Description
10.	27/87	110.28	B/C	Ae	19	?Abbasid, ?clipped fils
11.	28/87	110.28	B/C	Ae	17	?Abbasid, ?clipped fils

Crusader/Western Medieval

No.	Batch	Context	Phase	Metal	Diam. mm	Description
12.	24/87	111.16	C	Ae	21	Roger of Antioch, 1112–19
13.1–3	33/87	110.28	B/C	Ar	20/21	3 English 'short-cross' pennies, corroded together, 1180x1247. Cf. Metcalf 1995: 317, no. 35
14.	26/87	110.28	B/C	Ar	*c.*20	English 'short-cross' penny, 1180x1247, folded/broken. Cf. Metcalf 1995: 317, no. 35
15.	24/89	502.42	D	Pb	18–19	Lead token. O/ bold cross with bold pellet in each angle. R/ bold **T**. Frankish period.
16.	2/88	117.1	D	Ae	18	clipped into rough octogon, illegible, ?counterstamp, cf. Antiochene
17.1–436	22/88	122.18	B	billon/Pb		hoard of 436 lead tokens, of which 240 almost complete and 196 more than half-preserved + 100 large frags. + small frags. + 2 very corroded bronze discs. See discussion below

Ayyubid and Mamluk Periods

No.	Batch	Context	Phase	Metal	Diam. mm	Description
18.	37/89	309.3	C	Ae	23	al-'Adil (596–615 H/AD 1199–1218), mint/date illegible, probably Damascus 608 H/AD 1211–12. Cf. Balog 1964: 322.
19.	35/89	309.2	C	Ae	24	as no. 18
20.	36/89	309.2	C	Ae	24	as no. 18
21.	22/89	302.5	D	Ae	22	al-Mansur, prince of Hama (1244–84). Balog 1964: 838
22.	30/89	308.3	D	Ae	14	chequer/8, ?Mamluk. ?Egypt

Ottoman Period (1517–1917)

No.	Batch	Context	Phase	Metal	Diam. mm	Description
23.	23/88	122.21	C?	Ae	24	pierced, late medieval
24.	21/89	302.5	D	Ar/Ae	21	Nurenburg token, pierced 6 times for use as ear-ring, 16th–17th c.
25.	2/87	301.1	E	Ar	16	Mustafa III (1757–74), Egypt 1757–8
26.	30/87	305.1	E	Ar	15	pierced, Selim III (1789–1807), *c.*1793
27.	5/86	102.5	E	Ar (base)	13	'Abd al-Majid I (1839–61), 1856
28.	7/88	119.1	E	alloy	19 (2mm thick)	?Austria-Hungary, 1911
29.	17/87	111.3	E	alloy	40	fake Maria Theresa dollar (1780–)
30.	18/87	111.3	E	alloy	40	fake Maria Theresa dollar (1780–)
31.	14/87	111.1	E	alloy	16	Oman, 1327 H/AD 1909–10
32.	2/86	101.1	E	Ar (base)	15	Ottoman, pierced and broken at piercing, bent
33.	3/86	101.8	D	Ar (base)	13	Ottoman
34.	4/86	102.5	E	Ar (base)	14	Ottoman
35.	13/86	106.1	E	Ar (base)	12	pierced, Ottoman
36.	14/86	106.1	E	Ar (base)	13	Ottoman
37.	17/86	107.6	D	Ar (base)	17	pierced, Ottoman
38.	5/87	110.21	D	Ar	14	Ottoman
39.	6/87	110.21	D	Ar	16	Ottoman
40.	7.87	110.21	D	Ar	16	Ottoman
41.	8/87	110.21	D	Ar	16	Ottoman
42.	9/87	110.21	D	Ar	15	Ottoman
43.	10/87	110.21	D	Ar	15	Ottoman, cloth impression in corrosion
44.	16/87	110.25	D	Ar	17	pierced, Ottoman
45.	3/88	116.4	D	Ar (base)	12	pierced, Ottoman
46.	4/88	116.4	D	Ar (base)	13	Ottoman
47.	6/88	116.5	D	Ar	15	pierced, Ottoman
48.	8/88	119.2	E	Ar (base)	15	fragment, Ottoman
49.	9/88	119.2	E	Ar (base)	12	Ottoman
50.	10/88	119.3	D	Ar (base)	17	pierced, Ottoman
51.	11/88	120.2	E	Ar (base)	12	Ottoman
52.	12/88	120.2	E	Ar (base)	15	Ottoman
53.	13/88	120.2	E	Ar (base)	*c.*15	fragment, Ottoman
54.	14/88	120.2	E	Ar (base)	14	Ottoman
55.	21/88	122.1	E	Ae	20	worn, Ottoman
56.	19/88	124.1	E	Ar	16	pierced, Ottoman
57	1/89	126.1	D/E	Ar	22	Mustafa III (1757–74), Egypt 1177 H/AD 1763–4
58.	18/89	302.1	D/E	Ae	40	Mahmud II (1808–39), Istanbul, year ?4 [1812]
59.	34/89	302.1	D/E	Ar (base)	33	pierced, 'Abd al-Majid I (1839–61)
60.	34/87	305.1	E	Ae	27	Ottoman, v. worn
61.	35/87	305.1	E	Ar	15	pierced, Ottoman
62.	32/87	308.3	E	Ae	27	pierced, 'Abd al-Majid I (1839–61), year 1 or 2 [1839–40]
63.	29/89	502.21	D	Ar	15	pierced, Ottoman
64.	7/89	502.23	E	Ar (base)	24	pierced, Mustafa III (1757–74), Istanbul 1181 H/AD 1767–8
65.	8/89	502.23	E	Ae	23	Ottoman
66.	33/89	502.24	D	Ar (base)	11	Ottoman, ?9th c. H/15th c. AD
67.	10/89	502.25	E	alloy	19	Muhammad V Rashad (1909–18), year 5 [1332 H/AD 1913–14]
68.	12/89	502.27	D	Ae	19	pierced, Ottoman, 19th c.
69.	16/89	502.34	D	Ar (base)	21	probably Mahmud II (1808–39), Istanbul
70.	17/89	502.34	D	Ar (base)	21	as no. 69, pierced
71.	25/89	502.42	D	Ar	15	possibly as no. 72, pierced

No.	Batch	Context	Phase	Metal	Diam. mm	Description
72.	26/89	502.42	D	Ar (base)	16	contemporary imitation of 'Abd al-Hamid I (1774–89), Egypt
73.	14/89	503.13	D/E	Ae	16	?Ottoman
74.	20/89	503.24	D	Ar (base)	16	pierced, Ottoman, Istanbul 18th–19th c.
75.	23/89	503.24	D	Ar/Ae	15	pierced, Ottoman 19th c.
76.	28/89	504.6	D	Ae, ?Ar wash	15	pierced, Ottoman
77.	19/87	111.3	E	alloy	35	modern Ottoman medallion
78.	1.86	101.1	E	Ae	25	Great Britain, penny, young Victoria, v. worn, 1860–94
79.	11/89	502.25	E	Ae		Great Britain, halfpenny, Edward VII, 1907

British Mandate in Palestine (1917–48)

No.	Batch	Context	Phase	Metal	Diam. mm	Description
80.	20/87	113.8	E	Cu-Nic	18	1 mil, Egypt, 1917
81.	17/88	122.5	E	Cu-Nic	18	1 mil, Egypt, 1917
82.	21/87	113.8	E	Cu-Nic	23	5 mils, Egypt, 1917
83.	1/87	301.1	E	Cu-Nic	26	10 mils, Egypt, 1917
84.	4/87	301.2	E	Cu-Nic	26	10 mils, Egypt, 1917
85.	16/86	103.2	?	Ae	28	2 mils, Palestine, 1927
86.	6/89	502.23	E	Cu-Nic	23	5 mils, Palestine, 1927
87.	19/89	502.5	E	Cu-Nic	26	10 mils, Palestine, 1934
88.	15/89	502.18	E	Ae	18	1 mil, Palestine, 1935
89.	5/89	502.23	E	Ae	18	1 mil, Palestine, 1935
90.	2/89	502.4	E	Ae	23	5 mils, Palestine, 1942

Illegible/Unidentified

No.	Batch	Context	Phase	Metal	Diam. mm	Description
91.	8/86	102.10	C	Ae	28	disc with 2 holes pierced: one-sided design of rays and spears
92.	9/96	102.10	C	Ae	16	irregular fragment, illegible
93.	10/86	102.10	C	Ae	14	illegible
94.	15/86	106.1	E	Ae	21	illegible
95.	22/87	110.1	E	Ae	23	illegible
96.	23/87	110.1	E	Ae	27	pierced, illegible
97	11/87	110.21	D	Ae	19	illegible
98.	12/87	110.21	D	Ae	18	illegible
99.	38/87	110.21	D	Ae	15	illegible
100.	39/87	110.21	D	Ae	16	illegible
101.	40/87	110.21	D	Ae	15	illegible
102.	41/87	110.21	D	Ae	15	illegible
103.	15/87	110.25	D	Ae	19	illegible
104.	5/88	116.4	D	Ae	15 (5mm thick)	grille/illegible
105.	16/88	120.9	D	Ae	frag.	v. corroded, illegible
106	18/88	120.11	C/D	Ae	14	corroded, illegible
107.	13/87	301.3	D/E	Ae	*c.*15	illegible
108.	27/89	302.6	E	Ae	23	
109.	31/89	308.3	E	Ae	24	pierced
110.	9/89	502.23	E	Ae	18	?Hellenistic, pierced
111.	13/89	503.13	D/E	Ae	16	

Non-Coin Items

No.	Batch	Context	Phase	Metal	Diam. mm	Description
112.	11/86	105.16	D	Pb alloy	33	pierced disc, grid with numbers in squares/4 lines Arabic with dividers
113.	36/87	305.3	B	Ae	32	medallion with pendant attachment, part broken
114.	3/89	503.1	E	Ae	20	one side flat, 5 lank., other side curved with radiating strations, /washer, pierced hole 6mm

Medieval Lead Tokens

A total of 436 lead tokens (no. 17), all of the same design (Fig. 5.1; Pl. 5.1), were found together in the fill of a drain within the central courtyard of the castle (context 122.18, phase B). On one side they bear the inscription **PON** (with the **N** reversed) in seriffed lettering with an elaborate mark of contraction above. On the other side the field is divided horizontally in half. In the upper half of the design is a three-arched bridge with semi-circular arches, the central arch being larger than the others. A curved line indicates either the roadway or the parapet, and from it rises a crenellation consisting of six or seven merlons. In the lower half of the design is a large fish, left. It is shown with between five and six scales. The tokens are 19–20mm in diameter and each weighs around 3.5 to 4.0g.

The type has not been recorded elsewhere, and the significance of the designs is unknown. The bridge could be a punning allusion to a personal name including the syllable *pon*.

Close inspection quickly revealed that there were many duplicates among the tokens, that is to say, specimens cast in the same mould. A high proportion of the cache consisted of broken or damaged specimens which could not easily be checked for duplication; but that did not matter, as the problem could be solved satisfactorily from the better specimens (which were no doubt a random sample as regards the particular moulds in which they were cast). Some 120 were checked and found to be from only nine pairs of moulds. (Plate 5.1 shows eight of the nine mould products, while Fig. 5.1 shows the basic design.) The varieties occur in sufficiently equal proportions for it to seem probable that there were never more than the nine moulds. One wonders whether a double slab was engraved with the nine pairs of images, complete with a 'tree' of pouring channels (traces of which are visible at the edge of most specimens). If that were so, one would , of course, expect to find equal numbers of each variety within margins of statistical variation. The quantities of each variety in the sample that was examined are in fact 20, 18, 17, 13, 13, 12, 12, nine and eight. The last two have an unusually tall **N** in **PON**, which suggests that they belong together and are somewhat separate from the rest. On the basis of the numbers, one could guess that there might have been three separate slabs, made (perhaps) on different occasions, but in any case used unequally. Certainly, mould number 1 looks a little 'earlier' and experimental, the fish being somewhat over to the right-hand side and having as many as 14 scales, unlike numbers 2–9. But that might merely have been the first of the nine designs to be cut, on a single slab.

All the specimens in the sample were weighed, and they were found to be grouped quite closely around the median for each variety. The 20 specimens, for example, had a median value of 4.05–4.10g, but ranged from 3.87 to 4.46g. The 18 specimens had a median value of 3.35g. Similarly the two varieties with a tall **N** had median values of 3.28g and 4.32–4.33g. One could imagine that if the circular depressions in the stone slab were ground out to slightly different depths, the observed metrology is what would result. The averages for varieties 1–9, in order, are 3.28g, 4.33g, 4.00g, 4.03g, 3.35g, 3.53g, 4.05g, 4.46g and 3.49g respectively.

Lead tokens of this general category are fairly common finds on Crusader sites and have been recorded in some quantity from Acre and Caesarea, and also from the faubourg of Pilgrims' Castle ('Atlit) (Metcalf 1995: 306–7). Remarkably little is known about their date or function. They are assumed to have been used as small change, perhaps with a locally restricted circulation. One would guess at a date in the thirteenth century rather than the twelfth, from the style of the Belmont pieces, but this is no more than a guess. A large cache of tokens like this has never previously been recorded in the Latin East.

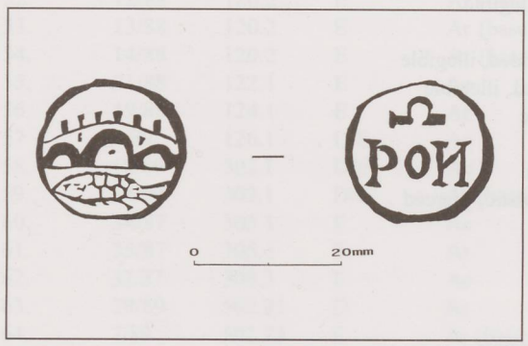


Figure 5.1. Belmont (Suba): medieval lead token (no. 17). Scale 1:1.

Plate 5.1. Belmont (Suba): medieval lead tokens (no. 17), eight examples from different moulds.

CHAPTER 6
THE UNGLAZED POTTERY

Anthony Grey

Introduction

All the ceramic material recovered by excavation was recorded daily by context on batch lists (or intake sheets). After washing and preliminary identification, the numbers of each type occurring in each context were subsequently recorded in pottery log books maintained over the three-year excavation period. The most informative of the diagnostic sherds were then extracted, identified by an individual pottery number, and retained for illustration and description in the pottery report catalogue. Because of the sheer bulk of the pottery recovered, some of the undecorated body sherds were subsequently discarded, while all the remaining diagnostic sherds will eventually be deposited with the Israel Antiquities Authority.

Few stratified deposits survived at Belmont from before the Crusader period of occupation in the twelfth century, apart from the Byzantine mosaic floor surface (context 110.27). Almost all pre-twelfth-century pottery and ceramic lamp fragments therefore represent residual material from Crusader period dumps, pit fills, make-up layers for floors and fills in walls and vaults, as well as from post-Crusader-period deposits. It appears that nearly all pre-Crusader-period deposits were cleared down to bedrock during the construction of the castle.

Many of the Crusader-period contexts and deposits from the Mamluk village period have experienced disturbance in the Ottoman period and later. A result of this residuality is a high degree of breakage. Mostly small sherds remain, with few profiles reconstructable. As much of the stratigraphy is disturbed and mixed, the uncertainty in phasing and dating deposits has rendered the development of typologies difficult. The total number of sherds recovered was nearly 128,000. A high degree of residuality exists in each of the five principal phases (see Chapter 4). A low count of residual sherds of the Iron Age, Persian, Hellenistic and Roman periods is superseded by a much higher count for sherds of the fifth to eighth centuries AD. Ninth- to twelfth-century material is scarcer, with relatively few examples of red-painted ware, white-painted ware, fine white ware, early glazed wares or Early Islamic lamps.

Hand-made wares reach a peak in the Mamluk-period village (Phase C), rising from 1.50% of the total pottery assemblage in the twelfth century (Phase B) to 6.27%, before falling to 2.41% in the Ottoman/British Mandate periods (Phases D/E). Wheel-made coarse wares fired in an oxidizing environment to red, light red or reddish yellow rise from 19.64% in Phase B to 34.24% in Phase C and 29.32% in Phases D/E. Combed and rilled sherds make up only around 6% of the total of wheel-made coarse wares in Phase B, rising to 19% in Phase C and 16.8% in Phases D/E; the relatively high numbers in the later phases appears to reflect a high degree of residual material from the fifth to eighth century (Phase B) as well as the advent of modern wheel-made wares in the nineteenth and twentieth centuries. Wheel-made grey wares form a very low percentage in all phases, rising from 0.61% in Phase B to 3.04% and 2.36% phases D and E respectively. From the eighteenth century, wheel-made grey wares begin to supersede some of the hand-made wares, with a rise in popularity of Gaza Ware jugs and jars.

Wheel-made fine white wares form less than 0.5% of the total pottery recovered in each phase. Wheel-made, fine, hard-fired light red and buff wares form under 0.2% in each phase and include possible Hellenistic-period material as well as sixth- to ninth-century fine wares.

Glazed wares form a very low percentage of the recovered pottery (see Ch. 7 below). Glazed common wares rise from 0.10% in Phase B to 0.20% in Phase C, during which period they are replaced by quartz- and calcite-gritted hand-made globular cooking pots. The finer glazed wares rise from 0.05% in Phase B to 0.12% in Phase C, forming only 0.21% of the total assemblage. Eighteenth-century glazed coffee cups and ceramic smokers' pipes are also present (for the latter, see Ch. 13 below).

Catalogue

The catalogue reflects a typology based on fabric/technique, form and surface treatment, phased and dated where possible. Each illustrated item is described by diagnostic sherd type (e.g. rim, base, body), rim diameter in cm (if applicable), description of form characteristics, ware texture (coarse, medium, fine), ware hardness (soft, medium, hard), ware colour (with Munsell number and description), site context number, site phase, and comparanda (where applicable).

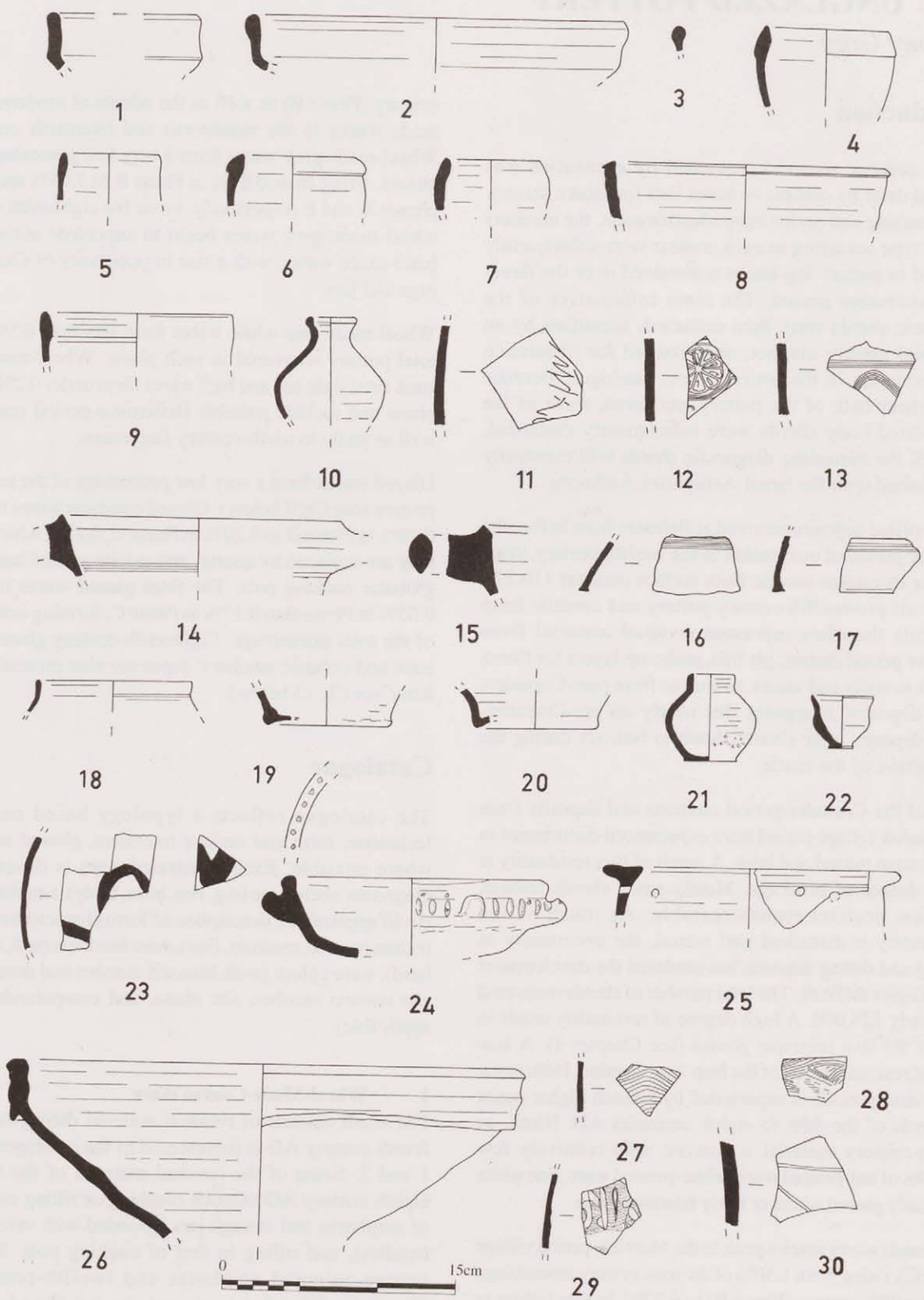
1 Wheel-Made Coarse Ware

The small amount of residual material dating before the fourth century AD is represented in the catalogue by nos. 1 and 2. Some of the residual material of the fourth to eighth century AD exhibits combing or rilling in the case of amphorae and storage jars (rounded with vertical loop handles), and rilling in that of cooking pots. Medieval orange-coloured amphorae and twelfth-century red 'Crusader fabric' are present, as are abundant post-medieval common wares, occasionally with combing, rilling or incising.

1.1 Tableware Bowls (First to Third centuries AD)

1. Fig. 6.1. Rounded rim, carinated body. Fine/medium ware with white calcareous inclusions. 5YR 7/4 pink with orange surfaces. Cf. Antioch: Waagé form 63, rounded bowl, *c.*1–25 AD (Waagé 1948); and form 473 (=Hayes EI form 48). Context 102.19: Phase C.

Figure 6.1. Belmont (Suba): unglazed pottery (nos. 1–30). Scale 1:4.



2. Fig. 6.1. Rounded, thickened, out-turned rim, with carinated body. Medium rather soft ware with sand and white calcareous inclusions. 5YR 7/4 pink. Possibly third century AD and comparable to Antioch bowls; cf. Waagé form 453, second century AD (Waagé 1948). Context 102.19: Phase C.

1.2 Jugs with Convex Necks

These orange-ware jugs are characterized by a convex neck profile and thickened, outwardly folded rim. There are comparable examples in orange, buff and cream wares, with and without spouts, from the Armenian Garden, Jerusalem, in occupation horizons dated *c.*1212–1219/27 AD and *c.*1375–1400 AD (Tushingham 1985: 142).

3. Fig. 6.1. Thickened rounded rim in coarse, soft ware with a laminar fracture and large white calcite and small black grit inclusions. 5YR 7/6 reddish yellow. Context 123.6: Phase ?C.

4. Fig. 6.1. Jug rim, thickened and outwardly folded to form a collar (diam. 7cm). Very coarse ware, porous, vesicular with large calcareous inclusions up to 5mm in diameter. Surface 5YR 7/6 reddish yellow, grey core. Cf. Armenian Garden, Jerusalem, early thirteenth-century jug with spout in light orange ware with a few medium to large white grits (Tushingham 1985: fig. 39.18); Damascus Gate, Jerusalem, necks of spouted jugs with convex neck, inturned and upwardly folded rim and rounded lip (Wightman 1989: pl. 59, nos. 3,4). Context 126.5: Phase D.

5. Fig. 6.1. Rim, outwardly folded in red, coarse, fairly hard ware. Context 105.7: Phase D.

6. Fig. 6.1. Incurved and externally folded rim, convex neck (diam. 8cm). Medium hard ware with some calcite and grit inclusions. 2.5YR 6/6 light red. Cf. Wightman 1989: pl. 59.1–4; Tushingham 1985: figs. 37.1a, 39.18, 40.28a; Bagatti 1947, fig. 26.3 (dated *c.*1150–1250). Context 120.2: Phase E.

7. Fig. 6.1. Pointed, thickened, slightly incurved rim and convex neck (diam. 6cm). Coarse, light, porous ware with frequent grog and calcite inclusions of medium hardness. 5YR 7/6 reddish yellow surface, grey core. Context 121.11: Phase D.

8. Fig. 6.1. Out-turned flattened rim, slightly incurving. Slightly ridged exterior and rilled interior. Medium ware with occasional calcite inclusions. 5YR 7/6 reddish yellow ware with internal and external white slip. Context 106.10: Phase D.

9. Fig. 6.1. Thickened inwardly folded rim, slightly flaring neck (diam. 10cm). Medium hard ware. 5YR 7/6 reddish yellow surfaces, grey core. Context 106.1: Phase E.

10. Fig. 6.1. Small biconical jug or jar with rounded rim (diam. 4cm). Fairly coarse, fairly soft ware with white calcite, chaff and grog temper. 5YR 7/6 reddish yellow. Context 102.19: Phase C.

1.3 Combed/Incised Body Sherds

11. Fig. 6.1. Body sherd with orange surfaces, grey core, white slip and inscription cut into the slip. Coarse fairly soft ware with occasional large calcareous inclusions. Surfaces 5YR 7/6 reddish yellow, grey core. Context 123.1: Phase E.

12. Fig. 6.1. Body sherd with stamp-impressed floral design in roundel. Cream exterior slip. Interior roughly smoothed while clay still wet. Medium ware with occasional small calcite inclusions. 5YR 7/6 reddish yellow. Cf. Bagatti 1984: fig. 68:9 ('Mamluk' relief). Unstratified.

13. Fig. 6.1. White slipped and combed body sherd. Medium ware. 5YR 7/6 reddish yellow, grey core. Context 102.8: Phase D.

1.4 Red Brittle Cooking Pot Ware

1.4.1 COOKING VESSELS

This characteristic coarse red quartz-gritted rilled thin-walled cooking pot ware dates within the fifth- to eighth-century range on the basis of form. A total of 63 sherds were recorded from the twelfth-century phase (context 103.12) in the north range of the inner ward (along with 23 fine ware sherds).

14. Fig. 6.1. Rim and stump of handle. Open form cooking pot/bowl with two horizontal handles, ribbed body and rilled interior. Triangular rim (diam. 24cm). Medium ware. 2.5YR 6/8 light red. Cf. Pella, *c.*500-525 AD (McNicoll 1992: pl. 109:8); the horizontal handled form dates from the late third century AD in the Jerusalem area (Magness 1993: 211); similar forms at Jalame (Johnson, in Weinberg 1986: 201, figs. 7–43.630–8). Context 109.29: Phase C.

15. Fig. 6.1. Rim and part of handle. Larger version of open form cooking pot with triangular inwardly slanted rim and two horizontal handles at the rim. Fire blackened, coarse hard ware. 10YR 7/4 very pale brown. Context 103.12: Phase A/B.

16. Fig. 6.1. Lid, plain square rim fragment, rilled 4cm above rim. Medium ware. 7.5YR 7/4 pink. Context 103.12: Phase A/B.

17. Fig. 6.1. Lid, square incurving rim fragment, sharply ribbed 4cm above rim. Medium ware, 2.5YR 6/8 light red. Cf. Pella, *c.*500–525 AD (McNicoll 1992: pl. 110:8). Context 103.12: Phase A/B.

18. Fig. 6.1. Rim. Closed form cooking pot. Fire blackened exterior (diam. 10cm). Medium hard ware, 2.5YR 6/8 light red. Context 503.15: Phase E.

1.4.2 JUGS

19. Fig. 6.1. Base (diam. 10cm). Medium ware, exterior 5YR 7/6 reddish yellow, interior 10YR 8/3 very pale brown. Context 503.15: Phase E.

20. Fig. 6.1. Concave base (diam. 6cm). Hard-fired, sandy, coarse ware. Ware 5YR 7/4 pink. Context 120.9: Phase D.

2 Wheel-Made White Wares

2.1 Small Globular Jars

21. Fig. 6.1. Complete small globular jar of closed form with plain rim, straight neck and flat base (diam. 3cm). Medium ware with shrinkage cracks and voids, unevenly fired with white calcareous inclusions and buff surfaces. 7.5YR 8/4 pink. Cf. late fourteenth-century small flask in 'drab brown' ware with white grits from the Armenian garden, Jerusalem (Tushingham 1985: fig. 44.39). Context 301.2: Phase E.

22. Fig. 6.1. Complete profile of open form jar with pointed rim, flared neck, carinated body and flat base (diam. 4cm). Medium ware. 7.5YR 7/4 pink. Cf. Tushingham 1985: fig. 41.40. Context 102.5: Phase E.

2.2 Red-Painted Ware

23. Fig. 6.1. Red-painted swirls on pink-slipped exterior of medium/fine hard ware with small white calcite inclusions. 2.5YR N8/ white. Dating is probably eighth to ninth century AD. The form would be a jar or jug. Parallels exist at Pella (McNicoll 1982 *et al.*: 143, 147, 165, pl. 142.1-3), the 'Amman Citadel (Harding 1951), Tall Hasban/Heshbon (Sauer 1973: 40–50), and Capernaum (Loffreda 1983: fig. 12:9). Context 103.12: Phase B.

2.3 Bowls

2.3.1 LUG-HANDLED BOWL

24. Fig. 6.1. Small lug-handled dish/bowl with a flat, slightly thickened rim, with holes pierced around the rim and a cordon of incised vertical slashes around the body (diam. 14cm). 5YR 8/2 pinkish-white. Context 303.1: Phase E.

2.3.2 LEDGE RIM BOWL

25. Fig. 6.1. Slightly grooved out-turned horizontal rim (diam. 11cm). Two holes bored into body just below rim after manufacture. Medium ware. 5YR 8/3 pink. Context 120.11: Phase C/D.

2.3.3 COLLARED BOWL

26. Fig. 6.1. Trunco-conical bowl with foot-ring base and rounded rim folded out and down to form a wide ridged vertical collar with a wavy lower edge. Coarse ware with frequent sand and occasional calcite inclusions. 5YR 8/3 pink with light reddish yellow surfaces. Cf. identical form fired in a reduced grey ware from context 109.14 (no. 46). Context 301.3: Phase D.

2.4 Incised/Combed/Impressed Sherds

27. Fig. 6.1. Wavy combing on exterior of body sherd in medium hard ware. 2.5YR 7/2 light grey. Probably fifth to seventh century AD. Context 110.20: Phase D.

28. Fig. 6.1. Wavy combing on white ware sherd. Probably fifth to seventh century AD. Context 126.5: Phase D.

29. Fig. 6.1. Body sherd of water jar with incised Arabic lettering on exterior within bands of close linear punctate decoration. Medium white ware. 2.5Y 8/2 white. Cf. 'Umayyad' jug in white ware with incised Arabic lettering (Brosh 1986: pl. II.a–b) Context 110.29: Phase ?B.

30. Fig. 6.1. White-slipped and incised body sherd. Medium ware. 5YR 7/3 pink. Possibly from the modern village phase. Context 123.1: Phase E.

2.5 Jugs and Flasks

31. (Fig. 6.2.) Vertical plain rim and gently ridged neck (diam. 5cm). Fine soft ware. 5YR 8/2 white with a faint greenish-yellow tinge. Cf. spouted jugs in greenish-yellow ware, thirteenth to fourteenth century (Wightman 1989: 69–71, pl. 59.9, ware 28). Context 106.10: Phase D.

32. Fig. 6.2. Pointed rim and convex neck with three pronounced ridges below the rim (diam. 3cm). Medium hard ware. 5YR 8/4 pink with buff surfaces. Cf. form 28 spouted jugs (Wightman 1989: 69–71, pl. 59.9). Context 106.10: Phase D.

33. Fig. 6.2. Triangular rim, slanted inwards, with splayed rilled neck (diam. 5cm). Coarse hard ware with white calcareous inclusions. 5YR 7/4 pink surface and light grey core. Context 106.1: Phase E.

34. Fig. 6.2. Everted, outwardly folded rim forming a collar and ridge just above the neck base (diam. 9.5cm). Medium hard ware. 10YR 8/2 white. Cf. first-century AD Roman jar rim from Jerusalem Citadel (Geva 1983: 65, no. 14). Context 106.10: Phase D.

35. Fig. 6.2. Outsplayed rim, flaring from an offset in the vertical neck (diam. 7cm). Medium to fine fairly soft ware with calcite and grit inclusions. 5YR 7/4 pink. Cf. Jerusalem, early thirteenth-century jar (Tushingham 1985: fig. 41.28). Context 120.2: Phase E.

36. Fig. 6.2. Foot-ring base (diam. 8cm). Fine soft ware. 2.5Y 8/2 white. Context 106.1: Phase E.

37. Fig. 6.2. Foot-ring base (diam. 10cm). Medium ware with inclusions of chaff, grog and grits. 10YR 8/1 white. Context 116.10: Phase D.

38. Fig. 6.2. Foot-ring base (diam. 4cm). Medium, fairly hard ware. 5Y 8/1 white. Context 106.10: Phase D.

39. Fig. 6.2. Nearly flat base (diam. 10cm). Medium ware with some calcareous inclusions and internal and external grey slip. 5YR 8/1 white. Context 105.3: Phase E.

40. Fig. 6.2. Flat base (diam. 4cm), with clay waste adhering. Medium ware with some calcite inclusions. 5YR 8/3 pink. Context 126.5: Phase D.

41. Fig. 6.2. Slightly concave base (diam. 3.75cm). Medium fairly soft ware with small calcite and quartz inclusions. 5YR 7/4 pink. Cf. Caesarea, red-ware jug (base diam. 4cm) with wheel-made ridges (Boas 1992: fig. 77.5). Context 102.18: Phase E.

2.6 Storage Jars

42. Fig. 6.2. Plain rim (diam. 6cm), with short tapered neck. Rather fine soft ware. 7.5YR 7/4 pink. Context 103.2: Phase E.

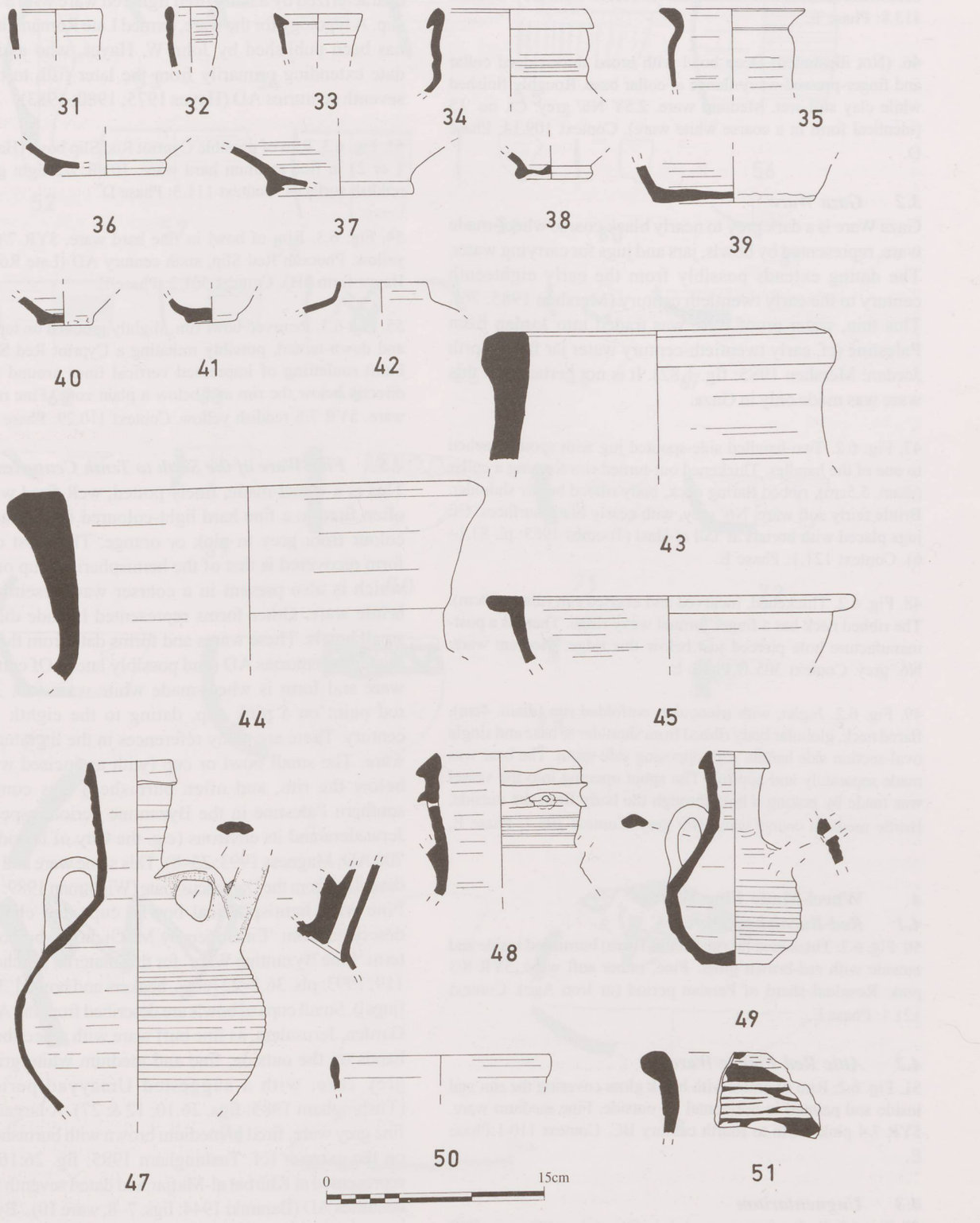
43. Fig. 6.2. Heavy duty storage jar with outwardly thickened rim and slightly tapered neck (diam. 21cm). Coarse medium ware. 7.5YR N8/ white with buff surfaces. Cf. Hakimian and Salamé-Sarkis 1988: fig. 12.2–3. Context 113.24: Phase C.

44. Fig. 6.2. Large storage jar with flat rim thickened externally. Coarse fairly soft ware with reddish yellow surfaces, grey core and inclusions of sand, grog and angular black grits up to 10mm in diameter. Ware 5YR 8/3 pink. Context 126.1: Phase E.

3 Wheel-Made Grey Wares

Wheel-made grey wares include residual sherds of rilled metallic jars of the sixth to eighth century in grey or red fabric with a dark brown or grey colour-wash and occasional white slip-painting. Wheel-made grey wares became current once again from the eighteenth century onwards. Two smooth-bodied grey Gaza Ware sherds excavated from a wadi terrace of the Nahal Min'am, in the Negev, have been dated *c.*1700 AD on the basis of the dating of land snail shells from the same deposit by amino acid epimerization analysis (Rosen and Goodfriend 1993). The ninteenth- and twentieth-century AD grey wares are frequently combed, incised or rilled as in Gaza Ware *abariq* (spouted jugs).

Figure 6.2. Belmont (Suba), unglazed pottery: jugs and flasks (nos. 31–41), storage jars (nos. 42–4), grey wares (nos. 45–9), red-burnished ware (no. 50), Attic red figure ware (no. 51). Scale 1:4.



3.1 Bowls

45. Fig. 6.2. Ledge rim bowl with slightly incurving rim. Convex profile with slight carination. Medium hard ware with grog and occasional small calcite inclusions. 7.5YR N7/ light grey. Context 113.8: Phase E.

46. (Not illustrated) Deep bowl with broad three-ridged collar and finger-pressed wavy flange at collar base. Roughly finished while clay still wet. Medium ware. 2.5Y N6/ grey. Cf. no. 15 (identical form in a coarse white ware). Context 109.14: Phase D.

3.2 Gaza Ware

Gaza Ware is a dark grey to nearly black coarse wheel-made ware, represented by bowls, jars and jugs for carrying water. The dating extends possibly from the early eighteenth century to the early twentieth century (Mershen 1985: 76). This thin, water-proof ware was traded into Jordan from Palestine (cf. early twentieth-century water jar from North Jordan: Mershen 1985: fig. 1.82). It is not certain that this ware was made only in Gaza.

47. Fig. 6.2. Two-handled side-spouted jug with spout attached to one of the handles. Thickened out-turned rim forming a collar (diam. 5.5cm), ribbed flaring neck, body ribbed below shoulder. Brittle fairly soft ware. N6/ grey, with nearly black surfaces. Cf. jugs placed with burials at Tall al-Hasi (Toombs 1985: pl. 83.1–6). Context 121.1: Phase E.

48. Fig. 6.2. Thickened, incurved and everted rim (diam. 10cm). The ribbed neck has a finger formed wavy ridge. There is a post-manufacture hole pierced just below this ridge. Medium ware. N6/ grey. Context 305.1: Phase E.

49. Fig. 6.2. Juglet, with triangular, outfolded rim (diam. 4cm), flared neck, globular body ribbed from shoulder to base and single oval-section side handle with opposing side spout. The base was made separately and applied. The spout opening into the vessel was made by poking a hole through the body from the outside. Brittle medium coarse ware. N6/ grey. Context 305.1: Phase E.

4 Wheel-Made Fine Wares

4.1 Red-Burnished Ware

50. Fig. 6.2. Thickened jar rim (diam. 10cm) burnished inside and outside with red-brown gloss. Fine, rather soft ware. 5YR 8/3 pink. Residual sherd of Persian period (or Iron Age). Context 121.1: Phase E.

4.2 Attic Red Figure Ware

51. Fig. 6.2. Rim of crater with black gloss covering the rim and inside and painted in horizontal on outside. Fine medium ware. 5YR 7/4 pink. Fifth to fourth century BC. Context 110.1:Phase E.

4.3 Unguentarium

52. Fig. 6.3. Body of *unguentarium* in fine, rather soft ware. 5YR 8/4 pink. Probably dating from the first century BC (or earlier) to the second century AD. Cf. bottles from Dura Europos dated as late as AD 160 (Welles 1968: figs. 1.20 and 3.68); and spindle-shaped Hellenistic/Roman bottles from Bethany (Saller 1957: fig. 45:1–3). Context 503.22: Phase B.

4.4 Late Roman Red Slip Ware

This is a class of table ware imported from around the Mediterranean Basin (along with local derivatives) and characterized by a hard-fired light red ware with a light red slip. A typology for the ware, termed Late Roman Fine Ware, has been published by John W. Hayes, who assigns it a date extending primarily from the later fifth to the early seventh centuries AD (Hayes 1975; 1980; 1983).

53. Fig. 6.3. Rim of possible Cypriot Red Slip bowl (Hayes form 1 or 2) in fine medium hard ware. 10YR 7/2 light grey with reddish surfaces. Context 111.5: Phase D.

54. Fig. 6.3. Rim of bowl in fine hard ware. 5YR 7/6 reddish yellow. Phocean Red Slip, sixth century AD (Late Roman 'C', Hayes form 3H). Context 301.2: Phase E.

55. Fig. 6.3. Incurved bowl rim, slightly grooved on top, everted and down-turned, possibly imitating a Cypriot Red Slip form. Faint rouletting of impressed vertical lines around the body directly below the rim and below a plain zone. Fine rather soft ware. 5YR 7/8 reddish yellow. Context 110.29: Phase ?B.

4.5 Fine Ware of the Sixth to Tenth Centuries AD

This is a wheel-made, finely potted, well-fired ware. It is often fired to a fine hard light-coloured fabric, ranging in colour from grey to pink or orange. The most common form recovered is that of the hemispherical cup or beaker, which is also present in a coarser ware resembling red brittle ware. Other forms represented include dishes and small bowls. These wares and forms date from the sixth to the tenth centuries AD (and possibly later). Of comparable ware and form is wheel-made white ware (no. 35) with red paint on a pink slip, dating to the eighth to ninth century. There are many references in the literature to this ware. The small bowl or cup (with an incised wavy line below the rim, and often burnished) was common in southern Palestine in the Byzantine period, especially in Jerusalem and its environs (e.g. the City of David, *c.*550–700 AD: Magness 1993: 23–8). This same ware and form are described from the Damascus Gate (Wightman 1989: pl. 11.1). Fine ware hemispherical bowls, cups and chalices are described from 'En Boqeq by M. Gichon who coined the term 'Fine Byzantine Ware' for this material (Gichon 1975: 119; 1993: pls. 36.1–22 [cups, beakers and bowls], 36.23–35 [jugs]). Small cups or bowls are described from the Armenian Garden, Jerusalem, as fine buff ware with wheel-burnished bands on the outside, fine and medium white grits and a grey core, with a suggested Umayyad-period date (Tushingham 1985: figs. 26.10, 12 & 27). A larger bowl in fine grey ware, fired to medium brown with burnished bands on the exterior (cf. Tushingham 1985: fig. 26.16) is also represented at Khirbat al-Mafjar and dated seventh to eighth centuries AD (Baramki 1944: figs. 7–8, ware 10). 'Byzantine' cups are described from Ramat Rahel, Stratum IIA (Aharoni 1964: fig. 22.1–10). Small, deep cups and bowls are reported from Caesarea (Brosh 1986: figs. 1.1–2, 66–7). The more thinly potted fine grey and buff wares are Early Islamic in date (seventh to tenth centuries), while their thicker, less fine yellow-red precursors are later Byzantine (sixth century). For further discussion on these wares and their dating, see Magness 1993: 166–71.

Figure 6.3. Belmont (Suba), unglazed pottery: *unguentarium* (no. 52), red-slip ware (nos. 53–5), sixth/tenth-century fine ware (nos. 56–69), hand-made wares (nos. 70–78). Scale 1:4.

4.5.1 HEMISPHERICAL CUPS/BEAKERS

Fine Ware with Band Smoothing

These are fairly deep vessels with a slightly closed form, convex profile and rim diameters ranging from less than 8cm to 9cm. They are finely potted, thin walled and wheel-turned, and probably had a small ring base, though no complete profiles have been recovered. The form resembles that of a Roman 'hunt cup' or beaker. The exterior is smoothed to a buff-orange colour and decorated with white/cream band polishing/smoothing; the most complete profile has seven such bands. The rims are usually slightly thickened, rounded and slightly offset/out-turned, but can also be straighter and more pointed.

56. Fig. 6.3. Rim (diam. 9cm) and most of body profile, from three joining sherds. The profile is convex, the rim rounded and slightly offset/out-turned. Smoothed buff exterior with white band smoothing to produce seven bands. Fine, fairly soft ware. 5YR 7/6 reddish yellow. Context 103.12: Phase B.

57. Fig. 6.3. Rounded, slightly thickened rim (diam. 9cm). Slightly convex body with band polishing. Fine medium hard white ware with buff surfaces. 5YR 7/3 pink. Context 103.12: Phase B.

58. Fig. 6.3. Rounded, slightly thickened rim (diam. 8cm) and convex body with grey horizontal band smoothing on interior and exterior. Fine medium hard ware with occasional white calcite inclusions. Context 112.10: Phase D.

59. Fig. 6.3. Rounded and thickened rim. Body has buff surfaces and exterior band smoothing in a fine medium to hard ware. 7.5YR 7/4 pink. Context 103.12: Phase A/B.

60. Fig. 6.3. Vertical triangular rim. Fine medium ware. 5YR 8/3 pink. Context 103.12: Phase A/B.

61. Fig. 6.3. Foot-ring base with slight exterior rilling in fine hard ware with buff surfaces. 5YR 8/3 pink. Context 105.34: Phase B.

Coarser Red Ware

The form is identical to the sixth- to tenth-century fine ware beaker/hemispherical cup, but the ware more closely resembles red brittle cooking pot ware. Possibly because exterior burnishing or smoothing is not feasible, the decoration is achieved by applying narrow white or cream slip-painted bands to the upper half of the vessel, somewhat resembling the thread or coil-trailing found on glass flasks and bowls. The dating could be later, perhaps late twelfth to earlier thirteenth century.

62. Fig. 6.3. Rim and part of body from three joining sherds (diam. 9cm). Rounded slightly thickened rim, slightly convex profile with narrow cream slip-painted banding extending for 3cm below the rim. Medium ware with frequent small white calcareous inclusions, 5YR 7/6 reddish yellow. Context 106.20: Phase B.

63. Fig. 6.3. Rim, slightly offset/everted (diam. 8cm); body convex with narrow white band slip-painting. Fairly coarse medium ware, 5YR 7/8 reddish yellow. Context 106.20: Phase B.

Red-painted Ware

64. Fig. 6.3. Rim of beaker, slightly offset/everted (as no. 63) but in a thinly potted, fine, hard-fired light red ware with pink slip and dark red-painted lattice. 5YR 7/6 reddish yellow surfaces, grey core. The form and thinly potted hard-fired ware resemble 'Fine Byzantine Ware' hemispherical cups and beakers. The red-painted design puts this item in the eighth- to ninth-century tradition of decoration. Context 301.2: Phase E.

4.5.2 BOWLS

65. Fig. 6.3. Bowl with flanged rim in fine hard white ware with a greyish core and buff surfaces. 5YR 7/3 pink ware. Cf. Pella, bowl (diam. 24cm) with band-burnished reddish-yellow interior and exterior and grey core (McNicoll 1992: pl. 116.1). Context 113.12: Phase C.

66. Fig. 6.3. Small, fine bowl with a flaring rounded rim and flange around the body carination. The ware has a grey core and light red surfaces with a cream exterior colour wash with traces of black painted decoration. Fine hard ware, 5YR 7/4 pink (surface). Context 301.1: Phase E.

67. Fig. 6.3. Most of profile of dish with arched rim, possibly spouted. Slightly concave base (diam. 6cm). Fine to medium fine, fairly soft ware with occasional small calcite inclusions, 5YR 7/3 pink. Context 301.1: Phase E.

68. Fig. 6.3. Flat rim forming a lip (diam. 20cm). Fine hard ware. 5YR 7/8 reddish yellow surfaces, grey core. Cf. early thirteenth-century bottle in greyish brown ware with frequent small white grits (Tushingham 1985: fig. 41.40). Context 106.20: Phase B.

5 Hand-Made Wares

5.1 Red-Burnished Ware

69. Fig. 6.3. Hand-made rim (diam. 6cm). Coarse, low-fired, porous, rather soft ware with voids and grey core. Red-burnished interior and exterior. Fabric 5YR 8/3 pink, core 7.5YR N5/ grey. This may be a residual Persian period (or Iron Age) sherd or a twelfth- to twentieth-century hand-made item with a red burnish. Context 113.24: Phase C.

5.2 Low-Fired, Light, Coarse Wares (with or without Geometrical Painting)

The Belmont assemblage belongs to a class common in (and limited to) Palestine, Jordan and southern Syria that dates possibly from the beginning (and more certainly from the middle) of the twelfth century (Porëe 1993: 9; Johns 1998) and continues into the twentieth century (Mershen 1985: 76–7, fig. 2); it is still made at the present time in the Ramallah area. Examples of these wares, including red-painted four-handled jars, or *zir*s (made by women), and spouted jugs may be seen in Bir Zeit University's ethnographic collection, at the German Evangelical Institute (Mount of Olives, Jerusalem) and at the École Biblique et Archéologique Française de Jérusalem.

Forms include dishes, platters, bowls, basins, jugs and jars. The most common ware type was low-fired in bonfire kilns to a light, porous, friable cream, pink or buff ware, often with a dark grey core and often thickly potted. Inclusions generally include chaff, grog and angular quartz grains. Also

present is a more thinly potted and hard-fired light red ware. These wares were most likely made locally by village potters in many centres. The vessels were hand-made and shaped with the aid of a piece of textile (Franken and Kalsbeek 1975: 169). Textile impressions can sometimes be seen, especially on the base.

Surface treatment includes burnishing or wet smoothing and the vessels were either left plain or decorated by finger impressed cordons, incised or punctate decoration or painting. The latter was executed in monochrome black or dark red/brown/purple paint, or less frequently polychromatically or bichromatically in black and red, or black and blue. The designs range from elaborate, carefully executed geometric motifs to more freely painted and crudely executed motifs. Many of the motifs seem to derive from a repertoire held in common with textile designs (Franken and Kalsbeek 1975: 170–73). It may be that the better executed and more elaborate geometric designs are earlier in date (twelfth to fifteenth century) than the freer, less elaborate motifs that are present on some examples. However, the more complex and carefully painted designs may have been reserved for tableware jugs, dishes and bowls as opposed to kitchenware basins and small dishes. Context 106.10, a brown rubble layer located in the east range of the the inner ward and assigned to the post-medieval village (phase D), yielded 397 hand-made ware sherds, of which 145 were painted. These include in the catalogue a small bowl, two small dishes, one large dish, two jugs and one plain cooking pan exhibiting mainly the cruder, more freely painted type of decoration, perhaps indicating a mainly kitchen-ware assemblage.

The following classification draws to a large extent on that used for the Damascus Gate assemblage (Wightman 1989: 61–5).

5.2.1 BOWLS AND BASINS

70. Fig. 6.3. Flat rim (diam. 28cm), out-turned to form a cordon with deep, irregular finger impressions. Fine grained, friable, soft orange ware. 5YR 8/4 pink. Cf. Wightman 1989, pl. 50.9. Context 102.10: Phase C.

71. Fig. 6.3. Flat rim with a finger impressed band below the rim. Wet-smoothed buff-orange surfaces. Coarse hard ware with chaff and grit inclusions. 7.5YR 8/4 pink, grey core. Cf. Bethany (Saller 1957: fig. 56.7331); Armenian Garden, Jerusalem, early thirteenth century bowl (Tushingham 1985: figs. 42.3 & 45.11). Context 106.10: Phase D.

72. Fig. 6.3. Small, crude bowl with plain rim (diam. 10cm) and flat base, unevenly fired, in coarse soft ware of poorly washed clay with inclusions of chaff (some carbonized in the fabric), mica and white calcite. 5YR 7/3 pink. Cf. Damascus Gate, Jerusalem, thirteenth-century bowl (Wightman 1989: pl. 50.1–5). Context 102.10: Phase C.

73. Fig. 6.3. Bowl, painted red on plain flat rim (diam. 9cm). Coarse medium ware with chaff, grog, sand and small white calcite inclusions. 7.5YR 8/4 pink. Context 106.10: Phase D.

74. Fig. 6.3. Bowl with plain rounded rim and hemispherical body (diam. 14cm). The exterior is textile-smoothed and painted below the rim with a crude design in red consisting of a horizontal band with intersecting loops hanging from it. Medium ware with chaff, grits and calcite inclusions. 5YR 8/4 pink. Cf. Abu Gosh (de Vaux and Steve 1950: pl. 1:36); Tall Dair 'Allah, motif B23 (Franken and Kalsbeek 1975). Context 109.1: Phase E.

75. Fig. 6.3. Flat rim projecting inwards and outwards. Very friable, light, soft ware with wet-smoothed pale yellow exterior. 5YR 8/2 white, with faint greenish-yellow tinge. Context 110.28: Phase B/C.

76. Fig. 6.3. Plain flat rim (diam. 36cm), splashing and finger printing on exterior, unevenly fired with grey core. Interior wet-smoothed with purple-red paint on rim and crude double zigzag design on interior below rim. Coarse soft ware with chaff, quartz and calcite inclusions. 5YR 8/3 pink. For zig-zags on outside of basin, cf. Johns (J) 1989: fig. 26:38. Context 106.10: Phase D.

77. Fig. 6.3. Flat rim with crude red zigzags on the rim and on pink slipped interior. The ware is cindery and porous, coarse and soft with inclusions of chaff, chert and calcite. N5/ grey. Context 106.10: Phase D.

5.2.2 SMALL DISHES

78. Fig. 6.3. Dish (diam. 18cm). Crudely made, porous, oxidized surfaces and grey core. Crude design inside and on rim in red-purple paint on slipped orange. Coarse soft ware with inclusions of chaff, grog and occasional small calcite. 5YR 7/6 reddish yellow surface. Context 106.10: Phase C.

79. Fig. 6.4. Crude design in purple-red paint on slipped orange interior surface, extending to exterior as a rim border of a band with loops painted on an unsmoothed surface. Medium ware with inclusions of chaff, chert and calcite. 5YR 7/6 reddish yellow surfaces, grey core. Context 106.1: Phase E.

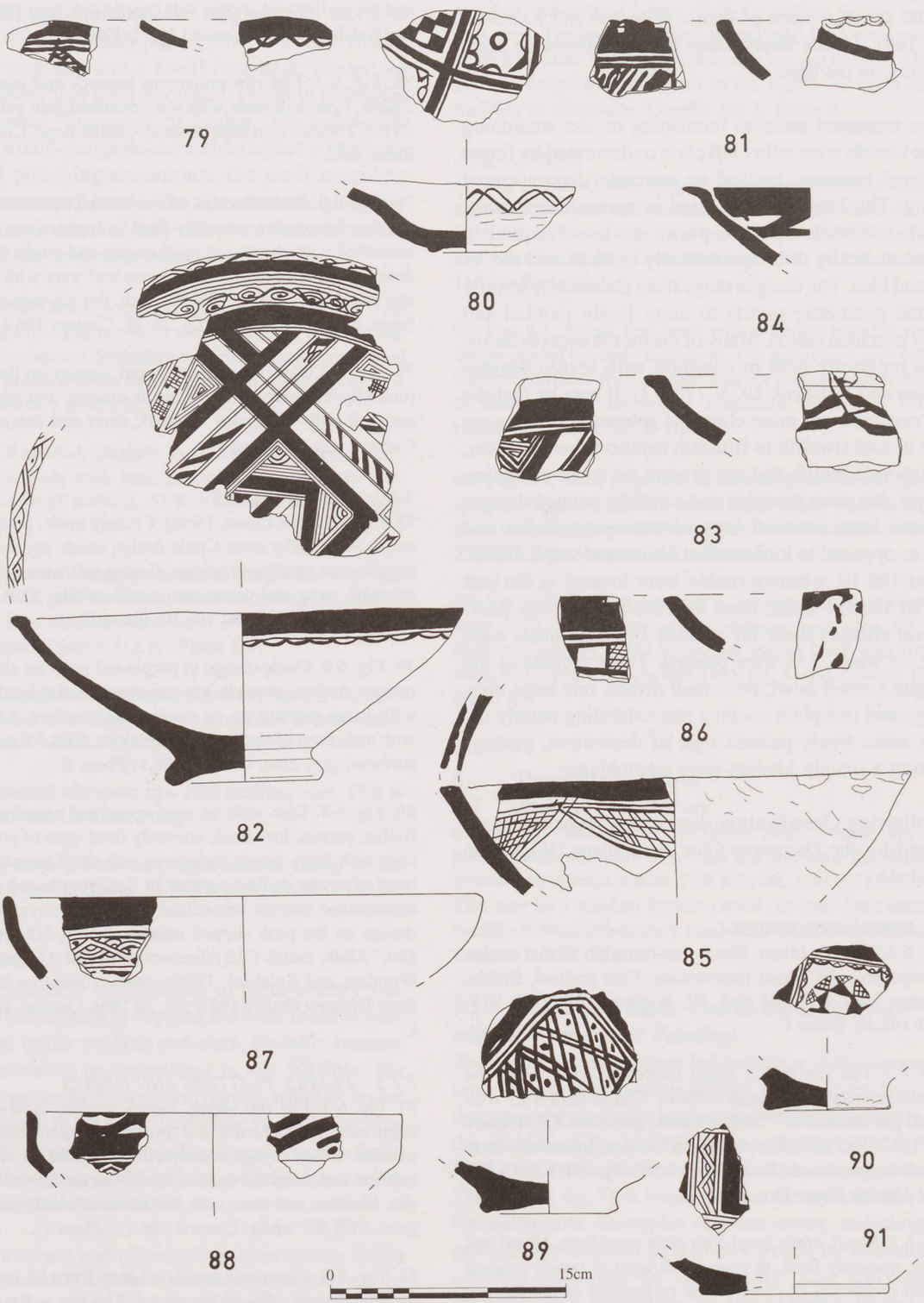
80. Fig. 6.4. Dish with an open spout and raised base in light, friable, porous, low-fired, unevenly fired ware of poorly washed clay with large quartz inclusions and chaff temper. There is a band of crude double zigzags in dark purple-red paint on the unsmoothed exterior immediately below the rim and a geometric design on the pink slipped interior. 7.5YR N5/ grey. Cf. Tall Dair 'Allah, motifs C15 (chequerboard) and A19 (scallop frieze) (Franken and Kalsbeek 1975); chequerboard on bowl interior from Bethany (Saller 1957: fig. 56.189). Context 113.12: Phase C.

5.2.3 PLATES, PLATTERS AND DISHES

81. Fig. 6.4. Flat rim (diam. 24cm), slightly incurved and with slight external thickening and 'pie crust' finger-impressing along exterior. Crude design in purple-brown paint on cream slipped interior and swirl on unsmoothed exterior immediately below rim. Medium soft ware with inclusions of chaff, grog and black grits. 5YR 8/1 white. Context 106.10: Phase C.

82. Fig. 6.4. Complete profile of dish from 55 joining sherds forming around 25% of the vessel. The rim is flat and slightly thickened externally. The profile is convex and the base a foot-ring. The interior is cream slipped and entirely covered by an intricate and well-executed geometric design in black paint. The rim is painted in zigzags with semi-circles and dots. The unslipped exterior has a band and small loops in purple-red paint below the rim. The ware is coarse, medium with calcite and grog inclusions. 7.5YR 8/4 pink. For form and motifs, cf. de Vaux and Steve 1959: pl. 1:9; Franken and Kalsbeek 1975: figs. 56.7, 59:9 & 60.10 (motifs B12, C7). Unstratified.

Figure 6.4. Belmont (Suba): unglazed hand-made wares (nos. 79–91). Scale 1:4.



83. Fig. 6.4. Flat rim (diam. 24cm), slightly incurving, externally thickened. purple-red painted geometric design on bright peach-pink slipped interior and crude swirls on unslipped exterior. Medium ware with chaff and occasional calcite inclusions. 5YR 8/4 pink. Context 106.1: Phase E.

84. Fig. 6.4. Rim fragment (diam. 24cm). Purple paint on cream interior. Medium ware with shelly inclusions. 5YR 7/6 reddish yellow. Context 120.11: Phase C/D.

85. Fig. 6.4. Rim of bowl (diam. 28cm). Unevenly fired coarse fairly soft ware with chaff, calcite and red grits. Crude lattice design in purple-brown paint on smooth cream interior. 5YR 8/3 pink. Cf. Franken and Kalsbeek 1975: motif B26; de Vaux and Steve 1950: pl. 1.26. Contexts 118.18 (two sherds) and 118.30 (one sherd): Phase D.

86. Fig. 6.4. Geometric design in blackish-purple paint on smooth cream interior and rim, and crude painting on unsmoothed exterior. Coarse medium ware with chert and calcite inclusions. 5YR 7/4 pink. Cf. Franken motif C3. Context 102.10: Phase C.

87. Fig. 6.4. Low-fired, light, friable ware with carefully executed geometric design in black paint on smooth cream interior. 5YR 8/2 white (with greenish-yellow hue). Cf. motif of semi-circles within triangles at Abu Gosh (de Vaux and Steve 1950: pl. 1.10). Context 120.11: Phase ?B.

88. Fig. 6.4. Triangular downwardly sloping rim, carinated profile. Brownish-black painted semi-geometric design on smooth cream interior and on less smooth exterior. 5YR 8/1 white. Cf. de Vaux and Steve 1950: pl. 1.30. Context 120.11: Phase ?B.

89. Fig. 6.4. Crudely made ring base with shrinkage cracks in very coarse ware with large calcite grits up to 12mm in diameter, black grits and grog inclusions. Crude lattice design in purple-black paint on smooth cream interior. 5YR 8/1 white. Context 106.1: Phase E.

90. Fig. 6.4. Slightly raised base (diam. 8cm) with textile impression on exterior. Carefully executed design of solid and latticed triangles within scalloped borders in purple paint on smooth cream interior. Light, friable coarse ware with firing cracks. 10Y 8/2 white. Unstratified.

91. Fig. 6.4. Raised base in friable, light ware with inclusions of chaff, quartz and calcite. Carefully executed geometric design in purple-red paint on slipped orange-pink interior. 5YR 8/3 pink. Context 120.11: Phase C/D.

92. Fig. 6.5. High, slightly raised base (diam. 10cm) with textile impression on exterior. Semi-geometric design in purple-brown paint over burnished ochre slip. Friable, porous, coarse ware with sand and chaff inclusions. 10YR 8/2 white, greyish core. Context 120.9: Phase D.

93. Fig. 6.5. Flat base with crude star and dots design in dark purple-brown paint on smooth cream interior. Fairly coarse, fairly soft ware with chaff and quartz inclusions. 5Y 8/1 white. Context 120.11: Phase C/D.

94. Fig. 6.5. Exterior of base (diam. 20cm) treated with concentric raised rings. Purple paint on burnished orange slipped interior. Medium hard ware with chert, chaff and shell inclusions. 5YR 7/6 reddish yellow. Context 116.7: Phase ?C/D.

5.2.4 JUGS

95. (Not illustrated) Two-handled narrow-necked strainer jug with a large central hole surrounded by three smaller holes punched through from underneath. Textile impressions on exterior. Motif of crude triangles and bands in black or dark red paint on smoothed grey exterior. Coarse ware with sand and grog inclusions. 2.5YR 7/2 light grey. Context 120.9: Phase D.

96. Fig. 6.5. Rim of handled sieve-neck strainer jug with plain rim and slightly flaring neck (diam. 11cm). Carefully executed geometric design in purple-black paint on smooth cream exterior, rim and handle and crude cordon around unsmoothed neck rim interior. Coarse soft ware with inclusions of chert, grog and calcite. 5YR 8/1 white (with greenish-yellow tinge). For form, cf. early thirteenth-century strainer jug from the Armenian Garden (Tushingham 1985: fig. 42.16); Tall Dair 'Allah (Franken and Kalsbeek 1975: fig. 66:25). For geometric design on exterior and loops under the rim on interior, cf. Johns (J) *et al.* 1989: fig. 25.31; Pringle 1984a: fig. 3.11; Franken and Kalsbeek 1975: motifs A5 (triangles) and C19 (concentric squares within squares). Context 106.1: Phase E.

97. Fig. 6.5. Carefully executed geometric design in purple-red paint on smooth cream exterior and crude design on unsmoothed interior. Medium soft ware with inclusions of large black grits. 5Y 8/1 white. For motif, cf. the Red Tower (Pringle 1986a: fig. 43.9); Pella (McNicoll 1992: pl. 125.6); Damascus Gate, Jerusalem (Wightman 1985: pl. 52.7); Franken and Kalsbeek 1975: motif A21; Johns (J) *et al.* 1989: figs. 25.31 & 26.38; MacDonald 1992; pl. 34g. Context 102.13: Phase C.

98. Fig. 6.5. Crude geometric design in purple-red paint on burnished pink slipped exterior. Coarse rather soft ware with inclusions of chaff and occasional calcite. 5YR 8/3 pink. Context 106.10: Phase D.

99. Fig. 6.5. Rounded flaring rim and crude design in dark red paint on burnished pink slipped exterior. Coarse medium ware with inclusions of grog, calcite quartz and large chert grits. 5YR 8/3 pink. Context 120.11: Phase C/D.

100. Fig. 6.5. Carefully executed geometric design on burnished pink exterior; interior similarly slipped. Frequent chaff and quartz inclusions. 5YR 8/4 pink, grey core. Cf. Franken and Kalsbeek 1975: motifs C1, C4, B26. Context 121.22: Phase A/B?

101. Fig. 6.5. Well-executed design in purple-black paint on pink slipped exterior. Medium ware with chaff and grog inclusions. 5YR 8/4 pink. Cf. Franken and Kalsbeek 1975: motif B31. Context 120.11: Phase C/D.

102. Fig. 6.5. Careful geometric design, well executed in purple-red paint on smooth cream exterior. Light, medium ware. 5Y 8/1 white. Cf. Bagatti 1984: fig. 62.3; Franken and Kalsbeek 1975: motifs B12 & B24. Context 111.16: Phase C.

103*a–c*. Fig. 6.5. Three body sherds possibly from the same vessel. Two layers of differently fired clay at the neck of no. 103*a* might indicate an applied handle. The design is a carefully executed geometric one in purple-brown paint on cream slipped exterior in coarse medium ware with large chert inclusions. 7.5YR 8/4 pink interior, 2.5Y 8/2 white exterior. No. 103*b* is similar. No. 103*c* is grey and cindery; N6/ dark grey. Context 102.19 (all three sherds): Phase C.

104. Fig. 6.5. Rounded rim and flaring neck. Very crude freely painted design in purple-red paint on unsmoothed exterior which

Figure 6.5. Belmont (Suba): unglazed hand-made wares (nos. 92–110). Scale 1:4.

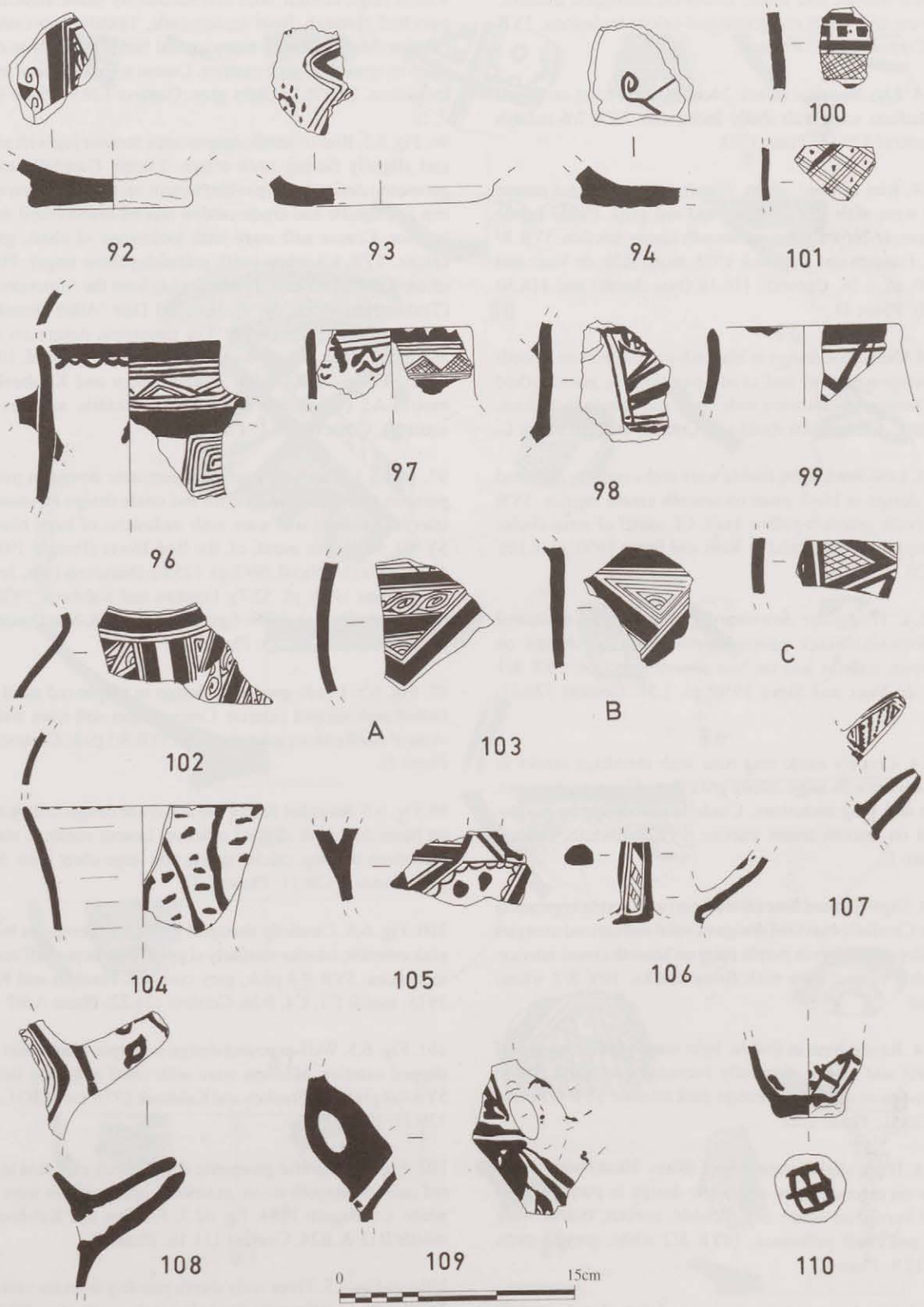
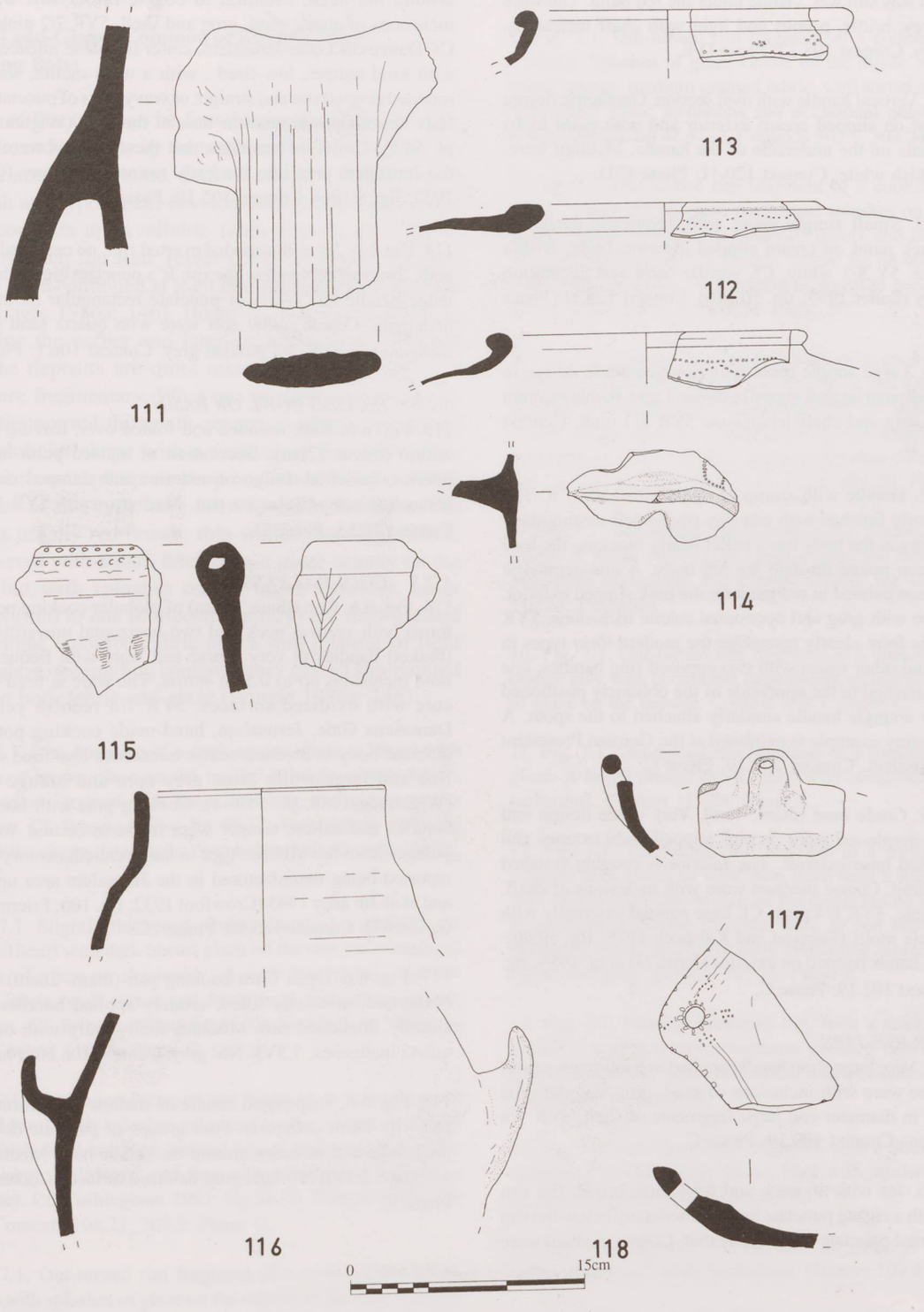


Figure 6.6. Belmont (Suba): unglazed hand-made wares (nos. 111–18). Scale 1:4.



has some textile imprinting. Medium ware with inclusions of grog and calcite. 7.5YR 8/2 pinkish white. Context 106.10: Phase D.

105. Fig. 6.5. Crudely geometric design in red paint on slipped orange-cream exterior and handle with textile wipe marks, made while the slip was still wet, visible under the red paint. The ware is cindery grey, brittle, porous and light with chaff inclusions. 2.5Y N6/ grey. Context 105.12: Phase D/E.

106. Fig. 6.5. Vertical handle with oval section. Geometric design in black paint on slipped cream exterior and with paint blobs and fingerprints on the underside of the handle. Medium ware. 5YR 8/2 pinkish white. Context 120.11: Phase C/D.

107. Fig. 6.5. Small simple spout with geometric design in brownish-black paint on cream slipped exterior. Light, friable medium ware. 5Y 8/1 white. Cf. similar form and decoration from Bethany (Saller 1957: fig. 56.190). Context 120.11: Phase C/D.

108. Fig. 6.5. Large simple spout with non-geometric design in dark purple-red paint on pink slipped exterior. Light, friable medium ware with quartz and chaff inclusions. 5YR 8/3 pink. Context 302.5: Phase D.

109. Fig. 6.5. Handle with stump of spout attached to it. The interior is poorly finished with wet clay ripples left unsmoothed. The spout entry at the body has a pellet nearly blocking the hole which has been poked through the jug body. A non-geometric design has been painted in red paint on the pink slipped exterior. Medium ware with grog and occasional calcite inclusions. 5YR 8/4 pink. This form clearly resembles the modern *ibriq* types in Gaza Ware and other wares with two opposed ring handles, one of which is attached to the upperside of the obliquely positioned side spout or a single handle similarly attached to the spout. A twentieth-century example is exhibited at the German Protestant Institute, Jerusalem. Context 102.19: Phase C.

110. Fig. 6.5. Crude base (diam. 4cm). Very crude design and execution in purple-red paint on pink slipped body exterior and on unsmoothed base exterior. The interior is roughly finished with a paint trail. Coarse medium ware with inclusions of chaff, grog and calcite. 5YR 8/4 pink. Cf. base painted externally with lattice-in-circle motif (Franken and Kalsbeek 1975: fig. 59:40); jar base with bands painted on exterior (Johns (J) *et al.* 1989, fig. 27:51). Context 102.19: Phase C.

5.2.5 STORAGE JARS

111. Fig. 6.6. Very large strap handle applied to hand-made vessel in very coarse ware with inclusions of sand, grog, angular grits up to 10mm in diameter and large fragments of shell. 5YR 7/6 pinkish yellow. Context 109.19: Phase C.

112. Fig. 6.6. Jar with no neck and thickened, broad, flat rim decorated with a zigzag punctate band immediately below the rim and a horizontal punctate band below that. Coarse medium ware with frequent quartz sand, grog and mica inclusions. 5YR 8/3 pink. Context 102.1: Phase E.

113. Fig. 6.6. Jar with short flared neck, rounded everted rim (diam. 18cm) and groups of punctate dots above a punctate band around the neck. Medium to coarse rather soft ware with inclusions of quartz sand, grog and shell. 5YR 7/2 pinkish grey. Cf. Damascus Gate, Jerusalem, crater in coarse micaceous ware with sand temper, low-fired , with a wide mouth, short neck, rounded everted rim and straight or wavy lines of punctate reed or stalk impressions around the base of the neck (Wightman 1989: pl. 54.5). Crowfoot mentions that these vessels were made in the Jerusalem area into the early twentieth century (Crowfoot 1932: fig. 8:186). Context 105.10: Phase E.

114. Fig. 6.6. Jar with rounded everted rim, no neck and globular body. Immediately below the rim is a punctate zigzag band. The ledge handle has swirls of punctate rectangular motifs on the underside. Coarse rather soft ware with quartz sand and grog inclusions. 7.5YR 7/2 pinkish grey. Context 106.1: Phase E.

5.2.6 INCISED BOWL OR BASIN

115. Fig. 6.6. Rim, rounded and folded over, leaving air space within (diam. 32cm). Decoration of incised palm branch on interior, rouletted design on exterior and stamped circles and horseshoe semi-circles on rim. Medium ware. 5YR 8/3 pink. Context 302.5: Phase D.

5.2.7 COOKING VESSELS

116. Fig. 6.6. Rim (diam. 14cm) of globular cooking pot (closed form) with vertical neck and two horizontal upwardly vaulted (basket) handles in very coarse soft ware with frequent quartz sand inclusions up to 0.5cm across. The ware is fired to a grey core with oxidized surfaces. 5YR 7/6 reddish yellow. Cf. Damascus Gate, Jerusalem, hand-made cooking pots with a globular body in medium/coarse micaceous low-fired ware with fine and large white grits, grey core and orange surfaces (Wightman 1989, pl. 54.1–4). Cooking pots with hoof-shaped handles and calcite temper were made in certain West Bank villages from the Middle Ages to the twentieth century; they are reported being manufactured in the Jerusalem area up to 1914 and at al-Jib after 1945 (Crowfoot 1932: fig. 100; Frierman 1975: fig. 50.87). Context 116.10: Phase ?C.

117. Fig. 6.6. Open form cooking pan (diam. 26cm) with two horizontal, upwardly tilted, crudely applied handles and flat slightly thickened rim. Medium shelly ware with occasional quartz inclusions. 7.5YR N6/ grey. Context 106.10: Phase D.

118. Fig. 6.6. Suspension handle of shallow open form cooking pan with burnt underside. Four groups of punctate dots around the handle and incisions around the handle hole. Medium rather soft ware. 2.5YR N7/ light grey, oxidized surfaces. Context 503.15: Phase E.

CHAPTER 7
THE GLAZED POTTERY

Kathryn Knowles

1 Lead-Glazed Common or Kitchen Wares (Cooking Pots)

Pottery of this type can be found from the eighth century onwards, and certainly by the tenth century it is well known on sites around Palestine. Unfortunately, it is difficult to establish any typological development in form until more dated contexts are available from sites in the region. Contexts from the Red Tower (Burj al-Ahmar) suggest that the ware continued at least into the fourteenth century AD (Pringle 1986a: 146). However, it is not possible to determine the earlier and later examples from Belmont since the deposits are quite mixed and the majority of sherds are fragmentary. What can be estimated, however, is that the normal thirteenth-century cooking pot usually had a globular shape with a vertical or out-turned rim, and a horizontal strap or strap sectioned handle. Many examples of this type have been found at Belmont. The fabric is usually red-brown, thin walled, hard and brittle, and covered with a dark thick brown glaze usually on the inside but with splashes on the outer shoulder. Later versions (mid to late fourteenth century) are finer grained with a light coloured fabric and a thin coating of light brown glaze, resembling contemporary glazed slip-painted wares in both fabric and glaze (Pringle 1986a: 146).

1. Fig. 7.1. Rim fragment of a cooking pot (diam. *c.*16cm) with splashes of brown glaze on the inside. A bright orange fabric, hard, medium grained with large limestone and glassy quartz inclusions. Cf. Pringle 1986a: fig 48.37; Tushingham 1985: fig 36.4 (similar shape, dated to the Ayyubid period). Context 113.24: Phase C.

2. Fig. 7.1. Slightly thickened rim fragment of a cooking pot (diam. *c.*18cm) with dark brown glaze on the rim and occasional splashes of glaze on the inside. A dark brown/red, medium grained fabric, well sorted and fairly hard with glassy quartz inclusions. Cf. Pringle 1986a: fig 48.38; Tushingham 1985: fig 34.35. Context 111.24: Phase C.

3. Fig. 7.1. Out-turned flattened rim fragment of a cooking pot (diam. 14cm) with splashes of glaze on the inside. A bright orange,fairly hard, medium grained fabric, well sorted with few visible large inclusions and tiny white inclusions (possibly limestone). Cf. Tushingham 1985: fig 34.35; Pringle 1986a: fig 48.42. Contexts 106.22, 309.3: Phase C.

4. Fig. 7.1. Out-turned rim fragment of a cooking pot (diam *c.*14cm) with splashes of glaze on the outside of the rim. A bright orange, fairly hard, medium grained fabric, well sorted with occasional large limestone inclusions. Context 503.29: Phase B/C.

5. Fig. 7.1. Out-turned rim fragment of a cooking pot (diam. *c.*14cm) with no glaze. A bright orange, medium grained fabric, fairly hard, well sorted with small white inclusions. Context 503.2: Phase D.

6. Fig. 7.1. Out-turned rim fragment of a cooking pot (diam. *c.*12cm). Splashes of glaze visible on the inside. A brick red to bright orange, medium grained fabric, well sorted and fairly hard with small white inclusions and occasional quartz grains. Cf. Pringle 1986a: fig 48.41–2. Contexts 303.1, 503.24: Phase E.

7. Fig. 7.1. Out-turned rim fragment of a cooking pot (diam. 14cm). Unglazed but with occasional splashes on the inside. A bright orange fabric, with moderate quartz and occasional tiny limestone inclusions. Cf. Pringle 1986a: fig 48.40; Tushingham 1985: figs. 36.2 and 37.15 (dated to Ayyubid period). Contexts 303.1, 503.25, 503.26, 503.28: Phase B/C.

8. Fig. 7.1. Out-turned rim fragment of a cooking pot, with splashes on glaze on both sides. The fabric can vary, but overall the clay is bright orange, fairly hard with few inclusions visible except small calcareous inclusions and infrequent quartz. Cf. Tushingham 1985: fig 36.2 dated to Ayyubid period). Contexts 101.24, 102.10, 102.19, 102.21, 112.9, 503.25: Phase B.

9. Fig. 7.1. Out-turned rim fragment of a cooking pot with no glaze. A brick red/orange, coarse grained fabric with tiny limestone inclusions. Cf. Pringle 1986a: fig 48.41. Context 110.28: Phase B/C.

10. Fig. 7.1. Out-turned rim fragment of a cooking pot. Bright orange clay with occasional large quartz inclusions and splashes of glaze on the outside. Context 309.3: Phase C.

11. Fig. 7.1. Out-turned rim fragment of a cooking pot with no glaze. A bright orange fabric, hard, with occasional large quartz inclusions. Context 113.24: Phase C.

12. Fig. 7.1. Thickened rim fragment of a frying pan (diam. *c.*24cm) with traces of what may have been a lug or handle. A dark brown glaze can be seen on the inside but no slip.The fabric is medium to coarse grained, dark to red brown in colour (probably burnt) and fairly hard, containing larger inclusions of quartz and grog. Context 102.18: Phase E.

13. Fig. 7.1. Vertical thickened rim, with a thick glaze on the inside.A bright orange, medium grained fabric, hard with abundant quartz, dark inclusions and occasional limestone. Context 112.9: Phase D.

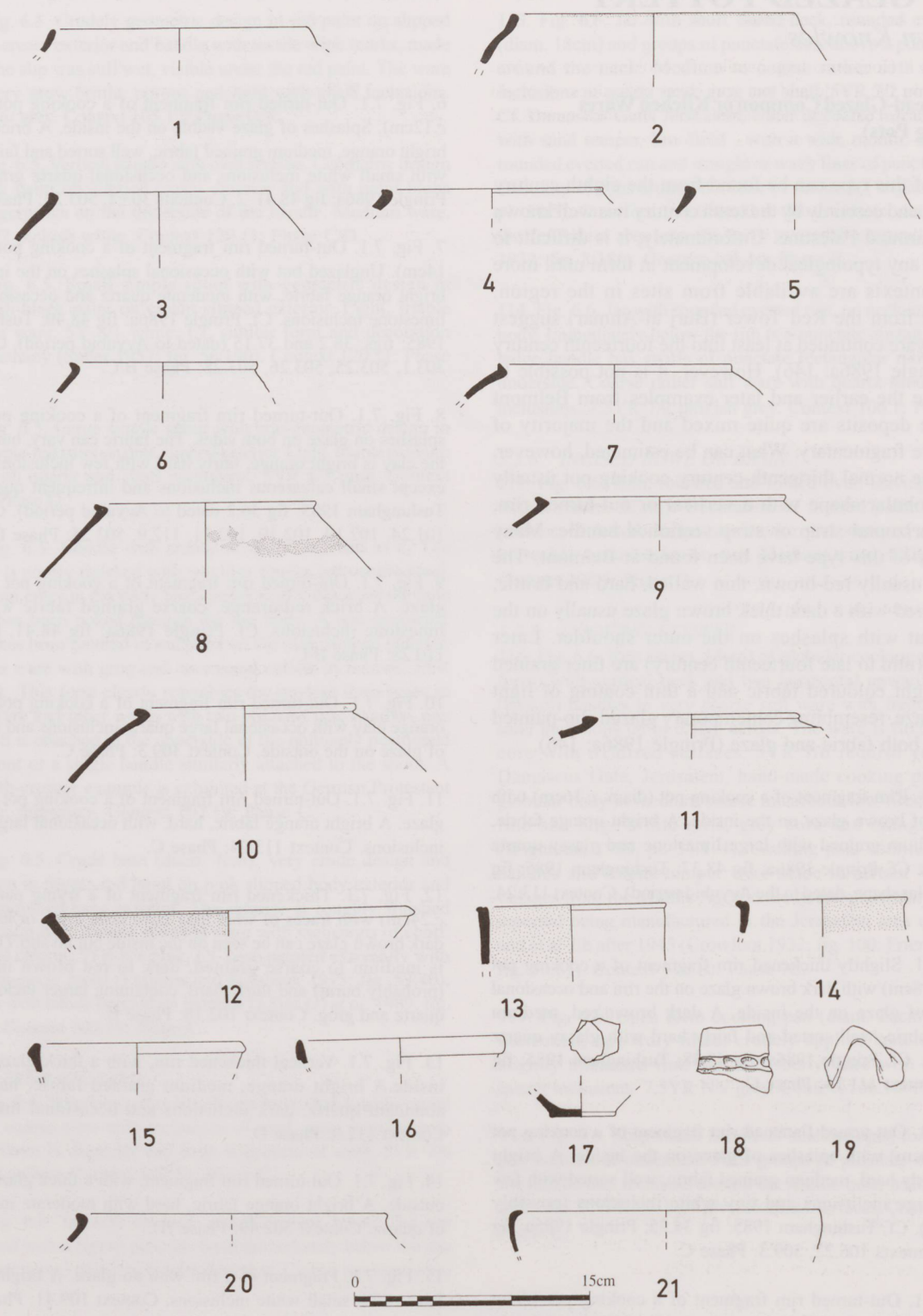
14. Fig. 7.1. Out-turned rim fragment, with a thick glaze on the outside. A bright orange fabric, hard with moderate inclusions of quartz. Context 502.49: Phase ?B.

15. Fig. 7.1. Fragment of a rim with no glaze. A bright orange fabric with small white inclusions. Context 109.41: Phase B.

16. Fig. 7.1. Fragment of a thickened rounded rim, with no glaze. A bright orange fabric with large moderate glassy quartz and occasional limestone inclusions. Context 105.27: Phase B.

17. Fig. 7.1. Base fragment (base diameter *c.*4cm) glazed outside. A bright orange fabric, hard, fine to medium grained with small quartz and limestone inclusions. Context 113.24: Phase C.

Figure 7.1. Belmont (Suba): lead-glazed common or kitchen wares (nos. 1–21). Scale 1:4.



18. Fig. 7.1. Decorated body sherd with finger impressed cordon and glaze splashed on the outside. A coarse grained, hard, bright orange/brown fabric, with abundant quartz and moderate to occasional limestone inclusions. Context 120.11: Phase C/D.

19. Fig. 7.1. Horizontal loop handle of a cooking pot with glaze splashed on the inside and out and burnt both sides. A bright orange, hard, coarse grained fabric, with abundant quartz and occasional limestone inclusions. Cf. Pringle 1986: fig 48.44. Context 102.19: Phase C.

20. Fig. 7.1. Fragment of an out-turned rim, with splashes of glaze on the top of the outside of the rim and inside. A bright orange, hard coarse grained fabric with moderate quartz inclusions. Context 503.21: Phase D.

21. Fig. 7.1. Fragment of an inturned rim. A brick red, hard, coarse grained fabric with occasional quartz and limestone. Context 105.34: Phase B.

2 Monochrome Glazed Slip Wares

Monochrome glazed slip wares are common at Belmont, the majority usually having everted rims and high ring bases. Unfortunately only small fragments have been recovered from the site; thus it is often difficult to distinguish between coarse *sgraffiato* wares and monochrome glazed slip wares.

On the whole, the fabric is dark red-brown in colour, coarse-grained with frequent quartz and calcareous inclusions. The suface is covered with a white slip, over which is added a green, yellow or brown glaze, occasionally mottled in appearance. This glaze is common on the inside of the vessel and usually extends on to the outside of the rim. Brosh suggests (1986) that these wares were common from the Crusader period to the Mamluk (twelfth to fourteenth centuries). They are found in contexts from the late thirteenth century onwards at the Red Tower (Pringle 1986a: 147–8). From around the end of the thirteenth century and beginning of the fourteenth, a shinier and more brightly coloured green or yellow glazed slip ware began to be produced.

22. Fig. 7.2. Rim fragment of a carinated bowl (diam. 11cm) with a cream slip under a bright green glaze which extends over onto the exterior below the rim. The fabric is bright orange, hard and coarse grained with abundant limestone inclusions and quartz grains. Context 110.29: Phase ?B.

23. Fig. 7.2. Rim fragment of a carinated bowl (diam. 16cm). A green mottled shiny glaze is found on both sides over a cream slip. The fabric is light brown, coarse grained with quartz grains and limestone inclusions. Context 502.34: Phase D.

24. Fig. 7.2. Rim fragment of a carinated bowl, with traces of slip and glaze on the inside, a thick dark dull green glaze can be seen over the rim and extends down the outside. The fabric is orange, hard, medium to coarse grained with tiny limestone inclusions and quartz grains. Context 110.20: Phase D.

25. Fig. 7.2. Thickened rim fragment of a bowl (diam. 13cm) with a cream slip under a thick shiny green glaze on the inside which extends onto the exterior just below the rim. The fabric is dark orange/brown, medium grained with large limestone inclusions. Cf. Pringle 1984a: fig 6.31. Context 118.18: Phase D.

26. Fig. 7.2. Rim fragment of a bowl (diam. 16cm). A cream slip under a dull looking light green glaze covers the interior, which extends to just below the rim on the exterior. The fabric is dark orange, hard, medium to fine grained with abundant tiny white limestone inclusions. Contexts 302.1, 302.5: Phase C.

27. Fig. 7.2. Rim fragment of a bowl with green-yellow (apple green) glaze extending on to the outside over a cream slip. The fabric is orange, coarse grained with white inclusions. Cf. Smith 1973: pl. 58.51. Context 121.1: Phase E.

28. Fig. 7.2. Rim fragment of a bowl (diam. 19cm). A bright shiny mottled green glaze on the inside extending to the outside of the rim over a white slip. The fabric is light brown with a medium to coarse grained fabric with white limestone inclusions and darker grains. Cf. Pringle 1985: fig 3.14. Context 117.1: Phase D.

29. Fig. 7.2. Rim fragment of a plate or bowl (diam. 24cm) with a cream slip under a thick dark green glaze on the inside which extends over to the outside of the rim. The fabric is grey/dark brown, burnt, coarse grained with abundant limestone inclusions and infrequent quartz. Contexts 302.7, 302.8: Phase C.

30. Fig. 7.2. Rim fragment of a bowl, with a cream slip over which a green glaze extends over the outside of the rim. The fabric is orange, medium to fine grained with limestone inclusions. Contexts 302.5, 302.12: Phase C.

31. Fig. 7.2. Rim fragment of a bowl, with a green glaze on the inner which partially appears on the outside over a cream slip. The fabric is orange-brown, hard, coarse grained with abundant quartz and occasional limestone inclusions. Context 502.8: Phase D.

32. Fig. 7.2. Rim fragment with dark green shiny mottled glaze covering both sides. The fabric is grey and fine grained. Context 105.16: Phase D.

33. Fig. 7.2. Rim fragment of a bowl (diam. 20cm). A bright shiny mottled thick green glaze on the inside over a cream slip, which extends over the outside just below the rim. The fabric is light brown, medium to coarse grained with abundant limestone inclusions. Context 503.1: Phase E.

34. Fig. 7.2. Foot-ring base fragment of a bowl. A cream slip under a metallic looking green glaze on the interior. The fabric is dark brown, hard and medium grained with white limestone inclusions. Cf. Pringle 1984a: fig 7.34. Context 301.3: Phase D.

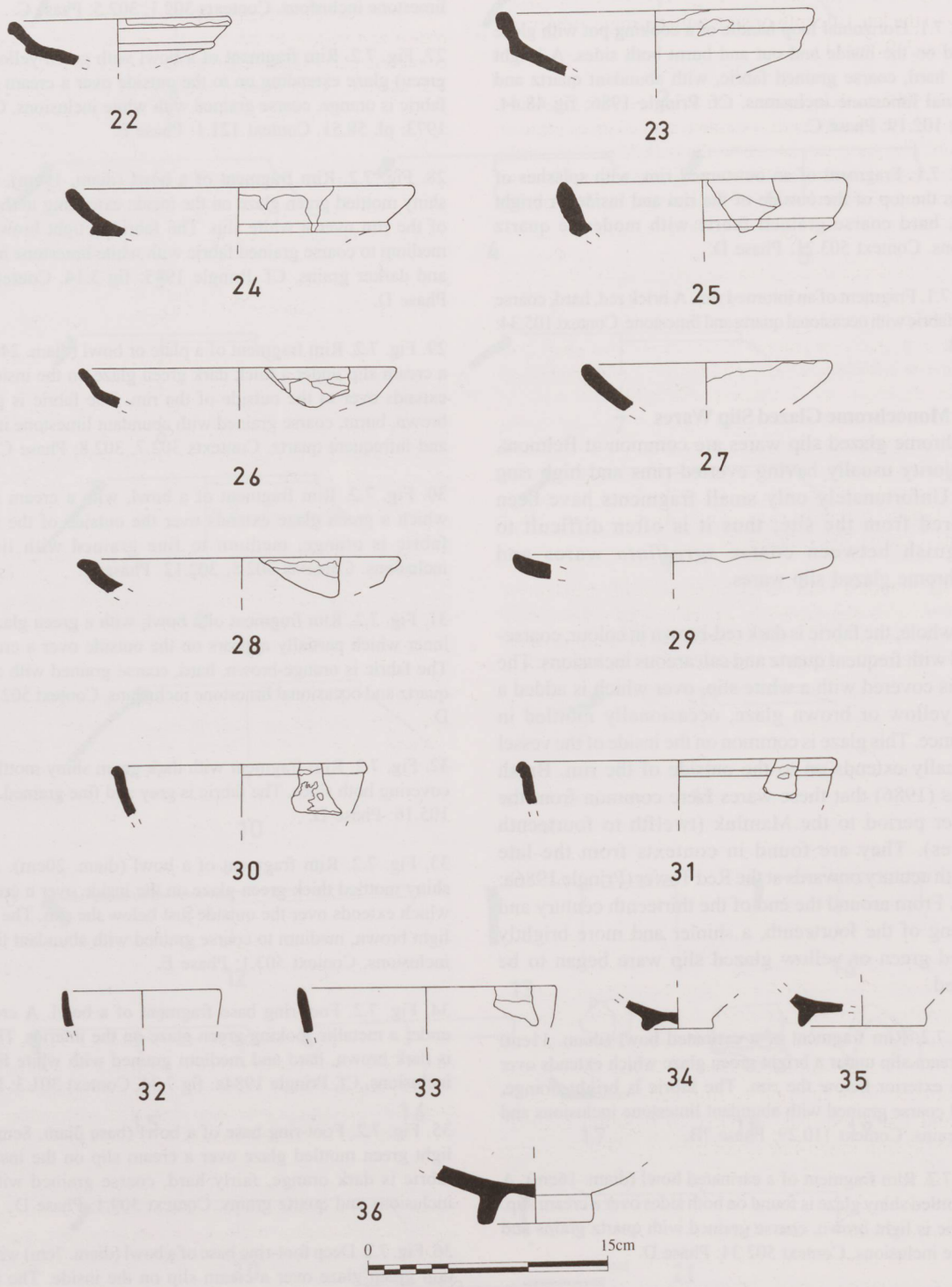
35. Fig. 7.2. Foot-ring base of a bowl (base diam. 8cm) with a light green mottled glaze over a cream slip on the inside. The fabric is dark orange, fairly hard, coarse grained with black inclusions and quartz grains. Context 309.1: Phase D.

36. Fig. 7.2. Deep foot-ring base of a bowl (diam. 7cm) with a dark dull green glaze over a cream slip on the inside. The fabric is orange, medium to coarse grained with tiny limestone inclusions and quartz grains. Context 109.15: Phase D.

3 Glazed Relief-Moulded Slip Ware

No moulded decorated fragments were found on the site, only the rims from such vessels. This type is characterized by its thick relief-moulded walls and white soft coarse-grained fabric. The decoration is formed by pressing the clay into a mould, and later adding a glaze over a white slip.

Figure 7.2. Belmont (Suba): monochrome glazed slip ware (nos. 22–36). Scale 1:4.



Tushingham (1985) assigns an early Ayyubid period date to this ware in Jerusalem; and Bagatti (1984) gives vessels from contexts at Nazareth a date in the Mamluk period. Pringle considers the date to range from the thirteenth century to the late fifteenth or sixteenth (Pringle 1984b: 38, fig. 3, nos. 7, 9 and 11).

37. Fig. 7.3. In-turned undecorated rim fragment of a bowl (diam. 16cm), with a white slip under a variable mottled green glaze on the inside. The glaze extends on to the outside just below the rim and covers the whole of the inside of the vessel. A white, coarse grained fabric, relatively soft. Cf. Bagatti 1984, fig. 68, no. 10. Contexts 116.7, 116.12: Phase C.

38. Fig. 7.3. In-turned undecorated rim fragment of a bowl (diam. 24cm) with a thick mottled olive green/brown glaze extending over the inside of the vessel and on to the outside of the pot just below the rim. A coarse grained fabric, cream/brown and quite hard with dark inclusions. Cf. Bagatti 1984: fig. 68.7; Tushingham 1985: figs. 39.12 and 44.13. Context 106.20: Phase B.

39. Fig. 7.3. Undecorated rim fragment of a bowl (diam. 18.5cm) with a thick mottled green-brown glaze extending on to the inside of the vessel and over the outside just below the rim. A coarse grained fabric, cream/brown, relatively hard with black inclusions. Context 504.9: Phase D.

40. Fig. 7.3. In-turned undecorated rim fragment of a bowl (diam. 26cm) with a white slip covered by a thick mottled yellow/brown glaze which extends on to both sides. A coarse grained fabric, pink, hard with white and dark inclusions. Context 109.6: Phase D.

4 Glazed Slip-Painted Wares

A large quantity of glazed slip-painted ware was found on site, glazed either yellow-brown or green-brown. On the whole, the fabric is medium to coarse grained with abundant quartz, smaller calcareous inclusions and occasional larger calcareous grains. Most of this pottery was probably produced locally, though similar types are also common from the eleventh to fourteenth centuries in Syria, the Byzantine Empire and Transcaucasia (Frierman 1975). Pringle suggests a typological development (as yet still hypothetical) from the twelfth to the thirteenth centuries (1985: 179–83; cf. 1984a: 103; 1986a: 149–50). The earliest type, produced from the mid twelfth century onwards in Syrian and Palestine, has a coarse to medium-grained brown fabric with broad-line decoration (0.6–1.4cm wide) and a clear or yellow glaze (rarely green); Bagatti gives these vessels at al-Qubaiba a date from the mid twelfth century onwards (1947: 128–30, fig. 31, pl. 26). The second type has a fine hard fabric with finer brush stokes (0.2–0.6cm wide), looped, spiral, dash or dot decoration and a clear yellow or more commonly green glaze.

4.1 Yellow-Brown Glazed

41. Fig. 7.3. Rim and foot-ring base (five joining sherds) of a carinated bowl (rim diam. 24.5cm, height 7.2cm) with splashes of colourless glaze on the outside. On the inside there is brown and yellow decoration which appears to have six sides and two interlacing triangles forming a six pointed star (line width 1–1.2cm). The fabric is dark red/brown, medium grained with large visible quartz grains and tiny limestone inclusions. Cf. Baramki 1944: fig 11.7; Bagatti 1947: fig 31.14; de Vaux and Steve 1950: fig 32.9; Pringle 1985: fig 5.29; Tushingham 1985: figs. 37.5, 40.2 & 40.4 (dated to the Ayyubid period). Context 303.1: Phase E.

42. Fig. 7.3. Rim fragment of a carinated bowl (diam. 22cm), with brown and yellow broad line decoration on the inside and a colourless glaze splashed on to the outside. Line width 1.0cm. The fabric is bright orange, fine grained with occasional quartz inclusions. Cf. Baramki 1944: fig 11.8–9. Context 302.6: Phase C/D.

43. Fig. 7.3. Rim fragment of a bowl (diam. 22cm) with brown and yellow broad line decoration (line width >1.2cm) on the inside and a clear glaze on the outside near the rim. The fabric is brick red, medium to coarse grained with large quartz grains and smaller white inclusions. Cf. Baramki 1944, fig 11.8–9; Bagatti 1947, fig 31.12. Context 301.3: Phase C.

44. Fig. 7.3. Rim fragment of a carinated bowl (diam. 22cm) with yellow and brown broad line decoration (width 1.2cm) on the inside and a clear glaze in patches on the outside. The fabric is bright orange, medium grained with large quartz grains and occasional large limestone inclusions (usually small and in the groundmass). Cf. Bagatti 1947: fig 31.13; de Vaux and Steve 1950: fig. 32, nos.14 & 17. Context 113.24: Phase C.

45. Fig. 7.3. Rim fragment of a bowl (diam. 24cm) with brown and yellow decoration on the inside and a clear glaze with thin glaze in patches on the outside. The fabric is medium grained with small white inclusions and abundant large quartz grains. Context 103.10: Phase B.

46. Fig. 7.3. Rim fragment of a bowl (diam. 22cm) with brown and yellow decoration on the inside and a clear glaze which extends vaguely and in patches to the outside. The fabric is medium to coarse grianed with abundant quartz, large limestone and occasional tiny white inclusions in the groundmass. Cf. Bagatti 1947: fig 31.14. Context 111.22: Phase C.

47. Fig. 7.3. Rim fragment of a bowl (diam. 22cm) with yellow and brown broad line decoration on the inside, and a clear glaze extends on to the outside of the pot. Line width 1.2cm. The fabric is dark brown, coarse grained with occassional quartz inclusions. Cf. Tushingham 1985: fig 35.31 (dated to the Ayyubid period). Context 109.32: Phase C.

48. Fig. 7.3. Rim fragment of a bowl (diam. 26cm) with brown and yellow line decoration on the inside (line width 1.0cm) and a clear glaze extending to the outside of the vessel. The fabric is bright red, medium grained with abundant quartz inclusions and tiny limestone inclusions. Context 117.1: Phase D.

49. Fig. 7.4. Rim and body fragment (joining) of a flanged bowl (diam. 30cm) with brown and yellow line decoration on the inside, and a thick clear glaze extending in patches to the outside. Line width 0.5–0.6cm. The fabric is dark orange, medium grained with dark inclusions and occasional quartz. Cf. Saller 1957, fig 55.21 (for the shape); Tushingham 1985: fig 40.15 (dated to the Ayyubid period). Context 302.12: Phase C.

50. Fig. 7.4. Rim fragment and non-joining body sherd of a flanged bowl (diam. 27cm) with brown and green line decoration on the inside and glaze on the outside in patches. Line width 1.0cm. The fabric is brick red, coarse grained with occasional white inclusions. Cf. Saller 1957, fig 55.21. Contexts 113.10, 127.1: Phase C.

Figure 7.3. Belmont (Suba): glazed relief-moulded slip ware (nos. 37–40), glazed slip-painted wares (nos. 41–8). Scale 1:4.

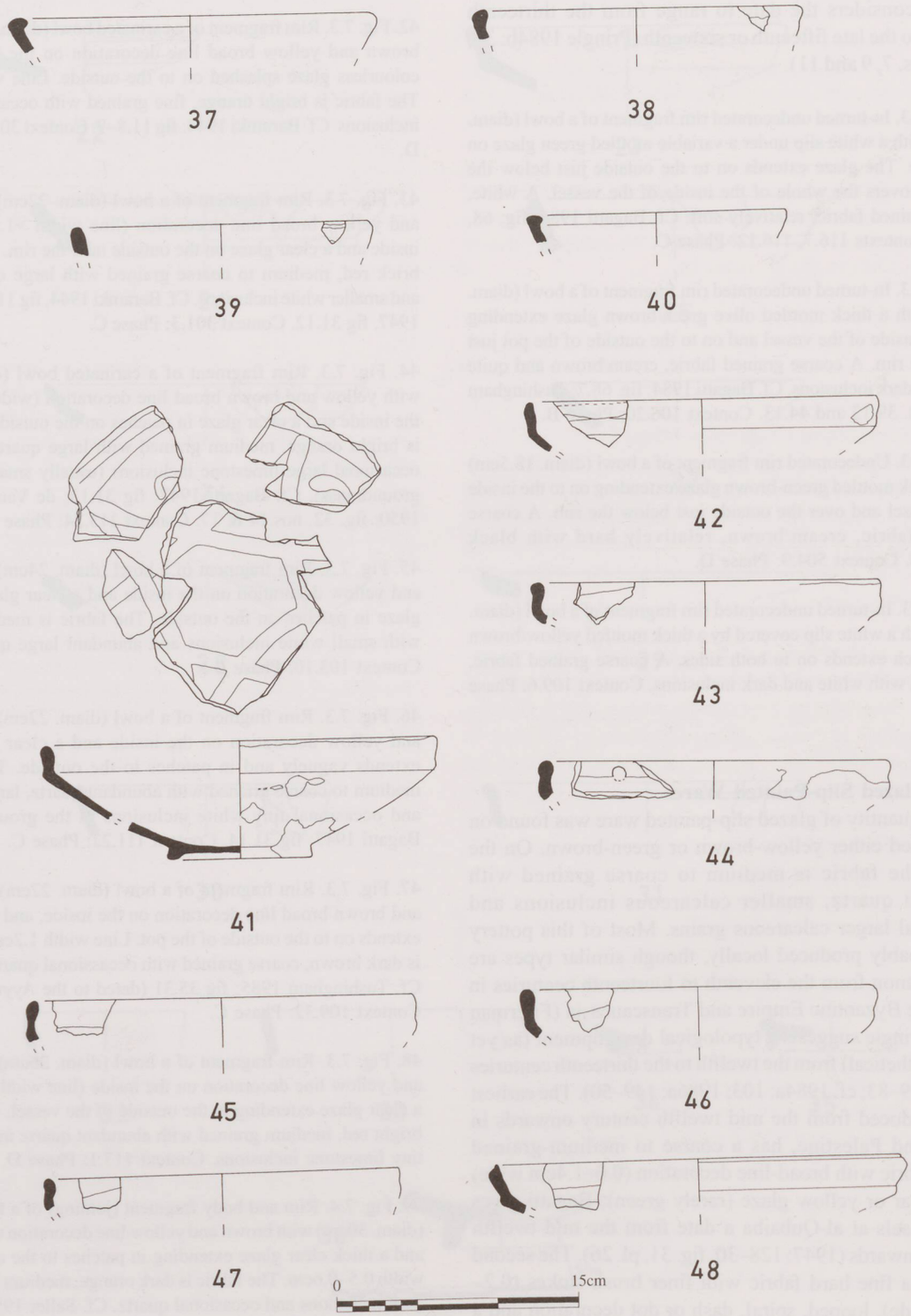
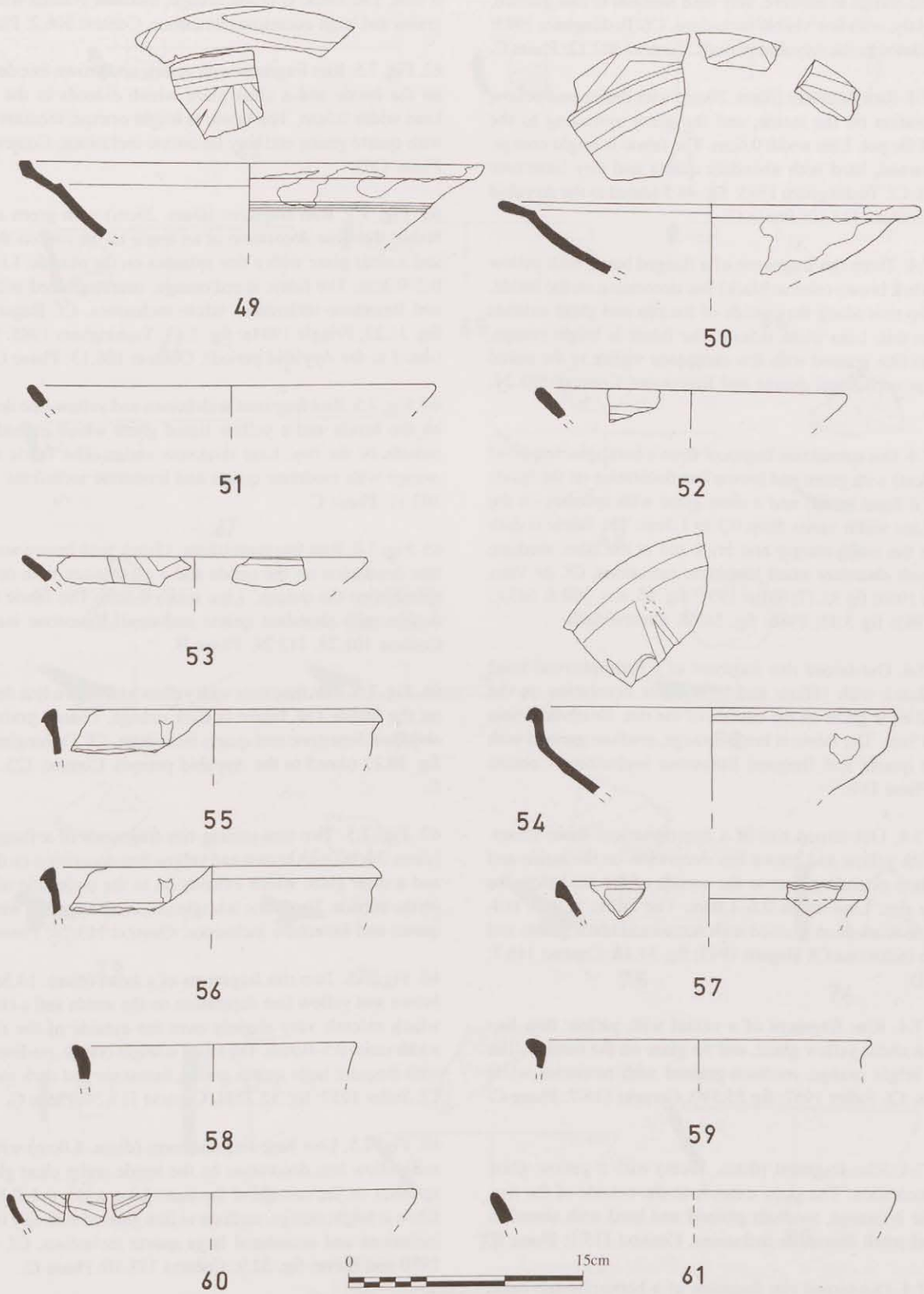


Figure 7.4. Belmont (Suba): glazed slip-painted wares (nos. 49–61). Scale 1:4.



51. Fig. 7.4. Rim fragment (diam. 26cm) with a thick clear glaze with splashes on the outside. The fabric is grey on the outside margin and orange in the core, very hard medium to fine grained, burnt slightly, with few visible inclusions. Cf. Tushingham 1985: fig. 44.5 (dated to the Ayyubid period). Context 302.12: Phase C.

52. Fig. 7.4. Rim fragment (diam. 20cm) with brown and yellow line decoration on the inside, and the glaze extending to the outside of the pot. Line width 0.6cm. The fabric is bright orange, coarse grained, hard with abundant quartz and tiny limestone inclusions. Cf. Tushingham 1985: fig. 44.5 (dated to the Ayyubid period). Context 113.12: Phase C.

53. Fig. 7.4. Three rim fragments of a flanged bowl, with yellow and very dark brown (almost black) line decoration on the inside. Yellow slip runs along the outside of the rim and glaze extends just below this. Line width 0.5cm. The fabric is bright orange, medium to fine grained with few inclusions visible to the naked eye except occasional quartz and limestone. Context 503.24: Phase D.

54. Fig. 7.4. Out-turned rim fragment from a hemispherical bowl (diam. 24cm) with green and brown line decoration on the inside (possibly a floral motif) and a clear glaze with splashes on the outside. Line width varies from 0.3 to 1.3cm. The fabric is dark brown on the outer margin and brick red at the core, medium grained with abundant small limestone inclusions. Cf. de Vaux and Steve 1950: fig 32.17; Saller 1957: fig. 55, nos. 590 & 5633;. Pringle 1985: fig 5.33; 1986: fig. 50.68. Unstratified.

55. Fig. 7.4. Out-turned rim fragment of a hemispherical bowl (diam. 22cm), with yellow and brown line decoration on the inside and clear glaze on the outside of the rim. Brush thickness varies *c*.0.7cm. The fabric is bright orange, medium grained with moderate quartz and frequent limestone inclusions. Context 106.10: Phase D/E.

56. Fig. 7.4. Out-turned rim of a hemispherical basin (diam. 22cm), with yellow and brown line decoration on the inside and a clear glaze extending over to the outside of the pot below the lip of the rim. Line width 0.6–1.0cm. The fabric is dark red-brown, fine to medium grained with occasional black grains and limestone inclusions.Cf. Bagatti 1947: fig. 31.18. Context 116.7: Phase C/D.

57. Fig. 7.4. Rim fragment of a vessel with yellow thin line decoration under yellow glaze, and no glaze on the outside. The fabric is bright orange, medium-grained with moderate white inclusions. Cf. Saller 1957: fig 55.590. Context 116.7: Phase C/D.

58. Fig. 7.4. Rim fragment (diam. 18cm) with a yellow glaze and no decoration. The glaze extends to the outside of the rim. The fabric is orange, medium grained and hard with abundant quartz and small limestone inclusions. Context 115.1: Phase E.

59. Fig. 7.4. Out-turned rim fragment of a hemispherical basin (diam. 22cm) with yellow and brown indistinct line decoration on the inside, a glaze covers the whole vessel. The fabric is bright orange, fine to medium grained, very hard with occasional quartz inclusions. Context 112.7: Phase D.

60. Fig. 7.4. Three non-joining rim fragments of a flanged bowl, with yellow and brown line decoration on the inside and a glaze which extends to the top of the rim on the outside. Line width 0.5cm. The fabric is very dark brown, medium grained with abundant quartz grains and occasional limestone inclusions. Context 113.24: Phase C.

61. Fig. 7.4. Rim fragment with yellow and brown indistinct line decoration, the glaze extends to the outside of the rim. Line width 0.7cm. The fabric is bright orange, medium grained with quartz grains and large occasional limestone. Context 306.2: Phase D.

62. Fig. 7.5. Rim fragment with yellow and brown line decoration on the inside and a clear glaze which extends to the outside. Line width 0.6cm. The fabric is bright orange, medium grained with quartz grains and tiny limestone inclusions. Context 302.6: Phase C/D.

63. Fig. 7.5. Rim fragment (diam. 26cm) with green and dark brown thin line decoration at an angle to the rim on the inside and a clear glaze with a few splashes on the outside. Line width 0.2–0.3cm. The fabric is red/orange, coarse grained with quartz and limestone inclusions. white inclusions. Cf. Bagatti 1947; fig. 31.23; Pringle 1984a: fig. 7.43; Tushingham 1985: fig. 44.7 (dated to the Ayyubid period). Context 106.13: Phase C.

64. Fig. 7.5. Rim fragment with brown and yellow line decoration on the inside and a yellow tinted glaze which extends to the outside of the rim. Line thickness varies. The fabric is bright orange with moderate quartz and limestone inclusions. Context 302.11: Phase C.

65. Fig. 7.5. Rim fragment (diam. 15cm), with brown and yellow line decoration on the inside and a clear glaze with occasional splashes on the outside. Line width 0.5cm. The fabric is bright orange with abundant quartz and small limestone inclusions. Context 101.24, 113.24: Phase B.

66. Fig. 7.5. Rim fragment with yellow and brown line decoration on the inside.The fabric is dark orange, coarse grained with abundant limestone and quartz inclusions. Cf. Tushingham 1985: fig. 38.27 (dated to the Ayyubid period). Context 125.1: Phase E.

67. Fig. 7.5. Two non-joining rim fragments of a flanged bowl (diam. 24cm) with brown and yellow line decoration on the inside and a clear glaze which extends on to the underside of the rim on the outside. The fabric is bright red, coarse grained with visible quartz and limestone inclusions. Context 113.24: Phase C.

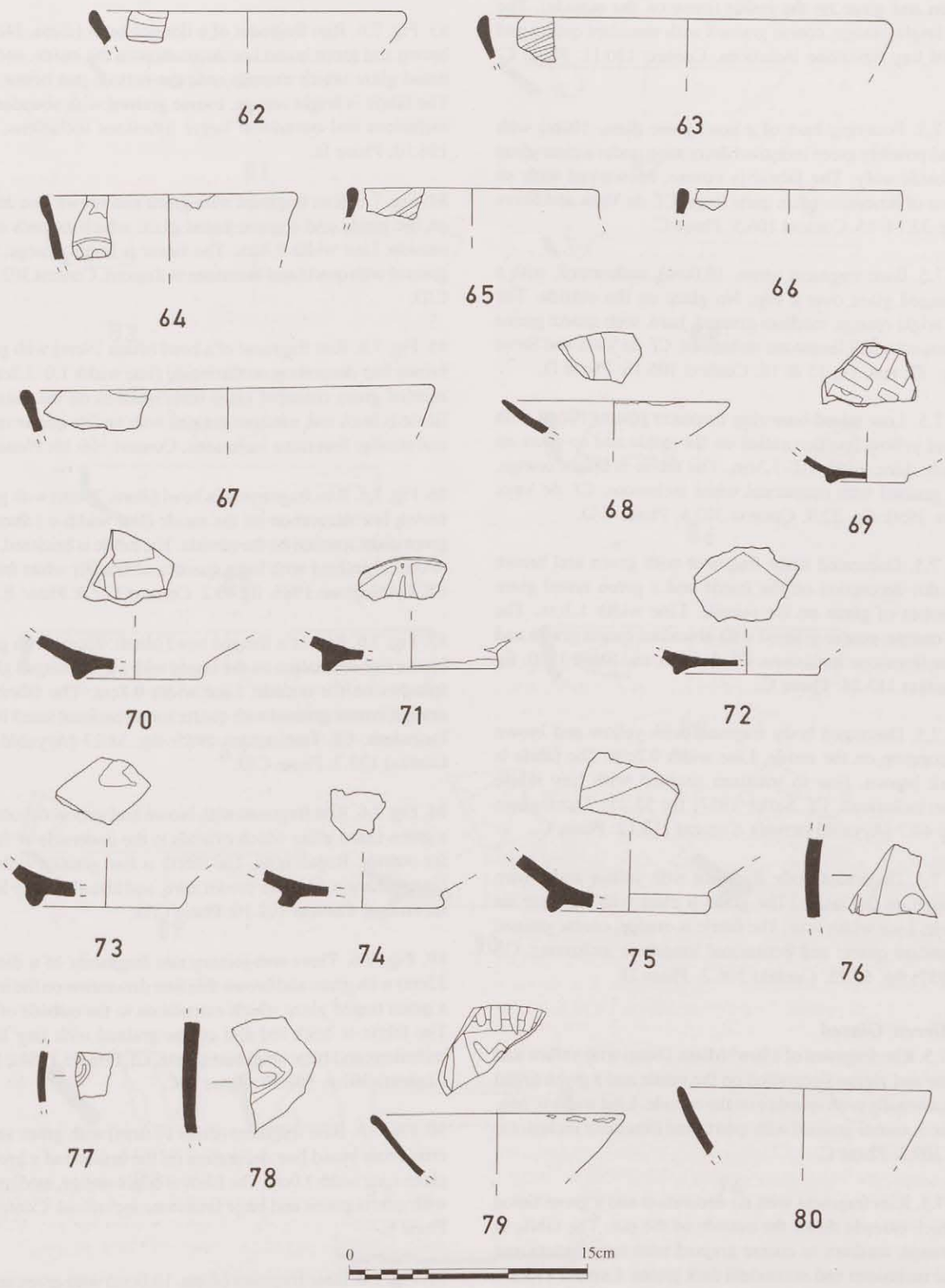
68. Fig. 7.5. Two rim fragments of a bowl (diam. 14.5cm) with brown and yellow line decoration on the inside and a clear glaze which extends very slightly over the outside of the rim. Line width varies 0.5–0.9cm. The fabric is bright orange, medium grained with frequent large quartz grains, limestone and dark inclusions. Cf. Saller 1957: fig. 55.7324. Context 113.24: Phase C.

69. Fig. 7.5. Low base ring fragment (diam. 8.0cm) with brown and yellow line decoration on the inside and a clear glaze with splashes on the outside of the base. Line width 0.4–0.8cm. The fabric is bright orange, medium to fine grained with tiny limestone inclusions and occasional large quartz inclusions. Cf. de Vaux 1950 and Steve: fig. 32.9. Context 113.10: Phase C.

70. Fig. 7.5. Base fragment (diam. 5cm) with brown and yellow criss-cross line and dot decoration on the inside, and splashes of glaze on the outside. Line width 0.6–0.7cm. The fabric is dark brown, medium to coarse grained with occasional quartz grains and tiny limestone inclusions. Cf. Pringle 1985: fig. 6.36. Context 113.24: Phase C.

71. Fig. 7.5. Base fragment (diam. 11cm) with yellow and brown line decoration on the inside and glaze on the outside of the base but not underneath. Line width 0.4–0.7cm. The fabric is bright

Figure 7.5. Belmont (Suba): glazed slip-painted wares (nos. 62–80). Scale 1:4.



orange, coarse grained with quartz, limestone and occasional dark inclusions. Context 113.12: Phase C.

72. Fig. 7.5. Base fragment (diam. 9cm) with green and brown decoration and glaze on the inside (none on the outside). The fabric is bright orange, coarse grained with abundant quartz and occasional tiny limestone inclusions. Context 120.11: Phase C/D.

73. Fig. 7.5. Foot-ring base of a bowl (base diam. 10cm) with brown and possibly green indistinct decoration under a clear glaze on the inside only. The fabric is coarse, brown/red with an abundance of limestone often quite large. Cf. de Vaux and Steve 1950: fig. 32.14–15. Context 106.5: Phase C.

74. Fig. 7.5. Base fragment (diam. 10.0cm), undeorated, with a yellow tinged glaze over a slip. No glaze on the outside. The fabric is bright orange, medium grained, hard, with quartz grains and occasional small limestone inclusions. Cf. de Vaux and Steve 1950: fig. 32, nos. 14, 15 & 18. Context 105.16: Phase D.

75. Fig. 7.5. Low raised base ring fragment (diam. 10cm) with brown and yellow line decoration on the inside and no glaze on the outside. Line width 1.1–1.3cm. The fabric is bright orange, medium grained with occasional white inclusions. Cf. de Vaux and Steve 1950: fig. 32.9. Context 302.6: Phase C/D.

76. Fig. 7.5. Decorated body fragment with green and brown line and dot decoration on the inside and a green tinted glaze with splashes of glaze on the outside. Line width 1.3cm. The fabric is orange, coarse grained with abundant quartz grains and tiny white limestone inclusions. Cf. de Vaux and Steve 1950: fig 32.8. Context 113.24: Phase C.

77. Fig. 7.5. Decorated body fragment with yellow and brown swirl decoration on the inside. Line width 0.2cm. The fabric is very dark brown, fine to medium grained with tiny white limestone inclusions. Cf. Saller 1957: fig 55.25; Tushingham 1985: fig 44.7 (Ayyubid period). Context 113.12: Phase C.

78. Fig. 7.5. Decorated body fragment with yellow and brown swirl design on the inside. The glaze is clear with no glaze on the outside. Line width 6cm. The fabric is orange, coarse grained with abundant quartz and occasional limestone inclusions. Cf. Saller 1957: fig. 55.25. Context 306.2: Phase D.

4.2 Green Glazed

79. Fig. 7.5. Rim fragment of a bowl (diam.16cm) with yellow and brown line and zigzag decoration on the inside and a green tinted glaze occasionally with splashes on the outside. Line width 0.7cm. The fabric is coarse grained with quartz and limestone inclusions. Context 309.3: Phase C.

80. Fig. 7.5. Rim fragment with no decoration and a green tinted glaze which extends down the outside of the pot. The fabric is bright orange, medium to coarse grained with large quartz and limestone inclusions and occasional dark grains. Context 113.24: Phase C.

81. Fig. 7.6. Rim fragment of a bowl (diam. 20cm) with brown and green line decoration on the inside, no glaze on the outside, and green tinted glaze on the inner.The fabric is bright orange, medium to coarse grained with large quartz and smaller limestone inclusions. Context 106.10: Phase D.

82. Fig. 7.6. Two non-joining rim fragments of a flanged dish (diam. 18cm) with brown and yellow broad line decoration on the inside, a green tinted glaze extends over to the outside just below the rim over a cream slip. Line width 0.6–0.9cm. The fabric is bright orange, coarse grained with quartz and limestone inclusions. Contexts 109.41, 113.24: Phase B.

83. Fig. 7.6. Rim fragment of a flanged bowl (diam. 24cm) with brown and green broad line decoration on the inside, and a green tinted glaze which extends onto the outside just below the rim. The fabric is bright orange, coarse grained with abundant quartz inclusions and occasional larger limestone inclusions. Context 106.10: Phase D.

84. Fig. 7.6. Rim fragment with green and brown line decoration on the inside and a green tinted glaze which extends on to the outside. Line width 0.4cm. The fabric is bright orange, medium grained with quartz and limestone inclusions. Context 302.6: Phase C/D.

85. Fig. 7.6. Rim fragment of a bowl (diam.19cm) with green and brown line decoration on the inside (line width 1.0–1.2cm) and a mottled green coloured glaze with splashes on the outside. The fabric is brick red, medium grained with visible quartz inclusions and smaller limestone inclusions. Context 106.10: Phase D.

86. Fig. 7.6. Rim fragment of a bowl (diam. 20cm) with green and brown line decoration on the inside (line width *c.*1.0cm) with a green glaze spashed on the outside. The fabric is brick red, medium to coarse grained with large quartz and smaller white inclusions. Cf. Tushingham 1985: fig 40.2. Context 122.4: Phase E.

87. Fig. 7.6. Rim of a flanged bowl (diam. 26cm) with green and brown line decoration on the inside with a green tinged glaze with splashes on the outside. Line width 0.8cm. The fabric is dark orange, coarse grained with quartz and occasional small limestone inclusions. Cf. Tushingham 1985: fig. 38.27 (Ayyubid period). Context 122.7: Phase C/D.

88. Fig. 7.6. Rim fragment with brown and yellow decoration and a green tinted glaze which extends to the underside of the rim on the outside. Repair hole. The fabric is fine grained with a bright orange margin and dark brown core, and abundant tiny limestone inclusions. Context 102.10: Phase C/D.

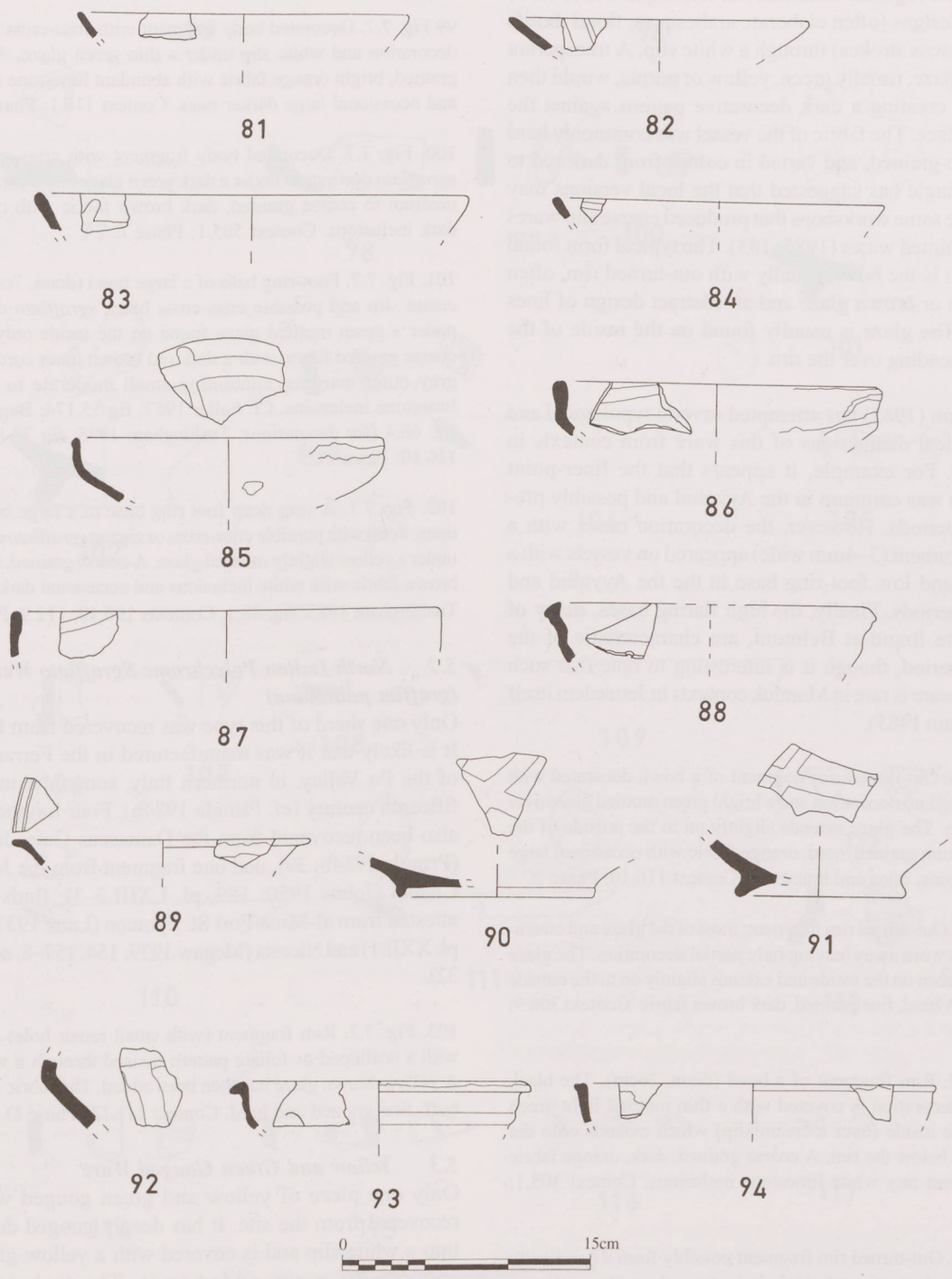
89. Fig. 7.6. Three non-joining rim fragments of a dish (diam. 22cm) with green and brown thin line decoration on the inside and a green tinged glaze which extends on to the outside of the rim. The fabric is brick red and coarse grained with tiny limestone inclusions and large abundant quartz. Cf. Pringle 1984a: fig. 7.46. Contexts 302.6, 503.29: Phase B/C.

90. Fig. 7.6. Base fragment (diam.10.0cm) with green and brown criss-cross broad line decoration on the inside and a green tinted glaze. Line width 1.0cm. The fabric is bright orange, medium grained with quartz grains and large limestone inclusions. Context 306.1: Phase E.

91. Fig. 7.6. Base fragment (diam. 10.0cm) with green and brown criss-cross line decoration on the inside, the glaze is tinted green with splashes on the outside. Line width 0.8–0.9cm. The fabric is brick red, fine to medium grained with abundant tiny limestone inclusions. Context 106.10: Phase D.

92. Fig. 7.6. Decorated fragment with deep green and black decoration and a dark green glaze which extends on to the outside. Line width 1.0cm.The fabric is orange with a brown core, medium grained, very hard with abundant limestone inclusions. Context 122.9: Phase C/D.

Figure 7.6. Belmont (Suba): glazed slip-painted wares (nos. 81–92), *sgraffiato* ware (nos. 93–4). Scale 1:4.



5 Sgraffiato (graffita) Wares

5.1 Coarse Sgraffiato Wares

The *sgraffiato* ware recovered from this site appears to be of local manufacture, produced in Palestine from the mid twelfth century to the mid fourteenth. Such vessels had considerable regional variation.The technique was to carve or incise designs (often elaborate arabesques, floral motifs and criss-cross strokes) through a white slip. A transparent coloured glaze, usually green, yellow or purple, would then be added, creating a dark decorative pattern against the lighter surface. The fabric of the vessel was commonly hard and coarse-grained, and varied in colour from dark red to brown. Pringle has suggested that the local versions may be from the same workshops that produced coarse slip wares and slip-painted wares (1985: 183). The typical form found at Belmont is the bowl, usually with out-turned rim, often with green or brown glaze and an abstract design of lines crossing. The glaze is usually found on the inside of the vessel, extending over the rim.

Tushingham (1985) has attempted several typological and chronological distinctions of this ware from contexts in Jerusalem. For example, it appears that the finer-point decoration was common in the Ayyubid and possibly pre-Ayyubid periods. However, the decoration made with a broad instrument (3–4mm wide) appeared on vessels with a plain rim and low foot-ring base in the the Ayyubid and Mamluk periods. Finally, the high flaring bases, many of which were found at Belmont, are characteristic of the Mamluk period, though it is interesting to note that such *sgraffiato* ware is rare in Mamluk contexts in Jerusalem itself (Tushingham 1985).

93. Fig. 7.6. Out-turned rim fragment of a bowl, decorated with swirled *sgraffiato* decoration and a bright green mottled glaze over a cream slip. The glaze extends slightly on to the outside of the rim. A medium grained, hard, orange fabric with occasional large dark inclusions, mica and limestone. Context 116.10: Phase ?C.

94. Fig. 7.6. Out-turned rim fragment; most of the glaze and cream-white slip is worn away leaving only partial decoration. The glaze is mottled green on the inside and extends slightly on to the outside of the rim. A hard, fine grained, dark brown fabric. Context 306.9: Phase D.

95. Fig. 7.7. Rim fragment of a bowl (diam. 26cm). The black *sgraffiato* decoration is covered with a thin mottled light green glaze on the inside (over a cream slip) which extends onto the outside just below the rim. A coarse grained, dark, orange fabric with abundant tiny white limestone inclusions. Context 305.1: Phase E.

96. Fig. 7.7. Out-turned rim fragment possibly from a bowl, with no *sgraffiato* decoration. A thick dark green glaze covers the top of the outside of the rim and the interior the pot (over a cream slip). A coarse grained, fairly hard, orange fabric with dark inclusions and possible moderate quartz inclusions. Context 108.9: Phase D/E.

97. Fig. 7.7. Partially decorated base fragment of a bowl (base diam. 10cm) with wavy line decoration and two parallel lines encircling the base, under a yellow glaze and a white slip. A fine grained, hard, brown orange fabric with occasional dark inclusions. Context 108.9: Phase D/E.

98. Fig. 7.7. Body fragment with lug (may be part of no. 93; no decoration appears on the sherd but the fabric, slip and glaze are all the same). The glaze has run down the outside of the pot and collected in the grooves of the lug. A medium grained, hard, orange micaceous fabric with occasional dark inclusions. Context 110.14: Phase C.

99 Fig. 7.7. Decorated body fragment with criss-cross *sgraffiato* decoration and white slip under a thin green glaze. A medium grained, bright orange fabric with abundant limestone inclusions and occasional large darker ones. Context 116.1: Phase E.

100. Fig. 7.7. Decorated body fragment with criss-cross black *sgraffiato* decoration under a dark green glaze and a cream slip. A medium to coarse grained, dark brown fabric with occasional dark inclusions. Context 505.1: Phase E.

101. Fig. 7.7. Foot-ring base of a large bowl (diam. 7cm), with a cream slip and possible criss-cross black *sgraffiato* decoration under a green mottled glaze found on the inside only. A hard, coarse grained fabric with a dark red brown inner core and dark grey outer margins, containing small moderate to abundant limestone inclusions. Cf. Saller 1957: fig 55.174; Bagatti 1984: fig. 66.4 (for decoration); Tushingham 1985: fig 38.1. Context 116.10: Phase ?C.

102. Fig. 7.7. A very deep foot ring base of a large bowl (base diam. 8cm) with possible criss-cross or zigzag *sgraffiato* decoration under a yellow slightly mottled glaze. A coarse grained, hard, dark brown fabric with white inclusions and occasional dark ones. Cf. Tushingham 1985: fig. 38.1. Contexts 106.10, 112.9: Phase D.

5.2 North Italian Polychrome Sgraffiato Ware (graffita policroma)

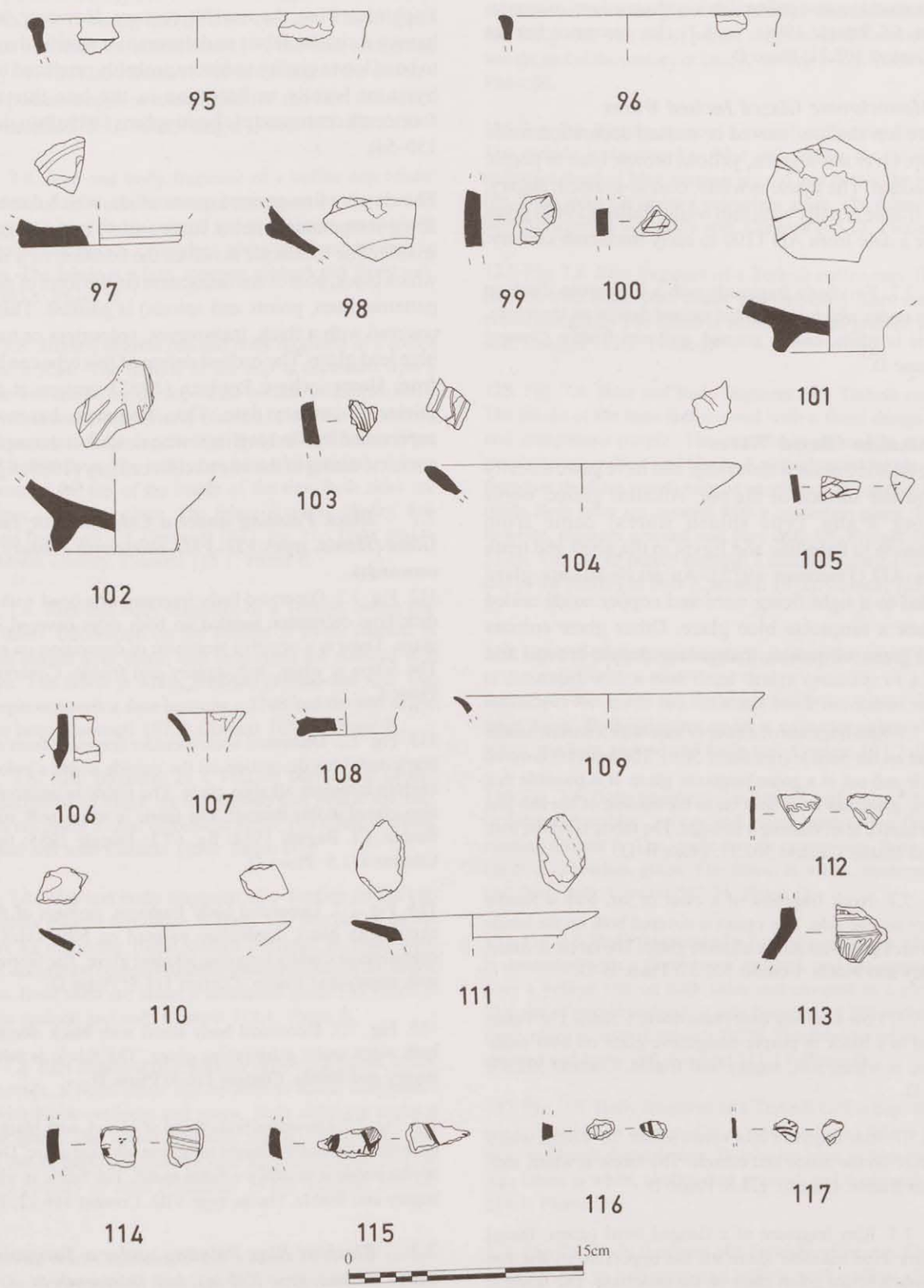
Only one sherd of this type was recovered from Belmont. It is likely that it was manufactured in the Ferrara region of the Po Valley, in northern Italy, sometime in the late fifteenth century (cf. Pringle 1984b). Four fragments have also been recovered from the Damascus Gate, Jerusalem (Pringle 1984b: 39), and one fragment from the Jerusalem Citadel (Johns 1950: 189, pl. LXIII.2–3); finds are also attested from al-Mina/Port St. Symeon (Lane 1937: 60–61, pl. XXII.1) and Nicosia (Megaw 1939: 154, 157–8, nos. B.30–32).

103. Fig. 7.7. Rim fragment (with small repair hole) decorated with a scalloped or foliate pattern incised through a white slip. A yellow-brown glaze has then been added. The fabric is orange-buff, fine grained and hard. Context 111.13: Phase D.

5.3 Yellow and Green Gouged Ware

Only one piece of yellow and green gouged ware was recovered from the site. It has deeply gouged decoration into a white slip and is covered with a yellow glaze with splashes of green added to it. The technique is a development from the local *sgraffiato* industry and appears around the late thirteenth to fourteenth century, or possibly later. In Palestine, the ware has been be found in layers of Crusader abandonment at Belvoir Castle and in thirteenth-century contexts at Capernaum and Nazareth (Pringle 1984a: 106–7), and at Jezreel (Grey 1994: 59).

Figure 7.7. Belmont (Suba): *sgraffiato* ware (nos. 95–105), alkaline glazed wares (nos. 106–11), under-glaze painted wares (nos. 112–17). Scale 1:4.



104. Fig. 7.7. Decorated rim fragment of a flanged bowl. A white slip has been deeply incised with a simple pattern over which has been added a yellow glaze with splashes of green added to it. An orange, medium to coarse grained fabric with occasional calcareous inclusions. Cf. Pringle 1984a: fig 8.71 (for decoration but not shape). Context 502.21: Phase D.

5.4 Monochrome Glazed Incised Wares

This ware has shallow, carved or incised decoration made into a slip. Over this a green, yellow, brown, blue or purple glaze is added. The fabric is white, coarse-grained, sugary, soft and friable usually with thin walls. Philon (1980) gives this ware a date from AD 1100 to early thirteenth century.

105. Fig. 7.7. Two body fragments with a dark green glaze on both sides under which is a curved incised design on the inside. The fabric is white, coarse grained, soft and friable. Context 112.9: Phase D.

6 Alkaline Glazed Wares

These vessels are plain with no slip, and have glaze directly applied to the surface of the pot. Alkaline glazed wares (including T'ang Type splash wares) came from Mesopotamia to Palestine and Egypt in the ninth and tenth centuries AD (Frierman 1975). An alkali-silicate glaze was added to a light-firing ware and copper oxide added to produce a turquoise blue glaze. Other glaze colours included green turquoise, manganese purple-brown, and clear.

106. Fig. 7.7. Rim fragment of a ewer or vase with a broken handle attachment on the outside (rim diam. 5cm). The vessel is covered both inside and out in a green/turquoise glaze. It is possible that manganese glaze has been spilt on to the outside of the rim just under the handle scar, causing a smudge. The fabric is white, soft, sugary and friable. Context 502.37: Phase B–D.

107. Fig. 7.7. Neck fragment of a ewer or jar, with a handle attachment on one side. The vessel is covered both on the inside and out with a green-turquoise alkaline glaze. The fabric is white, soft, sugary and friable. Context 502.37: Phase B–D.

108. Fig. 7.7. Low foot ring base (base diam. 5.5cm). The vessel is covered in a black or purple manganese glaze on both sides. The fabric is white, soft, sugary and friable. Context 502.37: Phase B–D.

109. Fig. 7.7. Rim fragment of a vessel (diam. 20–22cm) with a yellow glaze on the inside and outside. The fabric is white, soft, sugary and friable. Context 125.8: Phase B.

110. Fig. 7.7. Rim fragment of a flanged bowl (diam. 16cm) with a dark blue alkaline glaze on the upperside of the rim merging into a bright green glaze on the underside. The fabric is white, soft, sugary and friable. Cf. Tushingham 1985: fig 34.34 and 40.8 (dated to the Ayyubid period). Context 106.13; Phase C.

111. Fig. 7.7. Flanged rim fragment of a carinated bowl (diam. 20cm). The sherd has a blue glaze on its upper side, and yellow on the lower — both glazes merge into one another on the lower side producing a green zone between the two. The fabric is white, soft, sugary and friable. Cf. Tushingham 1985: fig 40.16 (Ayyubid period). Contexts 112.5, 122.19: Phase C/D?

7 Under-Glaze Painted Ware

A small number of tiny fragments found on the site are similar to the types produced in Raqqa and Rusafa on the Euphrates from the twelfth century. However, although having a similar fabric and decorative motifs, they appear to be of lower quality and were probably produced in central Syria or locally in Palestine in the late thirteenth to fourteenth centuries (cf. Tushingham 1985; Pringle 1986a: 150–54).

The clay is a fine-grained quartz silica, which due to its low firing temperatures never fuses and so remains gritty and friable. The technique involves the addition of a slip on to which black, blue or red decoration (in the form of geometric patterns, lines, points and spirals) is painted. This is then covered with a thick, transparent, colourless or turquoise-blue lead glaze. The earliest dating of this type can be found from Hama, where Poulsen (1957) assigns it an early thirteenth-century date. This, however, has now been superseded by Tushingham, who describes examples from contexts dating to the late twelfth century (1985: fig 37.14).

7.1 Black Painting under a Colourless or Turquoise Glaze (Hama, types VII–VIII, thirteenth century onwards)

112. Fig. 7.7. Decorated body fragment of a bowl with black or dark blue decoration painted on both sides covered in a blue glaze. There is a negative treatment of decoration on each side. The fabric is white, soft, sugary and friable. Context 106.13: Phase C.

113. Fig. 7.7. Decorated neck/shoulder fragment from a jar with black/dark blue decoration on the outside under a colourless or slightly turquoise alkaline glaze. The inside is undecorated and also glazed in this manner. The fabric is white, soft, sugary and friable. Cf. Bagatti 1984: fig. 67.1; Pringle 1985: fig. 15.87. Context 111.5: Phase D.

114. Fig. 7.7. Decorated body fragment, perhaps of the above sherd with black decoration painted on both sides under a colourless or slightly turquoise alkaline glaze. The fabric is white, soft, sugary and friable. Context 111.5: Phase D.

115. Fig. 7.7. Decorated body sherd with black decoration on both sides under a turquoise glaze. The fabric is white, soft, sugary and friable. Context 116.5: Phase D.

116. Fig. 7.7. Decorated body sherd of a bowl, with black painting on both sides under a bright turquoise alkaline glaze. Decoration on the inside is possibly a floral motif. The fabric is white, soft, sugary and friable. Hama, type VIII. Context 116.12: Phase C.

7.2 Black or Blue Painting under a Turquoise Glaze (Hama, type XII (a), late thirteenth to fourteenth century)

117. Fig. 7.7. Body fragment with blue (possibly black) decoration under a turquoise glaze. Badly eroded. The fabric is white, soft, sugary and friable. Context 502.37: Phase B–D.

8 Turkish Coffee Cups

A small number of fine glazed Turkish coffee cups have been recovered from the site. These are likely to be mid to late eighteenth-century imports from the Armenian pottery

industry at Kütahya, west central Asia Minor. The quality, however, in comparison to the earlier Iznik wares, is greatly reduced particularly by the mid to late eighteenth century, often with poor drawing and inferior colours. The original red colour becomes brownish (no. 119), the blue and green run badly (no 124), and from *c.*1740 to the end of the century Kütahya potters begin to use purple for the first time (no. 120) (Carswell 1972: II, 36–8; Pringle 1986a: 157–8).

118. Fig. 7.8. Rim and body fragment of a coffee cup (diam. 7cm), decorated in black, brown and turquoise on the outside. The pattern has been freely painted and the colours, particularly the turquoise has run. A colourless glaze has been applied to both sides. The fabric is white, medium grained and fairly soft. Context 302.5: Phase D.

119. Fig. 7.8. Slightly everted rim and body fragment of a coffee cup (diam. 6.5cm). The outside of the cup is decorated with a rough blue line encircling the top of the outside of the rim and a repeated red-brown pattern freely painted below this. A second blue line separates the top design from an indistinct blue decorated area below. The inside has blue oblique dashed lines running around the top of the inside of the rim. Both sides are covered in a colourless glaze. The fabric is white, chalky, fine grained and fairly soft. Cf. Carswell 1972; fig. 21c. Date: mid to late eighteenth century. Context 115.1: Phase E.

120. Fig. 7.8. Rim and body fragment of a Turkish coffee cup (diam. 6.0cm). Decoration on the outside is freely painted in manganese purple over black, and both sides are covered in a clear glaze. The fabric is white, medium grained and soft. The use of purple suggests a date between *c.*1740 and the end of the century or later (Carswell 1972). Context 105.10: Phase E.

121. Fig. 7.8. Rim fragment of a Turkish coffee cup (diam. 6.5cm), decorated in black on the outside just below the rim. Both sides are under a clear colourless glaze. The fabric is white, fine grained and soft. Context 116.4: Phase D.

122. Fig. 7.8. Rim and body fragment of a Turkish coffee cup with a slightly everted rim (diam. 6.5cm). The decoration on the outside is an elaborate floral design outlined in blue, with geometric decoration (zigzag) running around the top of the inside of the rim. Both sides are under a colourless glaze.The fabric is white, fine grained and soft. Context 114.1; Phase E.

123. Fig. 7.8. Rim fragment of a Turkish coffee cup (diam. 6cm). On the outside, a floral motif can be seen in black, manganese purple (with black outlines) and green. Both sides are under a colourless glaze. The fabric is chalky white, fine-grained and soft. The use of purple suggests a date between *c.*1740 and the end of the century or later (Carswell 1972). Context 502.34: Phase D.

124. Fig. 7.8. Rim fragment of a Turkish coffee cup (diam. 5.5cm). On the outside a floral motif can be seen in black, manganese purple and green (the latter has run badly). The inside and outside are covered entirly with a yellow paint or slip over which the design has been painted, both sides are under a colourless glaze. The fabric is white, medium grained and fairly soft. Date *c.*1740 to end of the century. Context 108.5: Phase D.

125. Fig. 7.8. Rim fragment of a Turkish coffee cup (rim diam. 6cm) The outside is decorated with black vertical lines under a faint turquoise paint and a broad band of manganese purple. Both sides are under a clear glaze. The fabric is white, medium grained and fairly soft. The use of purple suggests a date between *c.*1740 and the end of the century or later (Carswell 1972). Context 105.31: Phase D.

126. Fig. 7.8. Rim fragment of a Turkish coffee cup (diam. 6cm). The outside is decorated in blue and yellow, the inside has an indistinct band of blue running around just below the top of the rim. Both sides are under a colourless glaze. The fabric is white, medium grained and fairly soft. Context 105.12: Phase D/E.

127. Fig. 7.8. Rim fragment of a Turkish coffee cup. The rim is painted with green both inside and out. Both sides are under a colourless glaze. The fabric is white, medium-grained and fairly soft. Context 112.5: Phase D.

128. Fig. 7.8. Base and body fragment of a Turkish coffee cup. The inside of the base is decorated with a floral design in black and manganese purple. The outside is painted in manganese purple, green-yellow and black. A potter's mark in black can be found on the base which may be an attempt at copying the *Sivaz* mark. Both sides are covered with a colourless glaze. The fabric is white, medium grained and very soft. Cf. Pringle 1986a: fig 51.88. The use of purple suggests a date between *c.*1740 and the end of the century or later (Carswell 1972). Context 125.1: Phase E.

129. Fig. 7.8. Body fragment of a Turkish coffee cup. The outside is decorated with a blue floral design (possibly of a tree and landscape) the inside has indistinct black decoration which has worn away. Both sides are under a colourless glaze. Fabric is white, medium grained and fairly soft. Context 107.7: Phase D.

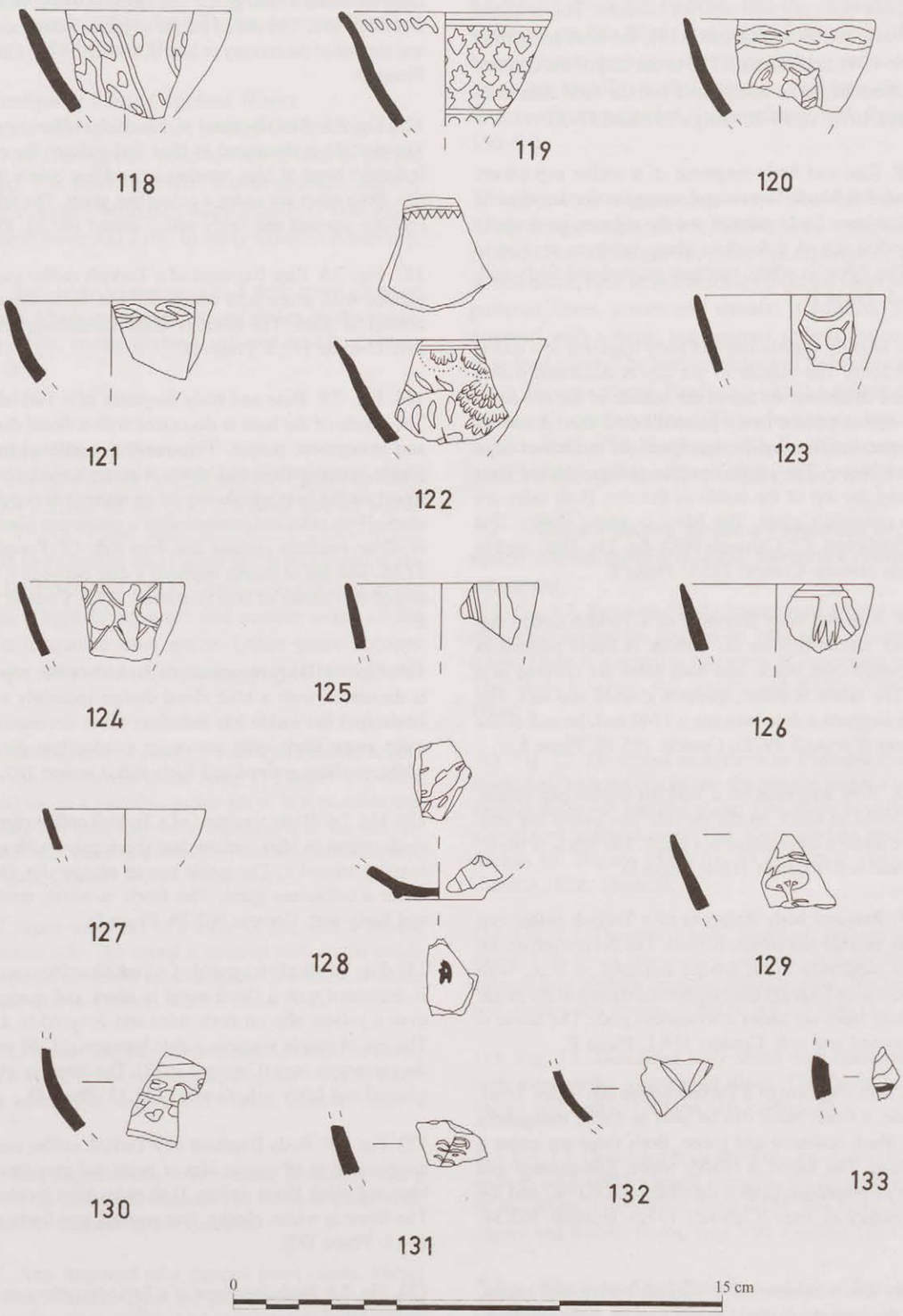
130. Fig. 7.8. Body fragment of a Turkish coffee cup. The outside is decorated in blue, yellow and green paint with a floral motif running around it. The inside has an orange slip. Both sides are under a colourless glaze. The fabric is white, medium grained and fairly soft. Context 502.24: Phase D.

131. Fig. 7.8. Body fragment of a Turkish coffee cup. The outside is decorated with a floral motif in black and manganese purple over a yellow slip on both sides and covered in a clear glaze. The use of purple suggests a date between *c.*1740 and the end of the century or later (Carswell 1972). The fabric is white, medium grained and fairly soft. Context 111.13: Phase D.

132. Fig. 7.8. Body fragment of a Turkish coffee cup. Both sides are covered in an orange slip or paint and over this is painted a blue and black floral design. Both sides have a colourless glaze. The fabric is white, chalky, fine grained, and fairly soft. Context 114.1: Phase D/E.

133. Fig. 7.8. Body fragment of a Turkish coffee cup. The outside is decorated in turquoise and yellow with yellow slip on the inside. Both sides are under a colourless, clear glaze. Fabric is white, medium grained, and fairly soft. Context 504.9: Phase D.

Figure 7.8. Belmont (Suba): Turkish coffee cups (nos. 118–33). Scale 1:2.



CHAPTER 8
THE CERAMIC LAMPS

Kathryn Knowles

The following catalogue of lamps has been ordered both typologically and chronologically. The catalogue gives a description of shape, decoration and any diagnostic features that may be important. Pottery fabrics have been examined using a macroscopic binocular microscope at magnification x20. Any visible inclusions have been noted and colour recorded using a Munsell colour chart. References to comparative material including date range and provenance have also been given.

1 Oval Lamps with a Rounded Nozzle

1.1 Candlestick (or Palm-Menorah) Lamps

Over forty mould-made lamp fragments of this type have been recovered from Belmont. Unfortunately, very little variation in decoration or form exists and it is very difficult to date these fragments more closely than to between the mid fifth and mid eighth centuries AD (Nitowski 1974; Rosenthal and Sivan 1978). Magness distinguishes between two different forms of this type: first, a small candlestick lamp (lamp type 2) which she dates *c.*350 to *c.* 550 AD; and secondly a larger candlestick lamp (type 3) in four variants, which she dates *c.*550 to the late seventh or early eighth century AD (Magness 1993). It is the larger candlestick lamp which is present at Belmont. Bailey (1988) comments that most of the lamps of this type come from sites within 40–50km of Jerusalem and that the majority have been found in the city. A local source of production therefore appears likely; indeed, a kiln producing lamps of the small variety has recently been found on the southern slope of Jabal Suba itself (see Chapter 2, Figs. 2.1 (F4), 2.4).

Candlestick lamps from Belmont are mould-made and oval or 'slipper shaped', with decoration in high to medium relief. The central filling hole is large and encircled by two or three deep ridges, the outer extending down the centre of the nozzle to the wick hole. Around this ridge can be found a radiating pattern of oblique lines in relief, which extend outwards to the edge of the shoulder and downwards towards the nozzle (Magness 1993: type 3A). This decorative stylized motif extending around and down to the wick hole has been compared both to the Jewish menorah, hence the name 'candlestick lamp', and also to the 'palm branch'. Since speculation exists over its true representation, this report will use the term 'palm-menorah' decoration. Other shoulder motifs include non-linear relief decoration, such as wavy lines or pellets, surrounding the central filling hole (Magness 1993: type 3B). There is usually no handle (or alternatively a large one, decorated as in Magness 1993: type 3D); its place is more frequently taken by a line, pellet or wavy-line motif (or a combination of all three) at the top of the shoulder. The underside has a raised circular base ring.

Macroscopically, two fabric types can be identified (fabrics A and B); however, they are very similar and may be variations of the same clay. Fabric A is cream-brown in colour, fine-grained, fairly soft, smooth and soapy with small calcareous inclusions (average size 2mm across) and occasional dark subangular inclusions. Fabric B varies in colour from cream to reddish brown and is medium-grained, hard, smooth with moderate to abundant small dark inclusions and larger calcareous inclusions (extending up to 2mm across). Occasional large reddish-brown grains can also be identified (5mm across).

1. Fig. 8.1. Shoulder fragment of a mould-made lamp in high relief. The shoulder consists of a radial pattern of wavy lines and a single pellet. Fabric A: very fine grained fabric with occasional white inclusions and sparse small dark inclusions. 7.5YR 7/4 light cream-brown. Cf. Smith 1973: pl. 66.311; Israeli and Avida 1988: 422; Magness 1993: 253 (type 3B). Mid sixth to early eighth centuries AD. Context 112.10: Phase D.

2. Fig. 8.1. Shoulder fragment, as no. 1. Fabric A: very fine grained fabric with infrequent large white inclusions up to 2mm in size. 7.5YR 7/4 light cream-brown. Cf. Smith 1973: pl. 66.311; Rosenthal and Sivan 1978: no. 481: Israeli and Avida 1988: 422; Magness 1993: 253 (type 3B). Mid sixth to early eighth centuries AD. Context 110.27: Phase A.

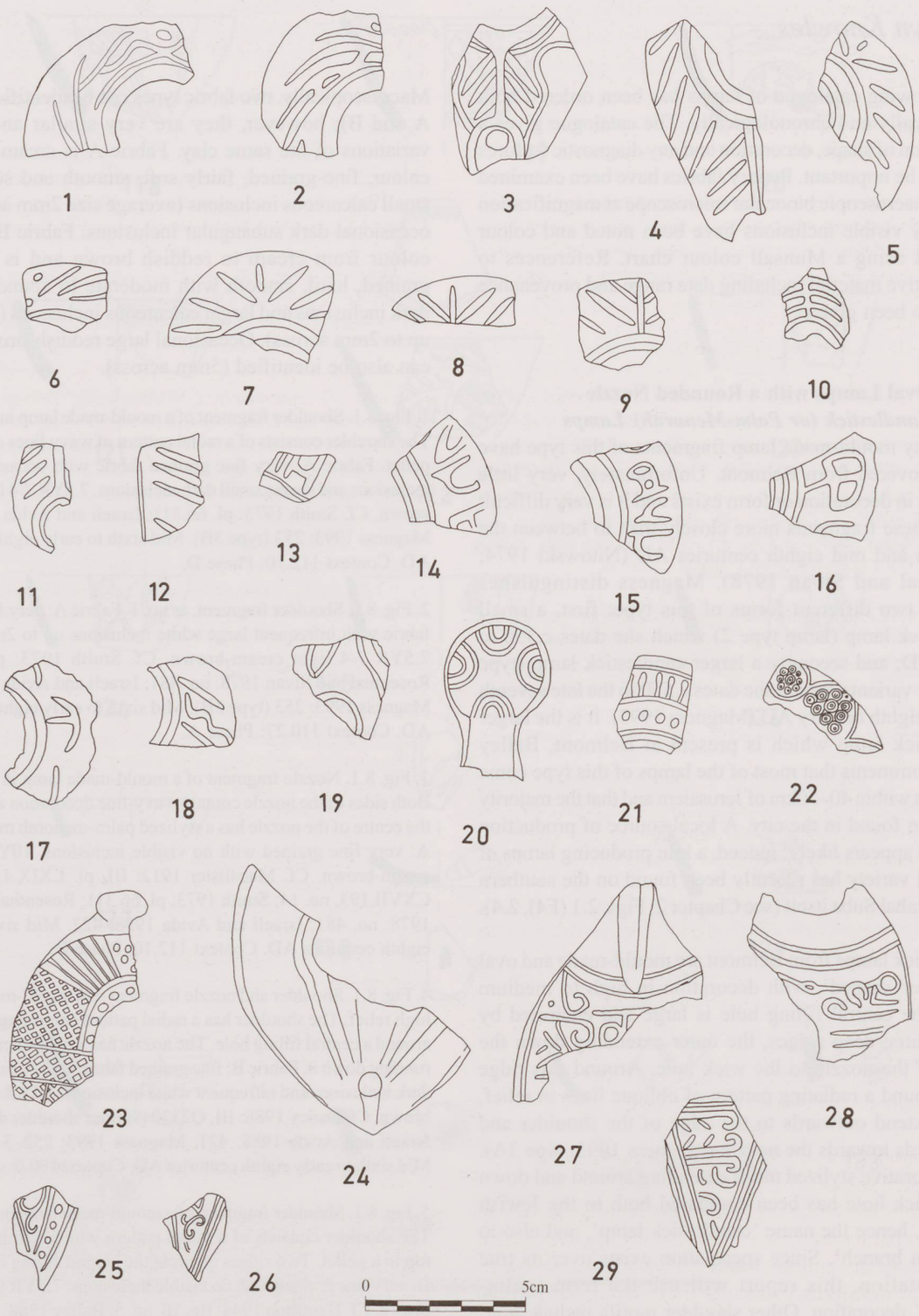
3. Fig. 8.1. Nozzle fragment of a mould-made lamp in high relief. Both sides of the nozzle contain wavy-line decoration and a pellet; the centre of the nozzle has a stylized palm-menorah motif. Fabric A: very fine grained with no visible inclusions. 10YR 7/4 pale cream-brown. Cf. Macalister 1912: III, pl. LXIX.1, no. 1; pl. CXVII.193, no. 14; Smith 1973: pl. 66.311; Rosenthal and Sivan 1978: no. 481; Israeli and Avida 1988: 422. Mid sixth to early eighth centuries AD. Context 112.10: Phase D.

4. Fig. 8.1. Shoulder and nozzle fragment of a mould-made lamp in high relief. The shoulder has a radial pattern encircling two ridges around a central filling hole. The nozzle has a palm-menorah motif running down it. Fabric B: fine grained fabric with occasional large dark inclusions and infrequent white inclusions. 7.5YR 5/6 orange-brown. Cf. Bailey 1988: III, Q2330 (similar shoulder decoration); Israeli and Avida 1988: 421; Magness 1993: 252–3 (type 3A). Mid sixth to early eighth centuries AD. Context 100.0: unstratified.

5. Fig. 8.1. Shoulder fragment of a mould-made lamp in high relief. The shoulder consists of a radial pattern which terminates at the top in a pellet. Two ridges encircle the central filling hole. Fabric B: very fine grained with no visible inclusions. 7.5YR 6/6 reddish-brown. Cf. Hamilton 1944: fig. 10, no. 5; Bailey 1988: III, Q2332; Magness 1993: type 3A. Mid sixth to early eighth centuries AD. Context 110.29: Phase B.

6. Fig. 8.1. Shoulder fragment of a mould-made lamp in high relief. The shoulder has a radial pattern with two pellets within. Two ridges circle the central filling hole. Fabric B: fine grained with occasional black inclusions. 10YR 8/4 pale brown. Cf. Rosenthal and Sivan 1978: nos. 476–9; Israeli and Avida 1988: 420 & 424;

Figure 8.1. Belmont (Suba): ceramic lamps (nos. 1–29). Scale 1:2.



Magness 1993: type 3A. Mid sixth to early eighth centuries AD. Context 112.10, Phase D.

7. Fig. 8.1. Shoulder fragment of a mould-made lamp in high relief. The shoulder consists of a radial pattern with a group of three at the top. Two ridges circle the central filling hole. Fabric B: fine to medium grained fabric with moderate tiny black inclusions. 7.5YR 7/4 light cream-brown. Cf. Rosenthal and Sivan 1978: nos. 484–5; Bailey 1988: III, Q2332; Magness 1993: type 3A. Mid sixth to early eighth centuries AD. Context 100.0: unstratified.

8. Fig. 8.1. Shoulder fragment of a mould-made lamp in high relief. The top of the shoulder has strokes arranged in a group of three. Fabric B: medium grained fabric with occasional large white calcareous inclusions and occasional large and frequent small dark grains. 7.5YR 7/4 light cream-brown. Cf. Rosenthal and Sivan 1978: no. 482; Magness 1993: type 3A. Mid sixth to early eighth centuries AD. Context 122.18: Phase B.

9. Fig. 8.1. Shoulder fragment of a mould-made lamp containing a radial pattern with a diagnostic decorative motif on the top (possibly a palm branch), surrounding two raised ridges around the central filling hole. Fabric B: medium-grained fabric with frequent black inclusions and occasional large brown and white inclusions. 10YR 7/6 cream-brown. Rosenthal and Sivan 1978: nos. 482; Magness 1993: type 3A. Mid sixth to early eighth centuries AD. Context 110.28: Phase B/C.

10. Fig. 8.1. Nozzle fragment of a mould-made lamp with a palm menorah motif extending downwards towards the wick hole. Fabric B: medium grained fabric with moderate large black and occasional grey and brown inclusions. 7.5YR 6/6 reddish-brown. Cf. Rosenthal and Sivan 1978: nos. 484–5; Bailey 1988: III, Q2332. Mid sixth to early eighth centuries AD. Context 110.28: Phase B/C.

11. Fig. 8.1. Nozzle fragment of a mould-made lamp with a palm menorah motif extending downwards towards the wick hole. Fabric B: medium to fine grained fabric with tiny black and white inclusions. Colour: outer margins 10YR 5/1 grey; core 10YR 7/3 very pale brown. Cf. Bailey 1988: III, Q2330; Israeli and Avida 1988: 419, 424. Mid sixth to early eighth centuries AD. Context 110.28: Phase B/C.

12. Fig. 8.1. Shoulder fragment of a mouldmade lamp in high relief. The shoulder consists of oblique lines. Fabric B: medium-grained fabric with abundant tiny black grains and occasional small white calcareous inclusions. 7.5YR 7/4 cream-brown. Mid sixth to early eighth centuries AD. Context 113.12: Phase C.

1.2 Candlestick or Palm Menorah Lamps with Greek Inscriptions

These lamps are similar in form to the candlestick variety (type 1.1) but have Christian inscriptions in Greek (often distorted or unintelligible) running around the shoulder. Nitowski (1986) has classified these lamps into seven chronological groups, of which Groups II, IIIb and IIIc are represented here. These groups correspond to Magness type 3C: large candlestick lamps with Greek relief inscriptions (Magness 1993: 253). Unfortunately only small fragments of the shoulder have been recovered from the site making the Greek inscriptions difficult to interpret. Macroscopic examination reveals that this fabric type (fabric C) differs from fabric A and B by being fairly soft and soapy with a very fine grained clay which varies in colour. Few inclusions are visible within the clay, except for occasional large calcareous inclusions (up to 6mm in size) and abundant tiny calcareous inclusions in the groundmass, often being represented by voids. These lamps have been dated by Nitowski (1974) from the early to mid fifth century AD up to the mid eighth century (the same date range as the earlier candlestick lamps) and also by Magness from the mid sixth century AD to the early eighth century (Magness 1993).

13. Fig. 8.1. Shoulder fragment of a mould-made inscribed lamp in high relief. Greek lettering visible on the shoulder (cf. Loffreda 1989: 113 (type B: 2.5)). Fabric C: fine grained with occasional tiny white calcareous inclusions often remaining as voids. 5YR 7/6 light red-orange. Cf. Nitowski 1986: type II, no. 2; Magness 1993: type 3C. Fifth/sixth to early eighth centuries AD. Context 117.1: Phase D.

14. Fig. 8.1. Shoulder fragment of a mould-made inscribed lamp in high relief. Greek inscription visible around the shoulder, reading 'Light of the world' (cf. Loffreda 1989: 87 (type A: 3.1)). Fabric C: fine-grained fabric with occasional tiny white calcareous inclusions. 7.5YR 7/4 pink-orange. Cf. Nitowski 1986: type IIIb, no. 16; Magness 1993: type 3C. Fifth/sixth to early eighth centuries AD. Context 126.5: Phase D.

15. Fig. 8.1. Shoulder fragment with decoration and fabric as no. 14. 7.5YR 6/6 light reddish-brown. Cf. Nitowski 1986: type IIIb, no. 11; Magness 1993: type 3C. Fifth/sixth to early eighth centuries AD. Context 112.10: Phase D.

16. Fig. 8.1. Shoulder fragment of mould-made inscribed lamp in high relief. Indistinct Greek lettering visible around the shoulder (cf. Loffreda 1989: 96 (type A: 4.4)). Fabric C: fine grained fabric with no visible inclusions. 7.5YR 6/6 orange-brown. Cf. Nitowski 1986: type IIIc; Magness 1993: type 3C. Fifth/sixth to early eighth centuries AD. Context 110.19: Phase C.

17. Fig. 8.1. Shoulder fragment of mould-made inscribed lamp in high to medium relief. Possible Greek lettering visible around the shoulder (cf. Loffreda 1989: 115 (type B: 3.1)). Fabric C: fine grained fabric with occasional tiny white calcareous inclusions. 7.5YR 7/4 cream-brown. Cf. Magness 1993: type 3C. Context 306.9: Phase D.

1.3 Miscellaneous Candlestick/Palm Menorah Lamps: Unidentified

Several fragments have been assigned to this miscellaneous group due to their fragmentary nature. The ornamented handle (no. 20) is particularly interesting, since it appears to be imitating the handle of a Byzantine bronze lamp.

18. Fig. 8.1. Decorated shoulder fragment of a mould-made lamp in high relief. The shoulder has a radial pattern and wavy-line decoration around the central filling hole. Fabric: medium to fine-grained with common black inclusions. 5YR 6/6 reddish-yellow. Cf. Macalister 1912: III, pl. 147, no. 26; Aharoni 1956: fig 4.1 (Byzantine attribution); Smith 1973: pl. 63, no. 157; Magness 1993: type 3B (?). Mid sixth to early eighth centuries AD. Context 502.21: Phase D.

19. Fig. 8.1. Decorated shoulder fragment of a mould-made lamp in high relief. Two ridges encircle a central filling hole with an indistinct curved pattern around the shoulder. Colour: outer margin 7.5YR 6/4 light brown; core 2.5Y 5/2 greyish-brown. Cf. Magness 1993: type 3B (?). Mid sixth to early eighth centuries AD. Context 112.10: Phase D.

20. Fig. 8.1. Ornamented handle fragment of a mould-made lamp. Fabric: fine grained with occasional dark inclusions. Colour: light pink/brown. Cf. Aharoni 1956: fig 4.1 (late Byzantine); Smith 1973: pl. 63, no. 157; Tushingham 1985: fig 32, no. 40 (mid fifth to mid eighth centuries AD); Magness 1993: 254, type 3D (mid sixth to early eighth centuries AD). Context 119.2: Phase E.

2 Channel Nozzle Lamps

The most characteristic feature of this type of lamp is its broad oval shape and decorated nozzle channel. The filling hole is large and encircled by several grooves which extend down either side of the nozzle to the wick hole, producing a broad channel within which decorative motifs are frequently placed. The shoulder can be decorated with linear, geometric or floral motifs and has a stub or slightly curved handle. The base has either a circular raised base ring (most frequently found on lamps with geometric motifs), or a raised oval base (found on those with a floral motif).

2.1 Channel Nozzle Lamps with Geometric Motifs

Only one small decorated shoulder fragment of this type was recovered from the site. This early type of channel nozzle lamp has a large filling hole surrounded by a series of circular ridges within which geometric dot-and-line motifs can be found. Furthermore, a distinctive decorated motif is frequently present within the nozzle channel and a conical lug handle and circular raised base ring are also characteristic features of this form. These types were very common and widespread throughout the whole of Palestine in the Umayyad period and are thought to be a local product (Israeli and Avida 1988). Kennedy (1963) classifies this as 'type 23A' and gives it a seventh to eighth-century date that accords well with examples found from other excavations. This type also corresponds with Magness's type 4B/4C, dated from the seventh to the early eighth centuries AD (Magness 1993: 256–8).

21. Fig. 8.1. Decorated shoulder fragment of a mould-made lamp in high relief. A number of ridges encircle the central filling hole, enclosing a series of short rays surrounding a row of small dots. Fabric C: very fine-grained fabric with occasional white calcareous inclusions in the clay matrix and infrequent large rounded calcareous inclusions extending up to 3mm in size. Colour: core 7.5YR 5/4 brown; outer margin black. Cf. Day 1942: pl.XI.2; Baramki 1944: pl. XVII.7; Macalister 1912: pl. XCIX.118, no. 6; pl. CVIII.156, no. 1; de Vaux and Steve 1950: fig 33, no. 9; Saller 1957: fig 16.15, pls. 109.15 & 14; Kennedy 1963: pl. XXVIII.775 (type 23A); Dothan *et al.* 1967: fig. 15, no. 2; Avigad 1976b: III, pl. LXXI, fig. 48; Rosenthal and Sivan 1978: 132, no. 538; Israeli and Avida 1988: 436, 447–8. Umayyad period, seventh to eighth centuries AD. Context 110.29: Phase ?B.

2.2 Channel Nozzle Lamps with Floral Motifs

This type of channel nozzle lamp has a broad oval shaped body and is characterized by its fine, precise shoulder decoration in low relief, most commonly comprising floral motifs and bunches of grapes within tendrils. The filling hole is encircled by two ridges, the outer of which extends down both sides of the nozzle and encircles the wick hole. Within this nozzle-channel, geometric designs are commonly found. The handle is now 'tongue-shaped' and bent forwards, and the base is oval and slightly raised. The fabric is also distinctive (fabric D), being medium-grained with abundant calcareous inclusions extending from 0.2mm to occasional grains 2mm in size, with less frequent small dark inclusions up to *c.*0.1mm across.

This form can easily be distinguished from the 'channel nozzle lamps with geometric motifs' and is said to have developed in the mid eighth century (Israeli and Avida 1988). Kennedy (1963) calls these 'type 23B' and gives them an eighth to ninth-century AD date. The Israel Museum dates these types from the seventh to the ninth centuries AD and cites moulds from a potters' workshop in north-west Ramla, dated to the eighth century AD. This class may correspond with the 'Channel nozzle oil lamps' (Magness type 5) dated from the eighth to tenth centuries AD (Magness 1993: 258–9).

22. Fig. 8.1. Decorated shoulder fragment of a mould-made lamp. The shoulder is decorated with bunches of grapes interwoven with vine tendrils in very low relief. Fabric D: fine to medium-grained with occasional white inclusions. It is difficult to determine the fabric since it has been burnt and only white inclusions are visible. 10YR 5/2 greyish-brown (burnt). Cf. Avigad 1976b: pl. LXXI, no. 51 (eighth to ninth centuries AD); Saller 1957: pl. 109.18 & 26 9 (similar form, but slightly different decoration). Context 109.20: Phase D.

2.3 Channel Nozzle Lamps with Linear Motifs

This type most commonly has an oval body with a stub handle that projects outwards and a large central filling hole from which a wide channel extends down to the wick hole. Around the shoulder can be found a variety of closely set linear designs, pellets and herringbone motifs (within frames), which extend down either side of the nozzle to the wick hole. Kennedy (1963) suggests a seventh to ninth century-date, whereas Rosenthal and Sivan (1978) prefers a seventh to eighth-century date.

23. Fig. 8.1. Decorated shoulder fragment of a mould-made lamp. The shoulder is decorated with pellets and alternating line and herringbone decoration within a framework of lines. A semicircle of pellets borders the central filling hole. Flat tongue/stub handle (broken). Fabric: medium to fine-grained, with occasional large white and black inclusions. 7.5YR 6/2 pinkish-grey. Cf. Kennedy 1963: pl. XXIX (type 24); Avigad 1976b: pl. LXXI, no. 45. Context 102.19: Phase C.

2.4 Channel Nozzle Lamps with no Decoration

This type has a broad oval shaped body with a pointed nozzle and plain shoulder. A ridge encircles the large central filling hole and extends down either side of the nozzle to the wick hole. The fabric is different to earlier examples. Fabric D is a medium to coarse-grained clay with both large calcareous inclusions and darker grains (*c.*0.4–0.6mm across) which are irregular to subangular in shape. Tushingham (1985) assigns this form to the Ayyubid period (*c.*1187–1248), though this form may also correspond with Magness's type 5, dated from the eighth century to the tenth (Magness 1993: 258–9).

24. Fig. 8.1. Broad oval body. The central filling hole is enclosed by a slightly pronounced ridge which forms a channel extending

down to the wick hole. Within the channel are four low ridges. The outside of the shoulder is undecorated. The nozzle has a slightly flattened area below the wick hole. Fabric E: medium grained fabric with frequent subangular white calcareous inclusions and dark grains *c.*4mm across in a clay matrix of similar grains. 5YR 5/8 yellowish-red. Cf. Saller 1957: pl. 109, nos. 28–9; Tushingham 1985: fig. 34, nos. 9,10 & 14; Magness 1993: 258–9. Context 502.37: Phase B–D.

3 Wheel-Made Lamps

3.1 'Beehive Lamps'

Only one unglazed nozzle fragment of a 'beehive' lamp was found at Belmont. These lamps have a circular body; they were wheel-made in two pieces, which were then placed together. A hole was made for the wick in the upper section and the edge of the lower half was pinched around this to form a nozzle. The undecorated upper shoulder surrounded a wide filling hole and often a small looped strap handle was present. Kennedy (1963) gives an eleventh- or twelfth-century date for this type, Tushingham (1986) an Ayyubid date (eleventh to twelfth centuries), and Brosh (1986) a twelfth- to fifteenth-century date.

24a. (not illustrated) Top section of a wheel-made 'beehive' lamp with burnt nozzle and a large filling hole. Undecorated and unglazed. Fabric: coarse grained with black and white inclusions. 5Y 8/2 white/cream. Cf. Kennedy 1963: pl. XXIX, no. 797 (type 25); Tushingham 1985: fig. 38, no. 15; Brosh 1986: fig. 6, no. 1 (typical of twelfth- to fifteenth-century lamps found in both Crusader and Mamluk sites). Context 302.8: Phase C.

4 Oval Lamps with Pointed Nozzle

These lamps differ from the channel nozzle lamps by having a longer oval body with a distinct tapering pointed nozzle. The filling hole is smaller and the ridges encircling it are no longer well defined. The channel which extended down the nozzle to the wick hole in earlier examples is no longer a feature of the lamp and is narrow and unpronounced. The earlier knob handle and slightly inturned handle has also developed into one that hooks sharply over the shoulder (almost touching it in later examples) and frequently has a ridge along its spine. The most characteristic feature however is its discus decoration which becomes crowded with floral, calligraphic or geometric/linear motifs. Tushingham (1985) believes that these lamps with their folded-over handle began to be made in the Ayyubid period, firstly with arabesque or calligraphic ornament; this decoration developed into geometric motifs by the Mamluk period, when the handle became looped around and pressed against the upper body of the lamp.

4.1 Oval Lamps with Pointed Nozzle and Floral Motif

This type differs from the earlier 'channel nozzle floral motif lamps' by having a discus almost entirely covered with motifs, such as rosettes and rinceaux in low relief. In addition, no distinct ridge runs around the central filling hole down either side of the nozzle to the wick hole. The central filling hole is also smaller and the handle hooks over almost on to the shoulder. Kennedy (1963) suggests that this form (type 27) is a development of his type 23B with its projecting handle. This type has a distinctive clay (fabric F) which is medium-grained with abundant calcareous inclusions and occasional larger rounded glassy inclusions. Kennedy (1963) calls these lamps 'Mamluk', dating from the thirteenth to the fifteenth centuries. Bagatti (1947) gives a date from the second half of the twelfth century to the fourteenth century, and de Vaux and Steve (1950) a Mamluk-period date.

25. Fig. 8.1. Decorated nozzle fragment of a mould-made lamp in low relief. The nozzle fragment is decorated with a scroll-and-pellet motif within framed ridges extending towards the nozzle. Fabric is burnt (thus it is difficult to determine the nature of the inclusions), fine to medium-grained. 7.5YR 7/4 orange. Cf. Bagatti 1947: fig. 235, no. 21; de Vaux and Steve 1950: fig. 33, nos. 1–2. Context 113.24: Phase C.

26. Fig. 8.1. Decorated nozzle fragment of a mould-made lamp in low relief. The nozzle is decorated with scroll-and-rinceaux motif within framed ridges extending towards the nozzle. Fabric burnt, medium to fine grained with occasional white inclusions. 10YR 5/3 grey/brown. Cf. Bagatti 1947: fig. 34, nos. 8–9; de Vaux and Steve 1950: fig. 33, nos. 1 & 2. Context 113.24: Phase C.

4.2 Oval Lamps with Pointed Nozzle and Arabic Inscriptions or Moulded Calligraphic Ornament

These lamps have a similar shape and form to those mentioned above, but differ by having 'Arabic' inscriptions or moulded calligraphic ornament crowding the discus. The fabric is particularly characteristic and macroscopically three fabric types occur, classified according to the abundance of calcareous inclusions:

> *Fabric type G(i).* Coarse-to medium-grained, abundant irregular calcareous inclusions, 2–2.5mm in size. The fabric appears to be characterized by its red/orange fabric.
> *Fabric type G(ii).* Medium-grained, with moderate to abundant calcareous inclusions. The inclusions are less frequent than in G(i) and are smaller in size (often 1mm and smaller in the clay matrix). The fabric also contains large glassy grains (1mm in size).
> *Fabric type G (iii).* Medium to fine-grained with infrequent irregular calcareous inclusions (occasionally 0.3mm in size) and smaller in the clay matrix.

These lamps date to about the same period as the floral decorated lamps (thirteenth to fifteenth centuries AD) and possibly as early as the Ayyubid period (AD 1187–1248) (Tushingham 1985).

27. Fig. 8.1. Decorated discus and handle fragment of a mould-made lamp in relief. The handle is folded over (hooked) with a groove running along it. The decoration is a stylized Arabic inscription (with two shallow ridges extending around the handle and outside of the discus). Fabric G(i): coarse-grained with abundant large and small calcareous inclusions. 2.5YR 6/6 red. Cf. de Vaux and Steve 1950: fig 33, nos. 1 & 2 (similar form but different Arabic motif); Tushingham 1985: fig 38, no.14. Context 302.6: Phase C/D.

28. Fig. 8.1. Decorated discus fragment of a mould-made lamp in relief. The decoration is a stylized Arabic inscription. Fabric G (ii): medium to fine grained fabric with moderate white inclusions both large and small in the clay matrix. Colour: outer margin, 10YR 7/3 very pale brown; core, 2.5YR 6/8 light red. Cf. de Vaux

and Steve 1950: fig. 33, nos. 1 & 2; Tushingham 1985: fig. 38, no. 14. Context 301.3: Phase D.

29. Fig. 8.1. Decorated nozzle fragment of a mould-made lamp in relief. The decoration is a stylized Arabic inscription surrounded by two shallow ridges on either side. Fabric: medium-grained, with abundant calcareous inclusions, and occasional larger grey inclusions. 5YR 7/6 reddish-yellow. Cf. Bagatti 1947: fig 34, nos. 7 & 3a; photo. 60, no. 20; de Vaux and Steve 1950: fig.33, no. 2. Context 302.6: Phase C/D.

30. Fig. 8.2. Hooked handle with deep ridge running along its spine. Fabric: fine to medium grained with common calcareous inclusions. 7.5YR 7/4 light cream-brown. Context 100.0: unstratified.

31. Fig. 8.2. Hooked handle with deep ridge running along its spine. Fabric: medium grained with occasional calcareous inclusions and larger grey grains. 7.5YR 6/4 light brown. Context 118.1; Phase E.

4.3 Oval Lamps with Pointed Nozzle and Linear/ Geometric Motif

These lamps have a lengthened oval body and tapering nozzle with linear/geometric decoration covering the whole of the discus. An incurved hooked handle which curls over to touch the top of the shoulder is also a characteristic feature. Tushingham (1985) believes that this type of handle is a thirteenth- or fourteenth-century (Mamluk-period) development from those with high looping handles and arabesques or calligraphic ornament of the twelfth to thirteenth century (Ayyubid period). Saller (1957) dates this form from the second half of the twelfth century to the mid fourteenth, whilst Day (1942) prefers a thirteenth- to fifteenth-century date.

32. Fig. 8.2. Partial body fragment of an oval-shaped lamp with a hooked incurved handle and a rounded base. The discus is decorated with a geometrical design, the motifs are enclosed in frames consisting of a double line next to the handle, merging into a single line around the edge of the discus. Within this border the raised decoration consists of straight lines arranged in various groups (e.g. between the handle and filling hole there are concentrically arranged chevrons, flanked by straight lines at right angles, followed by three lines then more chevrons). The grooved handle is hooked and incurving, almost touching the upper surface of the lamp. Fabric H: medium to fine grained, with occasional black inclusions up to 2mm in size and moderate voids once containing calcareous inclusions which have been burnt out during the firing process. Colour: outer margins 2.5YR 8/2 pink, core 5YR 7/3 pink. Cf. Bagatti 1947: photo. 60, no.1 (dated second half of twelfth century to mid fourteenth on coin evidence); de Vaux and Steve 1950: fig. 33, no. 13; Saller 1957: pl. 109, no. 31; Pringle 1984: fig. 5, no. 9; Tushingham 1985: fig. 45, no. 3; Pringle 1986a: fig. 47, no. 34 (Red Tower). Unstratified.

33. Fig. 8.2. Decorated discus fragment of a mould-made lamp with geometric decoration on the upper surface comprising several motifs enclosed within a frame. Near the handle are two ridges extending across the discus, then lines running at right angles to this and wavy indistinct decoration. Next are chevrons, then a framed decoration of herringbones/zigzags and pellets all around a central filling hole. Fabric: coarse grained with moderate white inclusions, burnt. 5YR 4/4 dark brown. Cf. Tushingham 1985: fig. 45, nos. 1 & 3. Context 106.1: Phase E.

34. Fig. 8.2. Decorated discus fragment of a mould-made lamp with elaborate linear decoration of various types within small frames. Fabric H: medium to coarse grained fabric with occasional tiny black inclusions. 10YR 8/3 cream. Cf. Tushingham 1985: fig. 45, no. 3. Context 302.5: Phase D.

35. Fig. 8.2. Decorated discus fragment with a floral motif (spiral motif in the round): two ridges on the outside of the shoulder with an interwoven pattern between them. Fabric: fine grained with no visible inclusions. 10YR 7/4 very pale brown. Cf. Bagatti 1947: photo. 60, no. 7 (similar but not identical); Kedar and Pringle 1985: 179, fig. 4.3. Context 302.5: Phase D.

4.4 Oval Lamps with Pointed Nozzle: Miscellaneous/Unidentified

36. Fig. 8.2. Badly eroded and burnt discus fragment in low relief with swirls on the rim. Fabric: fine grained with abundant white inclusions. 10YR 5/3 brown Context 106.14: Phase B.

5 Pinched-Nozzle Lamps

Over 70 fragments of unglazed single and double pinched-nozzle lamps were recovered from the site. This open variety comprises an open saucer with one or two pinched sides. It copies one of the earliest forms in the Mediterranean and was reintroduced into Palestine in the Mamluk period (thirteenth to fifteenth century AD). Püttrich-Reignard (1939) found lamps of this type at Khirbat al-Minya in a context attributed to AD 1200–1400. De Vaux and Steve (1950) suggest that both glazed and unglazed types continued in use in the East and around the Mediterranean until at least the 1950s. A typochronological progression from ovoid lamps with a knob handle and a wide filling hole (coin dated to AD 1211), to wheel-made saucer lamps with an internal loop handle, pinched nozzle and brown-green glaze (late twelfth to thirteenth centuries AD), to saucer lamps with no handle (thirteenth century and later) is discussed with reference to Rujm al-Kursi, Jordan, by Abdel-Jalil 'Amr (1984: 205).

5.1 Single-Nozzle Lamps

37. (Not ill.) Pinched-nozzle fragment of an unglazed single-nozzle lamp with a grey slip. A brown medium grained fabric with occasional black inclusions. Context 101.1: Phase E.

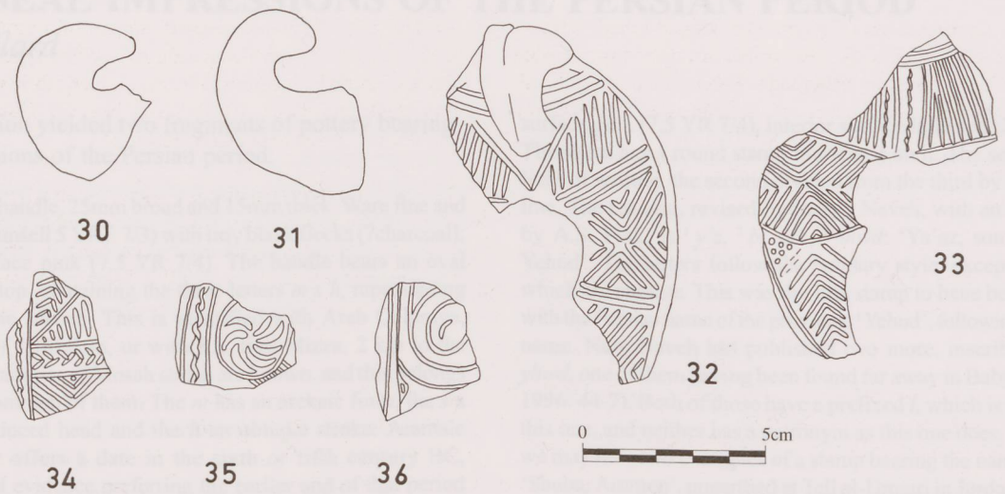
38. (Not ill.) Burnt pinched-nozzle fragment of an unglazed single-nozzle lamp with a grey slip. A dark red-brown, medium-grained fabric with no visible inclusions. Context 101.11: Phase E.

39. (Not ill.) Burnt pinched-nozzle fragment. A dark orange-brown, coarse-grained fabric with calcareous white inclusions. Context 105.19: Phase E.

40. (Not ill.) Rim fragment of a pinched-nozzle lamp. A red-brown, medium-grained fabric with both large and small calcareous inclusions. Context 107.1: Phase E.

41. (Not ill.) Burnt pinched-nozzle fragment of a single-nozzle lamp. An orange, medium-grained fabric with occasional calcareous and black inclusions. Context 108.6: Phase D.

Figure 8.2. Belmont (Suba): ceramic lamps (nos. 30–36). Scale 1:2.



42. (Not ill.) Complete pinched single-nozzle lamp with a red fabric and pink slip. Context 110.15: Phase C.

43. (Not ill.) Burnt base, nozzle and rim fragment of a single-nozzle lamp. An orange, medium grained fabric with moderate calcareous inclusions. Context 305.1: Phase E.

44. (Not ill.) Almost complete lamp fragment of a single-nozzle lamp. The nozzle is burnt with a possible large foot base. An orange-pink, medium-grained fabric with moderate large and small calcareous inclusions. Context 305.1: Phase E.

45. (Not ill.) Complete pinched singe-nozzle lamp with a cream-pink slip, slightly raised base and burnt nozzle. Context 502.14: Phase D/E.

46. (Not ill.) Complete pinched single-nozzle lamp with a burnt nozzle and slightly raised base. Context 502.35: Phase E.

5.2 Double-Nozzle Lamps

47. (Not ill.) Double-nozzle lamp fragment with both nozzles burnt, and a very indistinct base. A grey fabric (due to burning), coarse grained with calcareous white and grey inclusions. Context 105.12: Phase D/E.

48. (Not ill.) Base and rim fragment of a double-nozzle lamp, with an indistinct base. An orange coarse-grained fabric with calcareous white and black inclusions. Context 105.16: Phase D.

49. (Not ill.) Base and rim fragment of a double-nozzle lamp, with a raised foot base and a burnt nozzle. An orange-cream, medium-grained fabric with tiny calcareous inclusions. Context 105.20: Phase D.

50. (Not ill.) Rim, base and nozzle fragment of a double-nozzle lamp with a burnt nozzle and rounded base. An orange-red, medium-grained fabric with occasional grey and calcareous white inclusions. Context 110.18: Phase C/E.

51. (Not ill.) Nozzle fragment of a double-nozzle lamp with a burnt nozzle and pronounced foot-ring base. An orange-brown, medium-grained fabric with occasional calcareous inclusions. Context 110.18: Phase C/E.

52. (Not ill.) Nozzle and base fragment of a double-nozzle lamp with a burnt nozzle and indistinct raised base. An orange, medium-grained fabric of tiny black inclusions. Context 301.2: Phase E.

53. (Not ill.) Rim and nozzle fragment of a double-nozzle lamp, with a raised base. An orange-brown medium grained fabric with occasional tiny black and red inclusions. Context 503.1: Phase E.

54. (Not ill.) Base, rim and burnt nozzle fragment of a double nozzle lamp, with a slightly raised base. An orange, medium to coarse-grained fabric with frequent calcareous white and black inclusions. Context 503.1: Phase E.

CHAPTER 9
TWO SEAL IMPRESSIONS OF THE PERSIAN PERIOD

Alan Millard

The excavation yielded two fragments of pottery bearing seal impressions of the Persian period:

1. (Pl. 9.1). A handle, 25mm broad and 15mm thick. Ware fine and hard, pink (Munsell 5 YRE 7/3) with tiny black flecks (?charcoal); the outer surface pink (7.5 YR 7/4). The handle bears an oval stamp on the top, containing the three letters *m s h*, representing the place-name Mosah. This is identified with Arab Qaluniya, 7.5km west of Jerusalem, or with Kh. Bait Mizza, 2 km to the north. Three varieties of Mosah stamp are known, and this belongs to the most common of them. The *m* has an archaic form, the *s* a noticeably reduced head and the *h* an oblique stroke. Aramaic palaeography offers a date in the sixth or fifth century BC, archaeological evidence preferring the earlier end of that period (see Avigad, 1958; Stern 1982: 208ff.; Fitzmyer and Kaufman 1992: 31; Lemaire 1994: 269-71). Context 301.1/2: Phase D/E.

2. (Pl. 9.2). A small body sherd of fine hard ware, light reddish brown (Munsell 2.5 YR 6/4) with tiny white inclusions; outer surface pink (7.5 YR 7/4), interior surface light red (2.5 YR 6/8). The sherd has a round stamp impressed on it. The seal had three lines of writing, the second divided from the third by a horizontal line. The reading, revised by Joseph Naveh, with an observation by A.S. Fink, is [1] *y'z*, [2] *br yšb*, [3] *yhwd*: 'Ya'az, son of Yashub, Yehud'. The letters follow the lapidary style, except for the *y*s, which are cursive. This was the first stamp to have been recorded with the Persian name of the province, 'Yehud', following a personal name. Now Naveh has published two more, inscribed *lhnwnh/ yhwd*, one of them having been found far away in Babylon (Naveh 1996: 44-7). Both of those have a prefixed *l*, which is absent from this one, and neither has a patronym as this one does. In addition, we may note two examples of a stamp bearing the names *šb'l 'mn*, 'Shuba, Ammon', unearthed at Tall al-Umairi in Jordan, where the provincial name follows the personal name (Herr 1992). All add to the meagre attestation for the activities of local officials under the Achaemenid administration (see Lemaire 1994: 16-24). Unstratified.

Plate 9.1. Belmont (Suba): seal impression (no. 1), bearing the name *msh* (Mosah).

Plate 9.2. Belmont (Suba): seal impression (no. 2), bearing the inscription, 'Ya'az, son of Yashub, Yehud'.

CHAPTER 10
THE GLASS

Anthony Grey

A variety of glass was recovered in very fragmentary condition dating from the Roman-Byzantine period to 1948. No complete vessels were restorable. Often the glass was very weathered, flaking and iridescent. Much of it appears to date from the Roman-Byzantine period and to be blown or mould-blown. Only the most representative examples are illustrated in this catalogue.

1 Handles

These fragments could be from flasks, jugs, hanging bowls or claw-foot beakers.

1. Fig. 10.1. Handle fragment. Context 109.26: Phase B.

2. Fig. 10.1. Handle fragment in opaque weathered turquoise glass. Context 110.25: Phase D.

3. Fig. 10.1. Possible hanging bowl handle fragment in clear glass weathered to a black and silver surface. Context 502.37: Phases B–D.

2 Narrow 'Test Tube' Bases

4. Fig. 10.1. Possible toe base in pale bluish glass. Context 117.1: Phase D.

5. Fig. 10.1. Flat base with a pontil mark in opaque weathered glass. Possibly from a Roman-Byzantine cone beaker, toilet bottle or flask, though it is from a predominantly thirteenth- to fourteenth-century AD deposit. Context 106.10: Phase D.

6. Fig. 10.1. Rounded base with a pontil mark in thick blue-green glass. Possibly from a Roman-Byzantine cone beaker, toilet bottle or flask. Context 110.1: Phase E.

7. Fig. 10.1. Flat base in thick pale green glass. Context 120.11: Phase C/D.

3 Narrow-Diameter Rims

8. Fig. 10.1. Everted rolled rim in plain glass, diameter 2cm. Possibly Roman-Byzantine from a candlestick *unguentarium*, flask, jug or bottle. Context 110.22: Phase D.

9. Fig. 10.1. Everted rounded rim in very weathered pale green glass, diam. 1.7cm. Possibly Romano-Byzantine from a candlestick *unguentarium*, flask, jug or bottle. Context 121.22: Phase A/B?

10. Fig. 10.1. Plain rim and neck with relief bands around neck in plain weathered glass, diam. 2.8cm. Possibly Roman-Byzantine *unguentarium* rim. Cf. for similar form, Neuburg 1949: pl. 25:85 d, f. Context 301.1: Phase E.

4 Closed Vessels (Jugs and Flasks)

11. Fig. 10.1. Everted rounded rim in opaque glass (three joining fragments), diam. 12.4cm. Possibly from a Roman-Byzantine vessel with a funnel mouth. Context 120.11: Phase C/D.

12. Fig. 10.1. Slightly thickened rounded rim and flared neck in clear glass, diam. 7cm. Possibly from a Roman-Byzantine vessel with a funnel mouth. The ring base may be part of the same vessel. Context 502.42: Phase D.

5 Larger Open Vessels (Bowls, Dishes)

13. Fig. 10.1. Out and down-folded rim with air space and collar, diam. 9cm. Context 125.16: Phase B.

14. Fig. 10.1. Out and down-folded rim with airspace and collar in clear glass, diam. 9.5cm. Context 116.12: Phase C.

15. Fig. 10.1. Rounded slightly thickened rim, blue bands around neck, diam. 10cm. Context 118.27: Phase ?D.

6 Beakers

16. Fig. 10.1. Steeply flared neck and rim in thin ridged very weathered irridescent clear glass with bosses on neck, diam. 10cm. Possibly from a Roman-Byzantine conical beaker. Context 124.7: Phase A–B.

7 Wide Base

17. Fig. 10.1. Probably a Roman-Byzantine flask, bottle or jug base. Context 120.11: Phase C/D.

8 Cups/Beakers

18. Fig. 10.2. Thickened rounded rim and flared neck in very weathered opaque glass, diam. 8cm. Possibly a Roman-Byzantine hemispherical cup. Base from same vessel with folded ring and airspace, diam. 6.5cm. Context 302.6: Phase C/D.

19. Fig. 10.2. Ring base with airspace in folded pale amber glass with small air bubbles. Context 502.42: Phase D.

20. Fig. 10.2. Ring base in weathered opaque glass. Context 120.11: Phase C/D.

9 Finger Rings

21. Fig. 10.2. Fragment of ring in dark blue-green glass with prunts (protuberances) of red, yellow and white glass, diam. 2cm. Possibly Hebron. Context 101.4: Phase D.

22. Fig. 10.2. Circular opaque green cut glass ring stone pierced by two holes. Context 114.1: Phase E.

23. Fig. 10.2. Oval weathered plain blue glass ring stone. Context 123.3: Phase D.

10 Bracelets

A typology for glass bracelets from Islamic Palestine has been devised based on cross-section and decoration (Spaer 1992: 44–62). Five main cross-section types are proposed (circular, semi-circular, flat, evenly pointed and obliquely pointed) divided into sub-types. There are four decoration types (A and B: monochrome; C: twisted; D: multi-coloured)

Figure 10.1. Belmont (Suba): glass (nos. 1–17). Scale 1:2.

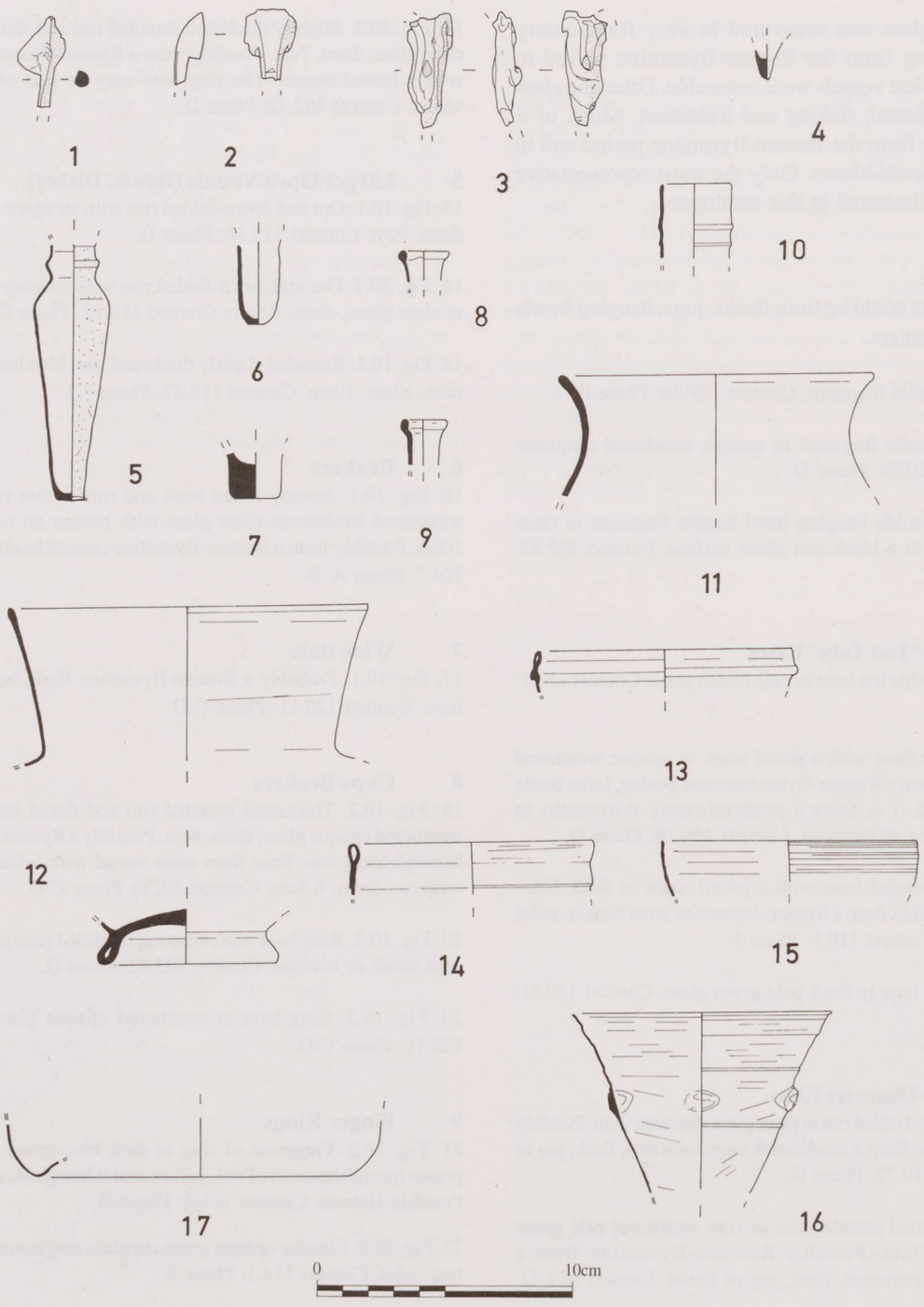
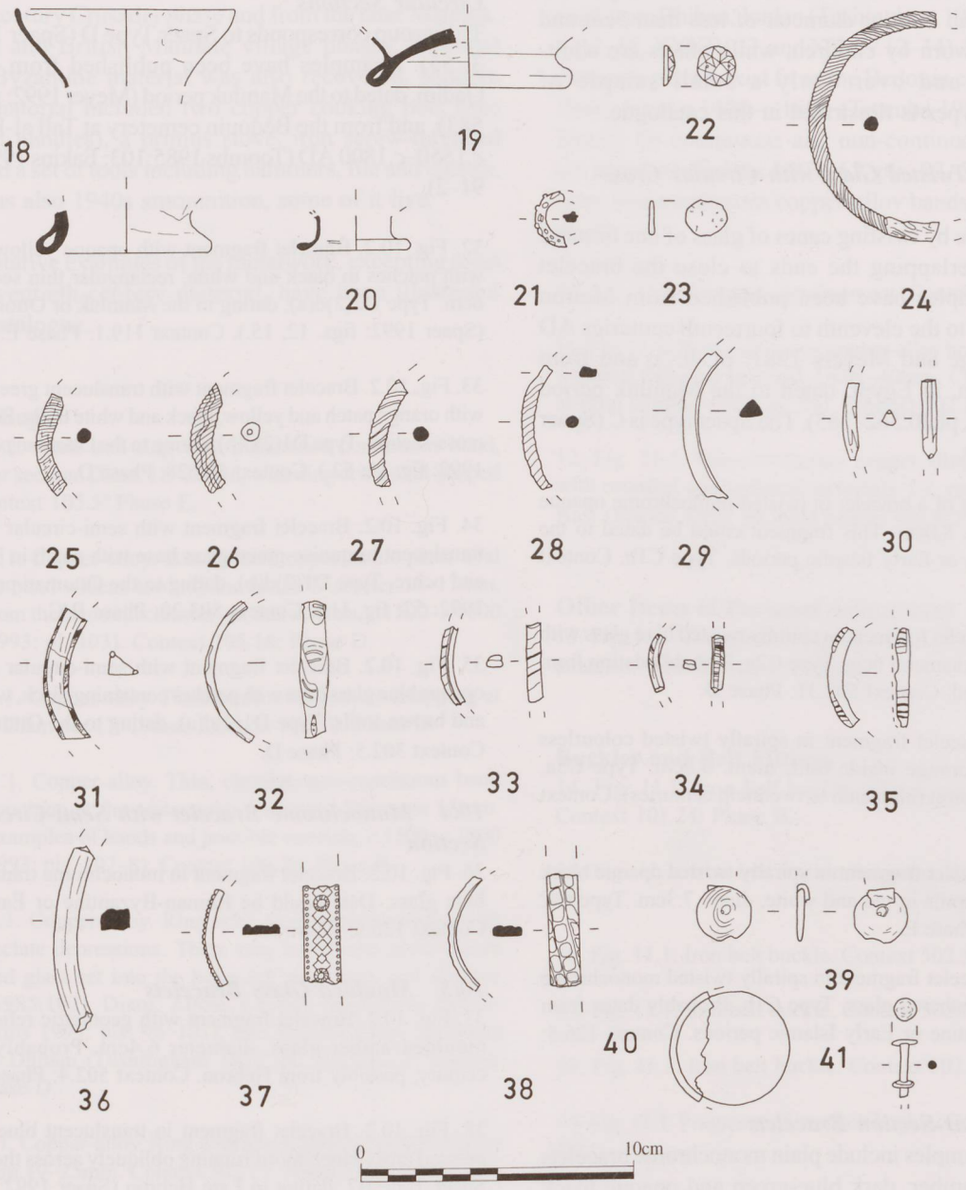


Figure 10.2. Belmont (Suba): glass (nos. 18–41). Scale 1:2.



divided into variants and pattern varieties. A period is suggested for each type.

Sixty-nine glass bracelet (bangle) fragments were recovered. Most are very fragmentary. The collection appears to include several residual pieces that date from the Roman-Byzantine or Early Islamic periods, while the majority appear to be Mamluk and Ottoman. Many of the examples have an interior diameter of less than 5cm and were probably worn by children, while others are adult-sized at 6cm and over. Only a small sample of representative types is illustrated in this catalogue.

10.1 Spirally Twisted Glass with Circular Cross-Section

These were made by twisting canes of glass of one or more colours and overlapping the ends to close the bracelet (seamed). Examples have been published from Meiron (Mairun), dated to the eleventh to fourteenth centuries AD (Meyers, Strange and Meyers 1981: pl. 9.7); and from Qusair al-Qadim, in Egypt, dated to the Mamluk period (Meyer 1992: 92, pl.20:562–565). The Spaer type is C (Spaer 1992: table 2, 49).

24. Fig. 10.2. Half of a bracelet in twisted monochrome opaque black glass, diam. 8.0cm. This fragment could be dated to the Roman-Byzantine or Early Islamic periods. Type C1b. Context 111.5: Phase D.

25. Fig. 10.2. Bracelet fragment in spirally twisted blue glass with single white trail, diameter 6cm. Type C2a. Probably dating from the Ottoman period. Context 502.31: Phase D.

26. Fig. 10.2. Bracelet fragment in spirally twisted colourless glass around an orange inside trail, diam. 6.8cm. Type C5a. Probably Late Hebron (ninteenth to twentieth centuries). Context 504.1: Phase D/E.

27. Fig. 10.2. Bracelet fragment in spirally twisted opaque black glass with single trails in red and white, diam. 7.3cm. Type C4. Context 503.11: Phase E.

28. Fig. 10.2. Bracelet fragment in spirally twisted monochrome pale turquoise weathered glass. Type C1b. Probably dates from the Roman-Byzantine or Early Islamic periods. Context 126.5: Phase D.

10.2 Triangular-Section Bracelets

Comparative examples include plain monochrome bracelets in blue, green, amber, dark blue-green and opaque black glass from Qusair al-Qadim, dated to the Mamluk period (Meyer 1992: 91, pl. 20:554–561), a dark opaque bracelet of the Mamluk period from Jarash (Meyer 1987: 214) and a bracelet of the eleventh to fourteenth centuries AD from Meiron (Meyers, Strange and Meyers 1981: pl.9.7).

29. Fig. 10.2. Bracelet fragment in very weathered monochrome glass with an evenly pointed triangular section, diam. 7.5cm. Spaer Type A4b (Spaer 1992: Table 1, 48). Mamluk or Ottoman period. Context 302.3: Phase D.

30. Fig. 10.2. Bracelet fragment in brown glass with an evenly pointed triangular section, with side strip of pale brown opaque glass along the outer point. Spaer Type D3(2) (Spaer 1992: table 3, 55; 59, fig. 24:6). Early Islamic or later. Context 502.24: Phase D.

31. Fig. 10.2. Obliquely pointed triangular sectioned bracelet fragment with twisted cane decorated side strips of black, white and ochre trails along two points, diam. 7cm. Spaer Type D4(3) (Spaer 1992: table 3, 55.). Late Hebron. Cf. Qusair al-Qadim, Mamluk period (Meyer 1992, pl. 20:570, 571). Context 502.25: Phase E.

10.3 Polychrome Bracelets with Flat or Semi-Circular Sections

This group corresponds to Spaer Type D (Spaer 1992: table 3, 55). Examples have been published from Qusair al-Qadim, dated to the Mamluk period (Meyer 1992: pl. 20:578–583), and from the Bedouin cemetery at Tall al-Hasi, dated *c.*1550–*c.*1800 AD (Toombs 1985:103; Eakins 1993:61–2, pl 91–2).

32. Fig. 10.2. Bracelet fragment with opaque yellow glass base with patches in black and white, rectangular thin section, diam. 6cm. Type D2(2)d(a), dating to the Mamluk or Ottoman periods (Spaer 1992: figs. 12, 15.). Context 119.1: Phase E.

33. Fig. 10.2. Bracelet fragment with translucent green glass base with orange patch and yellow, black and white trails. Semi-circular cross-section. Type D1(2)d(b), dating to the Ottoman period (Spaer 1992: fig. 11: 52.). Context 502.28: Phase D.

34. Fig. 10.2. Bracelet fragment with semi-circular section and translucent turquoise-green glass base with patch in black, white and ochre. Type D1(2)d(b), dating to the Ottoman period (Spaer 1992: 52: fig. 11.). Context 503.20: Phase B/C.

35. Fig. 10.2. Bracelet fragment with semi-circular section and opaque blue glass base with patches containing black, white, yellow and brown trails. Type D1(2)d(a), dating to the Ottoman period. Context 302.5: Phase D.

10.4 Monochrome Bracelet with Semi-Circular Section

36. Fig. 10.2. Bracelet fragment in monochrome translucent pale blue glass. Date could be Roman-Byzantine or Early Islamic. Context 126.5: Phase A.

10.5 Moulded Glass Bracelets

37. Fig. 10.2. Bracelet fragment with geometric relief design in moulded amber glass, diameter 6.4cm. Probably twentieth century, possibly from Hebron. Context 502.4: Phase E.

38. Fig. 10.2. Bracelet fragment in translucent blue glass with pressed cross-hatch motif running obliquely across the outer face. Spaer Type B7, dating to Late Hebron (Spaer 1992: table 1.49, fig. 3.). Context 502.23: Phase E.

11 Pendant

39. Fig. 10.2. Blue glass disc held by blue glass clasp, diameter 2cm. Context 302.5: Phase D.

12 Mirrors

40. Fig. 10.2. Small circular vanity mirror of flat glass held in iron frame, diam. 4.4cm. Context 306.10: Phase D.

13 Miscellaneous

41. Fig. 10.2. Opaque blue glass shaft with round head and collar. Context 305.1: Phase E.

CHAPTER 11
THE METALWORK

Anthony Grey

Iron and copper-alloy objects and fragments of various types, often badly corroded, were recovered from the twelfth-century Crusader phase and from the later Mamluk, Ottoman and British Mandate village phases. Residual Roman-Byzantine material was also recovered. Modern village material included two copper cooking pots (one with iron handles), a primus stove, iron screw-threaded hooks and a set of tools including hammers, file and chisels. There was also 1940s ammunition, some of it live.

Representative examples of the metalwork, excepting most of the twentieth-century material, have been illustrated for the catalogue.

Finger Rings

1. Fig. 11.1. Plain iron ring with a flattened continuous band, rectangular section. Diam. 18–20mm, widening at the oval-shaped bezel. Context 105.5: Phase E.

2. Fig. 11.1. Copper-alloy. Band joined opposite the plain oval bezel. The band widens towards the bezel. Diameter 16–17mm. Cf. ring from the Bedouin cemetery at Tall al-Hasi, *c.*1500–*c.*1800 (Eakins 1993: pl. 103). Context 105.16: Phase D.

3. Fig. 11.1. Copper-alloy. Plain band with ends overlapping at the bezel. Diameter 17–19mm. Context 106.10: Phase D.

4. Fig. 11.1. Copper-alloy. Thin, circular, non-continuous band of wire, touching at the rectangular terminals. Diameter 18mm. Cf. four examples of bands and possible ear-ring, *c.*1500–*c.*1800 (Eakins 1993: pls. 107–8). Context 106.20: Phase B.

5. Fig. 11.1. Copper-alloy. Ring with oval bezel decorated with seven punctate depressions. There may have been small pieces of coloured glass set into the holes (cf. ring from Tall al-Hasi: Toombs 1985:102). Diam. 2.0cm. Cf. two rings from Tall al-Hasi (Eakins 1993: pls. 98–101); late fourth-century (or later) ring from Dhiban (Tushingham 1972: pl. XXXV.32). Context 126.5: Phase D.

6. Fig. 11.1. Copper-alloy. Ring with green glass set in the circular bezel. Diam.19–25mm. Context 502.17: Phase D/E.

7. Fig. 11.1. Copper-alloy. Band with the ends originally overlapping or joined. The band widens at the angular ovoid bezel. Context 503.15: Phase E.

8. Fig. 11.1. Copper-alloy. Circular bezel and fragment of band. Context 502.37: Phases B–D.

Ear-Ring

9. Fig. 11.1. Triangular-shaped ear-ring of coiled and chainlink wire. with two tiny blue beads. Diam. 14mm., width 13mm. Context 502.4: Phase E.

Bracelets

Early seventh-century parallels in iron and copper-alloy exist from Dhiban, Jordan (Tushingham 1972: pls. XXXIII.1–4, 12–18, XXXIV.27, and XXXV.12–14). Examples from the Ottoman period exist from the Bedouin cemetery at Tall al-Hasi, dated *c.*1400–*c.*1800 (Toombs 1985; Eakins 1993). Nearly 50 continuous and non-continuous iron bracelets are reported (Eakins 1993: 63, pls. 93–5), along with two open non-continuous copper-alloy bands (Eakins 1993:61, pl. 89).

10. Fig. 11.1. Iron bracelet fragment. Context 105.20: Phase D.

11. Fig. 11.1. Non-continuous copper-alloy bracelet fragment with widened flattened terminal. Diam. 40mm. Cf example from Tall al-Hasi (Eakins 1993: pl. 89). Context 102.10: Phase C.

12. Fig. 11.1. Non-continuous copper-alloy bracelet fragment with rounded and widened terminals. Cf. example from Tall al-Hasi (Eakins 1993: pl. 89).Context 106.8: Phase D.

Other Items of Personal Adornment

13. Fig. 11.1. Elongated looped pendant of iron with three coins attached. Context 102.5: Phase E.

Buckles and Belt Fittings

14. Fig. 11.1. Iron belt buckle, 43mm long and 38mm wide. Context 101.24: Phase B.

15. Fig. 11.1. Iron belt buckle fragment. Context 102.5: Phase E.

16. Fig. 11.1. Iron belt buckle. Context 502.37: Phases B–D.

17. Fig. 11.1. Iron belt buckle. Context 502.37: Phases B–D.

18. Fig. 11.1. Iron belt buckle. Context 502.42: Phase D.

19. Fig. 11.1. Fragment of iron belt buckle. Context 503.20: Phase B/C.

20. Fig. 11.1. Copper-alloy belt buckle. Context 503.20: Phase B/C.

21. Fig. 11.1. Composite belt buckle of copper-alloy and iron. Context 302.6: Phase C/D.

22. Fig. 11.2. Copper-alloy buckle. Context 502.33: Phase D.

23. Fig. 11.2. Copper-alloy belt fastener. Context 502.8: Phase D.

24. Fig. 11.2. Iron belt fastener. Context 106.20: Phase B.

25. Fig. 11.2. Possible fragment of copper-alloy belt plate, folded over the belt and rivetted. Context 105.10: Phase E.

Figure 11.1. Belmont (Suba): metalwork: finger rings (nos. 1–8), ear-ring (no. 9), bracelets (nos. 10–12), pendant (no. 13), buckles and belt-fittings (nos. 14–21). Scale 1:2.

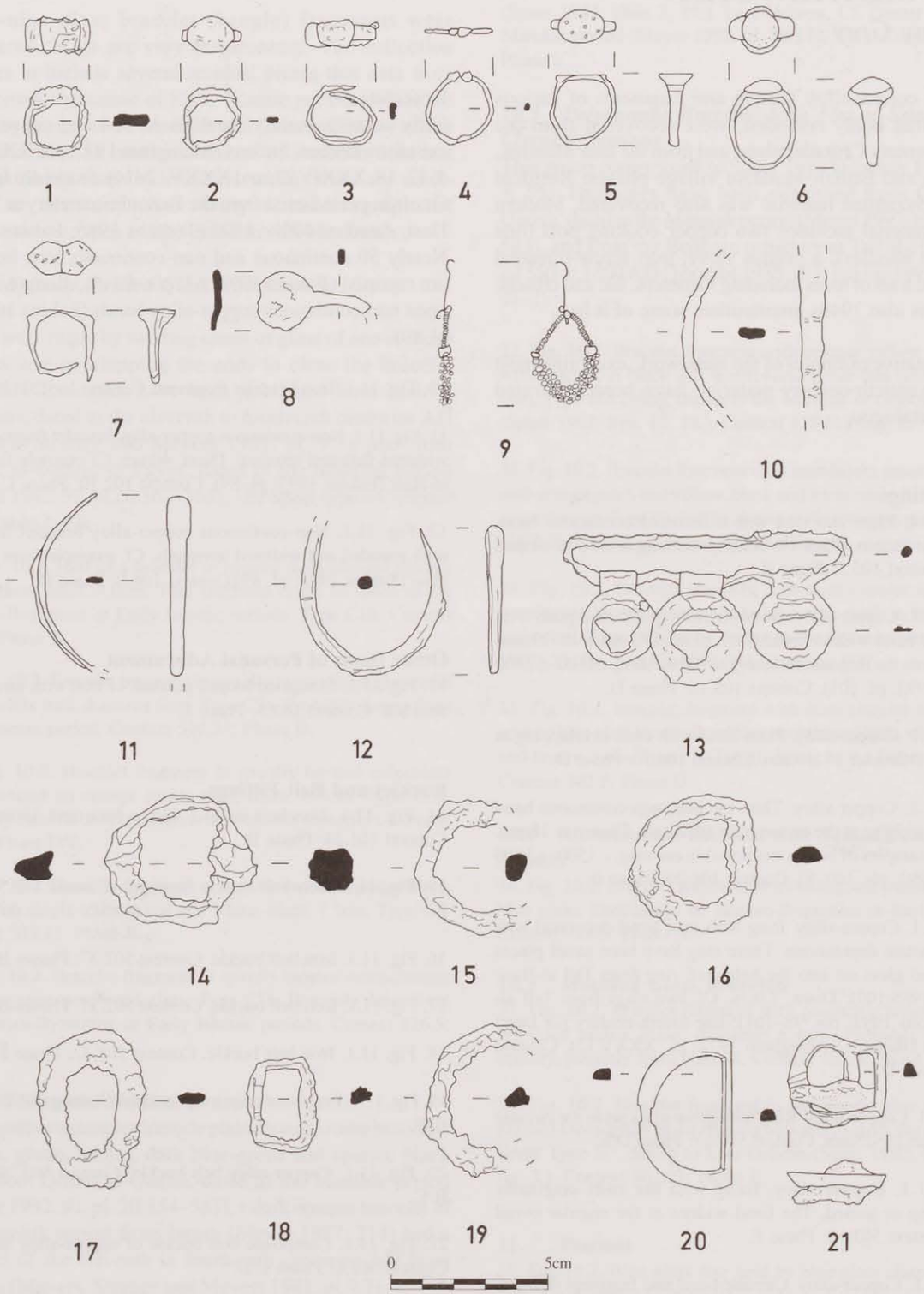
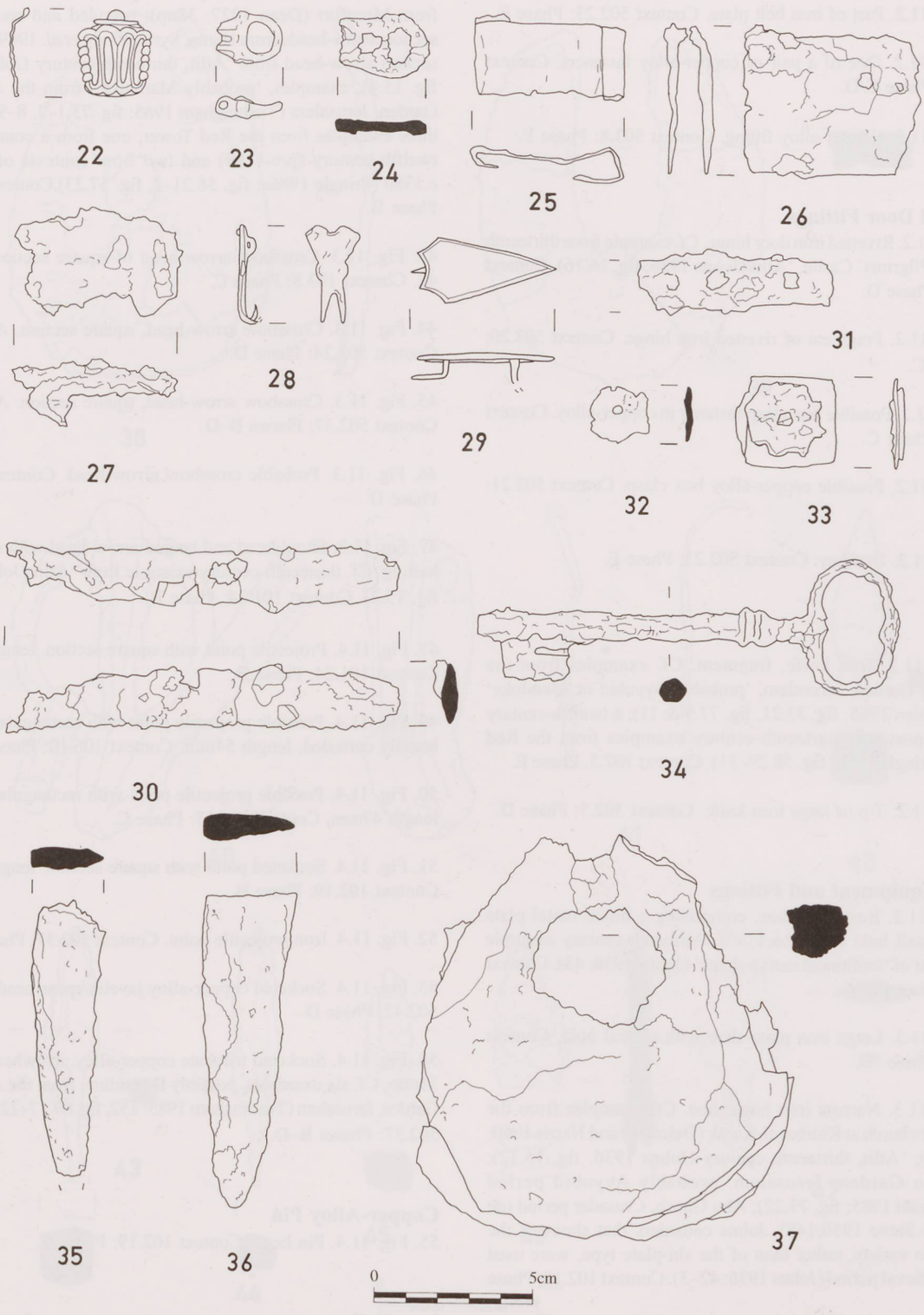


Figure 11.2. Belmont (Suba): metalwork: belt-fittings (nos. 22–9), box and door fittings (nos. 30–34), knives (nos. 35–6), horse equipment (nos. 37). Scale 1:2.



26. Fig. 11.2. Part of rivetted iron belt plate. Context 502.49: Phase ?B.

27. Fig. 11.2. Part of iron belt plate. Context 502.23: Phase E.

28. Fig. 11.2. One of a pair of copper-alloy fasteners. Context 302.13: Phase C/D.

29. Fig. 11.2. Copper-alloy fitting. Context 503.8: Phase E.

Box and Door Fittings

30. Fig. 11.2. Rivetted iron door hinge. Cf. example from thirteenth century, Pilgrims' Castle, 'Atlit (Johns 1936: fig. 16.16). Context 105.16: Phase D.

31. Fig. 11.2. Fragment of rivetted iron hinge. Context 503.20: Phase B/C.

32. Fig. 11.2. Possible box clasp fastener in copper-alloy. Context 106.13: Phase C.

33. Fig. 11.2. Possible copper-alloy box clasp. Context 502.21: Phase D.

34. Fig. 11.2. Iron key. Context 502.23: Phase E.

Knives

35. Fig. 11.2. Iron knife, fragment. Cf. examples from the Armenian Garden, Jerusalem, 'probably Ayyubid or Mamluke' (Tushingham 1985: fig. 73.21, fig. 77.9 & 11); a twelfth-century and two post-late-fourteenth-century examples from the Red Tower (Pringle 1986: fig. 58.29–31). Context 102.5. Phase E.

36. Fig. 11.2. Tip of large iron knife. Context 302.5: Phase D.

Horse Equipment and Fittings

37. Fig. 11.2. Iron horseshoe, comprising a broad metal plate with a small hole at the back. Cf. thirteenth-century example from 'Atlit of 'traditional native shape' (Johns 1936: 43). Context 102.5: Phase E.

38. Fig. 11.3. Large iron plate shoe with central hole. Context 502.21: Phase ?B.

39. Fig. 11.3. Narrow iron horseshoe. Cf. examples from the Byzantine church at Khirbat al-Karak (Delougaz and Harris 1960: pl. 48.13); 'Atlit, thirteenth century (Johns 1936: fig. 15.12); Armenian Garden, Jerusalem, probably Ayyubid period (Tushingham 1985; fig. 73.22); Abu Ghosh, Crusader period (de Vaux and Steve 1950:148). Johns considers that shoes of the more open variety, rather than of the slit-plate type, were used in the medieval period (Johns 1936: 42–3). Context 102.19: Phase C.

40. Fig. 11.3. Possible iron bridle. Context 503.11: Phase E.

?Needles for Stitching

41. Fig. 11.3. Two fragments of copper-alloy wire (2mm thick), one with a closed loop end. Cf. bronze needle (perhaps from the Ayyubid or Mamluk periods) from the Armenian Garden, Jerusalem (Tushingham 1985: fig. 70:1–2). Context ?101.24: Phase B.

Iron Weapon-Points

42. Fig. 11.3. Crossbow arrow-head with square section, length 5.2cm. Cf. thirteenth-century rectangular-section arrow-heads from Montfort (Dean 1927: 38np); rounded and rectangular-section arrow-heads from Hama, Syria (Ploug *et al.* 1969); square-section arrow-head from 'Atlit, thirteenth century (Johns 1936: fig. 15:4); examples, 'probably Mamluke', from the Armenian Garden, Jerusalem (Tushingham 1985: fig. 73.1–2, 8–9, 10, 33); three examples from the Red Tower, one from a context dated twelfth century (pre-1189) and two from contexts of *c.*1189–*c.*1380 (Pringle 1986a: fig. 56.21–2, fig. 57.23).Context 101.24: Phase B.

43. Fig. 11.3. Crossbow arrow-head of square section. As no. 42. Context 103.8: Phase C.

44. Fig. 11.3. Crossbow arrow-head, square section. As no. 42. Context 502.24: Phase D.

45. Fig. 11.3. Crossbow arrow-head, square section. As no. 42. Context 502.37: Phases B–D.

46. Fig. 11.3. Probable crossbow arrow-head. Context 503.21: Phase D.

47. Fig. 11.3. Shouldered and tanged arrow-head with socket for hafting. Cf. thirteenth-century example from 'Atlit (Johns 1936: fig. 15.2). Context 101.24: Phase B.

48. Fig. 11.4. Projectile point with square section, length 77mm. Context 101.24: Phase B.

49. Fig. 11.4. Possible projectile point with rectangular section, heavily corroded, length 54mm. Context 106.10: Phase D.

50. Fig. 11.4. Possible projectile point with rectangular section, length 47mm. Context 106.13: Phase C.

51. Fig. 11.4. Socketed point with square section, length 45mm. Context 102.19: Phase B.

52. Fig. 11.4. Iron projectile point. Context 502.37: Phases B–D.

53. Fig. 11.4. Socketed copper-alloy javelin/spear-head. Context 502.42: Phase D.

54. Fig. 11.4. Socketed trilobate copper-alloy arrowhead, length 31mm. Cf. six examples, possibly Byzantine, from the Armenian Garden, Jerusalem (Tushingham 1985: 152, fig. 69.17–22). Context 502.37: Phases B–D.

Copper-Alloy Pin

55. Fig. 11.4. Pin head. Context 102.19: Phase C.

Iron Nails

Among the nails recovered is a range of standard medieval types of varying size, with round heads, square shaft sections and often with bent ends, suggesting use in woodwork (Pringle 1986: 169). Not all the fragments recovered have been illustrated. Comparisons of the Byzantine and Early Islamic periods may be found at Khirbat al-Karak (Delougaz and Haines 1960: pl. 48.5–6), of the ninth century onwards at Corinth (Davidson 1952: pls.

Figure 11.3. Belmont (Suba): metalwork: horse equipment (nos. 38–40), ?needles (no. 41), iron weapon points (nos. 42–7). Scale 1:2.

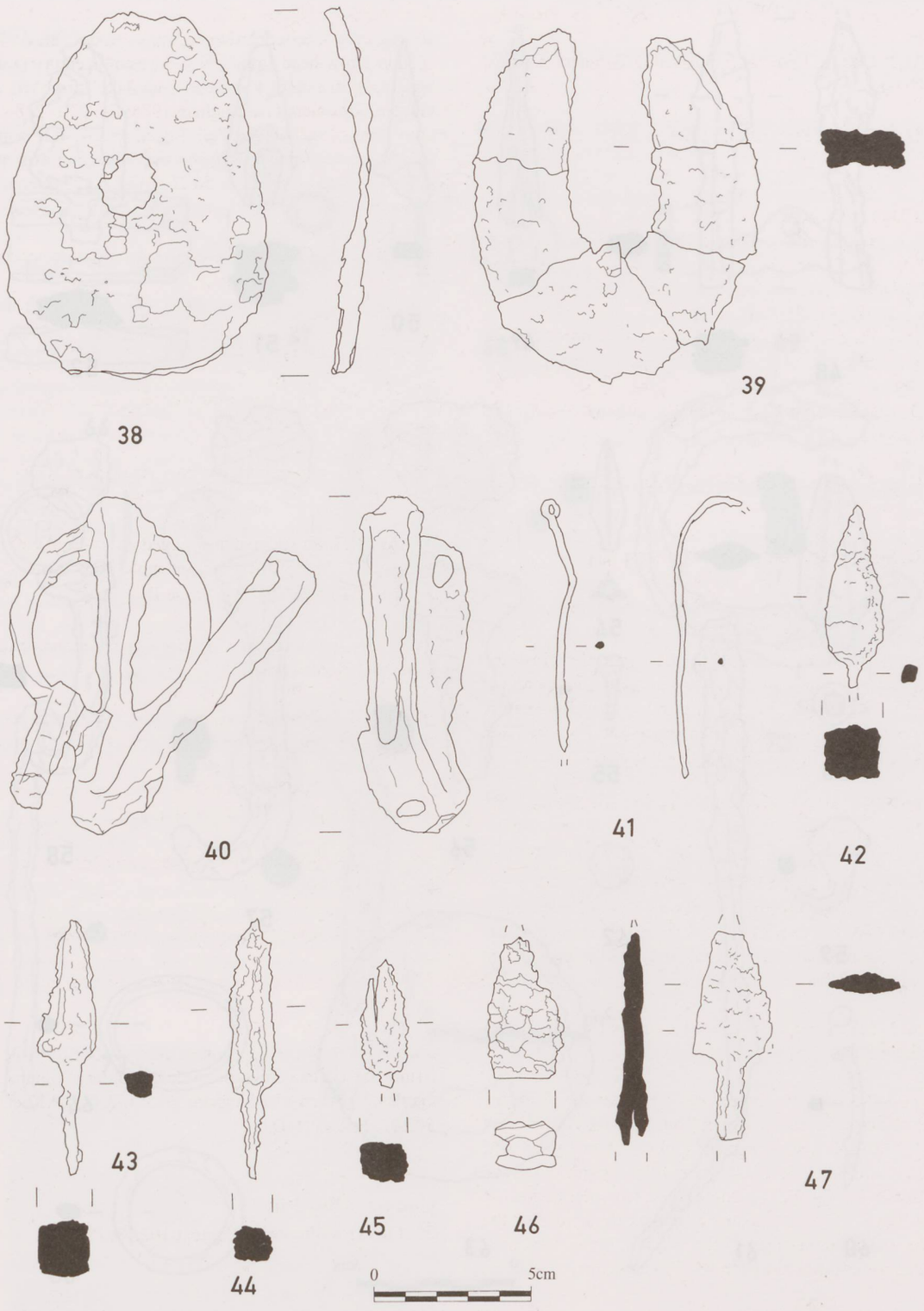


Figure 11.4. Belmont (Suba): metalwork: iron weapon-points (nos. 48–54), copper-alloy pin (no. 55), iron nails (nos. 56–61), iron shot (nos. 62–3), copper-alloy objects (nos. 64–5). Scale 1:2.

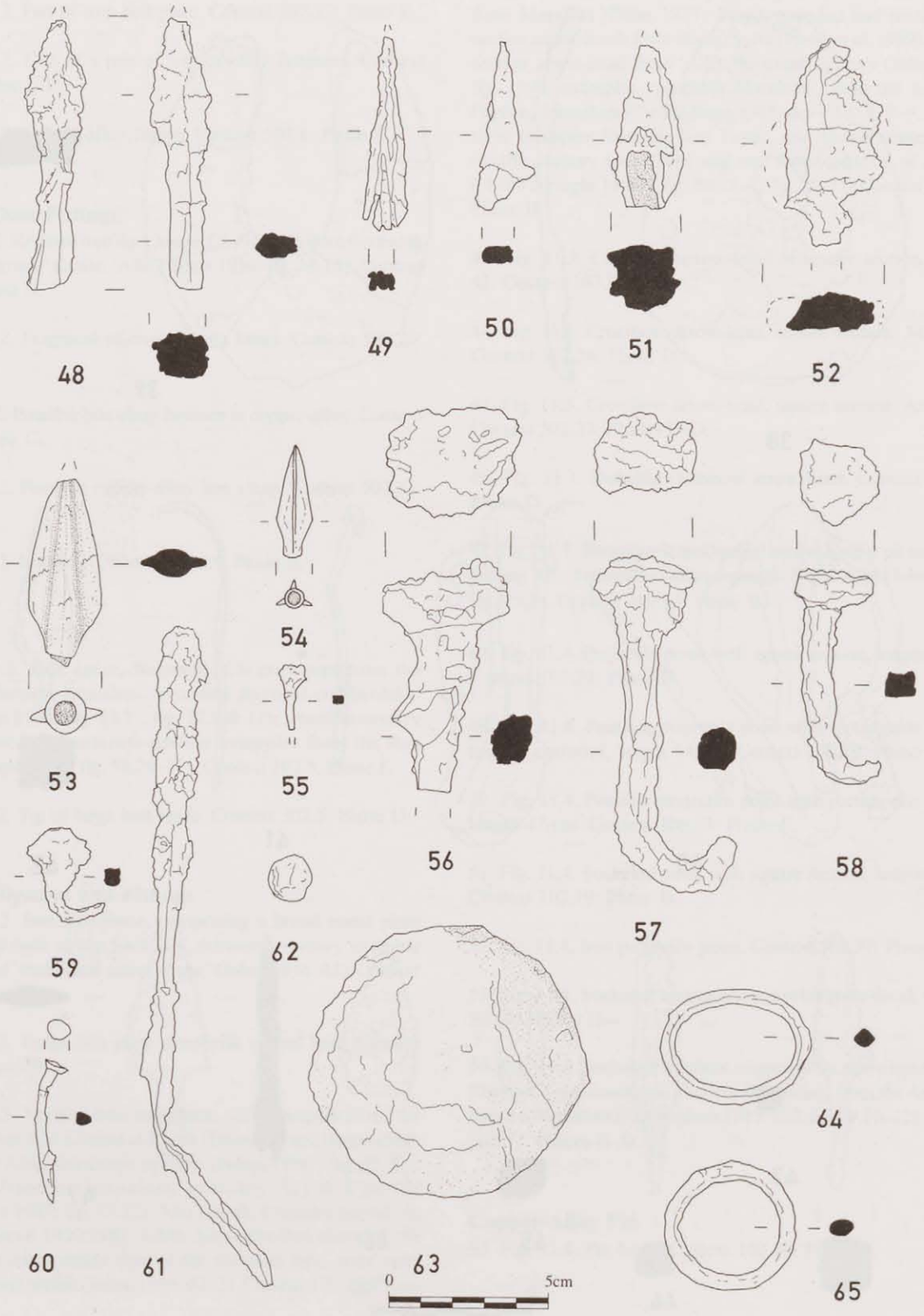
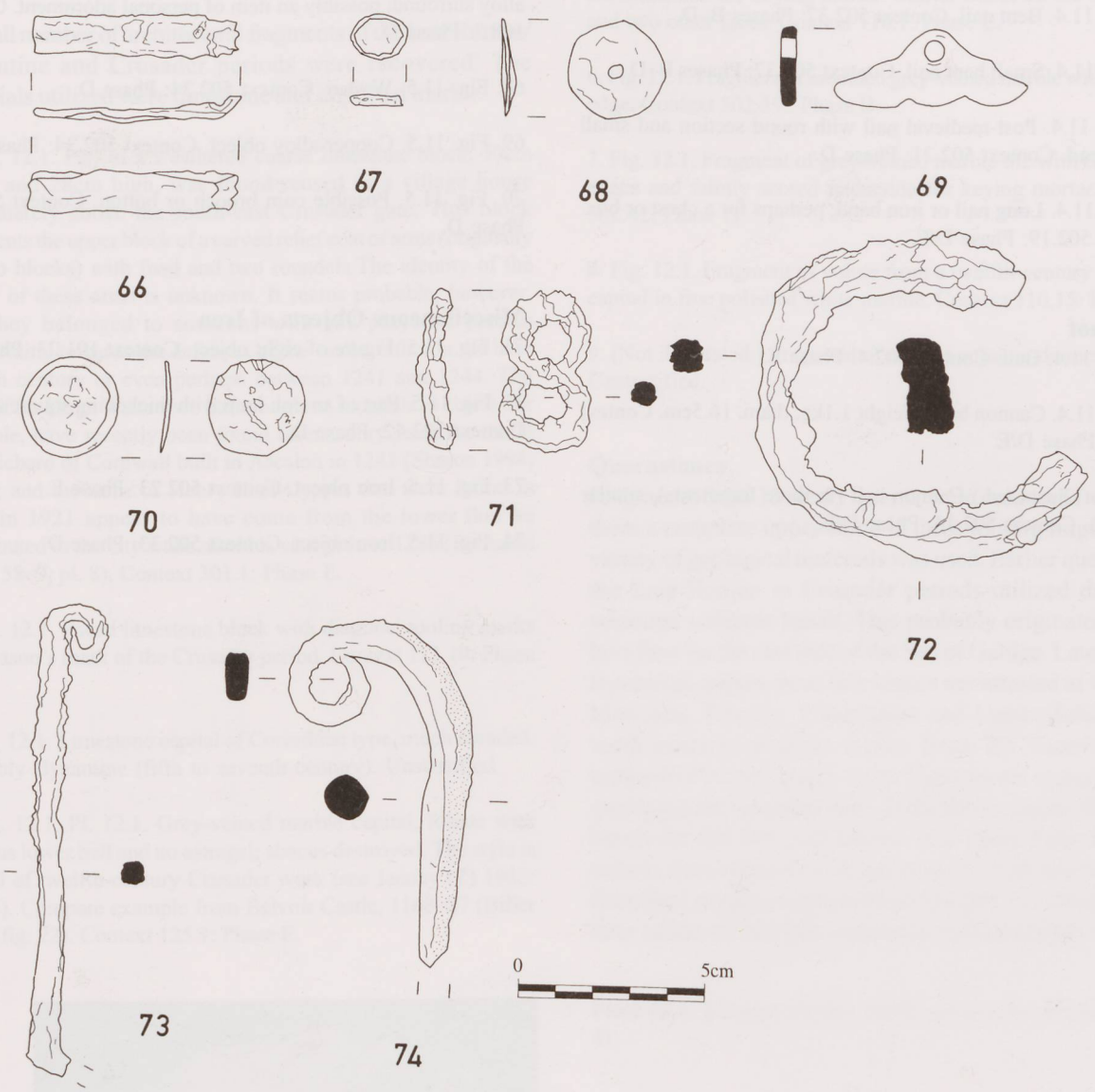


Figure 11.5. Belmont (Suba): metalwork: copper-alloy objects (nos. 66–70), iron objects (nos. 71–4). Scale 1:2.



42.10, 172), of the twelfth to twentieth centuries at the Red Tower (Pringle 1986a: figs. 59.36–47, 60.48–52), and of the thirteenth century at 'Atlit (Johns 1936: fig. 15.14).

56. Fig. 11.4. Large round-headed, square-sectioned bent nail. Context 302.12: Phase B.

57. Fig. 11.4. Large round-headed, square-sectioned bent nail. Context 502.37: Phases B–D.

58. Fig. 11.4. Bent nail. Context 502.37: Phases B–D.

59. Fig. 11.4. Small bent nail. Context 502.37: Phases B–D.

60. Fig. 11.4. Post-medieval nail with round section and small round head. Context 502.21: Phase D.

61. Fig. 11.4. Long nail or iron band, perhaps for a chest or box. Context 502.19: Phase D/E.

Iron Shot

62. Fig. 11.4. Ball. Context 502.4: Phase E.

63. Fig. 11.4. Cannon ball. Weight 1.1kg, diam. 16.5cm. Context 502.14: Phase D/E.

63a. (Not illustrated.) Cannon ball (in three fragments), similar to no. 63. Context 502.14: Phase D/E.

Miscellaneous Objects of Copper-Alloy

64. Fig. 11.4. Complete loop of oval shape, possibly a bracelet. Context 102.5: Phase E.

65. Fig. 11.4. Complete loop. Context 302.6: Phase C/D.

66. Fig. 11.5. Folded copper alloy sheet. Context 103.12: Phase B.

67. Fig. 11.5. Flat, circular piece of plain glass held in copper-alloy surround; possibly an item of personal adornment. Context 108.3: Phase D.

68. Fig. 11.5. Washer. Context 502.34: Phase D.

69. Fig. 11.5. Copper-alloy object. Context 502.34: Phase D.

70. Fig. 11.5. Possible coin brooch or button. Context 502.34: Phase D.

Miscellaneous Objects of Iron

71. Fig. 11.5. Figure of eight object. Context 101.23: Phase B.

72. Fig. 11.5. Part of an iron loop with thickening square section. Context 502.42: Phase D.

73. Fig. 11.5. Iron object. Context 502.23: Phase E.

74. Fig. 11.5. Iron object. Context 502.33: Phase D.

CHAPTER 12
MISCELLANEOUS OBJECTS OF STONE, BONE AND TERRACOTTA

Anthony Grey
with contributions by Denys Pringle

Architectural Fragments

by Anthony Grey and Denys Pringle

A small number of architectural fragments of the Late Roman/ Byzantine and Crusader periods were recovered. The materials utilized were limestone and imported marble.

1. Fig. 12.1. Part of a weathered coarse limestone block, 50cm broad and 28cm high, was found reused in a village house immediately above the south-east Crusader gate. This block represents the upper block of a carved relief coat of arms (originally on two blocks) with fusil and two roundels.The identity of the bearer of these arms is unknown. It seems probable, however, that they belonged to someone who had played a part in contributing towards the defences of the castle, either in the later twelfth century or even perhaps between 1241 and 1244. The arms of Sir Hugh Wake (two bars and three roundels in chief), for example, have recently been found on masonry from the castle that Richard of Cornwall built in Ascalon in 1241 (Sharon 1994; 1995); and the arms of Henry II of Cyprus that were found in Acre in 1921 appear to have come from the tower that he contributed to the city walls after his visit in June 1286 (Rahmani 1971: 58–9, pl. 8). Context 301.1: Phase E.

2. Fig. 12.1. Faced limestone block with diagonal tooling marks and mason's mark of the Crusader period. Context 112.10: Phase D.

3. Fig. 12.1. Limestone capital of Corinthian type, much abraded. Probably Byzantine (fifth to seventh century). Unstratified.

4. Fig. 12.1, Pl. 12.1. Grey-veined marble capital, foliate with bulbous lower bell and no astragal; abacus destroyed. The style is typical of twelfth-century Crusader work (see Jacoby (Z) 1982: 375–6). Compare example from Belvoir Castle, 1168–87 (Biller 1989: fig. 22). Context 125.1: Phase E.

Plate 12.1. Belmont (Suba): twelfth-century marble capital (no. 4).

5. Fig. 12.1. Broken marble sub-rectangular block, 12cm long and 7cm wide, pierced by a 4cm diameter hole. Diagonal scoring on the underside for keying mortar. Mortar traces on the underside and two other faces. Context 110.1: Phase E.

6. Fig. 12.1. Fragment of moulded grey-veined marble with squared edge. Context 502.39:. Phase B.

7. Fig. 12.1. Fragment of grey-veined marble tile with chamfered edges and faintly scored underside for keying mortar. Context 502.42: Phase D.

8. Fig. 12.1. Fragment of volute from a twelfth-century Crusader capital in fine polished white marble. Context 110.15: Phase C.

9. (Not illustrated.) Fragment of marble column, diameter 15cm. Unstratified.

Quernstones

Fragments from 15 rotary querns were recovered — one of them a complete upper stone in three joining fragments. A variety of geological materials was used. Earlier querns from the Late Roman to Crusader periods utilized dark grey vesicular volcanic basalt. This probably originated from a lava flow on the east side of the Sea of Galilee. Late Roman/ Byzantine querns from this source are attested at Caesarea Maritima, Tiberias, Capernaum and Upper Zohar, and a tenth-century example comes from Tel Yoqne'am. An unfinished rotary quern from Capernaum suggests local quarrying and manufacture. It therefore seems likely that basalt for the Belmont querns also came from the same source. Some fragments of basalt quern were also recovered from the Crusader courtyard (context 502.42). Querns of the later medieval and post-medieval village period, however,

Figure 12.1. Belmont (Suba): architectural fragments, scale 1:8 (nos. 1–4); architectural fragments, scale 1:4 (nos.5–8).

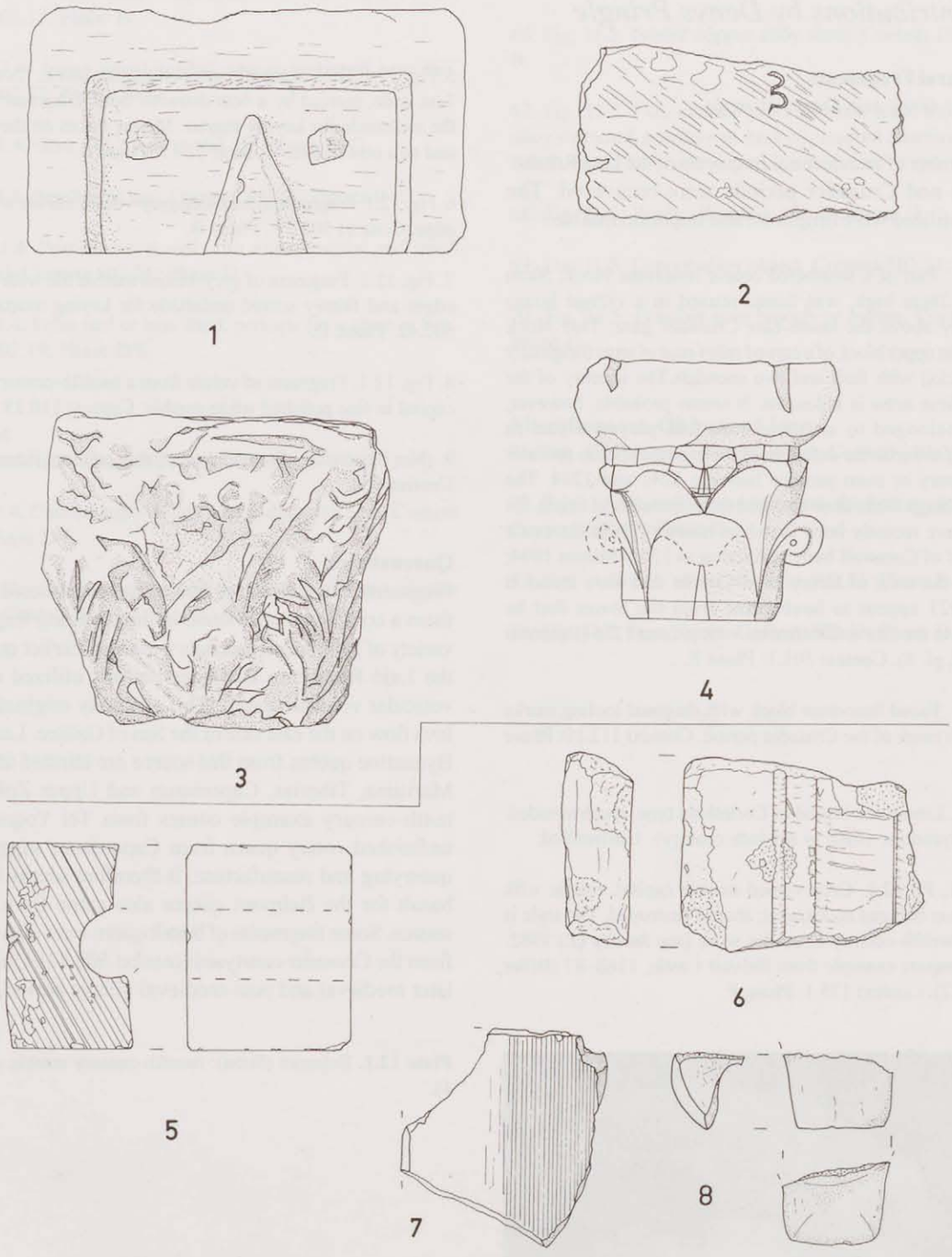
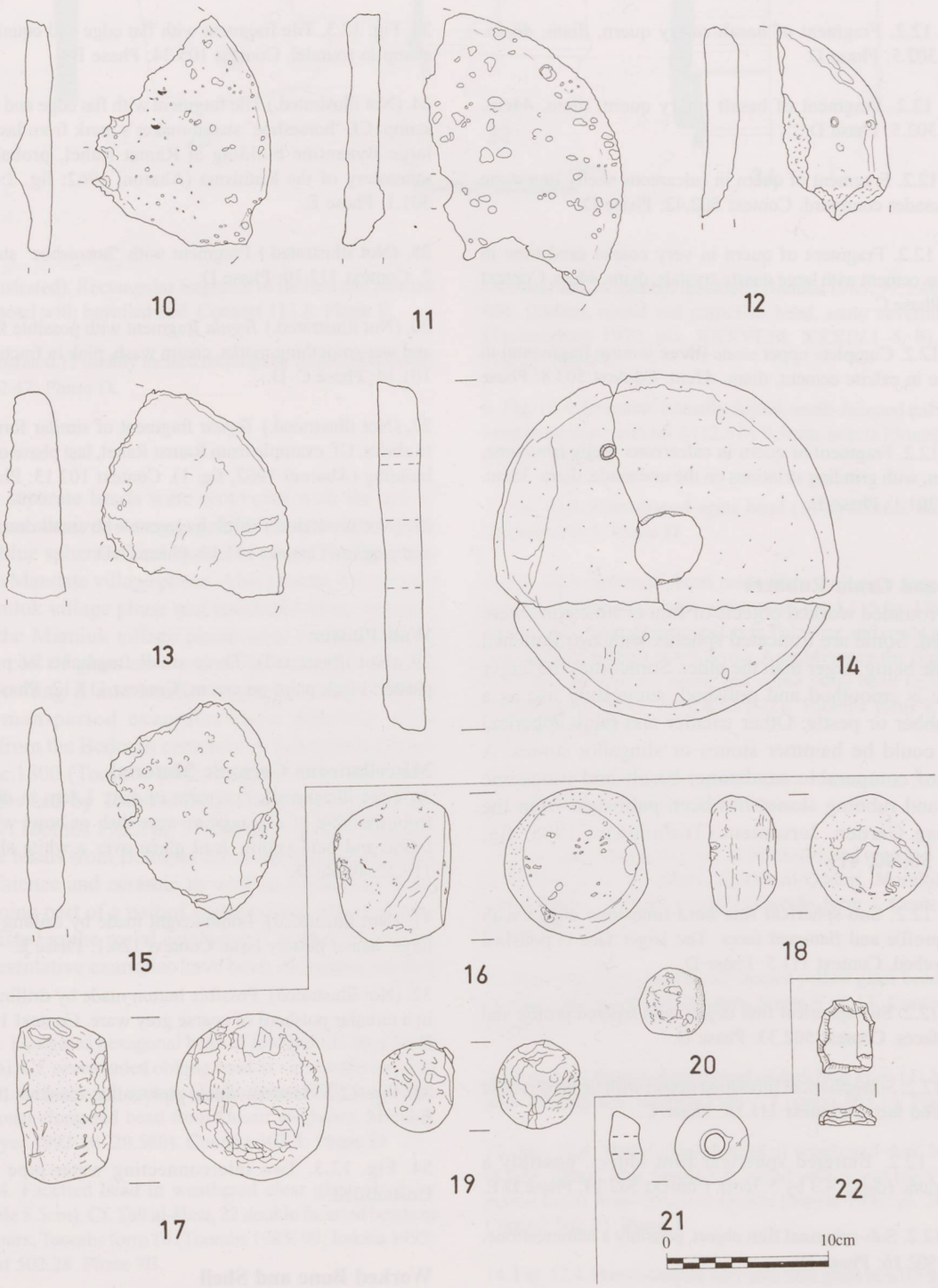


Figure 12.2. Belmont (Suba): quern stones, scale 1:8 (nos. 10–15), stone pestles and grain rubbers, scale 1:4 (nos. 16–20); spindle whorl, scale 1:4 (no. 21), worked flint, scale 1:4 (no. 22).



were made from different geological material embodying similar qualities of coarseness and hardness and derived form non-local sources.

10. Fig. 12.2. Fragment of basalt rotary quern, diam. 46cm. Context 302.5: Phase D.

11. Fig. 12.2. Fragment of basalt rotary quern, diam. 44cm. Context 302.5: Phase D.

12. Fig. 12.2. Fragment of quern in calcareous shelly limestone from Crusader courtyard. Context 502.42: Phase D.

13. Fig. 12.2. Fragment of quern in very coarse sandstone in calcareous cement with large quartz crystals, diam. 44cm. Context 110.19: Phase C.

14. Fig. 12.2. Complete upper stone (three joining fragments) in sandstone in calcite cement, diam. 42cm. Context 503.8: Phase E.

15. Fig. 12.2. Fragment of quern in calcareous shelly limestone, well worn, with grinding striations on the underside, diam. 38cm. Context 301.1: Phase E.

Pestles and Grain Rubbers

Sixteen rounded worked objects of flint or limestone were recovered. Some are truncated spheres with two flattened faces, one being larger than the other. Sometimes the larger flat face is smoothed and polished, suggesting use as a grain rubber or pestle. Other smaller and more spherical objects could be hammer stones or slingshot stones. A corpus of comparable sandstone, basalt and limestone pestles and rubbing stones has been published from the Armenian Garden, Jerusalem (Tushingham 1985: fig. 74.3, 9, 30, 40, 41).

16. Fig. 12.2. Sub-spherical fine hard limestone object with tapered profile and flattened faces. The larger face is polished and smoothed. Context 111.5: Phase D.

17. Fig. 12.2. Sub-spherical flint object with tapered profile and flat end faces. Context 502.33: Phase D.

18. Fig. 12.2. Sub-spherical limestone object with tapered profile and flat end faces. Context 111.16: Phase C.

19. Fig. 12.2. Battered spherical flint object, possibly a hammerstone (diam. 4.3 by 5.3cm). Context 502.14: Phase D/E.

20. Fig. 12.2. Sub-spherical flint object, possibly a hammerstone. Context 502.16: Phase D.

Spindle Whorl

21. Fig. 12.2. Smoothed, polished grey shale spindle whorl. Cf. fine grey terracotta spindle whorl of fifth to eighth century AD (Pringle 1986a: fig. 61:1). Context 110.22: Phase D.

Worked Flint

22. Fig. 12.2. Convex flint 'thumbnail' scraper, steeply retouched along all edges on a truncated blade. Context 301.1: Phase E.

Brick and Tile

A range of brick and tile fragments from the Roman-Byzantine to Modern periods was recovered and recorded.

23. Fig. 12.3. Tile fragment with flat edge and equal-arm cross-stamp in roundel. Context 105.34: Phase B.

24. (Not illustrated.) Tile fragment with flat edge and 'horseshoe' stamp. Cf. 'horseshoe' stamp maker's mark from last phase of a large Byzantine building at Ramat Rahel, probably part of monastery of the Kathisma (Aharoni 1962: fig. 2:4). Context 301.1: Phase E.

25. (Not illustrated.) Fragment with 'horseshoe' stamp, as no. 2. Context 112.10: Phase D.

26. (Not illustrated.) *Tegula* fragment with possible faint *graffito* and wet-smoothing marks, cream wash, pink in fracture. Context 101.14: Phase C–D.

27. (Not illustrated.) *Tegula* fragment of similar form and ware to above. Cf. example from Ramat Rahel, last phase of Byzantine building (Aharoni 1962, fig. 1). Context 102.13: Phase C.

28. (Not illustrated.) Brick fragment with small deep depression and *graffito*. Context 101.14. Phase C–D.

Wall Plaster

29. (Not illustrated). Three small fragments of painted wall plaster: black paint on cream. Context 113.12: Phase C.

Miscellaneous Ceramic Material

30. (Not illustrated). Fragment of disc, 1.8cm in diameter, cut from the base of a *sgraffiato* ware dish or bowl with pale red fabric and pale yellow lead glaze over a white slip. Context 110.22: Phase D.

31. (Not illustrated). Loomweight made by drilling a hole in a large, heavy pottery base. Context 126.1: Phase E.

32. (Not illustrated). Possible button made by drilling two holes in a circular potsherd of coarse grey ware. Context 106.1: Phase E.

33. Fig. 12.3. Modern water pipe collar. Context 101.1: Phase E.

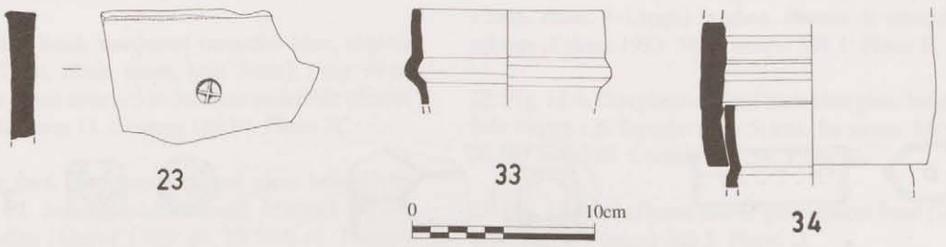
34. Fig. 12.3. Two interconnecting water pipe fragments. Unstratified.

Worked Bone and Shell

35. (Not illustrated). Possibly a cross-headed bone pin for use as a clothing fastener or lady's hairpin. Cf. a pin, described as 'probably Ayyubid', from the Armenian Garden, Jerusalem (Tushingham 1985: fig. 69.16). Context 502.42: Phase D.

36. (Not illustrated). Spindle whorl of sub-spherical, lathe-turned bone with incised decoration including turned rings. Cf. an example, probably medieval (Ayyubid/Mamluk period) from the Armenian Garden, Jerusalem (Tushingham 1985: fig. 68.3). Context 502.42: Phase D.

Figure 12.3. Belmont (Suba): stamp-impressed tile fragment (no. 23), water-pipes (nos. 33–34). Scale 1:4.



37. (Not illustrated). Rectangular fragment of incised and pierced mother-of-pearl with bevelled end. Context 113.8: Phase E.

38. (Not illustrated.) Possibly incised rectangular fragment of bone. Context 502.42: Phase D.

Beads

Sixty-four separate beads were recovered with the aid of sieving. None survived strung together. Most common were turquoise-blue spherical and spacer beads of the Ottoman and British Mandate village phase. Also present were beads of the Mamluk village phase and residual earlier material. Beads of the Mamluk village phase were made either by winding a coil of glass on a rod or by making a tube of glass and cutting it into smaller segments (Meyer 1992: 94). Ottoman-period examples show parallels with examples from the Bedouin cemetery at Tall al-Hasi, dated *c.*1440 to *c.*1800 (Toombs 1985; Eakins 1993). The form numbers devised by Toombs for his typology of Tall al-Hasi beads (Toombs 1985: pl. 57) are used in the catalogue below. The beads from Belmont are made from geological material, faience and ceramic as well as from glass. Two beads forming part of a pair of copper-alloy wire coil earrings are listed in the metal catalogue (Chapter 11, no. 9). Only representative examples have been illustrated for this catalogue.

1. Fig. 12.4. Elongated hexagonal bead of feldspar (21 by 12mm, hole 1.5mm). Cf. seven-sided oblong bead in vari-coloured paste from Dhiban, early seventh century (Tushingham 1972); turquoise-blue hexagonal elongated bead from Qusair al-Qadim, Mamluk period (Meyer 1992: pl. 20.580). Context 302.5: Phase D.

2. Fig. 12.4. Facetted bead in weathered clear glass (16.5 by 14.5mm, hole 5.5cm). Cf. Tall al-Hasi, 22 double facetted beads in various colours, Toombs form 16 (Toombs 1985: 99; Eakins 1993: 60). Context 502.28. Phase ?B.

3. Fig. 12.4. Facetted bead in blue glass (8 by 8mm, hole 2mm). Cf. Toombs form 16: double facetted bead. Context 504.1: Phase E.

4. Fig. 12.4. Hexagonal, multiple-facetted blue glass bead (6 by 6mm, hole 3mm). Cf. Tall al-Hasi (Eakins 1993: 60); Qusair al-Qadim, turquoise-green hexagonal bead, Roman period (Meyer 1992: pl. 14.372). Context 304.1: Phase E.

5. Fig. 12.4. Irregular, multi-facetted red carnelian bead (11 by 10.5mm, hole 1mm). Cf. Toombs forms 14 (biconical and double facetted) and 16 (double facetted) (Toombs 1985: 99; Eakins 1993: 60); Dhiban, round red carnelian bead, early seventh century (Tushingham 1972: pls. XXXVI.14, XXXIV.1–5, 9). Context 502.25: Phase E.

6. Fig. 12.4. Irregular, laterally drilled, multi-facetted red carnelian bead associated with no. 5 (12.5 by 9.5mm, hole 0.75mm). Context 502.25: Phase E.

7. Fig. 12.4. Pear-shaped agate bead (38 by 25mm, hole 2mm). Context 111.5: Phase D.

8. Fig. 12.4. Spherical bead made from dark grey soapstone (or possibly serpentine), with white girth band (15 by 17mm, hole 3mm). This stone does not occur in Palestine and could have been imported from Sinai, north Syria, Asia Minor or the Balkans. Cf. early seventh-century black and white paste bead from Dhiban (Tushingham 1972, pl. XXXVI.22); Toombs form 8. Context 503.22: Phase B.

9. Fig. 12.4. White glass bead (17.5 by 18mm, hole 5.5mm). Cf. Toombs form 7. Context 302.5: Phase D.

10. Fig. 12.4. Spherical bead of black-painted wood (8 by 8mm, hole 2mm). Cf. for shape, Qusair al-Qadim, Mamluk period, glass (Meyer 1992, pl. 20:591); Toombs form 7. Context 302.5: Phase D.

11. Fig. 12.4. Elongated barrel-shaped yellow glass bead (14.2 by 10mm, hole 5mm). Cf. Toombs forms 6 or 13. Context 502.4: Phase E.

12. Fig. 12.4. Barrel-shaped bead of dark blue glass (11 by 12mm, hole 4.5mm). Cf. Toombs form 7. Context 503.15: Phase E.

13. Fig. 12.4. Barrel-shaped bead of weathered dark blue glass (8.5 by 10mm, hole 5mm). Cf. coiled yellow and black Mamluk period beads from Qusair al-Qadim (Meyer 1992: pl. 20.592–3). Context 502.23: Phase E.

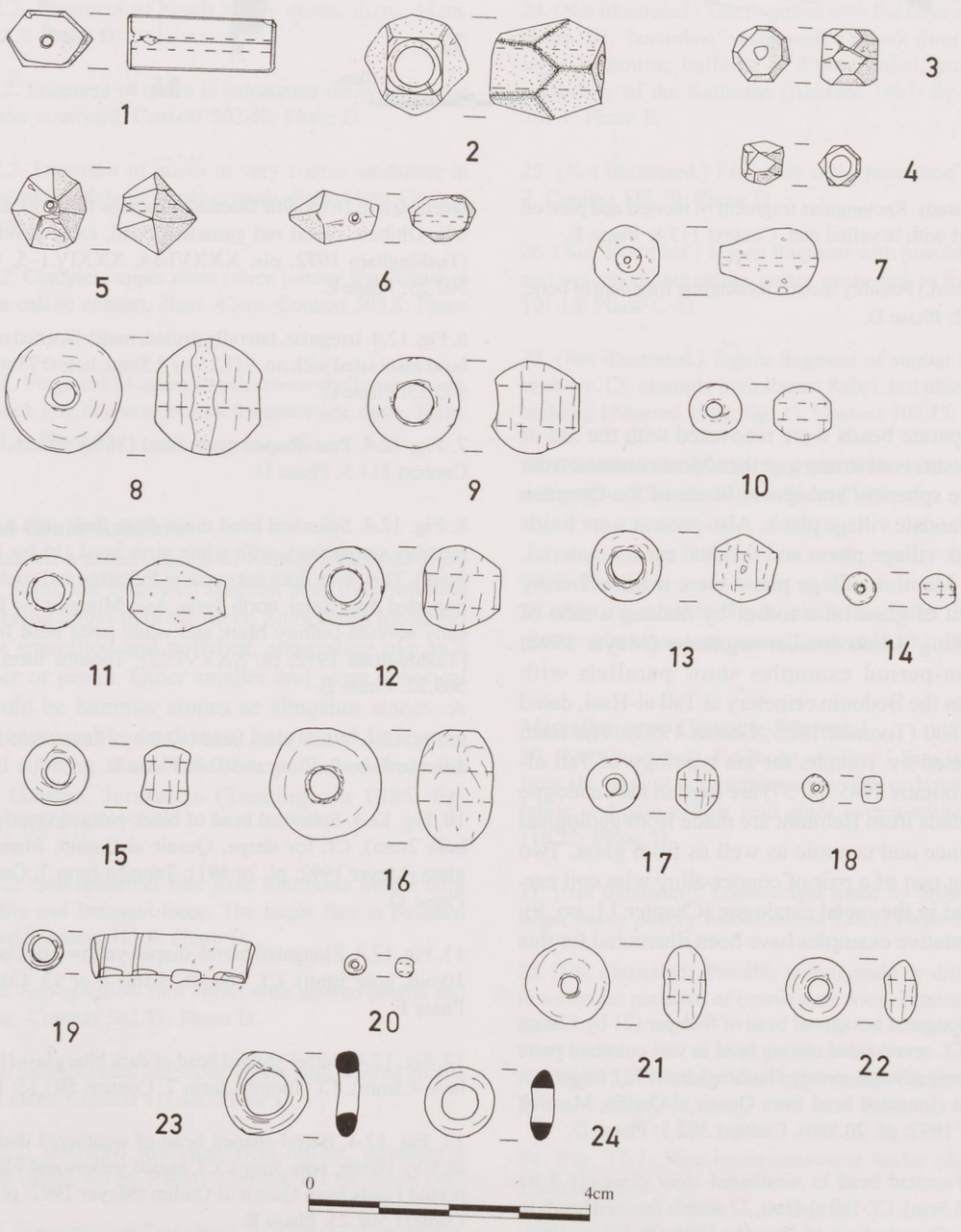
14. Fig. 12.4. Barrel-shaped very pale blue glass bead (5 by 4.8mm, hole 1mm). Cf. Toombs form 7. Context 110.22: Phase D.

15. Fig. 12.4. Doughnut-shaped light turquoise-blue glass bead with concave ends (9 by 6.3mm, hole 4mm). Cf. Toombs form 10. Context 502.23: Phase E.

16. Fig. 12.4. Doughnut-shaped clear glass bead (16 by 11mm, hole 4mm). Cf. Toombs form 7. Context 502.42: Phase D.

17. Fig. 12.4. Barrel-shaped green glass bead (7.3 by 6mm, hole 2mm). Cf. Toombs form 7. Context 502.21: Phase D.

Figure 12.4. Belmont (Suba): beads (nos. 1–24). Scale 1:1.



18. Fig. 12.4. Cylindrical green bead (4 by 3mm, hole 1mm). Cf. Toombs form 10 (Toombs 1985: 97–8). Context 502.20: Phase B/C.

19. Fig. 12.4. Tubular bead, weathered turquoise-blue, slightly concave (length 22mm, diam. 6mm, hole 3mm). Four small turquoise-blue glass beads attached to concave underside (diams. 3–4mm). Cf. Toombs form 11. Context 116.10: Phase ?C.

20. Fig. 12.4. Tiny dark blue barrel-shaped glass bead (3 by 3mm, hole 1mm). Cf. dark cobalt-blue bead, Mamluk period, from Qusair al-Qadim (Meyer 1992: pl. 20.589; cf. Toombs 1985:96). Context 126.5: Phase D.

21. Fig. 12.4. Doughnut-shaped white glass bead (12 by 3.5mm, hole 2.5mm). Cf. Toombs form 5 and, for shape, a turquoise and a green Mamluk-period bead and a black Roman-period bead from Qusair al-Qadim (Meyer 1992: pl. 20.587, 590, pl.14.373). Around 500 such beads have been reported from Tall al-Hasi (length 7–12mm, diam. 4–15mm) in glass, faience or ceramic in varying colours (Eakins 1993: 58). Context 301.1: Phase E.

22. Fig. 12.4. Doughnut-shaped dark blue glass bead (9 by 5mm, hole 3mm). Cf. Toombs form 5: and, for shape, Meyer 1992: pl. 20.587 and 590. Context 502.34: Phase D.

23. Fig. 12.4. Weathered amber glass spacer bead (10 by 3.5mm, hole 5mm). Context 302.5: Phase D.

24. Fig. 12.4. Turquoise-blue glass spacer bead (10 by 3.5mm, hole 5mm). This is the most abundant type of bead present at Belmont. Context 302.5: Phase D.

CHAPTER 13
THE CLAY PIPES

St John Simpson

Introduction

Some 377 semi-complete and fragmentary clay pipes (excluding joins) were recovered from the excavations at Belmont Castle.[1] This assemblage currently forms the largest published corpus from the Levant. Seventy-eight percent of these pipes derived from 25 trenches excavated in Area 100, whereas the remaining pipes were recovered from Areas 300 (10%) and 500 (11%). Although 40% came from topsoil or surface contexts, the remainder were stratified. Pipes were retained as a bulk find category throughout these excavations and a selection were drawn at the time of excavation. Further study was made possible through a grant awarded to the writer by the British School of Archaeology in Jerusalem in 1993. Each of the pipes was catalogued and drawn at 1:1. Colours were usually recorded using a Munsell Soil Color Chart (1994 revised edition). A selection were photographed and plasticine impressions were made of the maker's stamps. Bowl capacities were measured where possible using glass micro-balloons, an accurate technique of directly measuring capacity of an object without endangering it or compromising future residue analyses. Forensic field kits for the detection of narcotics were used to sample the interiors of all pipe-bowls, the aim being to test the relative importance of tobacco against the possible use of cannabinoids and opiates; this issue derives specifically from statements that pipes found in this region were used for smoking substances other than tobacco.[2]

In the following analysis, the pipes are placed within groups defined by fabric, form and surface treatment; within each group the pipes are arranged in order of catalogue number. These groups have been attributed approximate dates through comparison with other pipe assemblages, although associated finds should offer an independent means of dating. Typological parallels are cited where relevant. The terms used to describe the decorative elements follow, where appropriate, those employed by Robinson (1985: 154, fig. 1); the terms used by Bakla (1993) are less useful. Measurements were taken from the shank-end to the centre base of the bowl. The following abbreviations are used in the catalogue:

D	diameter
FN	finds number (specific to each piece)
L	length
ml	millilitres
RD	rim diameter (interior).

Drawing conventions include the use of hatching to designate broken areas, stippling to indicate glaze on the Group III pipes, and solid black for bowl/stem interiors and sections.

Catalogue

Seventeenth- to Early Eighteenth-Century Pipes

Group I

The earliest type is characterized by a fine pale clay, narrow bore diameter, stepped-ring termination and restrained pattern-wheel rouletted decoration on the shank-end; the corresponding bowl sherds were not identifed. Although one example (no. 6) was covered with a black burnished slip, the remainder lacked burnished coloured slip. Pipes similar to Group I have been attributed seventeenth- or early eighteenth-century dates in Istanbul and Mytilene (Hayes 1992: 392–93, type I; Humphrey 1990: 3–4). Related examples have been found at Tel Jezreel (Simpson, forthcoming [a]) and Tel Yoqne'am in Israel (Avissár 1996: 198–9, no. 4), Hama (Poulsen 1957: 281, fig. 1072) and Aleppo in Syria (Aleppo Citadel Museum: personal observation 1996), Erzerum in eastern Turkey (Simpson 1993) and Tall 'Afar, Tall Madhhur and Tall az-Zawia in Iraq (personal observation 1987; Professor M. Roaf, pers. comm.; Gargies 1987: 295, no. 6).

Two groups were distinguished on the basis of the presence or absence of decoration. Together they numbered 8 fragments, representing some 2% of the total corpus.

GROUP IA

1. Fig. 13.1. Shank-end; light grey fabric containing abundant dark sand; bore-hole D 6.5mm; plain swollen shank-end. FN 348. Context 502.23: Phase E.

2 Fig. 13.1. Stem and shank-end; fabric varies from yellow (7.5YR 7/6) to reddish yellow (5YR 6/6); stem L *c.*46mm; circular bore-hole, D 9mm narrowing to 5 × 7.5mm at the bowl/stem junction; plain swollen shank-end; visible mould-seams. FN 102. Context 302.5: Phase D.

3. Fig. 13.1. Shank-end; light brown fabric containing dark and red sand, lightly smoothed exterior; bore-hole D 6mm; plain swollen shank-end with two incised lines below. FN 353. Context 126.5: Phase D.

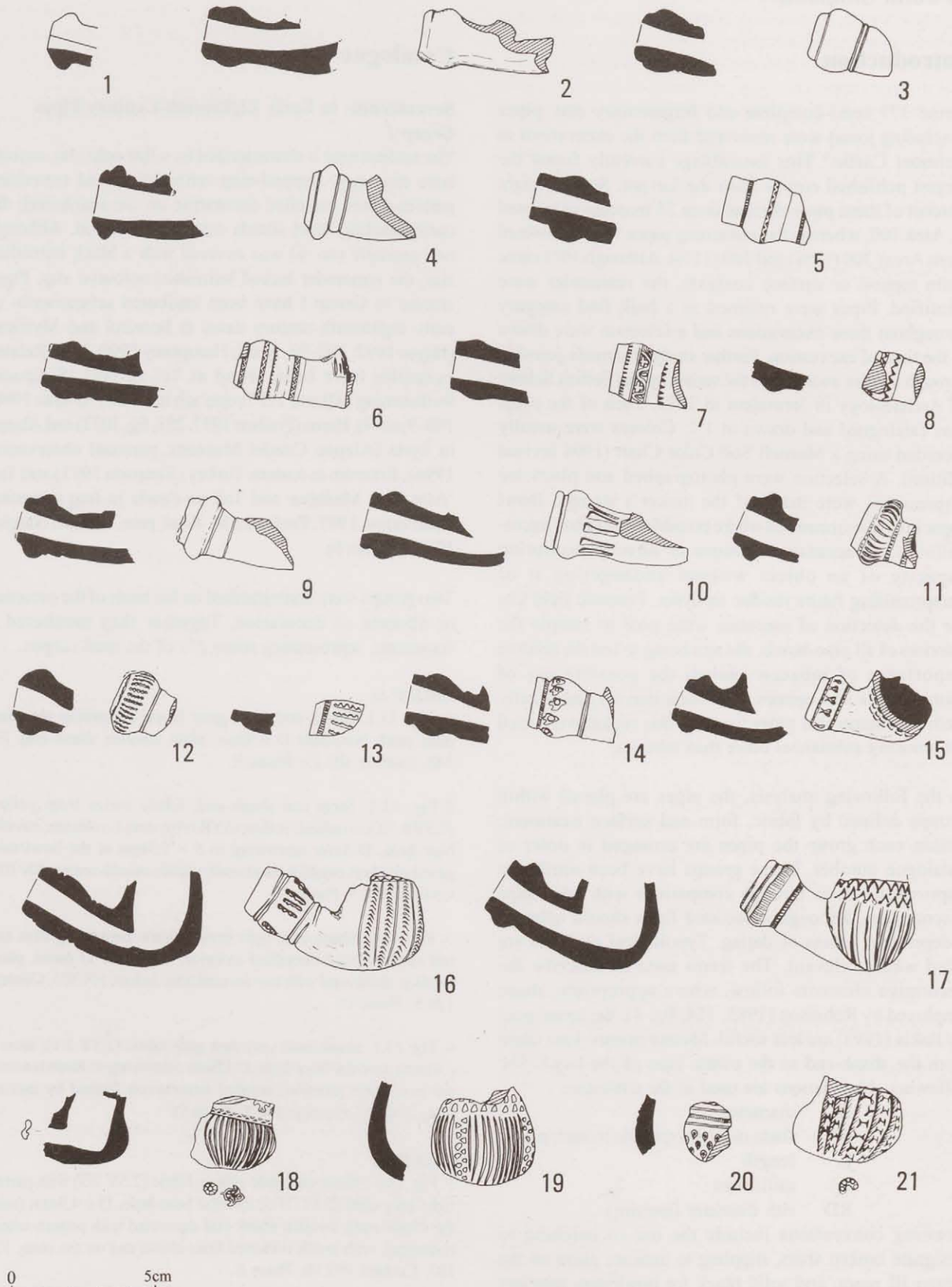
4. Fig. 13.1. Shank-end; very dark grey fabric (2.5Y 3/1); stem L *c.*41mm; circular bore-hole, D 12mm narrowing to 8mm towards the bowl/stem junction; stepped termination framed by incised lines. FN 107. Context 306.2: Phase D.

GROUP IB

5. Fig. 13.1. Shank-end; pale yellow fabric (2.5Y 7/3) with partial light grey core (2.5Y 7/1); circular bore-hole, D *c.*4.5mm (near the shank-end); swollen shank-end decorated with pattern-wheel rouletting, with notch-rouletted lines above and on the stem. FN 183. Context 109.18: Phase E.

6. Fig. 13.1. Shank-end, broken at the bowl/stem junction; reddish brown fabric and black burnished slip; stem L *c.*42mm; circular bore-hole, D 6.5mm at the shank-end but narrowing to 3mm at

Figure 13.1. Belmont (Suba): clay pipes (nos. 1–21). Scale 1:2.



the bowl/stem junction; swollen shank-end decorated with and loosely framed by zigzag pattern-wheel rouletted lines; incised lines at the upper bowl/stem junction; traces of mould-seam on the lower stem. FN 263. Context 124.2: Phase D.

7. Fig. 13.1. Shank-end; very pale brown fabric (10YR 7/4); circular bore-hole, D *c*.5.5mm (near the shank-end); swollen shank-end decorated with pattern-wheel rouletted register of equal-armed crosses and swags, with notch-rouletted lines above and on the stem. FN 182. Context 109.18: Phase E.

8. Fig. 13.1. Shank-end; very dark grey fabric (2.5Y 3/1); narrow bore-hole; stepped termination with lightly moulded or impressed decoration. FN 172. Context 306.1: Phase E.

Eighteenth-Century Pipes

Group II

This group included light brown or reddish brown burnished variants of the dark reddish brown type, occasionally with a coarser fabric and often lightly polished. The pipes had short stems and rounded bowls, usually with a cylindrical upper portion although the bowls tended to break along this part. All but one of the stems were circular in cross-section, the single exception being heptagonal (no. 32). The total number of fragments in this group is 26, representing 7% of the total. One pipe tested as a possible positive for cannabis (no. 25).

They are characteristically heavily decorated, usually with a combination of stamping, notch-rouletting and incising. There is evidence for several different stamps. Cypress-tree stamps were impressed singly (no. 22) or in alternating rows on the lower bowl and swollen shank-end of several pipes (nos. 23–7); up to two slightly different versions of this die were found on the same pipe. Cypress-tree stamp impressions have been found on pipes at Dor (Stern 1994: 324, fig. 231), Jerusalem (Wightman 1989: 257, pl. 63.15, 21), Tel Jezreel (Simpson, forthcoming [a]), Safad (Andersen 1985: 98, pl. 15, no. 276), Tall Ti'innik (Ziadeh, forthcoming) and Tel Yoqne'am (Ben-Tor and Rosenthal 1978: 69, fig. 6.2; Avissár 1996: 198, nos. 1–2); they also recur on a Group III pipe from Belmont (no. 36). This distribution suggests that they may represent a Palestinian tradition, as they have not been recognized from other parts of the Ottoman Empire.

9. Fig. 13.1. Shank-end and stem, broken at the bowl/stem junction; light grey fabric (10YR 7/2), lightly polished stem; stem L *c*.39mm; circular bore-hole, D 9mm (shank-end) narrowing to key-hole shaped aperture 7 × 4.5mm across (bowl/stem junction); swollen shank-end with traces of notching framed above and below by incised lines; traces of the vertical mould-seam. FN 180. Context 502.34: Phase D.

10. Fig. 13.1. Shank-end and stem, broken at the bowl/stem junction; buff fabric with some dark sand; stem L 45mm; circular bore-hole, D 10mm (shank-end) narrowing to 6mm (bowl/stem junction); swollen shank-end with deeply impressed/incised decoration below a deep incised line. FN 246. Context 120.2: Phase E.

11. Fig. 13.1. Shank-end; light grey fabric (10YR 7/1); circular bore-hole, D 8.5mm (shank-end); swollen shank-end decorated with vertical notches framed by coarse notch-rouletted lines; third notch-rouletted line around the stem. FN 70. Context 122.4: Phase E.

12. Fig. 13.1. Shank-end; greyish brown fabric (10YR 5/2), lightly polished stem; circular bore-hole, D 11mm; swollen shank-end decorated with vertical impressed lines. FN 4. Context 108.7: Phase D.

13. Fig. 13.1. Shank-end rim; light grey fabric (10YR 7/2); notch-rouletted above vertical impressed lines. FN 152. Context 108.1: Phase E.

14. Fig. 13.1. Shank-end and short stem, broken at the bowl/stem junction; very pale brown fabric (10YR 7/4), lightly polished surfaces; stem L *c*.33mm; circular bore-hole, D 8.5mm (shank-end) narrowing to 5mm across (bowl/stem junction); faint traces of the vertical mould-seam with horizontal traces of wiping on the shank-end; lopsided simple fleur-de-lys stamp 4.5mm long impressed around the swollen shank-end. Compare a similar shank-end from Dor (Stern 1994: 324, fig. 231). FN 35. Context 105.10: Phase E.

15. Fig. 13.1. Shank-end and stem; white fabric (5Y 8/1), lightly polished; stem L 38mm; circular bore-hole, D 8.5mm (shank-end) narrowing to 5mm (bowl/stem junction); swollen shank-end decorated with small but deeply impressed floral stamp 5mm long, framed either side by notch-rouletted lines; vertical dog's-tooth rouletting on the lower bowl, also rouletted at the bowl/stem junction; lightly blackened interior. FN 156. Context 105.16: Phase D.

16. Fig. 13.1. Semi-complete pipe; light grey fabric (10YR 7/2); stem L 47mm; circular bore-hole, D 8.5mm (shank-end), narrowing to 3.5 × 5mm across (bowl/stem junction); bowl height over 35mm; bowl capacity *c*.5ml; lightly swollen shank-end decorated with a vertical impressed pattern framed by double-incised lines; vertical pattern-wheel rouletted decoration on the exterior separated by single vertical incised lines; traces of mould-seam on the stem; blackened interior; two joining sherds. The worn appearance of this pipe suggests prolonged contact with water. FNs 23, 155 (=273). Contexts 123.1–2: Phase D.

17. Fig. 13.1. Semi-complete pipe; light grey fabric (10YR 7/2), lightly polished; stem L 45mm; circular bore-hole, D 10mm (shank-end), narrowing to 5.5mm (bowl/stem junction); bowl height over 30mm; bowl capacity over 8ml; swollen shank-end lightly impressed with and framed by notch-rouletting; lower bowl decorated with vertical double-incised lines below a horizontal register of floral stamped motifs; blackened interior. FN 5. Context 106.1: Phase E.

18. Fig. 13.1. Bowl; dark grey fabric and light brown surfaces; circular bore-hole narrowing to key-hole shaped aperture D 5.5 × 2.5mm across (bowl/stem junction); lower bowl decorated with vertical incised lines below a partially impressed horizontal pattern-wheel rouletted line, with a fine floral stamp 9 × 7.5mm across impressed on the upper bowl, repeated on the bowl underside next to an impressed circular stamp 4.5mm across; light finger impressions on the exterior of the upper bowl. Compare similar decoration on grey bowls found during excavations at the Damascus Gate, Jerusalem (Wightman 1989: pl. 63.16 and no. 3859 [not illustrated]). FN 259. Context 110.22: Phase D.

19. Fig. 13.1. Bowl; light grey brown fabric; lower bowl decorated all-over with vertical incised lines and notch-rouletting below horizontal notch-rouletted lines. FN 250. Compare Group III, no. 36. Context 301.1: Phase E.

20. Fig. 13.1. Bowl; light grey fabric, possibly lightly polished; lower bowl repeatedly impressed with a floral stamp, 3mm high, below horizontal incised and notch-rouletted lines. FN 215. Context 503.21: Phase D.

21. Fig. 13.1. Bowl, broken along the mould-seam; grey fabric (7.5YR 6/1); circular bore-hole, D 3.5mm (bowl/stem junction); lower bowl heavily decorated with vertical patterned lines framing ox-hide stamps 4.5mm across; traces of a partly impressed circular stamp in the centre of the bowl underside; blackened interior. FN 92. Context 114.1: Phases D/E.

22. Fig. 13.2. Shank-end and stem, broken at the bowl/stem junction; light grey fabric (10YR 7/2), partially blackened; stem L *c.*47mm; circular bore-hole, D 9mm (shank-end), narrowing to key-hole shaped aperture 4 × 7mm across at the bowl/stem junction; shank-end decorated with high-relief petals, upper parts incised, inner portions impressed with a cypress-tree stamp 14mm long; notch-rouletted; a bull's-eye stamp 8mm across impressed either side of the lower stem. FN 157. Context 123.1: Phase E.

23. Fig. 13.2. Shank-end and stem, broken at the bowl/stem junction; light grey fabric, lightly polished; stem L *c.*45mm; circular off-centre bore-hole, D 9.5mm, narrowing to 4.5mm (near the bowl/stem junction); lightly swollen shank-end decorated with two alternating rows of cypress-tree stamp 6.5mm long framed above by notch-rouletted line and below by incised lines; notch-rouletted and double-incised lines around the stem. FN 287. Context 123.5: Phase D.

24. Fig. 13.2. Shank-end, stem and fragmentary bowl; light grey fabric, lightly polished; stem L 38mm; circular bore-hole D 9.5mm (shank-end), narrowing to 7.5mm (bowl/stem junction); swollen shank-end decorated with two alternating rows of cypress-tree stamps 9mm long framed by notch-rouletted and double-incised lines; lower bowl decorated with two alternating rows of cypress-tree stamps impressed using a second die 9.5mm long. Compare no. 25. FN 257. Context 503.1: Phases C–E.

25. Fig. 13.2. Shank-end, stem and fragmentary bowl; very pale brown fabric (10YR 7/3), lightly polished exterior; stem L 44mm; circular bore-hole, D 8.5mm (shank-end), narrowing to a key-hole shaped aperture 5 × 3mm across (bowl/stem junction); lightly swollen shank-end decorated with two alternating rows of cypress-tree stamps 9mm long framed by notch-rouletted and double-incised lines; fine six-pointed star stamp 7.5mm across impressed in the centre of the bowl underside; lower bowl decorated with two alternating rows of cypress-tree stamps impressed using a second die 9.5mm long, below horizontal incised and notch-rouletted lines. Same stamps as no. 24. This pipe tested possible positive for cannabinoids. FNs 22, 154. Context 113.28: Phase D.

26. Fig. 13.2. Shank-end, stem and semi-complete bowl; light grey fabric (10YR 7/1); stem L 41mm; circular bore-hole, D 9mm (shank-end) narrowing to 4mm (bowl/stem junction); bowl height over 27mm; bowl capacity over 4ml; tiny floral stamps on the shank-end rim; lightly swollen shank-end decorated with two alternating rows impressed with a single cypress-tree stamp 7mm long, framed above and below by single notch-rouletted lines; double-incised line around the stem; scallop-shell stamp 6.5mm long impressed in the centre of the bowl underside, and in two alternating overlapping rows on the lower bowl with deeply incised horizontal lines above; blackened interior. FN 10. Context 109.1: Phase E.

27. Fig. 13.2. Bowl, broken at the bowl/stem junction; light brownish grey fabric (10YR 6/2); lower bowl decorated with three rows of overlapping cypress-tree stamps 12.5mm long with notch-rouletted and incised lines above. Similar to FN 197 (not illustrated), though with different stamp. FN 85. Context 301.2: Phase E.

28. Fig. 13.2. Complete bowl and stem, missing shank-end; light grey fabric (10YR 7/1); stem L *c.*38mm; circular bore-hole, D 6mm (near the bowl/stem junction); bowl height 40mm; bowl capacity 5ml; cylindrical upper bowl decorated with two fine notch-rouletted lines above and separating registers of scroll and zigzag pattern-wheel rouletting; twisted-stem palmette stamp 7.5mm long impressed around the lower bowl; scroll pattern-wheel rouletting repeated below, cut by double-incised lines radiating from the bottom of the bowl; wavy and notch-rouletted lines impressed along the lower bowl/stem junction. FN 31. Context 110.22: Phase D.

29. Fig. 13.2. Semi-complete pipe, missing shank-end and part of the bowl-rim; light grey fabric (10YR 7/1), lightly polished; circular bore-hole, D 3.5mm (bowl/stem junction); bowl height 44mm; bowl capacity 8ml; double-incised line around the stem below the shank-end; lower bowl decorated with deeply excised vertical flutes separated by vertical double-incised lines and topped with combed crescent stamps, impressed below horizontal notch-rouletted and incised lines. Chamfered rim resembles no. 31. FN 21. Context 105.10: Phase E.

30. Fig. 13.2. Semi-complete pipe; very pale brown fabric (10YR 8/2); stem L *c.*32mm; circular bore-hole, D 8mm (shank-end), narrowing to *c.*7mm (bowl/stem junction); bowl height 36.5mm; bowl capacity 6ml; swollen shank-end decorated with two alternating rows of fleur-de-lys stamps 6mm long; stem decorated with three notch-rouletted lines; bowl originally decorated all-over with stamped rayed-disc stamp 8mm across; heavily blackened interior and heavily weathered surfaces. FN 132. Context 121.1: Phase E.

31. Fig. 13.2. Semi-complete pipe; light grey fabric (10YR 7/1); stem L 34mm; circular bore-hole, D 9.5mm (shank-end), narrowing to 4mm (bowl/stem junction); bowl height 40mm; bowl capacity 11ml; swollen shank-end decorated all-over with a small stamp, with notch-rouletted line above, and double-incised and notch-rouletted lines below; circular stamp 7mm across impressed in the centre of the bowl underside, with two notch-rouletted rows separated by double-incised lines above; lower bowl decorated all-over with geometric rouletted pattern, with incised and notch-rouletted lines at top; six deeply scored lines on the underside of the stem, possibly a pipe-maker's mark; blackened interior. The chamfered rim resembles no. 29; a similar bowl-rim from Dor has been attributed an eighteenth-century date (Magrill 1996). FN 18. Context 102.16: Phase E.

32. Fig. 13.2. Shank-end, stem and semi-complete bowl; light grey fabric and bowl (10YR 7/1), grading to dark grey on the stem (10YR 5/1); stem L 40mm; circular bore-hole, D 8mm; bowl height 36mm; bowl capacity *c.*5ml; lightly faceted seven-sided stem with a small pierced loop on the underside of the bowl/stem junction; two incised lines above the swollen shank-end which was partially impressed with a long-stemmed palmette stamp 7mm long; circular cog-wheel stamp 8.5mm across deeply impressed in the centre of the bowl underside; lower bowl decorated with two deeply impressed rows of second floral stamp 7.5mm long; vertical ribbing on the upper bowl; blackened interior; two joining sherds. A light grey pipe of similar form, decorated with cypress-tree stamps on the lower bowl and with a pierced loop on the stem below the swollen shank-end, was seen in a Damascus bazaar in June 1996; a splash-glazed rouletted pipe with a similar loop below the swollen shank-end was observed by the author in Baalbek in April 1998. Small pipes with a similar pierced loop on the underside of the

Figure 13.2. Belmont (Suba): clay pipes (nos. 22–41). Scale 1:2.

bowl/stem junction were also made of brass (Bursa bazaar: personal observation, May 1997). FNs 15, 17. Contexts 105.16, 106.1: Phase D.

Group III: Splash-Glazed Pipes

These formed a small yet distinctive group of eight fragments and one semi-complete example, comprising 2% of the Belmont total. The pipes were made in two-part moulds and had rounded rather than lily or disc-based bowls. One bowl was decorated with lightly gadrooned ribs impressed with a cypress-tree stamp and a roulette wheel (no. 36); light finger or cloth imprints suggest that it was hand-held during this stage of manufacture. Rouletted or moulded vertical criss-cross panels decorated another bowl (no. 35). Filled bowl capacities were estimated as *c.*11ml. The remaining decoration was occasionally executed with roulette wheels, producing converging pairs of notch-rouletted lines at the bowl/stem junction (nos. 36, 39), a single line of notch-roulette or pattern-wheel decoration immediately below the rim at the shank-end (nos. 33–4) or on the bowl itself (nos. 38, 40). One complete stem survived, measuring 55mm in length from the shank-end to the centre of the bowl base (no. 35). Shank-end diameters were modest, ranging from 10 to 13mm, sometimes with stepped rim terminations (nos. 33–5). No evidence for maker's marks were found, but this may reflect the limited sample size.

The relatively coarse earthenware fabrics varied from yellow (10YR 7/6) or light reddish brown (5YR 6/4), occasionally with a darker core. The glaze was applied at the final stage of manufacture and was crudely splashed over the bowl, stem and shank-end. It varied in colour from yellow or yellowish brown to lime green or olive green, the variation on a single pipe suggesting poor control of firing conditions. The low degree of care in manufacture is further illustrated by extensive glaze dribbling on one pipe (no. 39), resulting from firing upside-down, and 'plucking' marks on another somewhat overfired example (no. 35), indicating that it had accidentally fused to another object during firing. Field-kit testing for cannabinoids and opiates proved negative on all counts.

Similar splash-glazed pipes from Dor (Tantura) and Baalbek have been seen by the author but the production centre of these pipes is unknown. They are likely to represent sidelines from one or more pottery workshop specializing in glazed wares. Glazed pipes were produced in Greece and Yemen during the seventeenth and eighteenth centuries and have been noted from Istanbul and Arabia (personal observation), but the shapes of these pipes are somewhat different (compare Hayes 1980: 6–7, type XX; Robinson 1983: 273, pl. 52, no. 3; 1985: 172–3, pl. 47, nos. 6–9; Keall 1992: 32, fig. 1). Green glazed and nineteenth-century burnished red-slipped pipes were also found during recent municipality excavations on the site of an Ottoman tea-house in the centre of Bergama (personal observation, May 1997). A plain pipe with a tall bowl covered with a light greenish yellow glaze, seen by the author in Istanbul (1994), was reportedly from the Çannakale area.

The lightly gadrooned rounded bowls and shank-end profiles of the Belmont examples suggest an eighteenth-century date. This is supported by the close similarity in the type of stamped and rouletted decoration on one pipe-bowl (36) with pipes from Group II which are independently attributed to the eighteenth century and suggested to be of Palestinian manufacture.

33. Fig. 13.2. Shank-end; very pale brown fabric (10YR 7/4) splashed with mottled brown/green glaze; bore-hole D *c.*7mm; swollen shank-end framed by wavy-rouletted line above and incised lines below. FN 58. Context 114.1: Phase D/E.

34. Fig. 13.2. Shank-end; yellow fabric (10YR 7/6) splashed with mottled brown/green glaze; bore-hole D *c.*6mm; swollen shank-end framed by a narrow notch-rouletted line above and a double-incised line below. FN 44. Context 102.5: Phase E.

35. Fig. 13.2. Semi-complete pipe, missing part of the upper bowl; misfired from very pale brown (10YR 6/3) to very dark gray (10YR 3/1), splashed with glaze which reduced during firing to a mottled olive green colour; stem L 53mm; bore-hole D 7.5mm (bowl/stem junction); bowl height *c.*39mm; bowl capacity 11ml; lower bowl decorated with vertical rouletted lattice-patterns; plucking mark on the shank-end. FN 198. Context 114.1: Phase D/E.

36. Fig. 13.2. Rounded bowl; reddish yellow fabric (5YR 6/6) splashed with orange glaze; bore-hole D 5mm (bowl/stem junction); bowl height over 30mm; bowl capacity over 5ml; lower bowl decorated with deeply impressed pendant cypress-tree stamps 8mm long, separated by vertical roulette impressions; converging wavy-rouletted lines at the bowl/stem junction. FN 1. Context 102.5: Phase E.

37. Fig. 13.2. Bowl rim; buff fabric splashed with olive green glaze; plain upper bowl; RD *c.*25mm; blackened interior. FN 218. Context 105.5: Phase E.

38. Fig. 13.2. Bowl rim; buff fabric splashed with mottled yellow glaze; RD *c.*23mm; horizontal wavy-rouletted decoration; blackened interior. FN 290. Context 110.10: Phase D.

39. Fig. 13.2. Rounded bowl; yellow fabric (10YR 7/6) splashed with mottled lime green glaze, heavily dribbled as the pipe was fired upside-down; RD 24mm; bowl height 38mm; converging rouletted lines at the bowl/stem junction. FN 2. Context 105.10: Phase E.

40. Fig. 13.2. Bowl; yellow fabric splashed with mottled yellow glaze; converging wavy-rouletted lines. FN 245. Context 117.1: Phase D.

41. Fig. 13.2. Bowl; yellow fabric splashed with mottled lime green glaze; notch-rouletted and incised decoration. FN 325. Context 106.1: Phase E.

Group IV: Red-Slipped Burnished Pipes with Scalloped Stepped Terminations

This small group numbered only five fragments (1% of the total) and probably represents the products of a single workshop. Similar pipes were found at Tel Yoqne'am, where they were attributed an eighteenth-century date (Avissár 1996: 199, nos. 5–9).

42. Fig. 13.3. Shank-end; coarse light grey fabric containing some angular black inclusions with a dark red burnished slip; circular bore-hole, D 11mm; swollen shank-end decorated in relief with petals bordered by a raised rib. FN 370. Context 114.1: Phase D/E.

43. Fig. 13.3. Stem and bowl fragment; coarse grey fabric (2.5Y 5/1) and weak red lightly burnished slip (10R 4/3); stem L *c.*45mm; circular bore-hole, D 12mm (shank-end) narrowing to 7 × 9mm (bowl/stem junction); horizontal lattice pattern on the lower bowl, converging double-incised lines marking the bowl/stem junction, swag-shaped stamp 13 × 5mm across, impressed on the right side of the stem midway between the bowl and the shank-end; ridged shank-end framed by incised lines. FN 173. Context 306.1: Phase E.

44. Fig. 13.3. Stem; coarse light grey fabric with numerous fine-medium angular black inclusions and a dark red lightly burnished slip; stem L *c.*43mm; circular bore-hole, D 13mm (shank-end), narrowing to 9mm (bowl/stem junction); swollen shank-end decorated in relief with petals bordered by a raised rib. FN 333. Context 502.4: Phase E.

45. Fig. 13.3. Stem and bowl fragment; coarse dark grey fabric (4/N) and weak red burnished slip (10R 4/3); stem L 51mm; circular bore-hole, D 12mm (shank-end) narrowing to 8mm (bowl/stem junction); converging deep incised lines marking the bowl/stem junction; swollen shank-end decorated in relief with alternating petals and trefoil motifs bordered by a raised rib. FN 59. Context 114.2: Phase D.

46. Fig. 13.3. Stem and bowl fragment; coarse dark grey fabric (4/N) and weak red burnished slip (10R 4/3); stem L *c.*50mm; circular bore-hole, D 12mm (shank-end) narrowing to 5 × 6mm (bowl/stem junction); converging deep incised lines marking the bowl/stem junction; swollen shank-end decorated in relief with alternating petals and blob motifs bordered by a raised rib. FN 11. Context 108.1: Phase E.

Eighteenth/Nineteenth-Century Pipes

Group V: Assorted Red-Slipped Burnished Pipes

GROUP VA: EIGHTEENTH TO EARLY NINETEENTH CENTURIES

47. Fig. 13.3. Shank-end; dark grey fabric and dusky red lightly burnished slip; circular bore-hole, D 9.5mm (shank-end), narrowing to 5mm (midway); incised decoration. Probably eighteenth century. FN 252. Context 106.10: Phase D/E.

48. Fig. 13.3. Stem-socket shank-end; grey fabric (2.5Y 6/1) and slip varying from light yellowish brown (10YR 6/4) to reddish brown (5YR 4/4); stem L *c.*39mm; circular bore-hole, D 12mm, narrowing to a constricted D-shaped aperture measuring 7.5 × 4.5mm (bowl/stem junction); swollen shank-end with simple notch-rouletted decoration. Eighteenth to early nineteenth century. FN 164. Context 117.1: Phase D.

49. Fig. 13.3. Shank-end stem-socket fragment; brown fabric (7.5YR 5/4) and dark reddish brown slip (5YR 3/3); diagonal slanted incision on the swollen termination. Eighteenth to nineteenth century. FN 140. Context 120.9: Phase D.

50. Fig. 13.3. Rounded bowl and fragmentary stem; dark grey fabric (7.5YR 4/1) and reddish brown slip (5YR 5/4); circular bore-hole, varying in D from 10mm (midway) to sub-rectangular shape, 9.5 × 5mm (bowl/stem junction); lower part of the bowl decorated with fine vertical incised lines; single circular impressed circle 6.5mm across on the underside of the base, probably impressed with a hollow cane. Eighteenth to early nineteenth century. FN 55. Context 124.1: Phase E.

51. Fig. 13.3. Bowl; semi-complete rounded bowl with complete stem; dark grey fabric (7.5YR 4/1) and thin reddish brown slip (5YR 4/3); stem L 48mm; circular bore-hole, D 10mm narrowing to *c.*5mm (bowl/stem junction); bowl height over 32mm; bowl capacity *c.*10 ml; swollen shank-end decorated with incised lines, framed above and below by single incised lines; further incised line midway along the stem; bowl decorated with vertical incision below single horizontal incised line, above which the rim is broken off; deep incised V at the bowl/stem junction. Compare rounded bowls decorated with vertical incision from Dor (Stern 1994: 324, fig. 231, right), Jerusalem (Wightman 1989: 257, pl. 63.16), Beirut (Turquety-Pariset 1982: 37–8, 62, fig. 4) and Hama (Poulsen 1957: 281, no. 1075). Eighteenth to early nineteenth century. FN 108. Context 106.1: Phase E.

52. Fig. 13.3. Bowl; dusky red fabric (2.5YR 4/4) with thick dark grey core (7.5YR 4/1) and slip varying from weak red (2.5YR 6/4) to reddish brown (5YR 4/4); worn abraded surfaces; rounded bowl divided into two zones by a single deep horizontal incised line, plain below with lightly incised decoration above. Possibly eighteenth to early nineteenth century. FN 6. Context 108.1: Phase E.

53. Fig. 13.3. Rounded bowls; dark grey fabrics (7.5YR 4/1) and slips varying from weak red (2.5YR 5/4) to very dusky red (2.5YR 2.5/3); decorated with heavy petals on the lower bowl, with impressed lattice pattern across the top (53), centre (54) or with lattice decoration framing bold incised lozenge motifs (55). Compare similar latticed decoration on upper portion of rounded pipe-bowls from Yoqne'am (Avissár 1996: 201, no. 24), Hama (Poulsen 1957: 281, no. 1076), Beirut (Seeden *et al.* 1995) and Tibna (Khammash 1986: 57); it also occurs on a pipe-bowl from Tel Jezreel (Simpson, forthcoming [a]). Eighteenth to early nineteenth century. FN 86. Context 502.22: Phase D.

54. Fig. 13.3. As no. 53. FN 133. Context 101.14: Phase C–D.

55. Fig. 13.3. As no. 53. FN 179. Context 105.12: Phase D/E.

56. Fig. 13.3. Rounded bowl; dark grey fabric (7.5YR 4/1) and dusky red slip (2.5YR 3/3); lower part decorated with fine vertical incised lines; heavily blackened interior. Compare no. 54. Eighteenth to early nineteenth century. FN 106. Context 105.20: Phase D.

GROUP VB: UNCERTAIN EIGHTEENTH OR NINETEENTH CENTURY

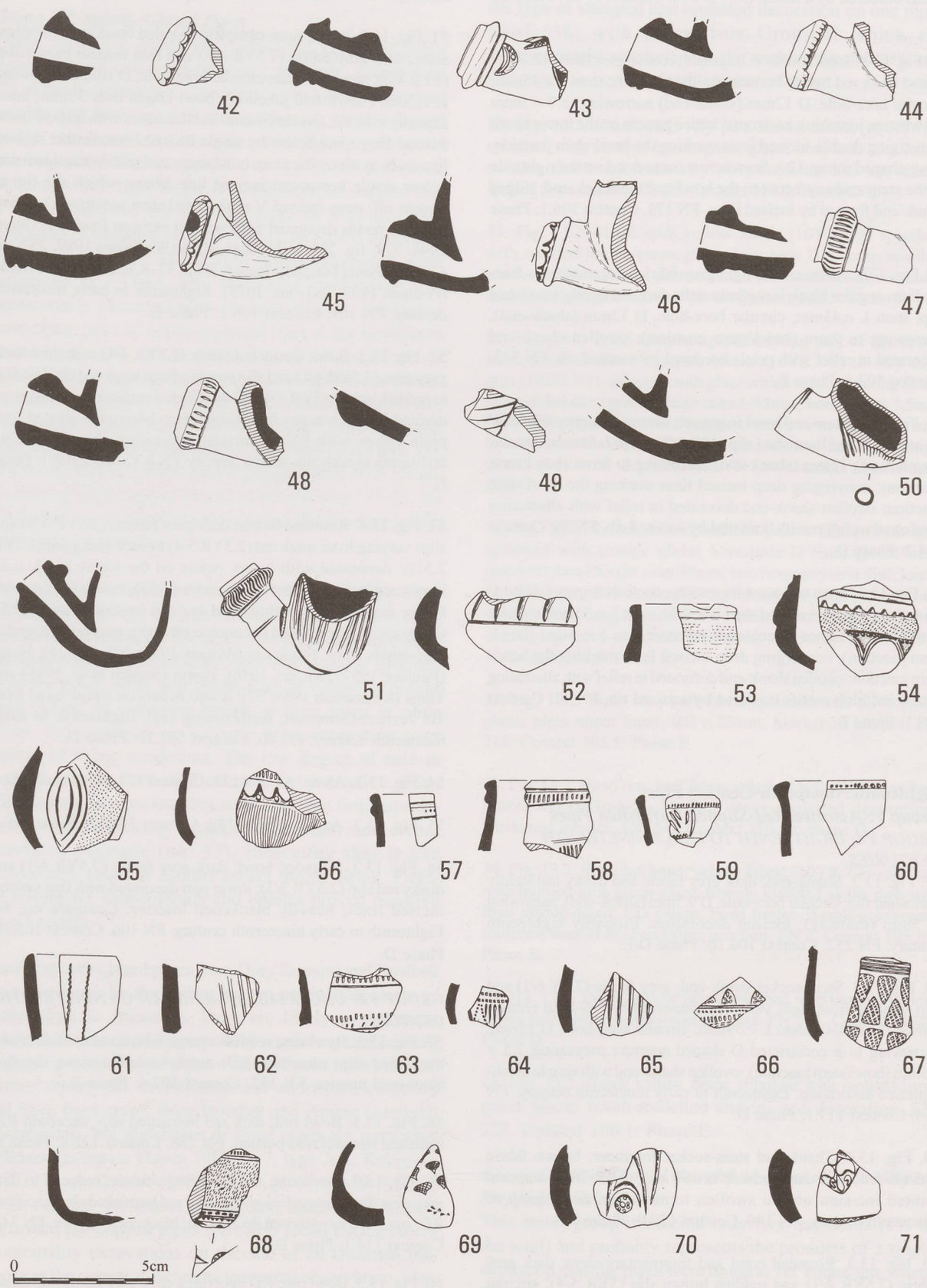
57. Fig. 13.3. Bowl rim; reddish orange fabric and reddish brown burnished slip; uncertain RD; notch-rouletted along the rim; blackened interior. FN 332. Context 502.4: Phase E.

58. Fig. 13.3. Bowl rim; dark red burnished slip; uncertain RD; rouletted rim and mid portion. FN 288. Context 122.4: Phase E.

59. Fig. 13.3. Bowl rim; reddish orange fabric, reduced to dark grey near the outer surface with dusky red burnished slip; uncertain RD; moulded or rouletted decoration; blackened interior. FN 346. Context 114.1: Phase D/E.

60. Fig. 13.3. Bowl rim; RD uncertain; dark grey fabric and dusky red burnished slip; horizontal row of indentations along the rim exterior; blackened interior. FN 396. Context 502.4: Phase E.

Figure 13.3. Belmont (Suba): clay pipes (nos. 42–71). Scale 1:2.



61. Fig. 13.3. Bowl rim; light brown fabric containing abundant dark sand and a light brownish burnished slip; uncertain RD; a pair of two vertical wavy-rouletted lines on the exterior. FN 213. Context 502.34: Phase D.

62. Fig. 13.3. Bowl; dark grey fabric and dusky red/grey brown burnished slip; vertical double-incised lines on exterior. FN 216. Context 126.5: Phase D.

63. Fig. 13.3. Bowl; grey/reddish brown fabric and reddish brown burnished slip; horizontal incised lines and rouletted decoration; blackened interior. FN 237. Context 108.6: Phase D.

64. Fig. 13.3. Bowl; reddish brown fabric and lightly burnished slip; converging notch-rouletted lines at the bowl/stem junction; lower bowl decorated with vertical incised lines with two horizontal rows of notch-rouletting above. FN 11. Context 302.6: Phase C/D.

65. Fig. 13.3. Bowl; reddish brown fabric and dusky red burnished slip; vertical incised decoration. FN 291. Context 122.7: Phase C/D.

66. Fig. 13.3. Bowl; reddish brown fabric, reduced to dark grey near the outer surface and dark reddish brown burnished slip; lightly impressed fan-shaped stamps, L 6mm, with incised and notch-rouletted decoration below. FN 338. Context 121.2: Phase E.

67. Fig. 13.3. Bowl; reddish orange fabric with thick dark grey core and dusky red burnished slip; horizontal incised lines above two rows impresed with a single triangular die, measuring 10.5 × 7mm across and containing a criss-cross motif; blackened interior. FN 326. Context 502.21: Phase D.

68. Fig. 13.3. Bowl; relatively coarse grey fabric containing abundant dark sand with lightly burnished surfaces; horizontal notch-rouletting and incised lines framing pecked decoration; stamp impressed on the underside of the bowl. FN 320. Context 105.16: Phase D.

69. Fig. 13.3. Bowl; dark grey and burnished slip; stamp measuring 6.5 × 4mm across repeatedly impressed on the exterior; blackened interior. FN 321. Context 105.16: Phase D.

70. Fig. 13.3. Bowl; dark grey fabric and light reddish brown/dusky red burnished slip; incised lines and circular impressed stamp measuring 6.5mm across, containing seven blobs arranged around a central blob. FN 372. Context 114.1: Phase D/E.

71. Fig. 13.3. Bowl; dark grey fabric, paler near outer surface and dusky red burnished slip; stamped floral motif with zigzag rouletting near the bowl/stem junction. FN 371. Context 114.1: Phase D/E.

72. Fig. 13.4. Stem; dark reddish brown fabric and dark brownish burnished slip; lightly moulded inscription in low relief. FN 328. Context 126.5: Phase D.

73. Fig. 13.4. Stem and shank-end, broken close to the bowl/stem junction; relatively coarse reddish orange fabric and dusky red lightly burnished slip; stem L *c.*37mm; circular bore-hole, D 12.5mm (shank-end), narrowing to 8mm (near the bowl/stem junction); swollen shank-end with rouletted lattice-pattern. FN 331. Context 120.2: Phase E.

74. Fig. 13.4. Stem and shank-end, broken at the bowl/stem junction; dark grey fabric, pinkish near surfaces and dark red burnished slip; stem L *c.*5mm; circular bore-hole D 13mm (shank-end), narrowing to 7mm; triangular stamp, L 5.5mm containing an arrangement of three blobs, repeatedly impressed along the swollen shank-end; finger or skin impression on the lower stem next to a linear area of impressed cloth, possibly from the hem or cuff of the pipe-maker: probably cotton but possibly silk; a regular extended tabby weave; System A, warp?, threads grouped in fours, *c.*12 groups per cm; System B, weft?, paired threads, *c.*12 pairs per cm; spin direction uncertain without higher magnification; 2 joining sherds. (Identification kindly made by Hero Granger-Taylor.) FNs 210, 373. Context 114.1: Phase D/E.

75. Fig. 13.4. Semi-complete pipe, missing upper bowl; dark grey fabric, paler near surfaces and thin pinkish mauve lightly burnished slip; stem L 50mm; circular bore-hole, D 11.5mm, narrowing to 5mm (bowl/stem junction); bowl height over 32mm; vertical ribs on the upper bowl with a circular stamp, 5mm across, repeatedly impressed below; single incised line marking the bowl/stem junction; blackened interior; 2 joining sherds. FNs 209, 374. Context 114.1: Phase D/E.

76. Fig. 13.4. Stem; light grey fabric with thick reddish brown core and dark reddish brown burnished slip; irregular bore-hole, D 10 × 12mm near the bowl/stem junction; notch-rouletted decoration. FN 234. Context 102.5: Phase E.

77. Fig. 13.4. Stem; reddish brown fabric with thick grey core and dark grey-brown polished slip; circular bore-hole, D 7.5mm, narrowing to 5.5mm (bowl/stem junction); converging pair of notch-rouletted lines at the bowl/stem junction. FN 228. Context 504.1: Phase D/E.

Nineteenth-Century Pipes

GROUP VC: OTHER RED-SLIPPED BURNISHED PIPES

78. Fig. 13.4. Shank-end; very dark grey fabric and dusky red burnished burnished slip; circular bore-hole, D 11mm (shank-end), narrowing to 6mm (midway); plain swollen shank-end. FN 292. Context 502.42: Phase D.

79–80. Fig 13.4. Stem-socket shank-end; very dark grey fabric (5Y 3/1) and dusky red burnished slip (10R 3/4); circular bore-hole, D *c.*12mm (shank-end), narrowing to 6.5mm (midway); broken at the bowl/stem junction; swollen shank-end framed by single incised line above and below. Possibly early nineteenth century. FNs 64. Context 305.1: Phase E.

80. Fig. 13.4. As no. 79, but with scalloped end. Scalloped ends were common at Athens and Corinth (Robinson 1983: 277, pl. 53, no. 23). FN 97. Context 306.1: Phase D.

81. Fig. 13.4. Stem-socket shank-end; very dark grey fabric (5Y 3/1) and weak red burnished slip (10R 4/4); circular bore-hole D *c.*10mm; swollen shank-end decorated with two rows of coarse notch-rouletting. FN 84. Context 301.2: Phase E.

82. Fig. 13.4. Stem with semi-complete rounded bowl; grey fabric (10YR 6/1) with thick dusky red core (2.5YR 4/4) and dusky red burnished slip (2.5YR 4/4); stem L 61mm; circular bore-hole, D 16.5mm, narrowing to a D-shaped aperture (bowl/stem junction); bowl height over 36mm; bowl capacity over 5ml; swollen shank-end with linear notch-rouletted decoration, lower bowl decorated with slanting incised lines framed by dog's-tooth rouletted lines at the bowl/stem junction. Identical to no. 83. Mid to late nineteenth century. FN 158. Context 123.1: Phase E.

83. Fig. 13.4. Bowl; dark grey fabric (10YR 4/1) and burnished slip varying from dark red (2.5YR 4/6) to dusky red (2.5YR 3/2); lower bowl decorated with slanting incised lines framed by dog's-

Figure 13.4. Belmont (Suba): clay pipes (nos. 72–98). Scale 1:2.

tooth rouletted lines at the bowl/stem junction. Identical to no. 82; a very similar piece was also found at Tel Jezreel (Simpson forthcoming [a]). Mid to late nineteenth century. FN 69. Context 122.4: Phase E.

84–85. Fig. 13.4. Rounded bowl, very dark grey fabric (2.5Y 3/1) with partial dark red core (2.5YR 4/6) and dusky red burnished slip (2.5YR 3/3); decoration limited to the middle and lower portions of bowl, with a notch-rouletted V at the bowl/stem junction below vertical moulded ribbing (84), with horizontal zigzag across the centre in low relief, with palmette (rayed dot) filling-motifs framed at the top by a single horizontal notch-rouletted line (85). Palmette motifs were a common decorative motif on late Ottoman pipes; a similar effect to the horizontal zigzag occurs on an eighteenth-century pipe from Corinth, but this was produced by impressing rather than moulding (Robinson 1985: 175, pl. 48, no. C16). FNs 103, 125, 163. Contexts 105.20, 105.10, 117.1: Phases D, E, D.

86. Fig. 13.4. Bowl fragment, possibly upside-down; greyish brown fabric (2.5Y 5/2) and dusky red burnished slip (10R 3/3); incised decoration. FN 45. Context 107.1: Phase E.

87. Fig. 13.4. Bowl; dark grey fabric and dusky red burnished slip; moulded decoration. FN 335. Context 504.1: Phase D/E.

88. Fig. 13.4. Rounded bowl rim; fabric varying from greyish brown (10YR 5/2) to reddish brown (5YR 4/4) and dusky red burnished slip (10R 3/4); uncertain RD; lightly flared plain upper section above portion decorated with inverted petal design with lattice pattern near base; blackened interior. FN 42. Context 107.1: Phase E.

89–90. Fig. 13.4. Rounded bowl; fabrics varying from red (2.5YR 5/6) to dark reddish grey (2.5YR 5/1) and dusky red burnished slip (2.5YR 4/4–10R 3/2); bowl height *c.*50mm (89); stem decorated with rouletted Vs, lower bowl decorated in low relief with broad leaf patterns highlighted with deep incised vertical lines ending in impressed circles, with up to three horizontal notch-rouletted lines above; blackened interiors. Compare pipes found at the Damascus Gate, Jerusalem (Wightman 1989: 74, 257, pl. 63: 4–5). FNs 16, 63. Contexts 108.9, 105.1: Phase D/E, E.

91. Fig. 13.4. Stem with semi-complete rounded bowl; grey fabric (5Y 5/1) and burnished slip varying from brown (7.5YR 5/4) to very dusky red (10R 2.5/2); stem L 45mm; circular bore-hole, D 10mm, narrowing to *c.*5mm and sub-oval shape (bowl/stem junction); bowl height over 28.5mm; bowl capacity over 10ml; stepped termination; decoration on the bowl divided into two zones by two horizontal incised lines, lower comprising petals radiating from base with tips separated by triangles containing a low relief blob in each, with a row of lozenges forming the upper register. Petalled bowls are common at Corinth, where they are attributed an eighteenth- to early nineteenth-century date (Robinson 1985: 181–82, pl. 53, nos. C55–C64). Possibly early to mid nineteenth century. FN 101. Context 114.1: Phase D/E.

92. Fig. 13.4. Shank-end; reddish orange fabric with thick grey core and reddish brown burnished slip; dog's-tooth rouletting on the lightly swollen shank-end and stem. FN 360. Context 301.1: Phase E.

93. Fig. 13.4. Stem-socket shank-end; reddish orange fabric with thick dark grey core and dusky red burnished slip; circular bore-hole D 15mm; notch-rouletted lines around the swollen shank-end; blackened interior. FN 318. Context 301.1: Phase E.

94. Fig. 13.4. Shank-end; relatively coarse reddish orange earthenware containing abundant dark sand and dusky red burnished slip; dog's-tooth rouletted lines framing linear impressions; the worn appearance of the decoration suggests the use of old tools. FN 394. Context 502.4: Phase E.

95. Fig. 13.4. Stem-socket shank-end; grey fabric (2.5Y 6/1) with red core (2.5YR 5/6) and lightly burnished weak red slip (2.5YR 5/4); circular bore-hole, D 20mm; swollen shank-end decorated with coarse notch-rouletted line above a row of crudely incised vertical lines; 2 joining sherds. Possibly early nineteenth century. FNs 161, 162. Context 117.1: Phase D.

96. Fig. 13.4. Stem-socket shank-end; dark grey fabric, reddish near surfaces and dusky red burnished slip partially fired to a darker colour; circular bore-hole D 14mm; broad impressed lines on the swollen shank-end. FN 310. Context 504.6: Phase D.

97. Fig. 13.4. Shank-end; dark grey fabric and dusky red burnished slip; single dog's-tooth rouletted line above flame-like decoration on the lightly swollen shank-end. Compare no. 98. Late nineteenth century. FN 355. Context 502.24: Phase D.

98. Fig. 13.4. Shank-end; red fabric (2.5YR 5/6) and dusky red burnished slip (10R 3/4); stem L *c.*64mm; circular bore-hole, D 17mm, narrowing to a D-shaped aperture 7mm across (bowl/stem junction); deeply incised petals around the shank-end, the petals being separated by triangles containing small blobs in low relief, and defined at the lower end by a single rouletted line; triangular stamp 6mm across, containing a geometric motif impressed on the right side of the stem midway between the stem-socket and the bowl/stem junction. Compare no. 97. Similar petalled or gadrooned shank-end decoration is found on stems at Athens, including one from a context dated *c.*1890–97 (Robinson 1983: 278–9, 282, pls. 54, 56, nos. 35, 52; Robinson 1985: 198–9, pls. 62–3, nos. A24, A26). Other examples have been found in Aleppo (citadel) and Palmyra in Syria, Tall 'Afar and Khirbat Dair Situn in northern Iraq (personal observation; Matney 1997: 82–3, 85, nos. 22, 29), as-Sawari in the Haditha Dam region of the Middle Euphrates (Gargies 1987: 300, no. 30), Acre (Stern 1997: 68, fig. 19, no. 138), Jerusalem (Wightman 1989: 257, pl. 63.10) and Tel Jezreel (Simpson forthcoming [a]). It is also a feature of some Tophane pipes (Bakla 1993: 34). Late nineteenth century. FN 89. Context 302.1: Phase D/E.

Group VI: Red-Slipped Burnished Lily Pipes with Rouletted Shank-Ends

These formed the largest category of red-slipped burnished pipes, estimated at over 220 pieces, forming some 60% of the total Belmont corpus, although the sherd counts may include a small number of pieces belonging to other red-slipped burnished pipes. One pipe-bowl was restorable (no. 125) with a capacity of *c.*22ml. Bowl-rim interior diameters averaged *c.*40mm, although others varied between *c.*30 and 54mm. Some bowls do not appear to have been decorated (nos. 122–5); but the relative proportion of plain to decorated bowls is uncertain, as most were highly fragmented (see nos. 138–44).

Several bowls were decorated on the front with converging pairs of incised lines rising up from the bowl/stem junction; many of the lower bowls illustrated here belong to this type. In some cases, this was combined with impressed decoration consisting of a cluster of small oval indents (nos. 129–30,

134–5, 137). Other bowls were decorated with groups of short incised vertical lines (nos. 145–6), small stamps (nos. 136, 149, 153, 155–61) or a combination of incised and stamped decoration (nos. 147–8, 154). Horizontal notch-rouletting was found on some bowls (nos. 150–51).

Ten different stamps were found on the bowls; all appear to be decorative rather than maker's stamps. They comprised the following motifs: a lozenge containing dots and rays divided into two groups by a horizontal line (nos. 154–5, 160), length 6–8mm, width 3–5mm; a lozenge (?) containing a ray or floral design (no. 156), length uncertain, width 5mm; a lozenge containing a single dot above a pair of Vs (no. 157), length 4mm, width 3mm; a plain oval stamp (no. 148), length 7mm, width 4mm; a small circular stamp containing a floral or solar motif (no. 159), diameter 7mm; a triple chevron, repeated all over the bowl (no.161), length 7mm, width 4mm; a diamond containing a chevron above a diamond (no. 158), length 6mm, width 3mm; a small diamond, possibly containing chevrons, repeated to produce a pyramidal or diamond-shaped pattern (nos. 149, 158), length 5mm, width 3mm; a small diamond containing inverted 'pineapples', repeated to produce a diamond-shaped pattern (no. 136), length 4mm, width 2mm; two stamps repeated below a rouletted line (no. 153), 5 × 5mm (triangle), 8 × 4mm (lower stamp).

Eight complete stems were found, varying in length from 55 to 70mm. The bowl/stem junction on many pipes was marked with a notch-rouletted line. Several examples were decorated approximately 30mm up the stem from the bowl with a single line of dog's-tooth rouletting (nos. 126–9, 137). Several pipe-stems carried oval maker's stamps, lightly impressed on the right side approximately 15–20mm from the bowl/stem junction (nos. 126–30). These stamps appear to represent different floral or geometric emblems, measuring 5–8mm across.

The swollen shank-ends of this group were decorated with up to four rows of notch-rouletting; another shank-end was decorated with three or four rows of diamond-rouletting (no. 118). The deliberate thickening of the shank-ends was designed to ensure their greater robusticity and several were found intact; shank-end interior diameters measured 13–17mm in a measurable sample of 29 examples. The bore-holes were circular in cross-section, tapering to a circular or D-shaped hole measuring between 4 and 10mm across at the bowl/stem junction. The piercing of the stem was executed with a narrow pointed tool inserted from the shank-end; this tool was occasionally pushed slightly too far, leaving a light indentation in the opposite interior wall of the bowl, implying that the bore was created after the bowl was finished. According to White's description of Istanbul pipe-makers (1845: II, 149), the aperture was created by inserting a box-wood borer into the closed mould prior to the removal of the pipe, after which the blank was allowed to dry partially before it was decorated and fired. An extra wedge or 'tongue' of clay then appears to have been added inside the bowl above the mouth of the bore on the pipes catalogued here, presumably with the intention of reducing the chance of fresh tobacco or dottle clogging the bore. This measure was not always successful as charring continued into the lower stem on a small number of pipes, and the stem of one example (no. 130) was even blocked with carbonized material. Accidental cloth imprints left during manufacture were found on one pipe, namely inside the bowl immediately above the bore-hole (no. 114). The exterior surfaces were vigorously burnished, usually removing any traces of the mould seams and occasionally lightly blurring the decoration or maker's stamps. The direction of the burnishing appears to have been vertical on the bowls and along the length of the stems.

There was a certain amount of variation in the firing of these pipes: fabrics ranged from red (2.5YR 6/6–6/8), occasionally with a grey core, to dark grey or black. This implies that the kilns were initially fired in thorough oxidizing conditions followed by a reducing atmosphere. The clay used appeared to be well levigated and contained some fine sand, possibly a natural inclusion, although ideally petrographic analysis of the different pipe fabrics should be undertaken at a future stage. All of the pipes were thinly covered with a fine clay slip which was fired to a dusky red (2.5YR 3/2–4/4) colour. There was some evidence for minor spalling on the surfaces which suggests slight overfiring of some pipes (no. 129) and one pipe was semi-vitrified (no. 118). This suggests that a low proportion of pipes were slightly misfired but nevertheless were sold to customers, perhaps at a reduced price.

Heavily carbonized residue survived in many of the pipe-bowls. Charring of the walls appears to have most heavy on the protruding 'tongue' above the borehole and on the lowermost portion of the bowl. All bowls were tested for the presence/absence of cannabis and opium; only two bowls yielded possible positive results for cannabis (nos. 149, 161).

Examination of fragmentation patterns suggested a clear correlation between average sherd size and wall thickness. Shank-ends, stems and lower bowls, which measured 5–8mm in thickness, often survived complete or semi-complete whereas the upper portions of bowls, which only measured 2–3mm in thickness, tended to shatter. Several examples were lightly abraded on the base of the stem-socket junction and another example was fractured at this point (no. 123), suggesting wear and damage during use. Other breakage patterns appear to relate to the method of forming as stems often broke at the bowl/stem junction or occasionally into two pieces down the length of the stem, thus fracturing along lines of weakness at the junction of two pieces of clay.

Red slip was added for decorative effect to Ottoman pipes during the eighteenth and nineteenth centuries. An additional high burnish was added on pipes produced from *c.*1845 onwards in Istanbul, when greater attention was also paid to the quality of the slip. Istanbul pipe-makers imported fine red clay for this purpose from Van, Aydin and other places although a local source at Ökmeydani was later utilized (White 1845: II, 149; Bakla 1993: 45). The lily form of pipe has been dated to the mid to late nineteenth century in

Istanbul, although it may have continued somewhat later (Hayes 1980: 6–7, fig. 1, type VIII; Robinson 1985: 166–7). This date is supported by the 1884 date of registration of three very similar Turkish pipes in the Pitt-Rivers Museum, Oxford (PR 1884.101.33–34, 1884.101.46). On the basis of form and surface appearance this group can therefore be attributed to the second half of the nineteenth century, continuing into the early twentieth. Identical pipes were recovered during excavations at Bet She'an (Baisan) (A. Boas, pers. comm. May 1993), Jerusalem's Damascus Gate (Wightman 1989: 73–4, pl. 63.3; and a plain lily, not illustrated: JDG 2200), Tel Jezreel (Simpson forthcoming [a]) and Ramat Hanadiv on Mount Carmel (A. Boas, pers. comm. May 1993).

99. Fig. 13.5. Shank-end; orange fabric with partial thick grey core and dusky red burnished slip; circular bore-hole, D 15.5mm (shank-end) narrowing to *c.*8mm (above bowl/stem junction); coarse notch-rouletted swollen shank-end. FN 185. Context 122.5: Phase E.

100. Fig. 13.5. Shank-end; grey brown fabric and dusky red burnished slip; circular bore-hole, D 16mm (shank-end); double-incised lines above notch-rouletting on the swollen shank-end. FN 114. Context 105.10: Phase E.

101. Fig. 13.5. Shank-end; dark grey fabric and thick dark reddish brown core and dusky red burnished slip; circular bore-hole, D 17.5mm (shank-end); double incised line above notch-rouletted swollen shank-end. FN 214. Context 308.3: Phase D.

102. Fig. 13.5. Shank-end; reddish fabric with thick dark grey core and dusky red burnished slip; circular bore-hole, D 14.5mm (shank-end); notch-rouletted swollen shank-end. FN 330. Context 502.27: Phase D.

103. Fig. 13.5. Stem and shank-end; dark grey fabric and dusky red burnished slip; stem L >51mm; circular bore-hole, D 16mm (shank-end), narrowing to a triangular aperture 8.5mm across (close to the bowl/stem junction); notch-rouletting on the swollen shank-end and upper stem; traces of mould seam; 2 joining sherds. FNs 143–4. Context 504.9: Phase D.

104. Fig. 13.5. Shank-end; dark brown fabric and dusky red burnished slip; circular bore-hole, D 15mm (shank-end); notch-rouletted swollen shank-end. FN 174. Context 101.1: Phase E.

105. Fig. 13.5. Shank-end; dark grey fabric and dusky red burnished slip; circular bore-hole, D 15.5mm (shank-end); double-incised lines above lightly impressed notch-rouletting on the swollen shank-end. FN 139. Context 125.1: Phase E.

106. Fig. 13.5. Shank-end; grey-brown fabric and dusky red burnished slip; circular bore-hole, D 16mm (shank-end); double-incised lines above notch-rouletting on the swollen shank-end. FN 141. Context 120.9: Phase D.

107. Fig. 13.5. Shank-end; dark grey fabric and dusky red burnished slip; circular bore-hole, D 14mm (shank-end); double-incised lines above notch-rouletting on the swollen shank-end. FN 187. Context 106.1: Phase E.

108. Fig. 13.5. Shank-end; dark grey fabric and dusky red burnished slip; circular bore-hole, D uncertain; notch-rouletted shank-end. FN 261. Context 124.2: Phase D.

109. Fig. 13.5. Shank-end; dark grey fabric and dusky red burnished slip; circular bore-hole, D uncertain; notch-rouletted swollen shank-end. FN 212. Context 108.3: Phase D.

110. Fig. 13.5. Shank-end; reddish brown fabric and dusky red burnished slip; circular bore-hole, D uncertain; notch-rouletted swollen shank-end. FN 240. Context 105.12: Phase D/E.

111. Fig. 13.5. Shank-end; reddish brown fabric and dusky red burnished slip; circular bore-hole, D uncertain; double-incised lines above notch-rouletting on the swollen shank-end. FN 324. Context 502.22: Phase D.

112. Fig. 13.5. Shank-end; dark grey fabric with thick dark reddish brown core and dusky red burnished slip; circular bore-hole, D 14mm (shank-end); notch-rouletted swollen shank-end. FN 238. Context 119.5: Phase D.

113. Fig. 13.5. Shank-end; grey fabric and dusky red burnished slip; circular bore-hole, D 16mm (shank-end) narrowing to 7mm (above bowl/stem junction); notch-rouletted swollen shank-end, FN 143. Context 504.9: Phase D.

114. Fig. 13.5. Shank-end and stem; reddish brown fabric and dusky red burnished slip; circular bore-hole, D 15.5mm (shank-end) narrowing to 5mm (bowl/stem junction); notch-rouletted swollen shank-end and upper stem; traces of unidentified textile impression inside the bowl. FN 268. Context 111.3: Phase E.

115. Fig. 13.5. Shank-end and stem; reddish fabric and dusky red burnished slip; stem L *c.*55mm; circular bore-hole, D 18mm (shank-end), narrowing to 5mm (bowl/stem junction); double-incised lines above notch-rouletting on the swollen shank-end; blackened interior. FN 368. Context 102.5: Phase E.

116. Fig. 13.5. Stem and shank-end; dark grey fabric and dusky red burnished slip; stem L 54mm; circular bore-hole, D 13.5mm (shank-end), narrowing to a D-shaped aperture 8 × 5mm across (bowl/stem junction); triangular 'tongue' of clay inside the bowl above this aperture; double-incised line above notch-rouletting on the swollen shank-end; blackened interior. FN 67. Context 106.1: Phase E.

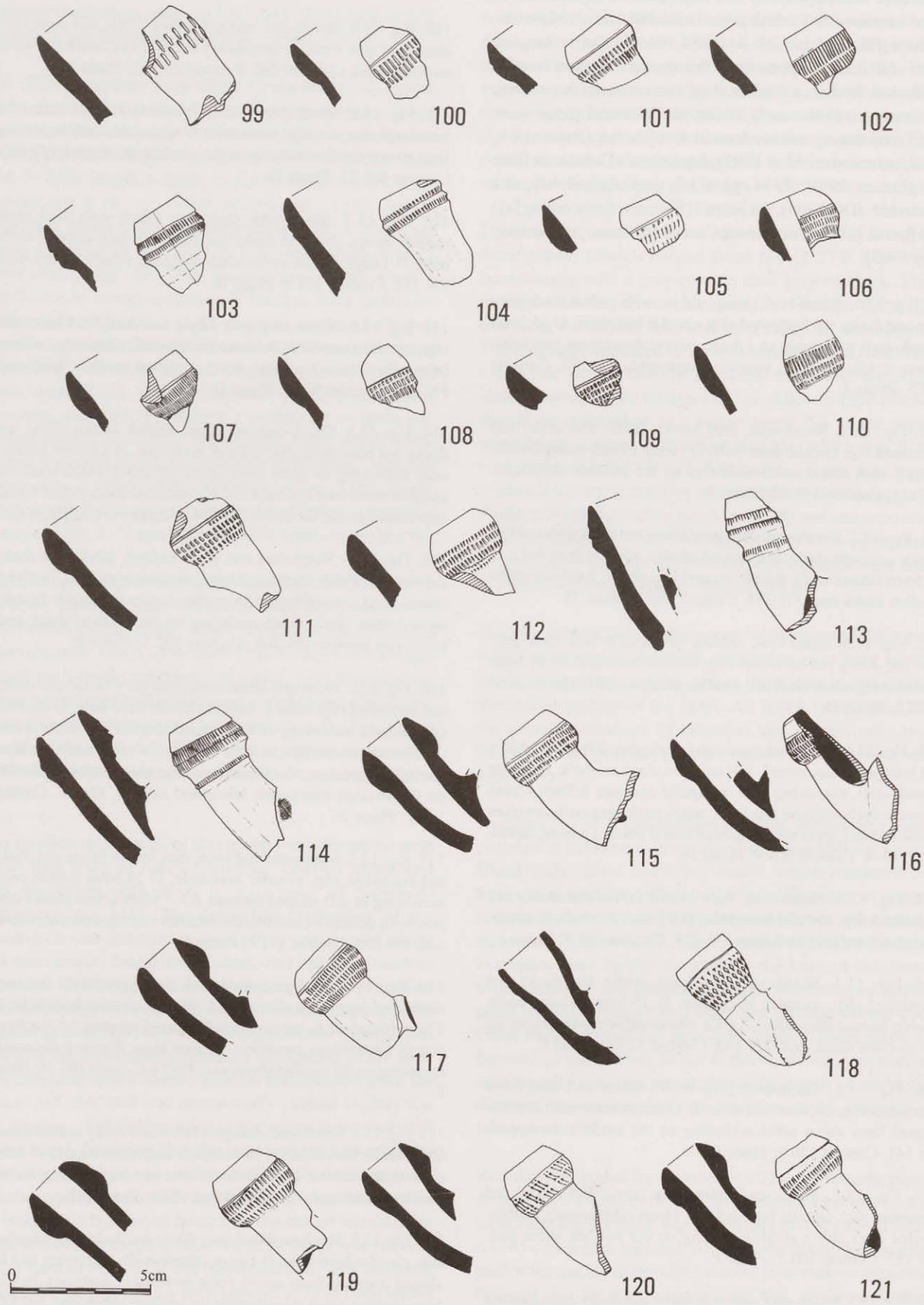
117. Fig. 13.5. Shank-end and stem; dark brown fabric and dusky red burnished slip; circular bore-hole, D 14.5mm (shank-end), narrowing to a D-shaped aperture 6.5 × 9mm across (bowl/stem junction); double-incised line above notch-rouletted swollen shank-end. FN 200. Context 111.1: Phase E.

118. Fig. 13.5. Stem and shank-end; dark grey fabric and very dusky red burnished slip; stem L 51mm; circular bore-hole, D 17mm (shank-end), narrowing to D-shaped aperture 5.5 × 4.5mm across (bowl/stem junction); incised lines framing diamond-rouletting on the swollen shank-end. FN 14. Context 105.10: Phase E.

119. Fig. 13.5. Shank-end; dark grey fabric and dusky red burnished slip; circular bore-hole, D 15mm (shank-end), narrowing to 14.5mm (mid-stem); double-incised line above notch-rouletting on the swollen shank-end. FN 99. Context 114.1: Phase D/E.

120. Fig. 13.5. Shank-end; dark grey fabric and dusky red burnished slip; circular bore-hole, D 14mm (shank-end), narrowing to a D-shaped aperture 9mm across (near bowl/stem junction); incised lines framing notch-rouletting on the swollen shank-end. FN 192. Context 127.2: Phase E.

Figure 13.5. Belmont (Suba): clay pipes (nos. 99–121). Scale



1:2.

121. Fig. 13.5. Shank-end; dark grey fabric, orange near surfaces and dusky red burnished slip; circular bore-hole, D 12mm (shank-end), narrowing to an irregular D-shaped aperture 6 × 7.5mm (bowl/stem junction); incised line above notch-rouletting on the swollen shank-end; slip worn away on the underside of the bowl. FN 149. Context 101.1: Phase E.

122. Fig. 13.6. Semi-complete pipe; reddish fabric and dusky red burnished slip; stem L 71mm; circular bore-hole, D *c.*11.5mm (shank-end), narrowing to 6.5mm (bowl/stem junction); double-incised lines above notch-rouletting on the swollen shank-end; notch-rouletted bowl/stem junction; blackened interior; 3 joining sherds. FNs 284–6. Context 123.5: Phase D.

123. Fig. 13.6. Stem, shank-end and lower bowl; dark grey fabric with orange core and dusky red burnished slip; stem L 67mm; circular bore-hole, D 16mm (shank-end), narrowing to a D-shaped aperture *c.*9mm across (bowl/stem junction); triangular 'tongue' of clay inside the bowl above this aperture; double-incised lines above notch-rouletting on the swollen shank-end; blackened interior. FN 188. Context 106.1: Phase E.

124. Fig. 13.6. Stem, shank-end and bowl profile; dark grey fabric with thick orange core and dusky red burnished slip; stem L 59mm; circular bore-hole, D 15.5mm (shank-end), narrowing to 9mm across (bowl/stem junction); double-incised line above notch-rouletting on the swollen shank-end; notch-rouletted lines at the bowl/stem junction and below the bowl-rim; slip worn away on the underside of the bowl; lightly blackened interior. FN 56. Context 502.1: Phase E.

125. Fig. 13.6. Semi-complete pipe; orange fabric and dusky red burnished slip; stem L >5mm; circular bore-hole, D 12.5mm (mid-stem), narrowing to 8mm (bowl/stem junction); bowl height 52mm; bowl capacity *c.*22ml; RD 41mm; plain lily and bowl/stem junction; triangular 'tongue' of clay inside the bowl above this aperture; blackened interior; 4 joining sherds. FN 175. Context 105.1: Phase E.

126. Fig. 13.6. Stem; dark grey fabric and dusky red burnished slip; circular bore-hole, D 9mm (bowl/stem junction); notch-rouletting above partially impressed maker's mark containing a floral motif, stamped close to the bowl/stem junction. FN 96. Context 116.4: Phase D.

127. Fig. 13.6. Stem; dark grey fabric with dusky red burnished slip; circular bore-hole, D 14mm (mid-stem), narrowing to 7.5mm (bowl/stem junction); notch-rouletting above lightly impressed oval maker's mark 6.5 × 4.5mm across, impressed near the bowl/stem junction; blackened interior. FN 171. Context 115.1: Phase E.

128. Fig. 13.6. Stem and lower bowl; dark grey fabric with thick orange core and dusky red burnished slip; circular bore-hole, D 13mm (mid-stem), narrowing to a D-shaped aperture *c.*7mm across (bowl/stem junction); triangular 'tongue' of clay inside the bowl above this aperture; notch-rouletting on the upper stem and bowl/stem junction; lightly impressed maker's mark 8mm long impressed on the lower stem; converging double-incised lines on the front of the bowl above single stamped oval; slip partially worn away on the underside of the bowl; blackened interior. FN 193. Context 125.1: Phase E.

129. Fig. 13.6. Bowl/stem junction; dark grey fabric and dusky red burnished slip; circular bore-hole, D 7.5mm (bowl/stem junction); converging double-incised lines on the front of the bowl with diamond-shaped arrangements of small stamped ovals above and below; notch-rouletted stem above oval maker's mark 6.5 × 7.5mm across; slip worn away on the underside of the bowl. FN 194. Context 125.1: Phase E.

130. Fig. 13.6. Stem, shank-end and lower bowl; dark grey fabric with thick orange core and dusky red burnished slip; stem L 69mm; circular bore-hole, D 16.5mm (shank-end) narrowing to a D-shaped aperture *c.*7mm across (bowl/stem junction); triangular 'tongue' of clay inside the bowl above this aperture; notch-rouletting on the swollen shank-end, upper stem and bowl/stem junction; partially impressed maker's mark *c.*6.5mm across impressed on the upper stem; converging double-incised lines on the front of the bowl; slip worn away on the underside of the bowl; heavily blackened interior with residue clogging the bore-hole. FN 90. Context 110.1: Phase E.

131. Fig. 13.6. Bowl/stem junction; dark grey fabric with thick dark reddish core and dusky red burnished slip; circular bore-hole, D 8.5mm (bowl/stem junction); converging double-incised lines on the front of the bowl; slip worn away on the underside of the bowl. FN 43. Context 107.1: Phase E.

132. Fig. 13.6. Bowl/stem junction; dark grey fabric and dusky red burnished slip; converging double-incised lines on the front of the bowl; notch-rouletted bowl/stem junction. FN 381. Context 115.1: Phase E.

133. Fig. 13.6. Bowl/stem junction; dark brown fabric and dusky red burnished slip; converging double-incised lines on the front of the bowl; incised and notch-rouletted bowl/stem junction; slip worn away on the underside of the bowl. FN 28. Context 115.1: Phase E.

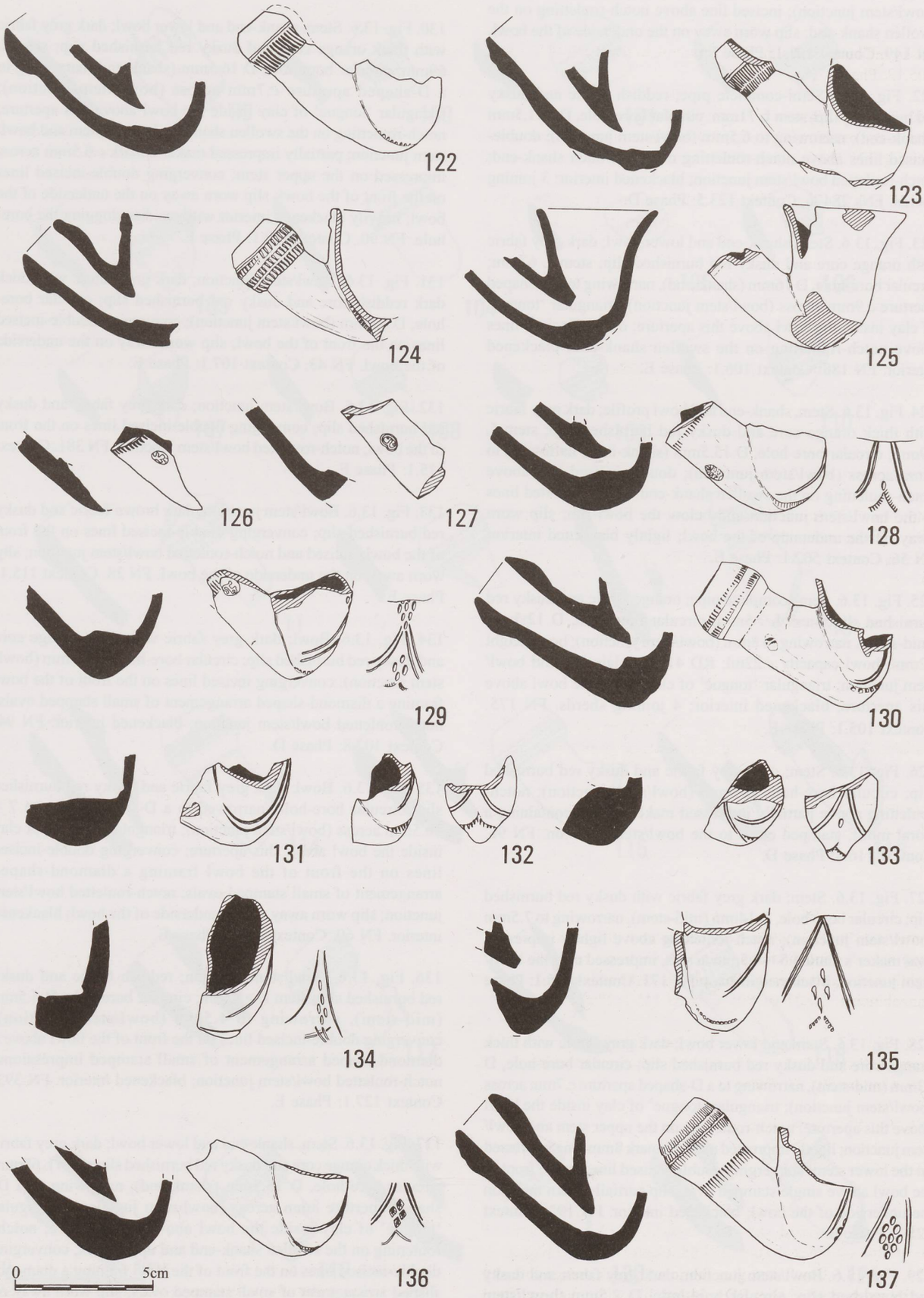
134. Fig. 13.6. Bowl; dark grey fabric with thick orange core and dusky red burnished slip; circular bore-hole, D 4.5mm (bowl/stem junction); converging incised lines on the front of the bowl framing a diamond-shaped arrangement of small stamped ovals; notch-rouletted bowl/stem junction; blackened interior. FN 94. Context 102.8: Phase D.

135. Fig. 13.6. Bowl; dark grey fabric and dusky red burnished slip; circular bore-hole, narrowed to a D-shaped aperture 7 × 10.5mm across (bowl/stem junction); triangular 'tongue' of clay inside the bowl above this aperture; converging double-incised lines on the front of the bowl framing a diamond-shaped arrangement of small stamped ovals; notch-rouletted bowl/stem junction; slip worn away on the underside of the bowl; blackened interior. FN 60. Context 304.1: Phase E.

136. Fig. 13.6. Bowl/stem junction; reddish fabric and dusky red burnished slip; stem L >50mm; circular bore-hole, D 5.5mm (mid-stem), narrowing to 4.5mm (bowl/stem junction); converging double-incised lines on the front of the bowl above a diamond-shaped arrangement of small stamped impressions; notch-rouletted bowl/stem junction; blackened interior. FN 393. Context 127.1: Phase E.

137. Fig. 13.6. Stem, shank-end and lower bowl; dark grey fabric with thick orange core and dusky red burnished slip; stem L 68mm; circular bore-hole, D 15.5mm (shank-end), narrowing to a D-shaped aperture 8mm across (bowl/stem junction); triangular 'tongue' of clay inside the bowl above this aperture; notch-rouletting on the swollen shank-end and upper stem; converging double-incised lines on the front of the bowl framing a diamond-shaped arrangement of small stamped ovals; slip worn away on the underside of the bowl; blackened interior. FN 195. Context 503.2: Phase D.

Figure 13.6. Belmont (Suba): clay pipes (nos. 122–37). Scale 1:2.



138. Fig. 13.7. Bowl rim; grey-brown fabric and dusky red burnished slip; RD *c.*40mm; plain lily. FN 379. Context 115.1: Phase E.

139. Fig. 13.7. Bowl; dark grey fabric with thick orange core and dusky red burnished slip; RD 39mm; plain lily. FN 146. Context 105.12: Phase D/E.

140. Fig. 13.7. Bowl rim; light grey fabric with dark grey core and dusky red burnished slip; RD *c.*43mm; plain lily; blackened interior. FN 230. Context 106.1: Phase E.

141. Fig. 13.7. Bowl; dark grey fabric and dusky red burnished slip; RD 34mm; plain lily. FN 136. Context 125.1: Phase E.

142. Fig. 13.7. Bowl; dark reddish brown fabric and dusky red burnished slip; RD *c.*36mm; plain lily. FN 87. Context 115.3: Phase D.

143. Fig. 13.7. Bowl; dark grey fabric, orange near surfaces and dusky red burnished slip; RD 36mm; plain lily. FN 116. Context 105.10: Phase E.

144. Fig. 13.7. Bowl rim; dark brown fabric with thick dark grey core and dusky red burnished slip; RD 46mm; plain lily. FN 239. Context 105.12: Phase D/E.

145. Fig. 13.7. Bowl; dark grey fabric and dusky red burnished slip; RD uncertain; upper bowl of lily with group of short incised lines on exterior; blackened interior. FN 36. Context 112.5: Phase D.

146. Fig. 13.7. Bowl rim; dark grey fabric and dusky red burnished slip; RD uncertain; notch-rouletted rim with converging double-incised lines on the front of the bowl; blackened interior. FN 227. Context 306.2: Phase D.

147. Fig. 13.7. Bowl rim; dark grey fabric and dusky red burnished slip; RD uncertain; oval stamped impressions above double-incised vertical lines. FN 367. Context 102.5: Phase E.

148. Fig. 13.7. Bowl rim; dark grey fabric and dusky red burnished slip; RD *c.*34mm; oval stamped impressions 7.5mm high, above double-incised vertical lines. FN 267. Context 111.3: Phase E.

149. Fig. 13.7. Bowl; dark reddish brown fabric and dusky red burnished slip; RD *c.*40mm; lily decorated with a cluster of small oval stamped indentations, each *c.*4mm high, below the rim; lightly blackened interior. This pipe tested possible positive for cannabinoids. FN 31 (=380). Context 115.1: Phase E.

150. Fig. 13.7. Bowl rim; dark grey fabric and dusky red burnished slip; RD uncertain; lily with notch-rouletted band. FN 329. Context 502.27: Phase D.

151. Fig. 13.7. Bowl; dark grey fabric and dusky red burnished slip; RD uncertain; lily with lightly impressed notch-rouletting. FN 48. Context 302.1: Phase D/E.

152. Fig. 13.7. Bowl; dark grey fabric, orange near surfaces and dusky red burnished slip; RD uncertain; lily with traces of decoration on lower portion. FN 68. Context 122.4: Phase E.

153. Fig. 13.7. Bowl; dark grey fabric with thick orange core and dusky red burnished slip; RD *c.*54mm; lily with notch-rouletted line above stamped decoration. FN 191. Context 116.1: Phase E.

154. Fig. 13.7. Bowl; orange fabric and dusky red burnished slip; RD *c.*30mm; lily with oval stamp 6mm long on the front of the bowl above fine vertical incised lines; blackened interior. FN 13. Context 108.1: Phase E.

155. Fig. 13.7. Bowl rim; dark grey fabric and dusky red burnished slip; RD uncertain; exterior decorated with impressions of stamp 7.5mm high. FN 258. Context 111.5: Phase D.

156. Fig. 13.7. Bowl rim; dark grey fabric and dusky red burnished slip; RD uncertain; lily with impressions of one or more small stamps. FN 358. Context 301.1: Phase E.

157. Fig. 13.7. Bowl rim; dark grey fabric and dusky red burnished slip; RD uncertain; double incised line above repeatedly impressed chevron stamp, 4.5mm high. FN 262. Context 124.2: Phase D.

158. Fig. 13.7. Bowl rim; dark grey brown fabric and dusky red burnished slip; RD uncertain; lily with cluster of repeated and overlapping impressions of a small stamp 6mm long. FN 166 (=206). Context 115.1: Phase E.

159. Fig. 13.7. Bowl; grey brown fabric and dusky red burnished slip; lily with circular stamp 7mm across containing a rayed blob. FN 77. Context 119.2: Phase E.

160. Fig. 13.7. Bowl; dark grey fabric and dusky red burnished slip; exterior decorated with repeatedly impressed small stamp, 7.5mm high; blackened interior. FN 319. Context 105.16: Phase D.

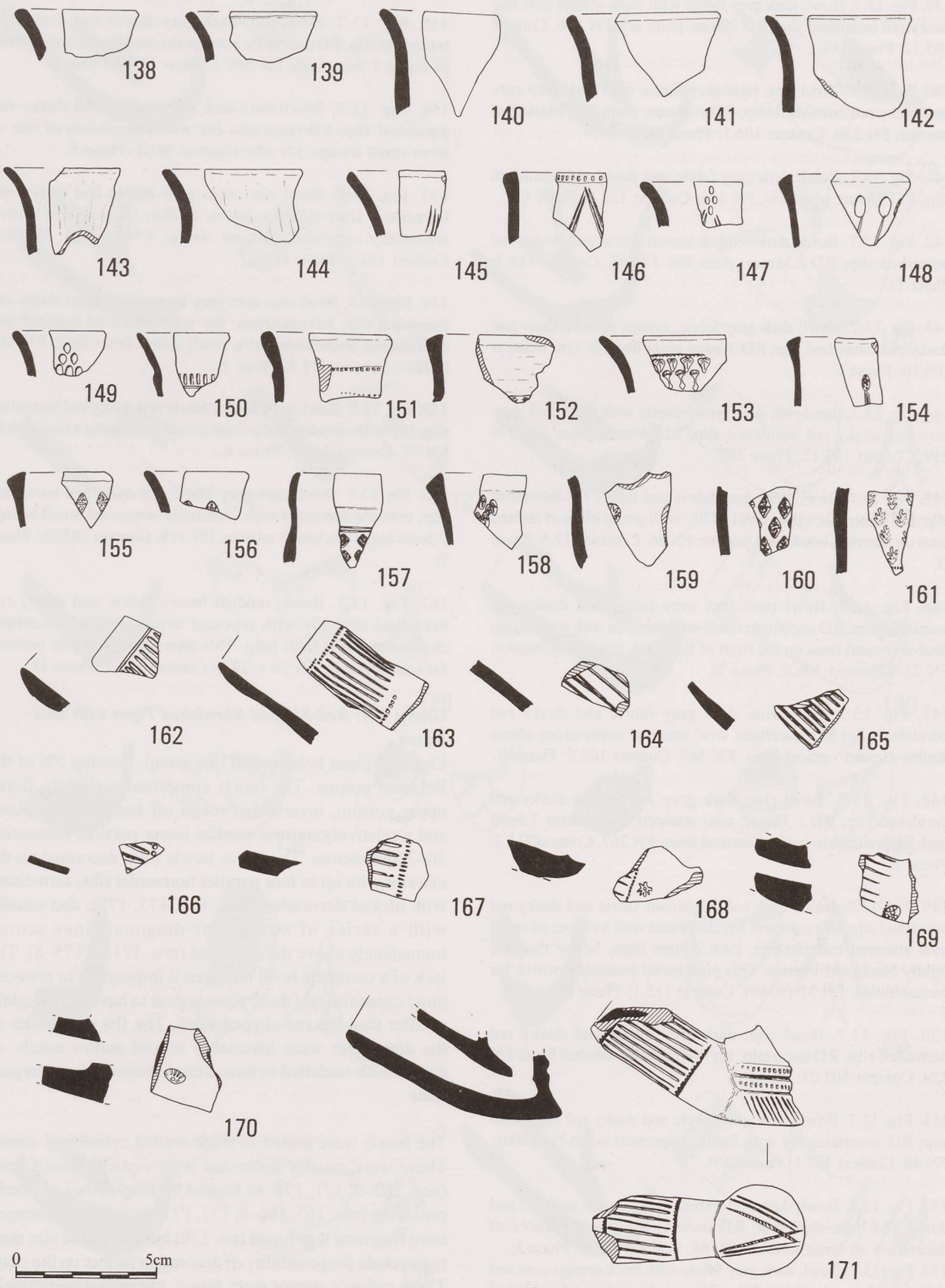
161. Fig. 13.7. Bowl; reddish brown fabric and dusky red burnished slip; lily with repeated impressions of a multiple chevron stamp 6.5mm long. This pipe tested possible positive for cannabinoids. FN 24 (=272). Context 123.2: Phase D.

Group VII: Red-Slipped Burnished Pipes with Disc-Bases

Eighteen pipes belonged to this group, forming 5% of the Belmont corpus. The bowls comprised a slightly flared upper portion, invariably broken off but probably plain, and a relatively narrow vertical lower portion, measuring 20–23mm across. The lower bowls were decorated on the exterior with up to four parallel horizontal ribs, sometimes with nicked decoration (nos. 171, 175, 178), and usually with a series of straight or diagonal lines scored immediately above the disc-base (nos. 171–3, 175–8). The lack of a complete bowl rendered it impossible to measure bowl capacities, yet these pipes appear to have been slightly smaller than the red-slipped lilies. The flat undersides of the disc-bases were invariably scored and/or notch- or dog's-tooth-rouletted to form a crude pattern of converging lines.

The bowls were joined to thick-walled cylindrical stems. These were usually decorated with vertical scored lines (nos. 162–9, 171, 176–8) framed by single rows of notch-rouletting (nos. 163, 166–8, 171, 177–8); one plain stamped stem fragment was found (no. 170) but its limited size does not exclude the possibility of decoration further up the stem. Three maker's stamps were found, impressed on the right side of the lower stem and close to the bowl-stem junction: an oval stamp containing several radiating lines above two

Figure 13.7. Belmont (Suba): clay pipes (nos. 138–71). Scale 1:2.



blobs (no. 170), length 8mm, width 5mm; a circular stamp 8 × 5mm across containing five blobs arranged around a central blob (no. 169); and a roughly circular stamp 5.5mm across consisting of an irregular 7-ray star with a central blob (no. 168).

One intact stem was found, measuring 5.5cm from shank-end to bowl-stem junction (no. 171). The diameter of the two surviving swollen shank-ends measured 13–14mm. The circular bore-holes tapered to circular or D-shaped openings at the bowl/stem junction measuring 5–11mm across; as in the case of the red-slipped burnished lilies, a wedge-shaped 'tongue' of clay was added inside the bowl above the bore-hole.

With one exception, these pipes shared reddish yellow (5YR 6/6) fabrics, occasionally grey near the surfaces, with a heavily burnished dusky red slip (2.5YR 3/3–4/4); the exception was fired grey throughout, including the surfaces (no. 176). The bowls were blackened through use on the interior and carbonized material survived inside several bowls. Field test kits proved negative for cannabis and opium. The thickness of the stems (4–7mm) and lower bowls (3–5mm) render these portions relatively robust and diagnostic, yet the absence of any identifiable bowl rims suggest that these portions were liable to shatter and may have been confused, when broken, with lily bowl-rims.

Judging by contemporary illustrations and typological analyses (Robinson 1983: 270–71) disc-based pipes date from the eighteenth to nineteenth centuries but this particular form appears to be a Palestinian type. Examples have been found in Jerusalem (Wightman 1989: 74, 257, pl. 63.12; Simpson, forthcoming [b]) and on Tel Jezreel (Simpson, forthcoming [a]) and Tall Ti'innik (Ziadeh, forthcoming), yet none has yet been noted from other regions of the Ottoman Empire. An apparently identical stamp to no. 112 has been found at Tall Ti'innik (Ziadeh, forthcoming). The close similarity of fabric and slip to the red-slipped burnished Group IV lilies suggests that these were a mid to late nineteenth-century type, possibly produced in Jerusalem.

162. Fig. 13.7. Shank-end; light grey brown fabric containing some dark sand and dusky red burnished slip; circular bore-hole, D *c.*19mm (shank-end); double-incised lines above vertical incised lines. FN 300. Context 503.24: Phase D.

163. Fig. 13.7. Stem and shank-end; dark grey fabric and dusky red burnished slip; circular bore-hole, D 16mm (shank-end); vertical incised lines framed by notch-rouletted lines. FN 66. Context 106.1: Phase E.

164. Fig. 13.7. Stem; dark grey fabric and dusky red burnished slip; vertical incised lines. FN 251. Context 106.10: Phase D/E.

165. Fig. 13.7. Stem; grey fabric and dusky red burnished slip; vertical incised lines. FN 95. Context 116.4: Phase D.

166. Fig. 13.7. Stem; orange fabric and burnished slip; vertical incised lines above notch-rouletted line. FN 126. Context 105.10: Phase E.

167. Fig. 13.7. Stem; reddish orange fabric and dusky red burnished slip; vertical incised lines above notch-rouletted line. FN 345. Context 114.1: Phase D/E.

168. Fig. 13.7. Stem; dark grey fabric and dusky red burnished slip; notch-rouletted line below vertical incised lines, with 7-pointed star stamp 5.5mm across impressed close to the bowl/stem junction. FN 253. Context 106.10: Phase D/E.

169. Fig. 13.7. Stem; grey fabric with thick pinkish core and dusky red burnished slip; circular bore-hole, D 5.5mm (above bowl/stem junction); notch-rouletted line below vertical incised lines with oval stamp, measuring 8 × 5mm and containing an arrangement of blobs, impressed close to the bowl/stem junction. Compare stamp on a pipe from Tall Ti'innik (Ziadeh, forthcoming). FN 232. Context 304.1: Phase E.

170. Fig. 13.7. Stem; grey fabric with thick reddish brown core; circular bore-hole, D 7.5mm (bowl/stem junction); oval stamp measuring 8 × 5mm and containing rays and blobs, impressed close to the bowl/stem junction. FN 231. Context 304.1: Phase E.

171. Fig. 13.7. Semi-complete pipe; dark grey fabric with thick orange core and dusky red burnished slip; stem L 55mm; circular bore-hole, D *c.*17mm (shank-end) narrowing to 8mm (bowl/stem junction); fragmentary plain upper bowl; ribbed lower bowl with lightly impressed notch-rouletting and vertical incision; incised and notch-rouletted disc-base; vertical incised lines on the stem framed by notch-rouletted lines. FN 201. Context 111.1: Phase E.

172. Fig. 13.8. Bowl; reddish brown fabric and dusky red burnished slip; vertical incision on the lower bowl; dog's-tooth rouletted disc-base. FN 181. Context 304.1: Phase E.

173. Fig. 13.8. Bowl; grey-brown fabric and dusky red burnished slip; lightly spiralled incision on the lower bowl; incised disc-base. FN 9. Context 106.1: Phase E.

174. Fig. 13.8. Bowl; grey fabric with thick reddish core and dusky red burnished slip; circular bore-hole, D narrowing to *c.*5.5mm (bowl/stem junction); ribbed lower bowl; notch-rouletted disc-base. FN 184. Context 305.1: Phase E.

175. Fig. 13.8. Bowl, broken at the bowl/stem junction; dark grey fabric and burnished slip; incised and rouletted; blackened interior. FN 289. Context 122.4: Phase E.

176. Fig. 13.8. Bowl and lower stem; dark grey fabric and burnished slip; circular bore-hole, D narrowing to 3.5mm (bowl/stem junction); vertical incised lines on the stem; lightly spiralled incision on the lower bowl; incised disc-base. FN 19. Context 108.1: Phase E.

177. Fig. 13.8. Bowl and lower stem; grey-brown fabric and dusky red burnished slip; circular bore-hole, D narrowing to 7.5mm (bowl/stem junction); vertical incised lines above notch-rouletted line on the stem; ribbed lower bowl with lightly impressed notch-rouletting and vertical incision; incised and notch-rouletted disc-base. FN 73. Context 109.1: Phase E.

178. Fig. 13.8. Bowl and lower stem; grey fabric with thick reddish core and dusky red burnished slip; circular bore-hole, D narrowing to 9mm (bowl/stem junction); vertical incised lines on the stem; ribbed lower bowl with lightly impressed notch-rouletting above

Figure 13.8. Belmont (Suba): clay pipes (nos. 172–87). Scale 1:2.

vertical incision; incised and dog's-tooth rouletted disc-base. FN 8. Context 105.20: Phase D.

Group VIII: Red-Slipped Burnished Pipes with Rouletted Bowls

Nine red-slipped burnished pipes, forming 2% of the Belmont corpus, were decorated with horizontal notch-rouletting on the rounded bowls. The style of rouletting varied from overlapping rows on at least the lower bowl (nos. 180–82, 186) to pairs of rouletted lines framing small circular stamped impressions (nos. 183–5) or rouletted bands extended over the entire bowl (no. 187); there was evidence for converging notch-rouletted lines on the undersides of the bowls (nos. 179, 186). The stamped impressions were created with a very small circular stamp containing a floral motif (nos. 183–5), diameter 2–4mm. Bowl wall thickness measured between 2.5 and 8.5mm; bowl capacities could not be measured directly. A single stem of this type was preserved (no. 179), measuring 70mm from shank-end to the base of the bowl, with a shank-end diameter of 16mm and D-shaped bore-hole diameter at the bowl junction of 35–80 mm. The swollen shank-end of this piece was decorated with overlapping notch-rouletted rows.

A single example of this type was also found at Tel Jezreel (Simpson, forthcoming [a]). The appearance of the fabrics, the burnished slip and the rouletted shank-end of this group are identical to those of the Group IV lily pipes, suggesting that they were produced at the same centre during the second half of the nineteenth century. Field tests proved negative for cannabis and opium.

179. Fig. 13.8. Shank-end and stem, broken at the bowl/stem junction; dark grey fabric, orange near the inner surface and dusky red burnished slip; stem L 61mm; swollen shank-end decorated with two incised lines above three partially overlapping notch-rouletted lines; converging notch-rouletted lines on the bowl underside at the bowl/stem junction; bowl decorated with horizontal notch-rouletting; additional 'tongue' of clay added to the interior of the bowl above the bore-hole. FN 100. Context 114.1: Phase D/E.

180. Fig. 13.8. Bowl; dark grey fabric and dusky red burnished slip; decorated with horizontal notch-rouletting. FN 177. Context 105.12: Phase D/E.

181. Fig. 13.8. Bowl; dark grey fabric and dusky red burnished slip; horizontal notch-rouletted rounded bowl. FN 170 (=205). Context 115.1: Phase E.

182. Fig. 13.8. Bowl; grey fabric with thick orange core and dusky red burnished slip; horizontal notch-rouletted rounded bowl. FN 365. Context 106.10: Phase D/E.

183. Fig. 13.8. Bowl; reddish brown fabric and dusky red burnished slip; bowl height *c.*43mm; two horizontal notch-rouletted rows framing circular stamps in the centre of the bowl. Compare nos. 184–5. FN 281. Context 125.1: Phase E.

184. Fig. 13.8. Bowl; dark grey fabric and burnished slip; decoration as nos. 183 and 185, with converging notch-rouletted lines on the underside; secondary blackening of surfaces. FN 57. Context 114.1: Phase D/E.

185. Fig. 13.8. Bowls; reddish brown fabric and dusky red burnished slip; bowl height *c.*43mm; two horizontal notch-rouletted rows framing circular stamps in the centre of the bowl. Compare nos. 183–4. FN 12. Context 105.10: Phase E.

186. Fig. 13.8. Bowl; dark grey fabric and dusky red burnished slip; lower bowl decorated with up to five overlapping horizontal notch-rouletted lines with converging notch-rouletted lines on the flattened underside; 3 joining sherds. FNs 74–5, 98. Context 118.18: Phase D.

187. Fig. 13.8. Bowl; dark grey fabric and dusky red burnished slip; three horizontal notch-rouletted rows across the rounded bowl; lightly blackened stepped rim. FN 50. Context 119.3: Phase D.

Early Twentieth-Century Pipes

Group IX

Two pipes almost certainly belong to the early years of the twentieth century and differ from the examples described above owing to their particularly long stems, right-angle profile and, in the case of no. 188, distinctive moulded decoration. Two complete examples of the latter type exist in the Pitt Rivers Museum in Oxford: these were acquired in 1909 and registered as Palestinian Bedouin (1909.62.1–2); a third example is exhibited in Palmyra Ethnographic Museum (personal observation, June 1996) and others exist in private collections (e.g. Peacey 1996: 40–41). Further examples have been found on sites in northern and central Iraq, including Tall Abu Dhahir and Karana 5 (personal observation 1986), Kharabuk (Amin Agha 1987: 94), Shor Tepe and the Haditha Dam region of the Middle Euphrates (Gargies 1987: 298, 304, nos. 22, 55). The place of manufacture of these pipes is uncertain.

188. Fig. 13.9. Stem; fabric varies from grey (2.5Y6/1) to light brownish grey (2.5Y6/2), lightly polished with light finger impressions on the underside; circular bore-hole D 7.5mm; moulded floral designs set in two panels arranged on either side of the stem. FN 83. Context 502.37: Phases B–D.

189. Fig. 13.9. Stem; probably split lengthways along the mould seam; light brownish grey fabric (2.5Y 6/2), lightly polished; circular bore-hole, D 5mm; decorated with three sets of four parallel incised/moulded lines. Compare example from Tall az-Zawia (Gargies 1987: no. 13). FN 82. Context 503.1: Phases C-E.

Pipes of Uncertain Date

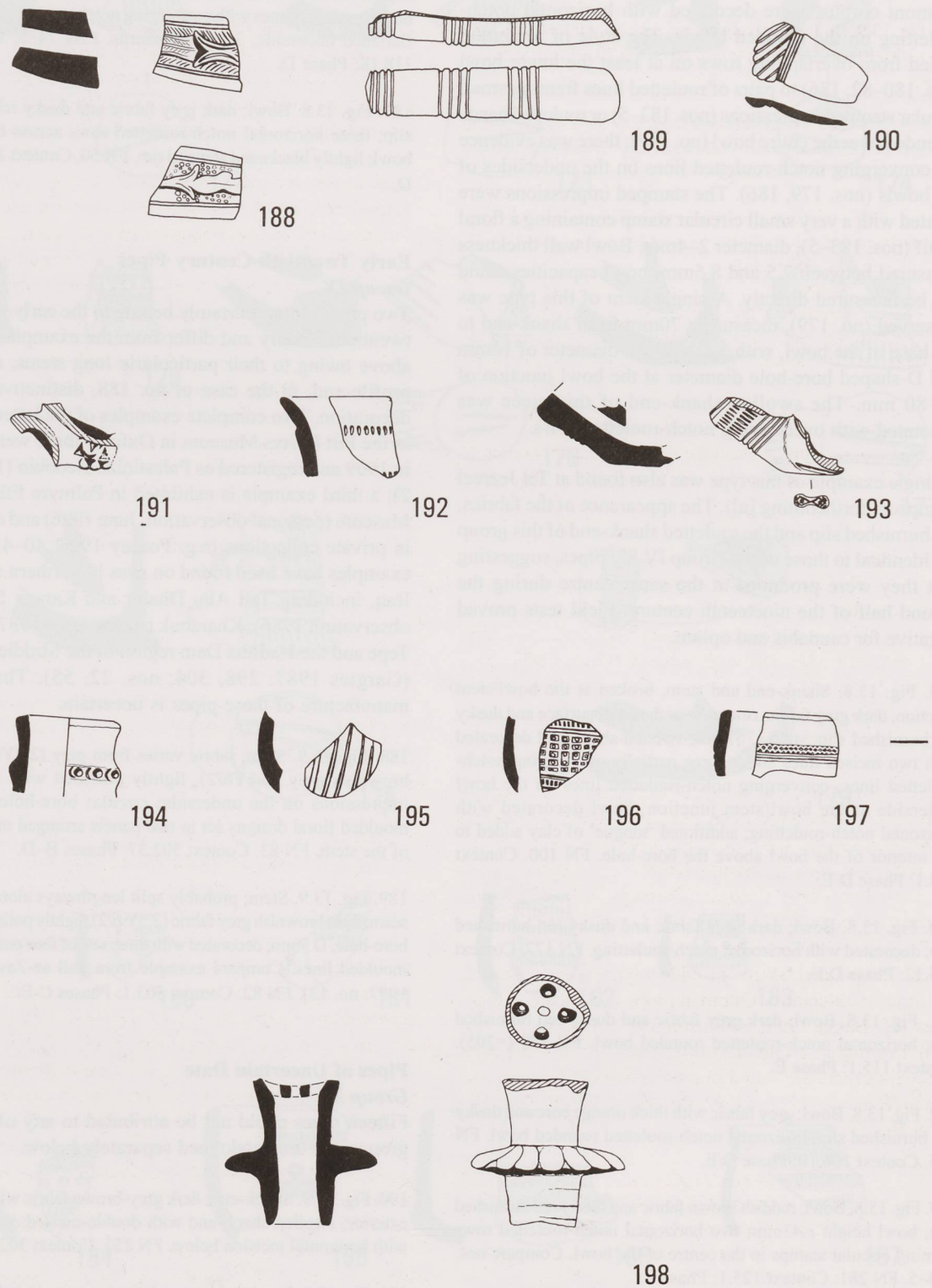
Group X

Fifteen pipes could not be attributed to any of the above groups and are catalogued separately below.

190. Fig. 13.9. Shank-end; dark grey-brown fabric with burnished exterior; swollen shank-end with double-incised diagonal lines, with horizontal incision below. FN 255. Context 302.5: Phase D.

191. Fig. 13.9. Bowl and stem; relatively coarse light brown fabric containing some angular grit and sand; circular bore-hole, D 9mm (near the bowl/stem junction); deeply incised or impressed decoration; blackened interior. FN 327. Context 126.3: Phase D.

Figure 13.9. Belmont (Suba): clay pipes (nos. 188–98). Scale 1:2.



192. Fig. 13.9. Stem and shank-end, broken at the bowl/stem junction; very dark grey fabric with burnished surface; stem L 37.5mm; circular bore-hole, D 5mm (bowl/stem junction); notch-rouletting on the shank-end with horizontal incised lines below; maker's mark 11mm across impressed on the flattened underside of the bowl. FN 266. Context 123.2: Phase D.

193. Fig. 13.9. Bowl; relatively coarse dark grey fabric with light brownish surfaces; vertical incised lines. FN 399. Context 502.4: Phase E.

194. Fig. 13.9. Bowl; relatively coarse grey fabric containing sand with burnished exterior; horizontal rouletting framing decoration. FN 400. Context 502.4: Phase E.

195. Fig. 13.9. Bowl rim; grey fabric with light brown burnished slip; horizontal notch-rouletted decoration on the exterior. FN 302. Context 118.13: Phase D.

196. Fig. 13.9. Bowl rim; grey fabric and surfaces, (10YR 6/1), latter partly fired to pale brown (10YR 6/3); RD 28mm; impressed decoration on the exterior. FNs 91, 165. Context 114.1: Phase D/E.

197. Fig. 13.9. Bowl rim; dark grey fabric with traces of red slip; lattice-pattern rouletting around the thickened central portion of the bowl; blackened interior. FN 236. Context 108.6: Phase D.

Water-Pipes

Group XI: Red-Burnished Water-Pipe Charcoal-Burner

A single water-pipe charcoal-burner was found (no. 198). The form of this is typical of products from Tophane which were often highlighted with gilding (Goes 1993: 65); whether this example was made in Istanbul or a local centre remains uncertain. The burnished red slip implies a date in the second half of the nineteenth century.

Similar forms of red-slipped burnished water-pipe charcoal-burners have been published from Jerusalem (Wightman 1989: 74, pl. 63.22 [described as a mouthpiece and published upside-down]), Kastelloriso (Wood 1990) and related heads are illustrated among finds from Beirut (Turquety-Pariset 1982: 38, 63, fig. 5) and Hama (Poulsen 1957: 281, no. 1070). The number of holes in the grate varies. The petaled 'skirts' provide a typological link with late nineteenth-century Ottoman pipes with petalled disc-bases (cf. Bakla 1993; Robinson 1985: 198, pl. 63, no. A26). In contrast, completely different types of water-pipe charcoal-burners are found in the Persian Gulf region and Yemen (Hansman 1985: 51, 92, fig. 11.g–i; Posey 1994: 40–42, 58–9).

198. Fig. 13.9. Water-pipe head; light reddish brown (5YR 6/4) fabric and a lightly burnished red slip (2.5YR 6/8); produced in a two-part mould, with a cylindrical tube, D 13mm, with a petalled 'skirt' in the centre and five equally-spaced holes at the top. FN 3. Context 106.1: Phase E.

Group XII: Possible Water-Pipe

Two joining sherds were found with a grey earthenware fabric, decorated in low relief (no. 199). This may belong to a type of water-pipe charcoal-burner.

199. (Not illustrated.) Grey earthenware fabric, decorated in low relief. FNs 189-90. Contexts 106.10, 106.1: Phases D/E, E.

Conclusions

Seated or reclining figures gently drawing on long-stemmed pipes or water-pipes are a familiar *leitmotif* of eighteenth and nineteenth-century European drawings, paintings, engravings and photographs of the Near East. Travellers' accounts provide further details and contemporary Ottoman records offer a rich source for reconstructing the organization and scale of the tobacco industry in this period. A small number of Turkish pipes do survive in collections, complete with their wooden or metal stems and costly amber mouth-pieces. These were regularly cleaned or replaced during use, particularly the bowls which were normally made of ceramic. Owing to their relative fragility these are regularly discovered on archaeological excavations and surveys across the Near East. However, until recent years, they have attracted relatively little serious attention.

Pioneering research on clay pipes found in Bulgaria (Iltcheva 1975; Stançeva 1972), Greece (Robinson 1983, 1985) and Turkey (Hayes 1992) has illustrated the great potential of these finds in the recognition and closer dating of associated post-medieval occupation deposits. More recent research on material from Iraq (Gargies 1987, Matney 1998), Mytilene (Humphrey 1990), Malta (Wood 1992), Yemen (Keall 1992) and other regions supports the general typological sequence and dating of pipes found in these areas, but also suggest the existence of local industries. Further papers have focused on the introduction, diffusion and social effects of smoking across the Near East from the late sixteenth century through the early twentieth century (Simpson 1990, 1995, 1998).

Within the Levant, there has been a widespread tendency among archaeologists to attribute a Mamluk date to pipes found during their investigations (Ben-Tor and Rosenthal 1978: 70, fig. 6.1–2; Turquety-Pariset 1982: 37–8, figs. 4–5). This has basically arisen from a mistaken date attributed to pipes excavated on the Citadel at Hama, the Mongol destruction of which in 1401 was thought to provide a *terminus ante quem* for all finds (Poulsen 1957). However, this only applies to material stratified within or below the destruction horizon. There are also a number of later Ottoman finds from these excavations, not least coins and tokens (Hammershaimb 1969: 164; Thomsen 1969: 167–8). It is therefore likely that subsequent minor occupation and casual visits accounted for the accidental loss or breakage and discard of these pipe-bowls. This re-evaluation renders unnecessary the excavators' conclusion that the pipes must have been used for the taking of narcotics, as New World tobacco was still unknown in the fourteenth century.[4] Moreover, close typological parallels with Ottoman pipes from Greece and Palestine confirm a seventeenth to early nineteenth-century date for the pipes from Hama (Simpson 1990).

Apart from Hama, groups of pipes have been recognized from various excavations and surface surveys in the southern Levant. Examples are frequently found during excavations in the Old City of Jerusalem, although as yet only one such group has been published (Wightman 1989: 73–4, 257, fig. 63; cf. Simpson 1990). However, single examples or small groups have been referred to or selectively illustrated from a growing number of sites within this region. These include Acre (Edelstein and Avissár 1997: 133–5; Stern 1997: 68), al-Burj al-Ahmar (Pringle 1986: 141–2, fig. 43.11–12), Dor (Stern 1994: 324, 328, fig. 231; Magrill 1996), Har Batur (Avni 1992: 33 [English section], 36 [Hebrew section]), Khan al-Minya (Stepanski 1989: 75), Khirbat Hamad (Aronshtam 1997: 181, fig. 11.7), Rogem Hiri (Mizrachi *et al.* 1996: 172-3, fig. 4.11), Safad (Damati 1986: 94), Tall Sailun (Andersen 1985: 98, no. 276), Tel Te'enim (Oren and Scheftelowitz 1998: 75, fig. 22.5) and Tel Yoqne'am (Ben-Tor and Rosenthal 1978: 69–70, fig. 6.1–2; Avissár 1996). The publication of further groups from Jerusalem (Robinson, forthcoming; Simpson, forthcoming [b]), Tel Jezreel (Simpson, forthcoming [a]), Tall Ti'innik (Ziadeh, forthcoming) and Ramat Hanadiv (Baram, forthcoming) will significantly add to this corpus.

The excavations at Belmont, however, have produced the largest group of pipes yet to be studied from this region. The overwhelming majority of these pipes date from the eighteenth and nineteenth centuries, although a small number of additional examples extend this date-range into the seventeenth and early twentieth centuries. Changes in the size, shape, colour and preferred decorative techniques bear some resemblances to the chronological and typological development outlined elsewhere for Istanbul and Greece. Nevertheless, there are a number of minor differences, which suggest that some types of pipe were particularly popular in this region. A variety of rounded bowls and red-slipped burnished late lily forms appear to have been the preferred local types of the eighteenth and nineteenth centuries. In addition, a particular type of solid disc-based pipe and pipes decorated with cypress-tree stamps appear to be of local Palestinian manufacture. A small number of splash-glazed pipes were also found, which may be the product of a local eighteenth-century glazed ceramic industry. However, no evidence was found for the flat disk-based pipes that were commonly found at Saraçhane (Istanbul), Athens or Corinth, nor were any of the large-capacity bowls that occur in nineteenth-century Egypt. No evidence was found for imported European clay pipes, or indeed other demonstrable long-distance imports, nor were any of the pipes decorated with gilding, as was common in Istanbul. The excavated corpus may be regarded as an unspectacular yet characteristic assemblage of a minor village in the Jerusalem area. It is not surprising that many of the closest parallels are indeed from Jerusalem itself or from other rural sites in Palestine.

The precise whereabouts of the workshops responsible for making these pipes is uncertain. Stylized maker's marks occurred sporadically on pipes from Belmont but, unlike those used by contemporaneous pipe-makers in Istanbul, these do not give the name or workshop of the makers in question. However, pipes were normally made by specialist pipe-makers working in towns and cities throughout the Ottoman Empire. The Istanbul pipe-makers have received some study but some 20 other pipe-making centres are attested. The closest of these to Belmont was Jerusalem although other pipe-producing centres within this region included Jaffa (Kark 1990: 253; Rogers 1989: 8), Nazareth (Ziadeh, forthcoming) and Beirut (Bartl, forthcoming). The extent to which different pipe-makers may have specialized in different types is uncertain but it seems likely that each may have produced a limited range of shapes linked by the stamps and moulds available to each individual. Bakla (1993), for example, illustrates a selection of tools from the chest of Ömer Güç, the last pipe-maker in Istanbul.

It is rarely possible to comment on the spatial context of Ottoman pipes yet Belmont offers an exceptional instance.[5] Most of the excavated pipes came from contexts within the inner ward of the castle, particularly from areas within the central courtyard, whereas relatively few pipes appear to have been recovered from within rooms. It is tempting to speculate that the reason behind this distribution was that pipe-smoking was preferred as a social activity within a shared plaza (*sahah*) at the heart of the old castle, implying that pipes were discarded as soon as they were broken. This area thus may have functioned as 'the centre of male gatherings and entertainment', where during the day 'the elders of the village would gather …, and in the evenings, after they had returned from working in the fields, the younger men would meet …, to relax, exchange news and perhaps listen to popular tales or folk songs' (Amiri and Tamari 1989: 15). An alternative hypothesis is that domestic refuse was not allowed to accumulate to a great depth within rooms but was swept out into external areas. Frequent pipe breakage patterns noted during this study were at the bowl rim and bowl/stem junction, suggesting that many pipes were broken as their owners attempted to clear charred debris and dottle from within the bowl. During the nineteenth century metal ashtrays with a stuffed leather ball in the centre (called a *takatuka*) were used for clearing the residue in upturned pipes (illustrated by Bakla 1993: 39), but these are unlikely to have been used outside wealthy circles. Itinerant pipe-cleaners, 'who circulate through the narrow streets, between six and eight a.m., waking tardy risers with shouts of *tchibookjee!* and *tchibookja!*' were a feature of Istanbul (White 1845: II, 126–7), but the pipe-smokers of Belmont probably relied more on simple expediency and the standard pipe-cleaning equipment of the period, namely a long metal or wooden pin with a cotton tip to clean out the pipe-bore (White 1845: II, 126). It may be noted that no evidence was found for the deliberate modification of broken pipes for re-use, as observed elsewhere (Simpson 1991), implying that the owners had a ready supply of new pipes. The proximity of Belmont to Jerusalem was clearly a factor here.

Some final comments may be added on the economic situation in late Ottoman Palestine. Tobacco was overwhelmingly the most common substance to be smoked, although possible evidence for cannabis was found in three pipes (nos. 25, 149, 161). Ottoman tax records and European travellers' accounts indicate that tobacco was cultivated in Palestine from the late seventeenth century onwards, although cotton became a more lucrative crop in the eighteenth century and tobacco was later imported through the ports at Jaffa and Gaza (Cohen 1973: 262; Kark 1990: 239, 278; Meyer 1907: 107). High-quality tobacco was grown in Syria above Lattakia, in the Sidon district and in the Baqa'a valley (Volney 1793: 197, 367, 408), but different grades of local tobacco were also available: a low-quality variety known as *heesheh* was grown in the Beersheba area, and another cheap variety called *merdiny* was cultivated in the Ghur (el-Aref and Tilley 1944: 36; Burckhardt 1822: 393). Tiberias, Safad, Hebron, Beersheba and Gaza functioned as markets for the sale of tobacco to bedouin (Kark 1990: 264–5), and Burckhardt (1822, 323) mentions the early nineteenth-century cultivation of tobacco at Tiberias.[6]

The combined spread of cultivation and ease of importation from other tobacco-growing regions must have had a profound impact on the local consumption of tobacco in this part of the Ottoman Empire. The frequency of eighteenth and nineteenth-century pipes in late contexts throughout the areas excavated at Belmont suggests that many, if not most, of the adults smoked pipes. It has been estimated that, during the early part of the twentieth century, as many as 90% of men and 50% of women in the Beersheba region used pipes (el-Aref and Tilley 1944: 36). In contrast, the use of water-pipes at Belmont appears to have been rare, as only one fragment of a charcoal-burner was recognized during the excavation. This may reflect the fact that Persian *tumbac* was the preferred tobacco for water-pipes, yet this was an expensive import that lay beyond the economic wherewithal of most villagers (cf. Grant 1921: 166). The scarcity of datable early twentieth-century pipes may reflect a different cause, namely the growing popularity of the cigarette, which signalled the gradual demise of the clay pipe industry across the Middle East. At the turn of the century in Palestine, Wilson (1906: 127) observed that 'small pipes of reddish-brown clay, with wooden stems, varying in length from a few inches to three or four feet ... are, however, being largely supplanted by cigarettes, the papers for making them being imported in little books or packets, and sold everywhere.'[7] Somewhat later, Hilma Granqvist commented during her fieldwork from 1925 to 1931 at Artas, south of Bethlehem, that 'the use of cigarettes was spreading', although some men still used pipes and water-pipes 'and photos showing a Bethlehem woman smoking a waterpipe at a party were sold in Jerusalem' (Granqvist 1965: 37). By the Second World War pipe-smoking had been relegated to a novelty pastime.[8]

Notes

1. This figure is based on pipes available for study. The somewhat higher figure of 444 pipes can be reconstructed from references in the site notebooks (1986: 133, 1987: 73, 1988: 155, 1989: 83 pipes): I am very grateful to Anthony Grey for kindly sending me this information. However, this figure includes joining fragments that were only counted once for the purposes of this analysis, plus a number of pieces which do not appear to have been kept, possibly from Areas 200 and 400 as there were no pipes from these Areas among the reference collection.

2. The potential archaeological applications of this technique have been outlined previously (Simpson 1994). The field kits employed were manufactured by Erez Forensic Technology Ltd (Jerusalem) and acquired through a British distributor. Sampling consisted of rubbing dry test papers over part of the pipe bowl or stem and spraying the test paper with a reagent; positive results produce a vivid colour reaction on the test paper within a few seconds. Two reagents were used, namely 'Cannabispray' and 'Herosol'. These kits are considered to be effective for detecting particles of up to 1/100 of a microgram ('Cannabispray') or a microgram ('Herosol'), including for use on surfaces that have been washed. Ideally this process should be followed by laboratory testing.

3. The terms used by Bakla (1993) are less useful. Measurements were taken from the shank-end to the centre base of the bowl.

4. Pipe-tobacco and the art of smoking were introduced by English and Dutch sailors to Istanbul between 1599 and 1606 and to Egypt between 1601 and 1603. Tobacco entered the Hijaz and Yemen as early as 1590. Rosenthal (1971) has convincingly argued that, prior to the introduction of American tobacco, cannabis and opium, the two major Old World stimulants other than alcohol, were ingested in edible form or were burnt on open braziers rather than inhaled using a pipe. However, following its introduction, smoking spread rapidly throughout the Ottoman Empire, Persia and India, despite widespread prohibitions from the second quarter of the seventeenth century (Simpson 1995, 1998).

5. It is hoped that the excavation of extensive areas of Ottoman vernacular housing at Kaman-Kalehöyük and Amorium will throw more light on this issue as pipes have been reported from both of these projects in Turkey.

6. Other varieties of Turkish tobacco, particularly from Thrace and Macedonia, are listed by Jahn (1954).

7. Thomson (1911: 93) refers to cigarettes being 'a modern innovation' in Palestine during the 1880s. Hand-rolled cigarettes became popular in Britain and France after the Crimean War (1854–6) when officers adopted the habit of smoking them from Turkish and Russian soldiers. The changing fashion led to a cigarette factory being founded in Germany in 1862 and the first cigarette machine a decade later; but it was not until almost the First World War that cigarettes became mass-produced (Libert 1984: 103; Jahn 1954: 34). Within the Ottoman Empire, elaborate cigarette-holders were made of amber, silver or coral, cheaper versions being made of bone or even bakelite (for examples from Damascus, see Kalter *et al.* 1992: 132, fig. 310).

8. This may explain a curious posed photograph from Halhul, near Hebron, dated 1940, showing an old man smoking a pipe while surrounded by onlookers (Amiri and Tamari 1989: 14 [wrongly captioned as a 'musician playing the pipes']).

CHAPTER 14
THE FAUNAL REMAINS

Paul Croft

Introduction

This report is based on the examination and recording of over 25,000 pieces of animal and bird bone excavated at Belmont. This total includes over 10,000 pieces which could be more or less closely identified. Not all of these have been examined by the present writer: a substantial minority of the mammalian remains were identified by Dr Gillian Clark, who has kindly permitted her records to be used in the compilation of the present report. The recovery rate for faunal remains of all but the smaller creatures at Belmont will have been relatively good, since dry-sieving of all non-superficial deposits was undertaken, using a 5mm mesh.

Since the great majority of the identified bones were of larger mammals, these constitute the main focus of attention in what follows. Small mammal, reptile, bird and fish remains are discussed in separate sub-sections of the report. The few human remains from Belmont, although not strictly faunal, are also briefly described in the present contribution. Selected metrical data for Belmont animal bones are presented in Appendix 2.

Environmental Background

Belmont and its hinterland are located on the western slopes of the central portion of the Judaean Hills, some 12km west of Jerusalem. This upland area consists of hills of dolomite and hard limestone separated by winding valleys. These valleys, often narrow and gorge-like, form a dendritic drainage pattern, which mainly carries water westwards to the Mediterranean Sea. At the present day stream flow is intermittent, being confined to winter (Orni and Efrat 1966: 53–4), but a perennial water supply is available from numerous springs. The vicinity of Belmont, lying between roughly 600 and 800m above sea level, enjoys an average annual rainfall of *c*.600mm. The *terra rossa* soils are of very variable thickness, and bedrock is exposed in many places, especially on hilltops and steep slopes. Valley bottom soils may, however, attain a depth of 1–2m (Lechevallier 1978: 9).

In terms of its natural vegetation, the Belmont area falls within the Mediterranean Woodland Zone. It would formerly have supported an evergreen sclerophyllous maquis, or possibly forest (Zohary 1962: 83), dominated by the evergreen oak (*Quercus calliprinos*). Amongst other trees, terebinth (*Pistacia palaestina*) would most likely have occurred in association with the dominant oak (Orni and Efrat 1966: 129). Subsequent to its large-scale degradation, twentieth-century reafforestation in the Mediterranean Woodland Zone involved the planting mainly of Aleppo pine (*Pinus halepensis*), which now grows spontaneously throughout the zone (Danin 1988: 134). This species, therefore, also seems likely to have been part of the natural association of trees. Such a maquis association would have included a variety of climbers, undershrubs and other understorey vegetation, including many bulb and tuber plants and, where the maquis was less dense, a profusion of annual and perennial herbs (Zohary 1962: 98).

Degradation of a maquis climax vegetation of this sort results in the creation of a low garigue or *batha*, an association of Mediterranean semi-shrubs typically dominated by spiny burnet (*Sarcopoterium spinosum*) often accompanied by rockrose (*Cistus* sp.) (Danin 1988: 136). The former shrub is extremely resistant to burning and cutting, due to a root system which can penetrate rocky substrate to a depth of 3m (Orni and Efrat 1966: 131), and so survives well even where grazing and fuel cutting are heavy. Zohary (1962: 98), however, stresses both the high level of resistance of the maquis association to human interference, due to the ability of those trees and shrubs to regenerate from their underground stems, and also the ability of maquis to regenerate itself, in succession, from garigue/*batha*. Clearly, then, garigue formation is neither particularly easily induced nor necessarily irreversible.

Early Settlement and Animal Economies in the Belmont Area

The earliest evidence for human settlement in the immediate area of Belmont dates to the early seventh millennium BC. The PPNB (Pre-pottery Neolithic B) settlement of Abu Ghosh (Lechevallier 1978; 1993), some 3.5km distant from Belmont, lies exactly opposite across the valley (the Wadi al-Hamar). The valley here is broad, shallow and fertile, its bottom lying only 100m or so below the Neolithic settlement and 150m below Belmont.

Despite the degree of climatic and environmental change that has certainly occurred during the eight millennia which separate the occupation of these two sites (see, for example, Bintliff and Van Zeist 1982; Rosen 1989), animal remains from Abu Ghosh may, nevertheless, provide some indication of the potential of the local landscape during more recent periods of occupation in the area when considered along with the natural vegetation. The exploitation of animals at Neolithic Abu Ghosh would have been part of a mixed subsistence economy designed to support a village community in its landsape. Dictates of religion and politics, entailing participation in a wider regional or supra-regional economy, which would undoubtedly have played a large part in moulding the structure of successive Belmont economies during the second millennium AD, are likely to have influenced

human exploitation of larger mammals hardly, if at all, during the much earlier occupation of Abu Ghosh. The Neolithic subsistence pattern may, then, more directly reflect the potential of the landscape than do later economic practices at Belmont.

A substantial faunal sample (3,618 identified specimens) was recovered in the late 1960s to early 1970s in excavations at Abu Ghosh and was studied by Ducos (1978). The sample consists mainly of the remains of goat (56.0%), cattle (17.5%), gazelle (13.3%) and pig (13.0%). Other mammals occur in insignificant numbers (Ducos 1978: table 1). Ducos considered all of these animals to have been wild, exploited by hunting, but deduced from the ageing data that a situation of proto-domestication (*proto-élévage*) may have existed for the goats.

In fact, current opinion favours the idea that goats were already undergoing domestication before 7000 BC (e.g. Grigson 1995a: 382), so the Abu Ghosh goats, although morphologically wild, now seem possibly to have been domestic stock. Be this as it may, their preponderance in the Abu Ghosh faunal sample indicates that the locality was highly suitable for goats, and significant proportions of pig and cattle bones attest the suitability of the area for these animals too. Thus, since it is apparent that three of the four main animals (sheep excepted) which formed the backbone of the animal economy at Belmont during the second millennium AD were already supplying the great majority of the animal resources at nearby Abu Ghosh during the seventh millennium BC, the impact of environmental change in the interim (in this particular upland area at least) seems unlikely to have been extreme.

The most obvious contrasts in the composition of the two site faunas seem readily explicable. First, the abundance of gazelle at Abu Ghosh and its rarity at Belmont presumably reflects a pronounced decline in numbers of this animal due to human predation. Secondly, the absence of sheep from Abu Ghosh compared with their common occurrence in all phases at Belmont may well be because sheep had not yet been brought into the area in PPNB times. Sheep domestication was still in its early stages (Clutton-Brock 1987: 56) and Abu Ghosh lies outside the probable area of distribution of wild sheep, if only perhaps by a short distance (von den Driesch 1995: 87; Uerpmann 1987: 127, fig.58). In any case, the topography and vegetation of the upland environs of Abu Ghosh hardly constitute ideal sheep territory.

Limited evidence for the nature of early post-Neolithic animal economies in the area comes from the vicinity of Sataf, some 1.5km south of Belmont. A very small Chalcolithic faunal sample, consisting of only 28 identifiable specimens, was caprine dominated (19 specimens) and included pig and cattle (4 and 2 specimens respectively) (Grigson 1991: 49–50, table 1). Five of the pieces of caprine bone could be identified as goat but none was attributed to sheep. Although too much cannot be made of the comparison, the composition of the small Sataf Chalcolithic sample is consistent with that of PPNB Abu Gosh. Such a conclusion does not appear to be contradicted by Grigson's later publication, in which an enlarged bone sample from Sataf, including 35 caprine, 5 cattle and 8 pig bones, is uncertainly attributed to the Chalcolithic (1995b: table 1).

Equally limited evidence for a number of later periods (Early Bronze Age to Modern) at Sataf (Grigson 1991: table 2) suggests the likelihood that a caprine-dominated animal economy (with the emphasis on goats) prevailed throughout, with cattle and pig present in greatly inferior numbers. Sheep were not recorded prior to modern times. No animal bones from Sataf were datable to the Crusader period.

The Crusader (Phase B) Animal Economy at Belmont

The main objective of archaeological investigations at Belmont has been to gain an understanding of the Crusader castle, and it is to this end that the present contribution on the faunal remains is primarily directed. However, only a minority of the faunal remains are attributable to this phase of activity on the site (Phase B). Table 1 indicates the chronological distribution of identified fragments of the main animals at Belmont and includes only material from contexts which could with reasonable confidence be attributed to one of the four main phases. It should be borne in mind that post-Crusader contexts especially are liable to contain residual material. It will be seen from Table 1 that bone samples from the Crusader (Phase B) and succeeding Later Medieval (Phase C) periods are very much smaller than those from Ottoman (Phase D) and Modern (Phase E) periods. Phase A (Hellenistic-Early Byzantine) yielded only a single identifiable (caprine) bone and has therefore not been included in Table 1.

During the Crusader phase at Belmont, the animal economy relied heavily on all three of the main taxa of larger mammals. Caprines (37.9% of NISP [number of identified specimens]) were numerically predominant, followed by pig (34.8%) and cattle (27.3%). However, the figures for relative abundance in the bone sample are likely to present a very misleading picture of the actual relative economic importance of the different animals. This is due to the fact that individuals of different taxa contribute to the human economy to differing extents. Specifically, there exists a disparity in meat yield between the different animals (in particular, cattle are very much heavier than caprines or pig) and, furthermore, cattle and caprines potentially yield secondary products (such as milk, traction and wool), whereas pigs do not.

In attempting to assess relative importance (as opposed to abundance) of the main economic animals at Crusader Belmont, the matter of inter-taxonomic differences in meat yield may be addressed by adjusting the NISP figures in accordance with the estimated meat yield of an average individual of each taxon. The meat weight figures employed by Grigson, *viz.* caprines 80kg, pig 100kg and

cattle 625kg (1995b: fig 4), will be used here, and her caution reiterated that the results of such an adjustment should be regarded as approximate only (Grigson 1995b: 251). Thus, if the main animals represented at Crusader Belmont were to have been exploited for their meat only, cattle would have been overwhelmingly dominant in the economy (72.4% of total meat), with pig (14.8%) and caprines (12.8%) trailing far behind (Table 2).

The strong probability that some of the cattle at Crusader Belmont provided traction, that cattle and caprines provided milk, and that sheep provided wool, suggests that the above estimates based on the assumption of a purely carnivorous exploitation of these animals cannot be expected to present an accurate picture of the overall economic importance of the different animals. The importance of these ruminants will tend to have been underestimated whilst that of pig, which does not yield secondary products, will have been overestimated. The degree to which this has been the case is probably considerable, but this remains a matter for conjecture.

It is clear from the counts of identified fragments (NISP) presented in Table 1 that the animal economy during the twelfth-century Crusader occupation of Belmont differs substantially from that of succeeding periods. Cattle remains are considerably more abundant and caprine remains less so than subsequently: in twelfth-century contexts caprine remains outnumber those of cattle by a factor of only 1.4, whereas during subsequent periods this figure is of the order of four to five.

During the twelfth century, pigs were also clearly of considerable importance to the Christian Crusaders (34.8% of all identified fragments of the main animals, or an estimated 14.8% of meat consumed), whilst faunal remains from contexts attributable to later phases, when the inhabitants were predominantly Muslim, include only a small proportion of pig remains. Since the Ottoman taxation survey of 1596/7 records the presence at Suba (Belmont) of seven Christian families in addition to 60 Muslim families (Hütteroth and Abdulfattah 1977: 115, no. Z170), the accumulation on the site of additional pig bones after the departure of the Crusaders cannot be ruled out. However, the fact that the proportion of pig remains in post-Crusader contexts declines through time (from *c.*7% to 3%) suggests that it represents residual material and favours the (perhaps unremarkable) conclusion that the husbandry of pigs ceased during Islamic times. If this conclusion is correct, then it is clear that significant levels of residuality are liable to prevail in all post-Crusader periods, and probably for all animal taxa, tending to blur any differences which may have existed between the apparently very similar late medieval, Ottoman and modern faunal assemblages.

Table 3 indicates numbers of caprine remains which could be further identified to the genus level. The present writer identified three fragments of sheep compared to seven of goat from Phase B contexts, whilst Gillian Clark's identifications for this phase include 16 of sheep and 10 of goat. These two sets of results are sufficiently dissimilar that the matter should perhaps be viewed with a degree of caution. However, if they are both presumed to be based on accurate observation then it may be concluded that a further contrast exists between the Crusader and subsequent periods: sheep and goats were apparently raised in roughly equal numbers by the Crusaders whilst for the succeeding 700 years, from the thirteenth century to the twentieth, goats were more than twice as abundant as sheep.

Since sheep and goats have somewhat different habitat preferences and food requirements (Clutton-Brock 1987: 57), it is likely that one of these patterns would have represented a more efficient (in purely energetic terms) utilization of the local topography and vegetational resources than the other. If this is so then the long-term post-Crusader pattern in which goats dominated rather than the apparently short-lived Crusader pattern of balanced numbers of sheep and goats must be viewed as the strongest candidate. A possible conclusion from this would be that the Crusaders, during their relatively brief period of occupation of Belmont, were less concerned with energetic efficiency than with exercising a preference for keeping significant numbers of sheep. Wool production may have been a more important objective of caprine husbandry at Belmont during the Crusader period than subsequently.

As mentioned above, limited faunal evidence from Chalcolithic to modern Sataf and, especially, the Abu Ghosh Neolithic faunal sample confirm that the area was eminently suitable for goats. Given that the environment seems not to have changed beyond recognition during the intervening eight millennia, this suitability is probably reflected in the distinct preference for goats over sheep during the Islamic phases at Belmont. If so, this adds weight to the suggestion made above that in keeping the two caprine genera in roughly equal proportions the Crusaders were exercising a cultural preference.

The Abu Ghosh faunal remains also confirmed the suitability of the area for pigs. Acorns, no doubt abundantly available from the oak-dominated natural maquis vegetation, would have been an important winter food for pigs (Lewthwaite 1984: 28) as well as for goats. In fact pigs were considerably more abundant at Crusader Belmont than they had been during the Neolithic at Abu Ghosh, possibly reflecting another cultural preference. Similarly cattle were significantly represented both during the Neolithic and during successive phases at Crusader and Islamic Belmont. The 17.5% incidence of cattle remains at Abu Ghosh is very close to the figures (*c.*15–19%) for the Islamic phases at Belmont some eight millennia later, so their somewhat higher incidence (27%) during the Crusader period may reflect, as suggested with regard to sheep and pigs, yet another instance of cultural preference over-riding energetic efficiency.

The occurrence of minor animal taxa of larger and medium-sized mammals (i.e. taxa other than caprines, cattle and pig) is indicated in Table 4. It will be seen that few minor taxa were identified from Crusader contexts. Camel was

represented by two fragments and a single canine tooth probably represents fox. Three fragments of equid bone include two (Table 5) with clear butchery marks, and the fact that these occur on meat-bearing elements (distal femur and proximal humerus) suggest that equid flesh may have been consumed at this time. Finally, a metatarsal shaft fragment represents fallow deer (*Dama mesopotamica*) as, almost certainly, does piece of worked antler (a shaved tine).

From contexts which were only uncertainly attributed to the Crusader period came a further bone of both camel and equid, the latter also butchered. Animal bones from contexts classified as Phase B/C seem likely to date mainly to Phase B, since they include a high proportion of pig bones (Table 4). The only additional taxon included in this material is dog, although camel, fox and fallow deer are also represented. The deer remains consist of five bones (distal tibia, os malleolare and the three main tarsals from context 502.37) which constitute a complete ankle joint of fallow deer (*Dama mesopotamica*), the species of deer which probably accounts for all of the Belmont cervid remains. Thus, the repertoire of Crusader-period animals, even if uncertain attributions to that period are included, presents no surprises.

A small sample of animal bones represents the Crusader construction phase (Phase B) of the Red Tower (Burj al-Ahmar), a small castle located in the Plain of Sharon some 60km north of Belmont (Pringle 1986a). This twelfth-century sample includes 16 bones of caprines, six of cattle and an equid bone, but no pig remains, whilst the subsequent Templar occupation (Phase C *c.*1191–1248) yielded a pig-dominated assemblage, which included 49 pig bones compared to only eight caprine bones, and no remains of cattle or equid (Cartledge 1986: table 12). Because of the very small size of both of these samples from the Red Tower, their value as comparanda for the twelfth-century Belmont bone assemblage is extremely limited. All that can really be concluded from the comparison is that in broadly similar and contemporary establishments occupied by similar groups of people and not too distant from one another, animal economies relied on the same range of taxa.

During the Crusader period the site of Yoqne'am (Tall Qaimun, *Caymont*), located on the border of the Carmel mountain range and the Jezreel Valley, in northern Israel, functioned as a fortified administrative centre. The excavation of twelfth- to thirteenth-century house floors and fill in Stratum III yielded a sample of some 364 animal bones which may confidently be attributed to the Crusader period (Horwitz and Dahan 1996: 246, table XXII.1). This sample constitutes the only other useful comparandum for the contemporary Belmont sample of which the writer is aware. The main animals represented are caprines (NISP=196), cattle (126) and pig (17). Represented by small numbers of bones were chicken (14) and camel (16), and by single bones donkey, fallow deer, dog, fox and tortoise. No information is available on the relative importance of sheep and goats.

Thus, the overall composition of the Crusader period faunal assemblages from Yoqne'am and Belmont, including the representation of minor taxa, is similar. A further notable similarity lies in the estimated relative contribution to meat supply of cattle and caprines at the two sites. At Crusader Yoqne'am, cattle may be estimated to have provided about five times more meat than caprines (81.9% compared with 16.3%), which is close to the estimate of five-and-a-half times for contemporary Belmont (Table 2).

The most conspicuous difference between the Belmont and Yoqne'am assemblages is the relative scarcity of pig remains in the latter. Why this should be is unclear, and anyway lies beyond the scope of the present report.

Post-Crusader (Phases C–E) Animal Economies at Belmont (Suba)

Following the departure of the Crusaders from Belmont, three successive phases of Islamic occupation yield evidence for apparently rather similar animal economies, based upon a combination of goats, sheep and cattle in that order of abundance (Tables 1, 3 and 4). That the animal sector of the economy was dominated by goats during Islamic times is reflected in the fact that goats are the only animals mentioned in the entry for Suba in the Ottoman taxation survey of 1596/7 (Hütteroth and Abdulfattah 1977: 115, no. Z 170). The survey also shows that the animal sector was subsidiary to agricultural production (particularly of wheat, barley and grape syrup) within the economy as a whole. This accords with the general observation that in Near Eastern mixed farming/livestock economies animal products contribute only 35–40% of human energy requirements, the greater part deriving from crops, especially cereals (Horwitz and Haham 1996: 253, quoting Redding 1981).

Although the presence in the archaeological deposits of perhaps quite substantial quantities of residual faunal remains (see the comments above on the occurrence of pig remains in Islamic contexts) is liable to have reduced the apparent extent of variability in animal economies during the Islamic era, the proportions in which these principal animals are represented are so consistent throughout the Islamic sequence that great change between the thirteenth century and the mid twentieth century seem unlikely to have occurred. The twelfth-century Crusader faunal sample clearly illustrates that pig-keeping could be conducted very successfully at Belmont, but this option was denied to most subsequent occupants for religious reasons.

Animal taxa which occur for the first time in the later medieval period (Phase C) include gazelle (*Gazella sp.*), represented by 5 fragments (Table 4). Two felid species are represented: a calcaneum represents domestic cat (*Felis catus*) and a large felid proximal humerus compares with leopard (*Panthera pardus*). Striped hyaena (*Hyaena hyaena*) is represented by an astragalus, and porcupine (*Hystrix indica*) by a mandibular fragment. From a context which could only tentatively be attributed to Phase C came a

scapula fragment of hare (*Lepus capensis*). Contexts attributed to Phase C/D include only one additional taxon, domestic rabbit (*Oryctolagus cuniculus*).

In the Ottoman period (Phase D), otter (*Lutra lutra*) occurs for the first time, represented by two scapulae, and badger (*Meles meles*), represented by a maxillary fragment, appears in a Phase D/E context. No new animals occur in the modern period (Phase E), but contexts of this period did yield the only post-Crusader examples of butchered equid bone (Table 5). A tibia shaft fragment and a dog-chewed whole metatarsal both bore chopper marks. Remains of both camels and equids were present but rare in Phases B and C, but more abundant in Phase D and distinctly so in Phase E (Table 4). This is still true even if the nine bones from a single equid forelimb found in a Phase E context are counted as a single item, reducing the number of equid remains for that phase to 32. These observations suggest that transport animals became increasingly important during the Ottoman period and particularly in the modern period.

At the Red Tower, small Islamic-period bone assemblages representing the mid thirteenth to late fourteenth century (phases D–D1, 85 identifiable mammalian bone fragments) and late fourteenth to mid twentieth century (phases E–F, 323 fragments) respectively (Cartledge 1986: table 12) show a far higher level of dependence on cattle than during the Islamic period at Belmont, where they correspond roughly with Phases C and D–E. This disparity most probably reflects the contrasting topography of the two sites, the coastal plain environment of the Red Tower being more suited to cattle-keeping than the rugged limestone hills around Belmont. Very few pig remains occur in post-Crusader contexts at the Red Tower. These are restricted to phase D and are probably residual, as seems likely at Belmont. Doubtless fortuitously, gazelle appears in the faunal record at roughly the same time at both sites (Belmont, Phase C; Red Tower, phase D), and persists as a minor taxon into the twentieth century.

Tall Hasban (Heshbon) is located at an altitude of almost 900m in the uplands immediately northeast of the Dead Sea. Here, strata 2–4 (Ayyubid, early and late Mamluk) yielded a large sample of faunal remains dating between AD 1200 and 1456. A total of 8,237 fragments included 84.6% caprines (amongst which goats were dominant), 13.7% cattle and 1.7% pig. Camel and equid remains were also well represented here (von den Driesch and Boessneck 1995: tables 5.9 and 5.10). This basic pattern corresponds fairly closely with that which has been established for contemporary Phase C Belmont (i.e. caprines 74.3%, cattle 18.6%, pig 7.1%, camel and equid present: cf. Table 1). Environmental differences between Belmont and the drier vicinity of Tall Hasban could account for the lower representation of cattle at the latter site. Pig remains at both sites are probably residual.

The foregoing comparison between the Belmont post-Crusader faunal assemblages and those from contemporary contexts at the Red Tower and Tall Hasban is not designed to be exhaustive, but simply intended to show that Belmont falls into a general pattern. Animal bone assemblages of the thirteenth century to the twentieth century in Palestine follow the age-old pattern of caprine dominance, with significant but lesser quantities of cattle and often, religious beliefs permitting, pig (Grigson 1995b: 247).

The Main Animals: Mortality Data

Cattle

Epiphysial-based mortality patterns for Belmont cattle during Phases B to E are presented in Table 6. Skeletal elements have been grouped to define three pre-adult age stages, namely infant (younger than about 1½ years), juvenile (between *c.*1½ and *c.*2–3 years old) and sub-adult (between *c.*2–3 and 3½–4 years old). Fused specimens of the later-fusing elements represent animals which survived beyond sub-adulthood to become adults. The proportion of unfused epiphyses in each group has been used as an estimate of the percentage of cattle which died before the end of each age stage. It will be noted that total numbers of bones in the groups for all phases are frequently rather small (in Phases B and C generally, very small), so the reliability of the calculated percentages is uncertain in many instances. Dental eruption and wear data for Belmont cattle are insufficient to provide a check on the epiphysial-based mortality patterns.

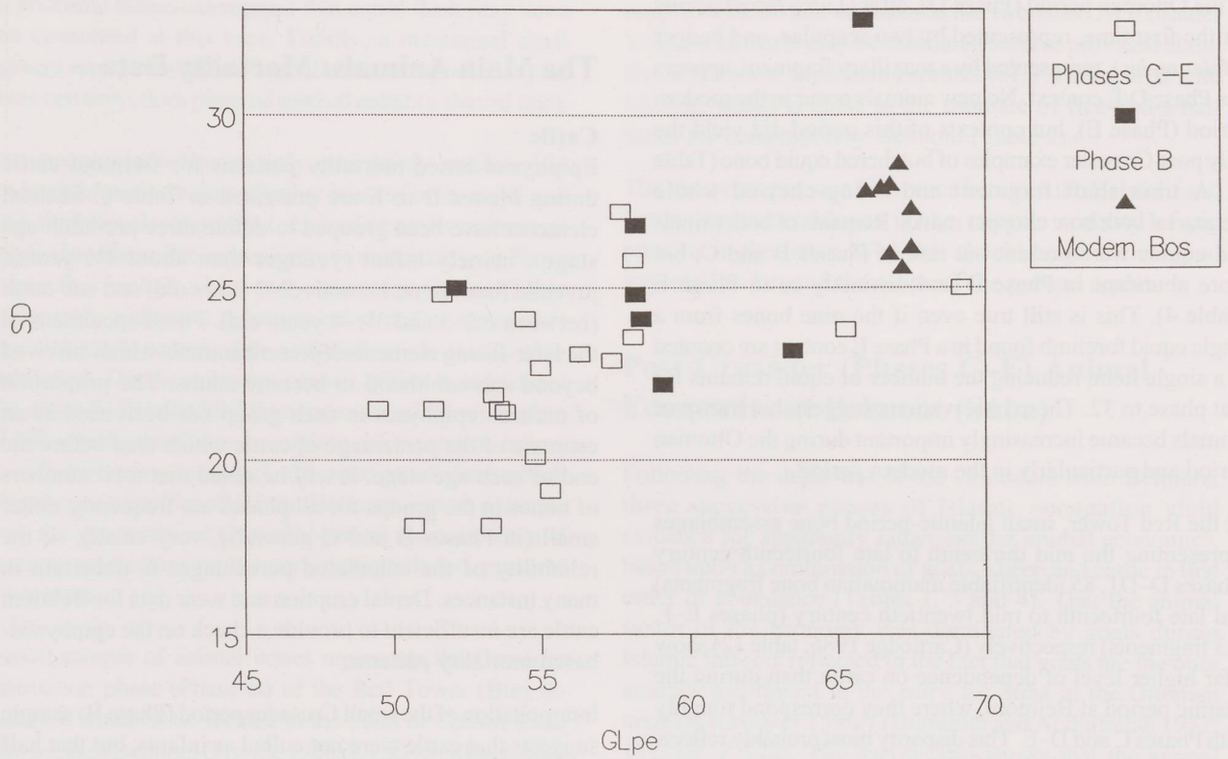
Interpretation of the small Crusader period (Phase B) sample suggests that cattle were not culled as infants, but that half were slaughtered fairly young, as juveniles. Fewer were slaughtered as sub-adults, leaving 40% of cattle to live on into adulthood. The later medieval (Phase C) sample is even smaller, but suggestive of frequent slaughter of cattle during infancy, and reduced survival into adulthood, compared with the Crusader period.

Larger samples for the Ottoman and modern periods may provide a more reliable basis for inferring mortality patterns for cattle. During Ottoman times (Phase D) a low incidence of infant slaughter is apparent, but juveniles, sub-adults and adults seem to have been culled in equal measure. Finally, the mortality pattern for cattle during the modern period (Phase E) implies minimal mortality during infancy, light culling of juveniles, and moderate culling of sub-adults, with half of all cattle surviving into adulthood.

The extent to which the differing mortality patterns that may be inferred from epiphysial fusion data for cattle at Belmont actually represent real differences in the approach to their exploitation during successive phases of occupation is extremely uncertain: much variability could simply be due to inadequately small samples. However, it would hardly be surprising if approaches to the exploitation of cattle did change over nine centuries of occupation, perhaps reflecting changes in the relative importance of milk, meat and traction as objectives of bovine husbandry.

In Figures 14.1a and 14.1b, the length (GLpe) of fused cattle first and second phalanges from Belmont is plotted against a breadth measurement. In the case of first phalanges, length is plotted against the smallest breadth of the diaphysis (SD), whilst for second phalanges it is plotted against proximal

Figure 14.1a. Belmont (Suba), cattle bones: length (GLpe) of fused first phalanges plotted against smallest breadth of the diaphysis (SD). Measurements in mm.



breadth (Bp). The plots for both first and second phalanges include specimens from Belmont Phase B (Crusader) and Phases C–E (Islamic), and also the complement of relevant phalanges of a modern domestic individual (of unknown sex) from Cyprus.

Belmont cattle first phalanges (Fig. 14.1a) seem to fall into two size groups. The great majority have lengths of 59.1mm or less, whilst a minority are not less than 63.5mm long. The tight clustering of all eight first phalanges of the modern individual indicate that size separation amongst the Belmont specimens is unlikely to be a matter of phalanges from the fore- and hind-limbs, so sexual size dimorphism is the most likely explanation.

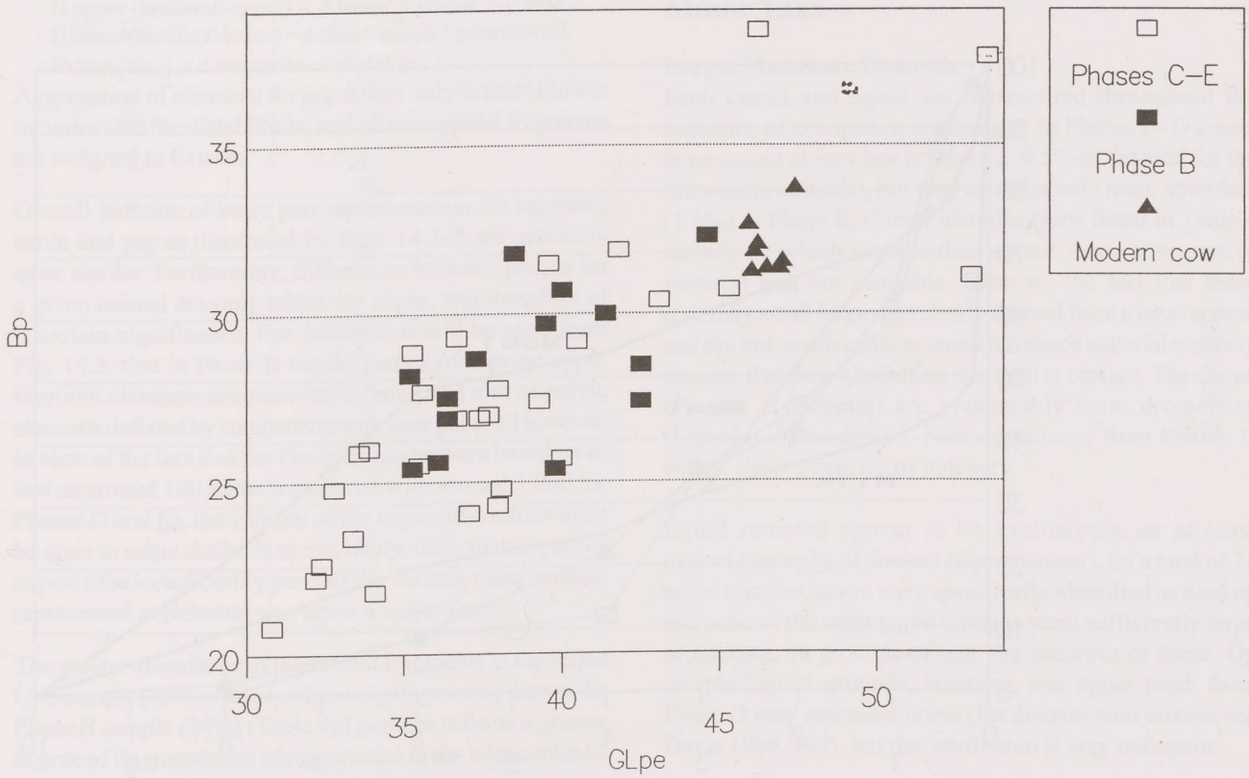
The situation for second phalanges appears similar (Fig. 14.1b) and, although separation into two size groups is somewhat less clear, it does seem that females greatly outnumber males in the sample. The implied culling of the great majority of male cattle at Belmont prior to the fusion of the proximal articulation of first and second phalanges (i.e. during infancy) implies that cattle husbandry here may have been geared throughout the sequence of occupation primarily to milk production. That this conclusion is not generally born out by a high frequency of unfused phalanges and other early-fusing elements (Table 6) probably reflects a disproportionate loss from the assemblage of the relatively fragile bones of immature cattle.

Caprines

Epiphysial fusion data for caprines and the patterns of mortality which they imply are presented in Table 7. In the same way that this was done for cattle (see above), the epiphyses have been grouped to define three pre-adult age stages. Infants are younger than a year old, juveniles between a year and 1½–2½ years whilst the sub-adult stage occupies the succeeding year. Thus, adults are older than 2½–3½ years of age. Ages have been derived from Silver (1969).

For the Crusader and later medieval periods (Phases B and C) the proportions of caprines which seem, according to available data, to have died by the end of each stage indicate absurd patterns of mortality, suggesting that these samples are too small to be reliable. By contrast, far larger samples for Ottoman and modern times (Phases D and E) suggest mortality patterns which are broadly similar to one another and plausible. Whilst these patterns appear far removed from Payne's theoretical mortality pattern for wool production (1973: fig. 3), they are closer to the models for both meat or milk production (Payne 1973: figs 1 and 2). In fact, the caprine mortality data for Belmont Phases D and E appear to conform particularly closely to Payne's meat-production model, lacking evidence of the very high (up to *c.*60%) mortality prior to one year of age. However, if at Belmont some attritional agent such as carnivore destruction (discussed below) has been disproportionately prevalent

Figure 14.1b. Belmont (Suba), cattle bones: length (GLpe) of fused second phalanges plotted against proximal breadth (Bp). Measurements in mm



for immature caprine bones, then these mortality data might well be misleading, underrepresenting the true incidence of young deaths. In this case, the importance of milk production as an objective of caprine husbandry will tend to have been underestimated.

Assessment of mortality on the basis of dental eruption and wear is arguably more reliable (Payne 1973: 283–4) and, where sufficient data are available, provides a cross-check on fusion-based reconstructions. The presence in the Crusader period (Phase B) of five specimens of caprine lower third deciduous premolars (dp3) compared with seven lower fourth permanent premolars (P4) suggests a 42% mortality rate before the age of 2–2½ years, i.e. towards the juvenile/sub-adult transition in fusion terms. This is the age by which the deciduous tooth has been replaced by the permanent one (Silver 1969: tables E and F). This figure does not accord well with the fusion-based figure of 11% dead by the end of the juvenile stage (Table 7), but is more credible. Whilst such a figure might suggest that Crusader-period caprine exploitation was geared towards meat, or possibly milk, production, it is clear that the ageing data for this period are too sparse to be at all reliable.

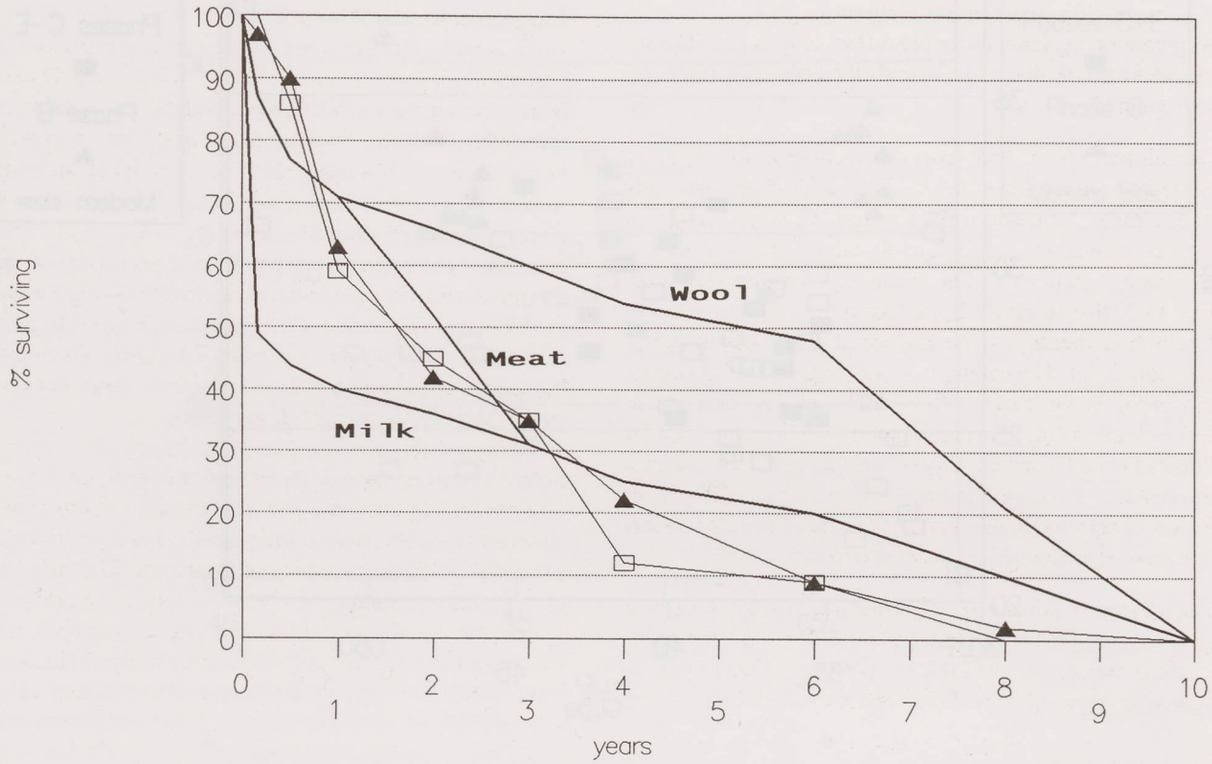
Ratios of dp3 to P4 for Phases C, D and E are 6:6, 38:34 and 114:136 respectively, suggesting figures of 50%, 53% and 46% mortality prior to 2–2½ years of age. These mortality figures, at least for the two latest phases, accord tolerably well with both the fusion data (Table 7) and the wear data discussed below.

For Phases D and E sufficient mandibular toothwear data exist to permit survivorship curves of the sort employed by Payne (1973) usefully to be constructed. These curves, presented in Fig. 14.2, are based on 58 specimens for Phase D and 175 for E. Most specimens (43 and 147 respectively) were directly observed to correspond to one of Payne's age stages, whilst the stage has been inferred in a minority of instances. Stages have been accorded absolute ages following the suggestions of Payne (1973: table 3). The survival curves are virtually identical in conformation and show quite heavy mortality up to a year of age, declining thereafter. Very few caprines during Phases D and E at Belmont survived beyond 6 years of age.

Figure 14.2 also displays Payne's (1973: figs. 1–3) theoretical models of caprine mortality when production is aimed at meat, milk and wool. The Belmont curves for Phases D and E lie somewhat closer to the model for meat production than for milk production. If milk production had been the main priority, a conspicuously high level of mortality would be expected within the first two–three months of life. In view of the exigencies of assemblage formation, preservation and recovery in archaeological bone samples, however, distinguishing the one strategy from the other with any degree of confidence is often problematic (e.g. Grigson 1995a: 392).

Ultimately it must be admitted that the orientation of caprine husbandry at Belmont remains uncertain. Taken at face

Figure 14.2. Belmont (Suba): survivorship curves for caprines represented in Phases D (rectangles) and E (triangles), based on dental eruption and wear, compared with theoretical mortality models when production based on meat, milk and wool respectively.



value, the evidence favours meat production having been the main (but almost certainly not the exclusive) objective during the Ottoman and modern periods. However, milk production is also likely to have been an important consideration and, if significant loss has occurred from the assemblage of immature caprine bones (perhaps due to destruction by dogs), milk could well have been the most important product of caprine husbandry. This may well also have been true for the Crusader and later medieval periods, but since these yielded very few mandibles attributable to an age stage (six from Phase B and eight from Phase C) the evidence must be considered as too sparse to permit interpretation.

Pigs

The mortality pattern for Phase B (Crusader period) pigs, based on epiphysial fusion and presented in Table 8, displays the predictable concentration on the culling of young individuals. Sixty percent were slaughtered as infants, a further 10% as juveniles, and the final 30% as sub-adults: thus none of the pigs appears to have survived into adulthood.

In fact a few mature bones amongst the pig remains from non-Phase B (B/C and definitively post-B) contexts indicate that a small minority of Belmont pigs did survive into adulthood. If, as suggested above, these do indeed represent residual material dating originally to Phase B, then they imply that the Crusaders kept a few adult pigs, presumably as breeding stock. A maxillary fragment with two very worn molars (M1 and 2) attributed to a Phase B/C context might also derive from a domestic pig of advanced age, but could well be from a hunted animal. A dog-chewed calcaneum from Phase D is very large, and might also represent wild boar. Other data regarding dental eruption and wear are insufficient further to augment the evidence of epiphysial fusion for pig mortality.

The Main Animals: Body Part Representation

The frequency of representation of skeletal elements of the main animals at Belmont by Phase is presented in Tables 9a–g, and these data have been aggregated to define bodily portions for graphic presentation in Figs. 14.3–5. Aggregation was necessary because samples for a given taxon and phase were frequently too small to permit comparison on an element by element basis. For caprines and cattle individual elements have been aggregated as follows:

Neck = atlas + axis.
Shoulder = scapula + p.humerus.

F.upper (forelimb upper) = d.humerus + p.ulna + P.radius.
F.lower (forelimb lower) = d.ulna + d.radius + carpals + p.metacarpal.
Pelvic [girdle] = sacrum + pelvis + p.femur.
H.upper (hindlimb upper) = d.femur + patella + p.tibia.
H.lower (hindlimb lower) = d.tibia + tarsals + p.metatarsal.
Extrem[ities] = d.metapodia + phalanges.

Aggregation of elements for pig differs only in that H.lower includes also the distal fibula, and all metapodial fragments are assigned to Extrem.

Overall patterns of body part representation for caprines, cattle and pig as illustrated by Figs. 14.3–5 are generally quite similar. Furthermore, differences between phases for a given animal are only relatively slight, and therefore of uncertain significance. For instance, it will be seen from Fig. 14.3. that in Phase B the frequency of caprine upper forelimb elements is somewhat inflated and that of pelvic elements deflated by comparison with later phases. However, in view of the fact that the Phase B figures were based on as few as around 100 items (compared with around 1,000 for Phases D and E), the validity of the apparent contrast must be open to some doubt. It seems likely, then, that import or export of selected bodily parts of the various main animals represented at Belmont was never a major factor.

The greater abundance of pig cranial fragments in the Phase C–E sample (43% of all identified pig fragments) than in the Phase B sample (34%) (Table 9g) perhaps reflects a greater degree of fragmentation of pig remains in the later contexts. This would accord with the pig remains in post-Phase B contexts being residual, as suggested above.

Minor Taxa

Larger Mammals: Domestic

Both camel and equid are represented throughout the sequence of occupation at Belmont. In Phases B–D camel bones occur at very low levels (0.2–0.5% of the total for the three main animals), but they are relatively more abundant (1.6%) in Phase E. Camel identifications listed in Table 4 include 21 which are less than secure, since comparative material was not available. Even so, the fact that these generally small fragments clearly derived from a large animal and did not match cattle or equid reference material virtually ensures that their attribution to camel is correct. The camel remains at Belmont are presumably from dromedary (*Camelus dromedarius*). Nine specimens, from Phases D and E, show evidence of butchery.

Equid remains appear to be exclusively, or at least overwhelmingly, of donkey (*Equus asinus*). Of a total of 71 equid remains, seven were specifically identified as donkey and none of the other equid remains seem sufficiently large to indicate, on grounds of size, the presence of horse. On morphological grounds, however, one upper tooth from Phase D may represent horse (for discriminant criteria see Davis 1980: 294), but this attribution is very uncertain.

Figure 14.3. Belmont (Suba): caprines, body part representation.

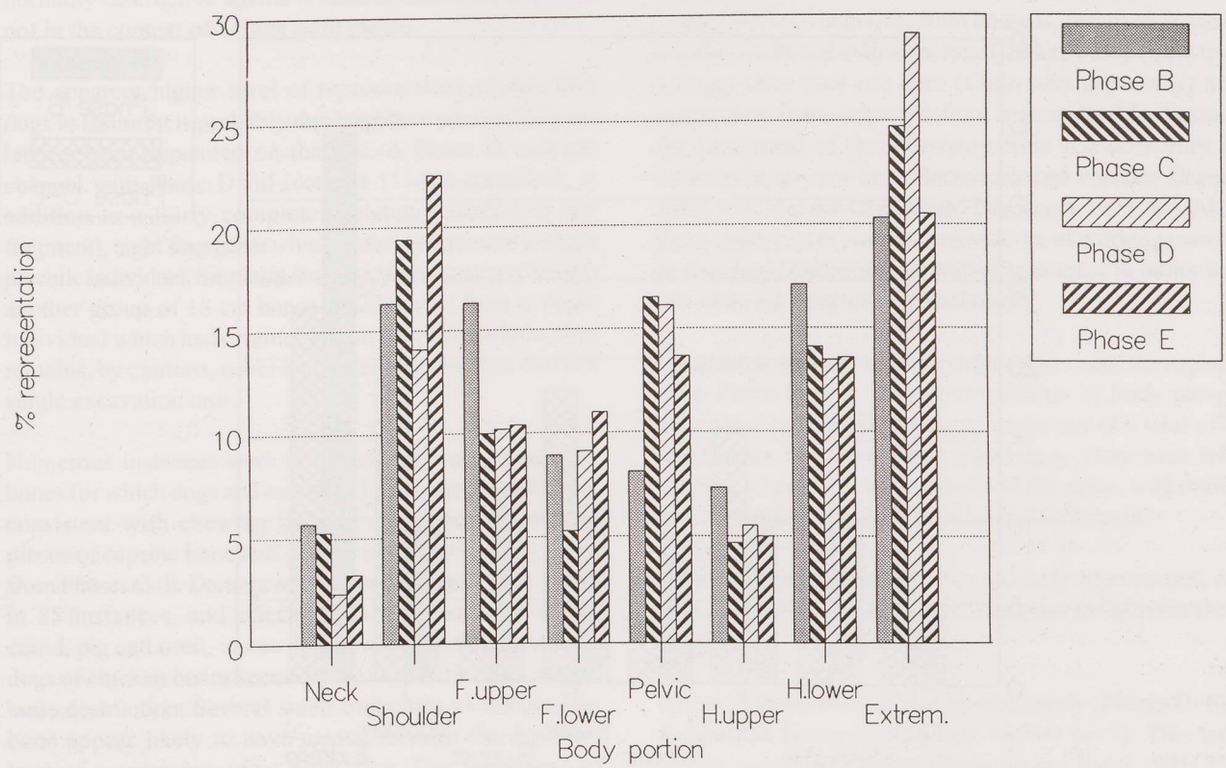


Figure 14.4. Belmont (Suba): cattle, body part representation.

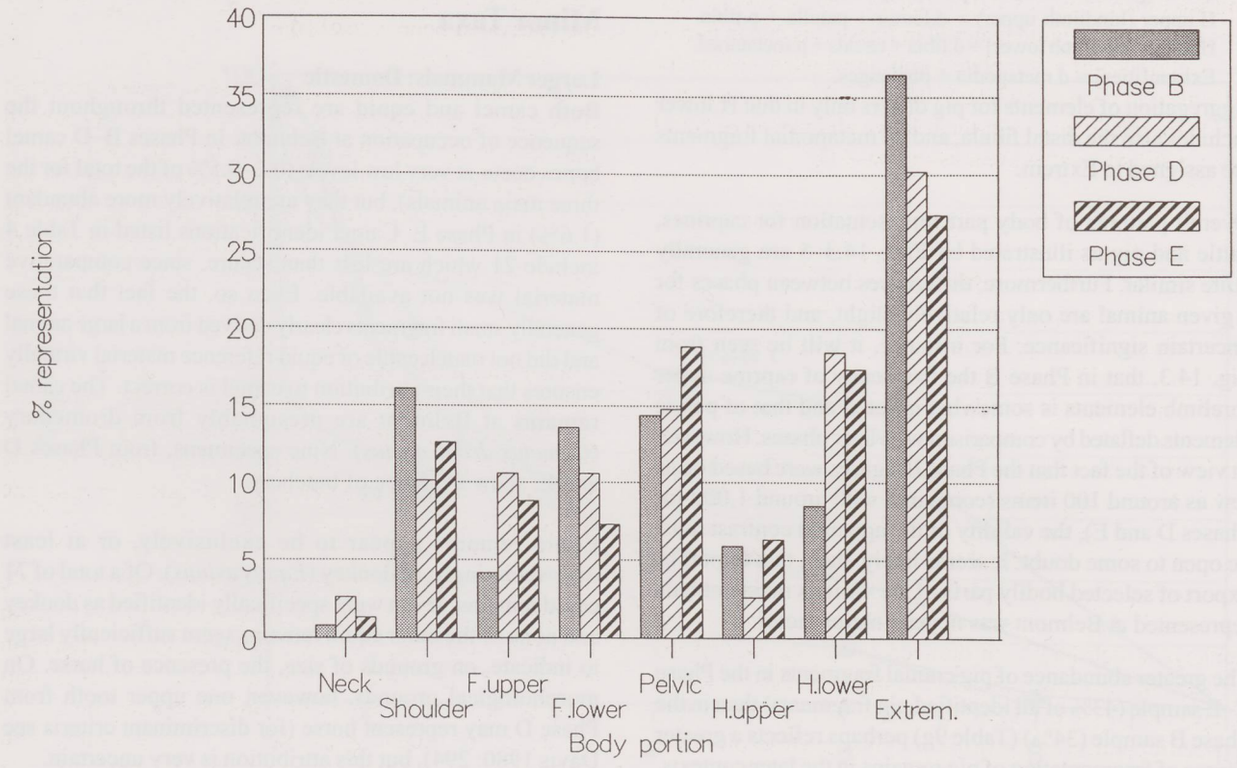
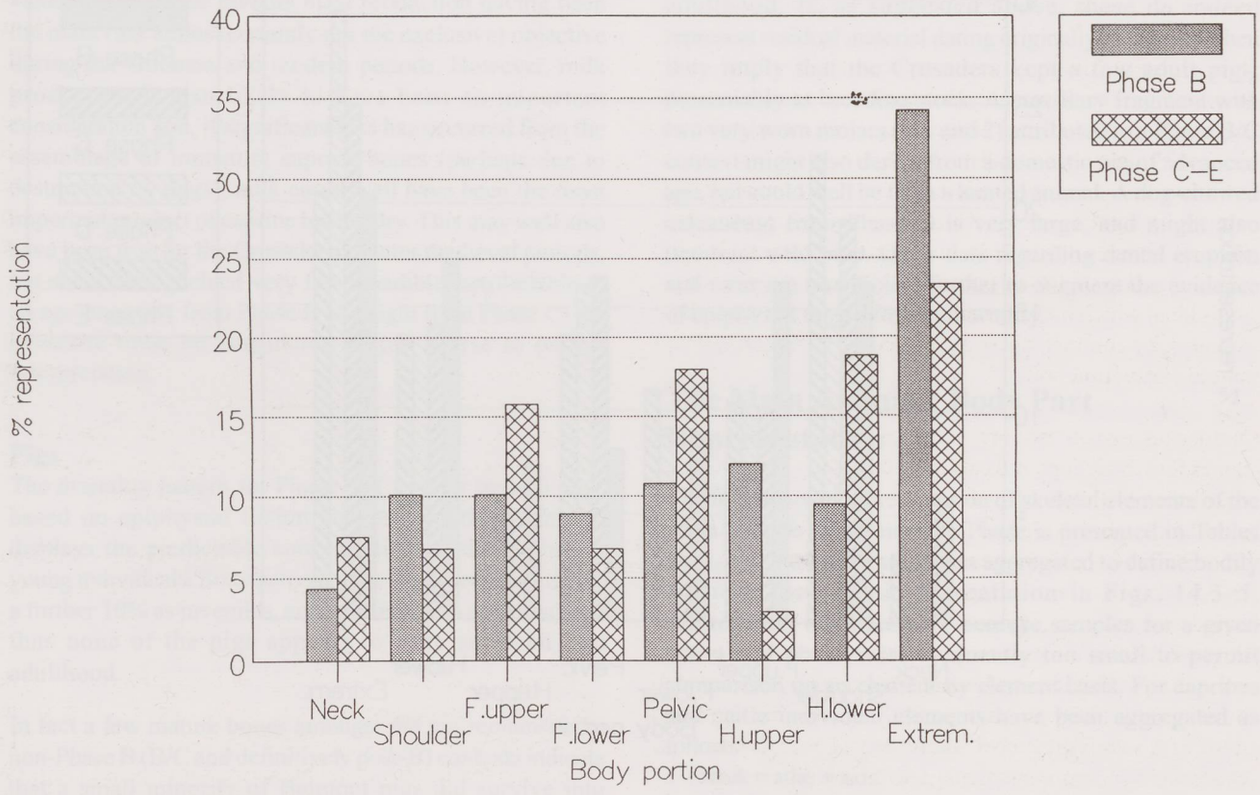


Figure 14.5. Belmont (Suba): pigs, body part representation.



Equid remains occur with low frequency throughout the occupation, but become somewhat more abundant in Phases D and E (0.8–1.1% of the totals for the three main animals) than previously (0.2–0.4%). The relatively high representation of equid material in Phase E is due in part to the occurrence of a complete forelimb which accounts for 10 bones (in context 502.2). If this limb is considered as a single fragment, however, the relative abundance of equid bone is still at least as great as in Phase D.

Of the 43 equid specimens identified by the present writer from Belmont, seven (16%) had apparently been chewed by dogs. No camel bones bore traces of chewing, and the corresponding proportion for 892 cattle remains was 2%, indicating that dog-gnawing is particularly prevalent on equid remains. The evidence of butchery on some equid bones (Table 5), mentioned above, suggests that equid meat may sometimes have been consumed by people. On the other hand, the fact that equid bones were often chewed by dogs, coupled with the observation that such chewed bones include mainly lower limb bones (two phalanges, two metapodia and a distal tibia as opposed to two femur fragments), suggests a different fate for some equid carcases. If dogs were scavenging whole carcases of dead donkeys which had been dumped in the vicinity of the settlement, then lower limb bones might well be the most likely elements to become detached, and to be brought into the settlement. Such a process might well explain the occurrence in the assemblage of dog-gnawed equid bones. The attenuation of bone assemblages on human habitation sites due to carnivore activity is often discussed and demonstrated (as below for the present assemblage), but the possibility assemblage augmentation by these more normally destructive agents is seldom considered, at least not in the context of village settlements.

The apparent higher level of representation of cats than dogs at Belmont is probably due largely to whole skeletons having been deposited on the site. A Phase B rock-cut channel with Phase D fill (context 115.04) contained, in addition to a fairly complete skeleton (counted as one fragment), eight fragments which probably represent a single juvenile individual. Similarly, in a superficial context (106.01) another group of 18 cat bones could derive from a single individual which had originally been deposited whole. Dog remains, by contrast, never amounted to more than two in a single excavation unit.

Numerous instances were noted of carnivore damage to bones for which dogs and cats must be responsible. Damage consistent with chewing by cats was observed on four pieces of caprine bone and 13 bird (mainly chicken) bones from Phases C–E. Damage attributable to dogs was recorded in 85 instances, and affected bones of caprines, cattle, equid, pig and even, in one instance, dog. Any chewing by dogs of chicken bones seems likely to have resulted in total bone destruction. Several small fragments of mammalian bone appear likely to have passed through the digestive tract of a carnivore, most likely dog. The abundance of evidence for carnivore damage to bones in the Belmont assemblage indicates that many bones must have been destroyed by this means. This would apply particularly to fragile bones such as those of immature animals and of chickens which will, despite a good standard of bone recovery at Belmont, inevitably be under-represented in the excavated bone assemblage.

A final domestic mammal represented by small numbers of bones at Belmont is rabbit. This creature is represented only in post-Crusader contexts, and may not occur prior to the Ottoman phase (Phase D). The 16 lagomorph bones which could not be more closely identified were, with one exception, very immature or perinatal, so the chances are that these derive from domestic rabbit rather than hare.

Larger Mammals: Wild

Despite the considerable diversity of wild mammals represented at Belmont, each is represented by only a few bones and it is clear that wild animals were of little importance to subsistence here by comparison with the domesticates.

The most abundantly represented wild animal is gazelle (n=33). On distributional grounds this would seem most likely to be *Gazella gazella*, the mountain gazelle (Harrison and Bates 1991: 194–204; Uerpmann 1987: 90–110). Their relative scarcity at Belmont compared with their 13% incidence in the faunal assemblage from neolithic Abu Ghosh (Ducos 1978) must reflect a substantial decline in gazelle numbers in the area.

Deer remains totalled 13 fragments (from Phases B–E) of which eight could be attributed to Persian fallow deer (*Dama mesopotamica*) with some confidence. On this basis five small pieces of antler (one from Phase B, two from D and E) are also attributed to this species. Certainly they come from a larger deer than roe deer (*Capreolus capreolus*) and, unless they were imported from a considerable distance, the likelihood of their deriving from red deer must be considered as very low (Boessneck and von den Driesch 1995: 116; von den Driesch and Boessneck 1995: 87). All of these antler pieces show some evidence of working (sawing or shaving), indicating an enduring interest in antler as a raw material for artefact manufacture.

Occasional remains of fox (*Vulpes sp.*) occur throughout, from Phase B to E. The representation of body parts is dominated by cranial fragments (eight out of a total of 15 fragments), suggesting that foxes may often have been skinned where they were killed and the skins, with cranial bones attached, brought back to the settlement.

Hare (*Lepus capensis*) is also sparsely represented, and does not certainly occur on the site prior to Ottoman times (Phase D).

Amongst those animals which occur rarely (Phases C–E) at Belmont is porcupine (*Hystrix indica*) (n=7). This large rodent makes tasty eating (Harrison and Bates 1991: 221) and knife marks on a distal humerus from Phase D suggest disarticulation for consumption. Still rarer, Otter (*Lutra lutra*)

(n=3) occurs in Phases D and and was most likely hunted for its fur. Represented only by single bones are badger (*Meles meles*) in Phase D/E, hyaena (*Hyaena hyaena*) and a large felid, probably leopard (*Panthera pardus*) (both Phase C). Of these the badger might well have been eaten, but this is unlikely in the case of the the last two animals.

Smaller Mammals, Reptiles and Amphibians

Several dozen identifiable remains of smaller mammals were recovered, but these contribute little to our understanding of the site. Most of these are of rat (*Rattus sp.*), and they occur in deposits which range from Phase B to E. Traces of rodent gnawing were noted on 43 bones from Phase B/C onwards and, judging from the width of the teethmarks, this is attributable to rats. Caprine, bird and cattle bones were affected. Thus, although some of the rat remains could be intrusive, the evidence confirms the inevitable presence of rats during (and almost certainly throughout) the human occupation of Belmont. A rat mandible from a Phase C/D context was specifically attributable to black rat (*Rattus rattus*), but there is no reason why other rat bones from Belmont should not represent brown rat (*R. norvegicus*) as well (for discriminant criteria and distributional data, see Harrison and Bates 1991: 245–8).

Several specimens were attributed to housemouse (*Mus musculus*) from contexts ranging from Phase B/C to D/E. A shrew (*Crocidura suaveolens*) was identified from a Phase C/D context, and mole rat (*Spalax leucodon*) from a Phase E context. A few unidentified bones clearly suggest, on the basis of their size, that other rodent species were present at the site. Like the rat remains, any of these other rodent remains could be intrusive.

By far the most abundant reptile at Belmont was tortoise (*Testudo*, cf. *graeca*), represented by 40 carapace fragments and a humerus. Tortoise remains were not uncommon in contexts dating to Phases B–E, but the burrowing habits of this creature make it very possible that the material could be intrusive.

Amongst only five other pieces of reptile and amphibian bone, two were identified as representing the lizard *Stellio stellio*. This material, also, is quite likely to be intrusive.

Birds

By far the most abundant class of bird remains from Belmont was chicken bones, of which a total of 1,457 were identified. Table 10 indicates numbers of identified chicken bones by period, and also expresses the frequency of chicken remains as a proportion of the total number of identified fragments of the main mammalian taxa (cf. Table 1). For the Crusader, later medieval and Ottoman periods (Phases B–D) chicken remains are abundant and their frequency relative to those of mammals appears remarkably stable. In the modern period (Phase E) chicken was apparently only half as important in the human diet as formerly, although its remains were still abundant. It is clear that chickens (and presumably their eggs) constituted a significant element of human diet at Belmont during all phases (B–E) of occupation.

In the Crusader period bone sample goose, probably domestic, was present, although not common, being represented by only two fragments (Table 11). Several species of pigeon were identified: rock dove may have been domestic (i.e. domestic pigeon), but woodpigeon and turtle dove would have been wild birds. Also probably hunted for food were chukar (a partridge) and possibly blackbird. A fairly large accipiter, possibly one of the smaller eagles, was found in a Crusader context, and a further fragment from a Crusader/later medieval (Phase B/C) context was positively identified as griffon vulture. The unidentified Phase B material includes at least one additional species of large bird.

In the Islamic periods (Phases C–E, thirteenth to twentieth century) the emphasis in the avifauna (excluding chicken) remains on goose, rock dove and chukar. Additional bird species probably include song thrush; and a second piece of large accipiter bone may or may not be of the same species as that found in a Crusader context.

Since they tend to be fragile, and often small and easily overlooked by excavators, and particularly in view of the abundant evidence for carnivore activity on the site, it is likely that the avian remains recovered from Belmont provide for a very low estimation of the importance of birds in the human diet for all periods of occupation. This is probably as true for chicken, despite the abundance of their remains, as it is for the other, far less abundant, avian taxa.

As at Belmont, bird remains were quite prominent in the faunal assemblage from the Red Tower (Cartledge 1986: table 18). The equal representation of goose and chicken during the Templar phase (C) at the latter site may indicate that geese were a more significant element of diet than at Crusader period Belmont, where their bones were present but rare, and chicken relatively less important. However, as Cartledge (1986: 179) stresses, these Templar goose bones probably represented very few individuals, which could have been consumed at a single feast.

At Yoqne'am, the Crusader-period bone sample (Horwitz and Dahan 1996: 246, table XXII.1) contained relatively few chicken bones compared with Belmont, but this may be due to a generally higher standard of bone recovery at the latter site.

Although chicken was clearly of considerable importance in strata 2–4 Tall Hasban (von den Driesch and Boessneck 1995: table 5.10), contemporary with Belmont Phase C, it was less abundant in proportion to mammalian remains than at the latter site. A figure of 8.6% may be be calculated for the relative abundance of chicken remains at Tall Hasban strata 2–4 in the same way as that of 20.6% has been calculated for Belmont Phase C (Table 10).

Fish

Fish remains were not very abundant at Belmont, a total of only 45 pieces of fish bone having been noted. These fish bones have unfortunately not been further studied.

The occurrence of fish bone by phase and its frequency relative to mammalian bone is summarized in Table 12. It is clear that the material is unevenly distributed in time, a disproportionately large amount of it occurring in the Crusader period (Phase B). In phases C and D, fish remains occur with less than a quarter their former frequency, and in Phase E they appear relatively very rare indeed. Thus, the limited evidence available suggests that fish may have been a much more important element of diet during the Crusader period than subsequently, whilst in the modern period it seems to have declined to a much lower level of importance than ever before.

Human Remains

Although not strictly faunal, the few human remains recovered from Belmont are, for the sake of completeness, mentioned here. A catalogue of these remains is presented in Table 13.

It is notable that most of the human and possible human remains are from very young individuals and are scattered in Phase D (Ottoman) contexts. Perhaps on-site disposal of the remains of very young infants who died was particularly prevalent in this period. In particular, context 302.5 is a 'dustbin' pit which contained a substantial amount of animal bone and other rubbish, and might have been a convenient place to dispose of dead babies. This suggestion would not, however, account for the presence of a small section of adult-sized fibula shaft, which consequently remains something of an enigma.

Table 1.
Identified fragments of the main animals at Belmont by Phase

Phase/period	Caprines	Cattle	Pig	Total
B. Crusader	252	182	232	666
C12 AD	37.9%	27.3%	34.8%	
C. Later med.	391	98	37	526
C13–16 AD	74.3%	18.6%	7.1%	
D. Ottoman	1,922	366	120	2,408
C16–19 AD	79.8%	15.2%	5.0%	
E. Modern	2,904	600	97	3,601
C20 AD	80.6%	16.7%	2.7%	

Table 2.
Identified fragments and estimated contributions to meat supply of the main animals at Belmont by Phase*

Phase/period		Caprines	Cattle	Pig
B. Crusader	n=	252	182	232
C12 AD	meat contribution	12.8%	72.4%	14.8%
C. Later med.	n=	391	98	37
C13–16 AD	meat contribution	32.5%	63.7%	3.8%
D. Ottoman	n=	1,922	366	120
C16–19 AD	meat contribution	39.0%	58.0%	3.0%
E. Modern	n=	2,940	600	97
C20 AD	meat contribution	37.6%	60.8%	1.6%

** Following Grigson (1995b: fig. 4), estimates are based on the assumption of the following average meat yields: sheep and goat 80kg, pig 100kg, cattle 625kg.*

Table 3.
Identified fragments of sheep and goats at Belmont by Phase

Phase/period	Sheep	Goat	Ratio Sheep:Goat
B. Crusader			
C12 AD	19	17	1:0.9
C. Later med.			
C13–16 AD	14	25	1:1.8
D. Ottoman			
C16–19 AD	80	197	1:2.5
E. Modern			
C20 AD	112	279	1:2.5

Table 4.
Occurrence by Phase of large and medium-sized mammals at Belmont, including minor taxa

Taxon	Phase B	?B	B/C	C	?C	C/D	D	D/E	E	Total
Caprines	252	70	128	391	117	118	1,922	500	2,904	7,002
Cattle	182	96	177	98	17	24	366	74	600	1,634
Pig	232	20	170	37	15	5	120	16	97	712
Camel	2	1	2	1	2	2	11	6	56	83
Equid	3	1		1		2	20	4	40	71
Gazelle				5			10	2	16	33
Cat				1	2		22	20	28	73
Dog			2			1	2	1	10	16
Fox	1		3				2	3	6	15
Hare					1	1	7	1	3	13
Rabbit						3	3	4	1	11
Lagomorph						10	2	1	3	16
Fallow deer	2		5				2		4	13

Table 4 continued...

Taxon	Phase B	?B	B/C	C	?C	C/D	D	D/E	E	Total
Hyaena				1						1
Porcupine				1			2	1	4	8
Otter							2		1	3
Badger								1		1
Leopard				1						1

Note: Phase B = Crusader, C = later medieval, D = Ottoman, E = modern. Phase A, A/B and B–D each yielded a single identifiable caprine bone; and Phase ?D yielded 4 caprine bones and one each of cattle and pig. This material is not included in the Table.

Table 5.
Belmont equid bones with butchery (chopper) marks

Phase	Context	Element/description
B	101.24	unfused distal articulation of femur
B	101.24	proximal humerus fragment
?B	502.49	proximal femur fragment
E	105.10	tibia shaft fragment
E	122.01	whole metatarsal, distal end dog-chewed

Table 6.
Mortality of Belmont cattle, on the basis of epiphysial fusion

	Phase B		Phase C		Phase D		Phase E	
	F/U	% dead	F/U	% dead	F/U	% dead	F/U	% dead
Infant:								
dist. scapula	0/0		0/1		5/0		16/0	
dist. humerus	1/0		0/3		4/1		8/0	
prox. radius	1/0		1/2		5/0		9/0	
phalanges 1 & 2	30/0		6/1		38/4		41/1	
Total	32/0	0%	7/7	50%	52/5	9%	74/1	1%
Juvenile:								
dist. tibia	1/2		2/0		5/4		11/1	
dist. metapodial	2/1		1/5		6/4		25/6	
Total	3/3	50%	3/5	62%	11/8	42%	36/7	16%
Sub-adult:								
prox. humerus	0/5		1/0		0/4		3/3	
prox. ulna	1/1		0/0		0/2		0/2	
dist. radius	2/1		0/0		2/4		6/2	
prox. femur	2/0		0/2		5/4		8/5	
dist. femur	0/1		0/0		0/2		2/5	
prox. tibia	1/0		0/2		1/2		1/8	
calcaneum	0/1		0/0		0/3		5/1	
Total	6/9	60%	1/4	80%	8/21	72%	25/26	51%
Adult:		100%		100%		100%		100%

Note: F = Fused; U = Unfused.

Table 7.
Mortality of Belmont caprines, on the basis of epiphysial fusion

	Phase B		Phase C		Phase D		Phase E	
	F/U	% dead	F/U	% dead	F/U	% dead	F/U	% dead
Infant:								
dist. scapula	5/4		6/5		7/16		42/28	
dist. humerus	6/2		4/3		33/15		40/13	
prox. radius	4/1		2/4		23/7		45/5	
Total	15/7	32%	12/12	50%	63/38	38%	127/46	27%
Juvenile:								
dist. tibia	6/0		2/8		20/16		36/28	
dist. metapodial	2/1		2/13		29/56		77/67	
Total	8/1	11%	4/21	84%	49/72	59%	113/95	46%

Table 7 continued...

	Phase B		Phase C		Phase D		Phase E	
	F/U	% dead	F/U	% dead	F/U	% dead	F/U	% dead
Sub-adult:								
prox. humerus	0/2		1/2		2/9		6/10	
prox. ulna	0/2		0/1		5/12		4/23	
dist. ulna	1/0		0/0		1/0		1/3	
dist. radius	0/3		0/1		3/24		11/36	
prox. femur	0/2		2/6		13/28		14/25	
dist. femur	2/2		0/7		5/30		13/28	
prox. tibia	0/5		1/1		4/13		9/13	
calcaneum	3/5		1/2		6/10		8/11	
Total	6/21	78%	5/20	80%	39/126	76%	66/149	69%
Adult:		100%		100%		100%		100%

Note: F = Fused; U = Unfused.

Table 8.
Mortality of pigs from the Crusader period (Phase B) at Belmont, on the basis of epiphysial fusion

Stage	Element	Fused	Unfused	% dead by end of stage
Infant	dist. scapula	2		
	dist. humerus	2	8	
	prox. radius	2	1	
	Total	6	9	60%
Juvenile	dist. tibia	3	2	
	dist. fibula		2	
	calcaneum	1	2	
	dist. metapodial	8	22	
	Total	12	28	70%
Sub-adult	prox. humerus		4	
	prox. ulna		2	
	dist. ulna		5	
	dist. radius		5	
	prox. femur		3	
	dist. femur		11	
	prox. tibia		8	
	Total	0	38	100%

Table 9a.
Breakdown by element of identified material of the main animal taxa represented at Belmont: Phase B caprines

Element	Left	Right	ND	Total	Includes: Goat	Sheep
scapula	5	6	7	18		1
p. humerus	1	1		2		
d. humerus	5	3		8	1	
p. ulna	5	2		7	1	1
d. ulna	1			1		
p. radius	3	2		5	2	1
d. radius	3			3		
p. femur		1	1	2		
d. femur	3		1	4		
p. tibia	2	2	1	5		
d. tibia	1	5		6		1
astragalus		5		5	2	2
calcaneum	4	3	2	9	1	3
nav-cuboid		1		1		1
p.m/carpal	2	2		4		
d. m/carpal	1	1		2		
d. m/tarsal			1	1		
atlas				3		
axis				4		1
pelvic frags.				8		
hyoid				3		
os malleolare				1		
carpals				3		

Table 9a continued...

Element	Left	Right	ND	Total	Includes: Goat	Sheep
longbone shafts				35		
phalanx 1				12	3	2
phalanx 2				6	1	3
phalanx 3				4	1	2
Total				162		
Number of whole bones possessing two articular ends and fused proximal ulnae/radii, to be subtracted				2		
Total postcranial frags.				160		
head				90	3	1
horncore				2	2	
Total frags.				252		

Table 9b.
Breakdown by element of identified material of the main animal taxa represented at Belmont: Phase C caprines

Element	Left	Right	ND	Total	Includes: Goat	Sheep
scapula	7	8	15	30	3	3
p. humerus	3			3		
d. humerus	3	5		8	1	1
p. ulna	1	2		3		
p. radius	3	3		6	1	
d. radius	1			1		
p. femur	2	4	1	7		
d. femur	2	3	1	6		
patella	1			1		
p. tibia		1				
d. tibia	4	2		6		
astragalus	1	6		7	4	1
calcaneum	1	4		5	1	1
p.m/carpal	2	1	1	4		
d. m/carpal	2	2		4		
p. m/tarsal	4	2		6		
d. m/tarsal	2	2		4		
d.m/podial			7	7		
atlas				4		
axis				5		
pelvic frags.				19	2	1
hyoid				3		
sacrum				2		
carpals				4		
longbone shafts				61		
phalanx 1				16	5	2
phalanx 2				8	4	
phalanx 3				3		2
Total				234		
Number of whole bones possessing two articular ends and fused proximal ulnae/radii, to be subtracted				5		
Total postcranial frags.				229		
head				158	1	2
horncore				3	1	1
Total frags.				390		

Note: Figures exclude a whole skeleton of a very young goat kid, counted as a single fragment in Tables 1, 2 and 4.

Table 9c.
Breakdown by element of identified material of the main animal taxa represented at Belmont: Phase D caprines

Element	Left	Right	ND	Total	Includes: Goat	Sheep
scapula	30	41	57	128	7	2
p. humerus	3	7	1	11		
d. humerus	24	25		49	9	6
p. ulna	11	10	1	22	3	1
d. ulna	1			1		
p. radius	10	18	1	29	12	1
d. radius	14	10		14		1
p. femur	19	22	1	42	1	2
d. femur	19	15	2	36		
patella	1			1		1
p. tibia	5	11	1	17		
d. tibia	19	16	1	36		
astragalus	15	15	1	31	15	6
calcaneum	15	6		21	6	3
nav-cuboid	2	3		5	1	
p.m/carpal	19	29	3	51	1	
d. m/carpal	12	12	8	32	6	1
p. m/tarsal	19	14	7	40		
d. m/tarsal	8	7	5	20	4	1
p. m/podial			5	5		
d. m/podial	1		30	31	8	1
atlas				16	2	1
axis				8	1	
pelvic frags.				107	12	8
hyoid				13		
sternum				2		
sacrum				9		
sesamoid				1		
carpals				14		
longbone shafts				323		
phalanx 1				119	24	11
phalanx 2				43	9	9
phalanx 3				41	21	13
Total				1,328		
Number of whole bones possessing two articular ends and fused proximal ulnae/radii, to be subtracted				36		
Total postcranial frags.				1,292		
head				596	28	10
horncore				34	27	2
Total frags.				1,922		

Table 9d.
Breakdown by element of identified material of the main animal taxa represented at Belmont: Phase E caprines

Element	Left	Right	ND	Total	Includes: Goat	Sheep
scapula	88	114	80	282	39	12
p. humerus	7	7		14	1	2
d. humerus	28	25		53	12	6
p. ulna	15	19		34	6	1
d. ulna	2	2		4		
p. radius	20	29	1	50	30	6
d. radius	23	21		44	6	
p. femur	18	19	2	39	4	
d. femur	23	19	2	44		
p. tibia	13	7	1	21		
d. tibia	34	26	2	62	1	
astragalus	4	12	1	17	10	3
calcaneum	11	9		20	1	5
nav-cuboid		2		2		
p. m/carpal	45	48	2	95		

Table 9d continued...

Element	Left	Right	ND	Total	Includes: Goat	Sheep
d. m/carpal	24	31	17	72	10	1
p. m/tarsal	32	35	9	76	3	
d. m/tarsal	23	16	8	47	8	3
p. m/podial			3	3		
d. m/podial			26	26	4	1
atlas				22		1
axis				21		1
pelvic frags.				131	14	15
hyoid				10		
sternum				1		
sacrum				10		
sesamoid				1		
carpals				2		
longbone shafts				541	3	
phalanx 1				79	26	7
phalanx 2				32	7	5
phalanx 3				13	9	3
Total				1,868		
Number of whole bones possessing two articular ends and fused proximal ulnae/radii, to be subtracted				78		
Total postcranial frags.				1,790		
head				1,061	41	38
horncore				53	45	2
Total frags.				2,904		

Table 9e.
Breakdown by element of identified material of the main animal taxa represented at Belmont: Phase B and C cattle

	Phase B:				Phase C:			
Element	**Left**	**Right**	**ND**	**Total**	**Left**	**Right**	**ND**	**Total**
scapula	2	1	11	14		1	3	4
p. humerus	1	4		5	1			1
d. humerus		1		1	1	1	1	3
p. ulna	1	2		3	1			1
p. radius	1			1	3			3
d. radius	3			3				
p. femur	1	1		2	1	1		2
d. femur	2			2				
patella	3			3				
p. tibia	1	1		2	1		1	2
d. tibia	2	1		3	2			2
astragalus	1	1		2				
calcaneum			1	1				
nav-cuboid		1		1	1	1		2
p. m/carpal	2			2		1	1	2
d. m/carpal		1		1	1		2	3
p. m/tarsal	1	1		2		1	1	2
d. m/tarsal						1		1
d. m/podial			2	2			2	2
atlas				1				2
pelvic frags.				12				6
sacrum				3				
sesamoid				4				1
os malleolare				1				
carpals				11				2
tarsals				1				1
longbone shafts				15				10
phalanx 1				15				7
phalanx 2				15				

Table 9e continued...

Element	Phase B: Left	Right	ND	Total	Phase C: Left	Right	ND	Total
phalanx 3				10				1
Total				138				60
Number of whole bones possessing two articular ends and fused proximal ulnae/radii, to be subtracted				1				1
Total postcranial frags.				137				59
head				34				39
horncore				11				
Total frags.				182				98

Table 9f.
Breakdown by element of identified material of the main animal taxa represented at Belmont: Phase D and E cattle

Element	Phase D: Left	Right	ND	Total	Phase E: Left	Right	ND	Total
scapula	4	8	3	15	13	12	9	34
p. humerus	2	2		4	3	2	1	6
d. humerus	3	1	2	6	3	5		8
p. ulna	5	3	1	9	6	5		11
p. radius	2	3		5	3	6		9
d. radius	2	5		7	4	4		8
p. femur	7	2		9	4	8	3	15
d. femur	2		1	3	6	2	2	10
patella					1			1
p. tibia	2			2	3	6		9
d. tibia	2	6	1	9	6	6		12
astragalus	3	4		7	9	5		14
calcaneum	2	4		6	5	5		10
nav-cuboid	4	2		6	1	2	2	5
p. m/carpal	5	4		9	6	6		12
d. m/carpal		3		3	5	7	2	14
p. m/tarsal	3	3		6	7	6		13
d. m/tarsal	1	2	2	5	5	5	3	13
d. m/podial			2	2			4	4
atlas				4				2
axis				1				2
pelvic frags.				15				45
hyoid				6				3
sternum								3
sacrum				4				
sesamoid				1				1
os malleolare								1
carpals				4				3
tarsals				1				1
longbone shafts				48				104
phalanx 1				25				25
phalanx 2				19				21
phalanx 3				3				10
Total				244				429
Number of whole bones possessing two articular ends and fused proximal ulnae/radii, to be subtracted				3				7
Total postcranial frags.				241				422
head				118				174
horncore				4				4
Total frags.				363				600

Table 9g.
Breakdown by element of identified material of the main animal taxa represented at Belmont: Phases B and C-E pig

	Phase B:				Phase C-E:			
Element	**Left**	**Right**	**ND**	**Total**	**Left**	**Right**	**ND**	**Total**
scapula	3	3	4	10	2	2	3	7
p. humerus	4	1	1	6	2			2
d. humerus	2	5	1	8	3	4		7
p. ulna	3	2		5	2	4	1	7
d. ulna	2	2	1	5	1	1	1	3
p. radius	2	1		3	5	2		7
d. radius	2	3		5	3	1		4
p. femur		3		3	3	1		4
d. femur	2	9		11	2	1		3
p. tibia	3	5		8	1			1
d. tibia	6	1		7	7	1		8
d. fibula							1	1
astragalus	1	2		3	6	2		8
calcaneum	2	2		4	5	2	1	8
atlas				5				6
axis				2				4
sternum				1				
sacrum				3				2
sesamoid				1				
pelvic frags.				11				18
carpals				4				2
tarsals				1				
longbone shafts				5				26
m/carpal III/IV				11				2
m.tarsal III/IV				6				6
m/podial III/IV				4				
m.podial II/V				19				6
phalanx 1				6				13
phalanx 2				5				1
phalanx 3				3				3
Total				165				159
Number of whole bones possessing two articular ends and fused proximal ulnae/radii to be subtracted				12				4
Total postcranial frags.				153				155
head				79				120
Total frags.				232				275

Table 10.
Identified fragments of chicken at Belmont by phase

Phase	**Period AD**	**Chicken frags.**	**Abundance relative to mammals***
B	Crusader, C12	150	22.5%
C	Later medieval, C13-16	108	20.6%
D	Ottoman, C16-19	501	20.8%
E	Modern, C20	356	9.9%

** Abundance of chicken is expressed as a percentage of the total numbers of identified fragments of the main mammalian taxa, as presented in Table 1.*

Table 11.
Occurrence by phase of all birds at Belmont

	B	?B	B/C	C	?C	C/D	D	?D	D/E	E
Chicken	126	12	20	89	197	43	432	3	47	311
	?24		?4	?19	?4	?7	?69		?5	?45
Anser anser	2		1	2			1			
(Goose)							?1			
Columba livia	3		1	1		3				7
(Rock dove)	?1				?1		?2			?1
Columba palumbus	5		1							
(Woodpigeon)										
Streptopelia turtur	1					1				
(Turtle dove)										
Columba sp.							?2			
Alectoris chukar	6		1	1	2		3		1	1
(Chukar)			?1				?1			?1
Turdus merula	1			1						
(Blackbird)										
Turdus philomelos					?1					
(Song thrush)										
Gyps fulvus			1							
(Griffon vulture)										
small falconid							1			
large accipiter	1									1
Unidentified	4						4		2	2

Note: Phase B = Crusader, C = Later medieval, D = Ottoman, E = modern.

Table 12.
Occurrence by phase and relative frequency of fish remains at Belmont

	B	?B	B/C	C	C/D	D	E
Number of fragments	16	3	8	2	1	14	1
Frequency relative to mammals*	2.40%			0.38%		0.58%	0.03%

**Frequency of fish is expressed as a percentage of total numbers of identified fragments of the main mammalian taxa, as presented in Table 1.*

Table 13.
Human remains from Belmont

Context	Phase	Description/comments
110.29	B	foetal ?femur
109.38	C	?human ?phalanx or metapodial frag.
111.6	D	femur shaft frag., adult size
116.4	D	12 tiny frags. (mainly ribs), ?human ?neonatal
116.5	D	skull and mandibular frags., ulna, radius of tiny baby
120.11	C/D	2 burnt skull frags.
126.3	D	frontal ?perinatal
302.5	D	skeleton of neonatal baby with parts of at least 2 others. Fibula shaft frag., adult size
301.2	E	tooth frag.

CHAPTER 15
SUMMARY AND DISCUSSION

Denys Pringle

The Castle as Revealed by Excavation

The excavations at Belmont revealed that the castle was concentric in plan, consisting of two or possibly three wards or baileys, one inside the next (Fig. 15.1). A compact rectangular inner ward on the hilltop was surrounded lower down the hill by a larger enclosure of polygonal form following roughly the natural contours. On the south-east, between these two lines of walling, there also existed an intermediate range of buildings, though whether or not this encircled the entire hill is uncertain.

The irregular polygon described by the outer *enceinte* measured overall some 100m east-west by 115m north-south. Only the sloping *talus* of this wall survives, inclined at an angle of about 70°. It is partly rock-cut and partly built, with an ashlar facing of lime-mortared masonry enclosing a rubble core. In front of it the rock has been levelled to form a berm or terrace. No evidence was found of any outer ditch. It may be assumed that the upper portions of the wall would have presented a vertical face externally, as indeed they do on the inside where it is possible to examine them; but nowhere do they stand high enough for this to be verified and their original height is unknown. No evidence was found for towers, projecting or otherwise, and it would appear that the angles were left exposed, without any provision for protecting the adjoining curtains by flanking fire. However, it may be that the bases of towers, had they existed, would only have projected from the *talus* at a higher level than that which now survives; or, as appears to have been the case at *le Chastelez* (Qasr al-'Atra) in Galilee in 1179 (Pringle 1997: 85, no. 174), it may simply be that the castle was abandoned before such towers were ever built.

The outer gate, sited at the south-eastern angle, was also a relatively simple affair, consisting on plan of little more than an oblique passageway, narrowing to 3m in width, set between overlapping sections of the outer wall and closed by a pair of wing-doors. One may assume that some further defensive provision, such as machicolations or murder-holes, would have been made above the gate-passage. Given the thickness of the walls at this point, there may even have been some form of gate-house or gate-tower. However, there is no evidence for a portcullis nor for embrasures covering the approach to the gate, such as one finds for example in the Hospitaller castle of Belvoir, built in the same period (Biller 1989; Pringle 1997: 32–3, no. 46). Traces of rock-cutting south of the gate, which it was not possible to investigate in detail, hint at the possibility of there having been some form of additional outwork; but they may just as easily have related to a *birka*, or pool for watering animals.

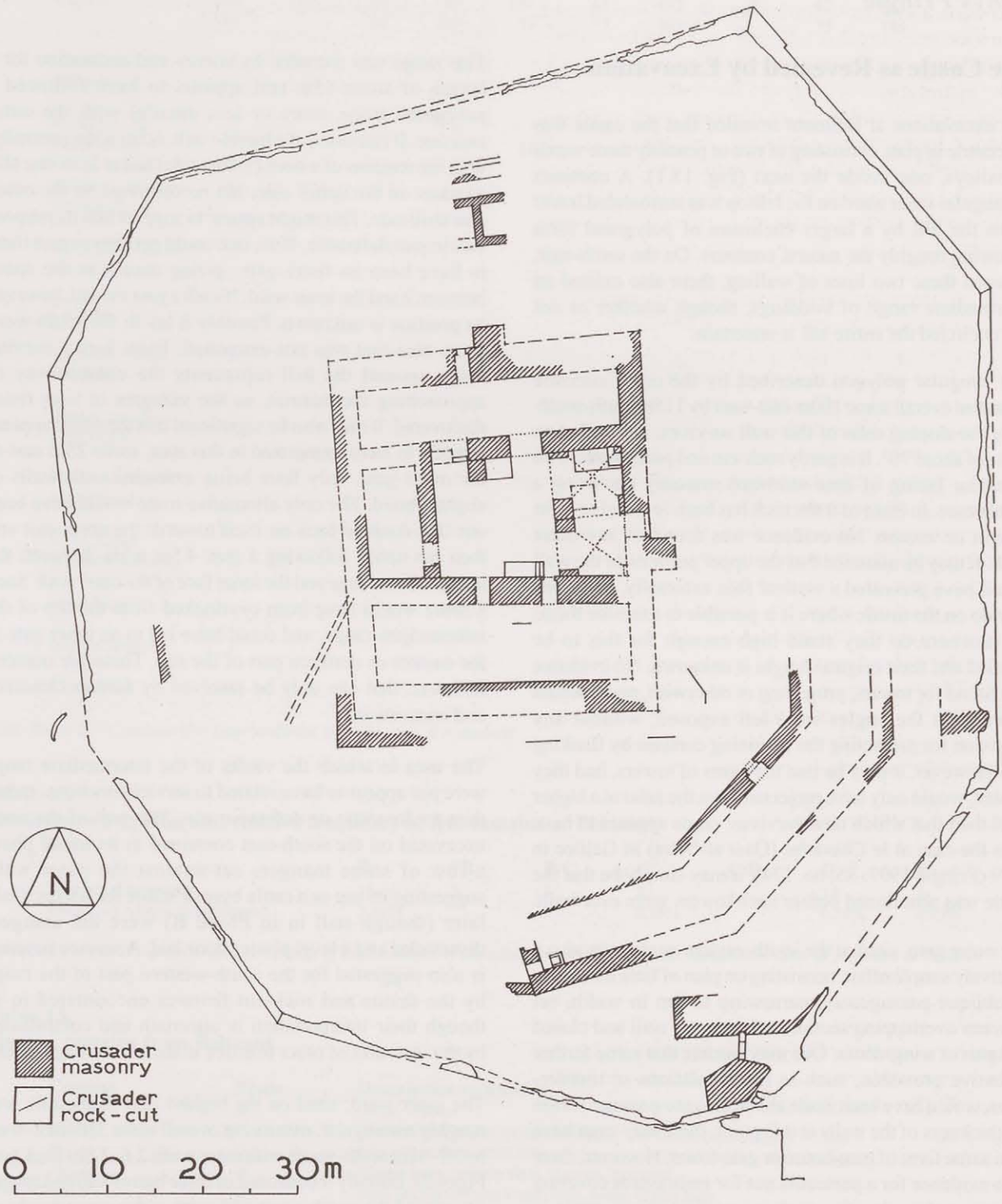
Having entered this gate one would have been met almost immediately by the outer wall of the intermediate range of buildings, occupying the south-eastern slope of the hill. This range was recorded by survey and excavation for a length of some 55m and appears to have followed a polygonal trace, more or less parallel with the outer *enceinte*. It consisted of a barrel-vault, 6.5m wide internally, with the remains of a door (1.8m wide) and at least one slit-window on the uphill side, but no openings on the outer, downhill side. This might appear to suggest that its purpose was in part defensive. If so, one could perhaps expect there to have been an inner gate, giving access to the space between it and the inner ward. If such a gate existed, however, its position is unknown. Possibly it lay to the south-west, in an area that was not excavated. From here a curving route around the hill represents the easiest way of approaching the summit, as the villagers in later times discovered. It may also be significant that the range appears initially to have terminated in this area, some 25m east of the outer gate, only later being extended with walls of slighter build. The only alternative route would have been one that doubled back on itself towards the north-east and then ran uphill following a gap, 4.5m wide, between the intermediate range and the inner face of the outer wall. Such a route would have been overlooked from the top of the intermediate range, and could have led to an inner gate in the eastern or northern part of the site. These are matters, however, that can only be resolved by further clearance and excavation.

The uses to which the vaults of the intermediate range were put appear to have related to service functions, rather than to domestic or defensive use. The part of the vault excavated on the south-east contained in its initial phase a row of stone mangers set against the outer wall, suggesting its use as a cattle byre or stable for horses. Only later (though still in in Phase B) were the mangers dismantled and a level plaster floor laid. A service function is also suggested for the south-western part of the range by the drains and rock-cut features encountered in it, though their interpretation is uncertain and complicated by the insertion of other features in the later village phase.

The inner ward, sited on the highest part of the hill, was roughly rectangular, measuring overall some 33m east–west by 39–41m north–south with outer walls 2.6–3.8m thick (see Fig. 4.2). Initially it consisted of three barrel-vaulted ranges set around the south, west and north sides respectively of an open courtyard, some 20m east-west by 12–14m north–south. There is evidence, both in the building's general layout and in its structure, to suggest that the south range and the outer walls were built first, followed by the west range and then the north range. However, the positioning of the south range's doors to the courtyard suggests that all three ranges were envisaged from the start.

The original gate into the inner ward seems to have been on the east. It was 1.69m wide and was rebated for a door or

Figure 15.1. Belmont (Suba): plan of the castle as revealed by excavation (drawn by M. Pease).



pair of doors opening inwards. On the outside, it was flanked immediately to its south by a solid turret, 1.96m wide, which projected some 2.6m from the wall-face. Another narrower door, 0.78m wide, also gave access on the north side of the inner ward; it was flanked on its east side by a similar turret, 3.3m wide, projecting 2.3m. This secondary door would have led straight into the north range, from which a door and a wider arched opening gave into the courtyard. No other evidence for external doors into the inner ward was found; indeed, it seems unlikely that there would have been any on the west or south, for the land falls away steeply on these sides and the lower parts of the south-western and south-eastern corners of the building were buttressed accordingly.

The south range could be entered from the courtyard by either of two doors, the eastern of which came to be blocked when a stone staircase to an upper floor was constructed partly in front of it. The west range also had a door opening from the courtyard; and, as noted already, the north range had a door and a wider arched opening leading into it.

What survives today of the inner ward represents no more than remains of the ground floor or basement. That the building also had an upper floor is indicated by the foundations of stone staircases built on the south and north sides of the courtyard respectively. Although the arrangement of the upper floor level may be expected to have mirrored that of the basement, we know nothing of it for certain. Some fragments of capitals and painted wall plaster found in the excavations (Ch. 12, nos. 4, 8 and 29), however, attest to its architectural embellishment and support the view that it would most probably have contained the principal living areas.

Underneath the inner ward was a series of cisterns, cut into the living rock and dating apparently from Byzantine times. These remained in use through the Middle Ages, as the upkeep of the cistern heads indicates. They also continued to be fed by a system of rock-cut or stone-lined drains, which channelled rainwater into them from the courtyard and from the roofs of the surrounding buildings. A larger stone-lined and capped drain running off from the inner ward towards the south-west seems more likely to have been intended to carry away waste from the kitchens or latrines; but this remains to be investigated further and its date is in any case uncertain.

In a secondary Crusader phase, a square groin-vault, open on the west and south, was built in the north-eastern corner of the courtyard. This was supported on a free-standing square pier and on three rectangular pilasters built against the existing walls of the courtyard. Following the construction of this vault, a wine-press was built below it, with a stone flagged pressing floor and a rock-cut collecting tank, the latter being cut around the base of the corner pilaster supporting the vault. In its initial phase the purpose of the vault was possibly no more than to provide shelter for the activities taking place beneath it. Later, however, the vault was extended by another bay to the south, so that the entire eastern part of the courtyard was brought under cover. Whether this extended vault would have supported a room above or simply a terrace, it would certainly have had the effect of improving the circulation at first-floor level. However, at ground level it would also have effectively blocked the original east gate into the inner ward. In this period it would therefore seem that, unless there was a door at first-floor level (for which no evidence survives), the only entrance into the inner ward would have been that on the north.

No clear evidence was found for any deliberate destruction of the castle before 1948, when a number of the vaults surviving as village houses were blown up. It is quite possible, however, that the destruction attributed to al-ʿĀdil in 1191 consisted of little more than dismantling the principal defensive features, such as the outer gate. The cache of four English pennies (Ch. 5, nos. 13–14), minted between AD 1180 and 1247, that was found in the north range could be related to English participation in either the Third Crusade (1191–2) or the expedition of Richard of Cornwall (1240–41), when Jerusalem and a corridor linking it with the coast were briefly returned to Christian hands (Prawer 1975: II, 83–99, 283–7, maps II and VIII). Belmont would technically have been in the area under Frankish control until 1244; but whether or not it was actually reoccupied by the Hospitallers during that period it is impossible to say, since the precise point of transition from castle to village occupation is not easily recognizable in the archaeological record.

Architectural Discussion and Analysis

In terms of its overall planning, Belmont may be recognized as an early example of 'concentric' castle planning, a defensive system that was to achieve its first consistent medieval expression in the castle of Belvoir, built by the Hospitallers in eastern Galilee between 1168 and 1187 (Biller 1989; Pringle 1996; 1997: 32–3, no. 46). At Belvoir, an inner ward, 50m square with a rectangular tower at each corner and a fifth on the west containing a bent entrance, was surrounded by a roughly quadrangular outer ward (100m north-south by 110m east-west) with projecting rectangular corner and interval towers rising from the bottom of an enclosing rock-cut ditch (Fig. 15.2; Pls. 15.1–2). On the east the castle was protected by a precipitous slope, falling away into the Jordan Valley (Pl. 15.3); and it was here that the main entrance was placed, approached by a zig-zagging ramped barbican. Although the castle does not survive above the level of the first floor, a likely reconstruction of its original elevation (Fig. 15.3) demonstrates the military thinking that lay behind its design, with the towers and curtain walls of the inner ward rising high above those of the outer, thus allowing the defenders to array two tiers of bow or ballista fire against an approaching enemy.

Another example of this type of castle, as yet know to us only from documentary sources, was the royal castle of *Darom* (Dair al-Balah), built south-west of Gaza between the 1160s and 1191 (Pringle 1988: xxxv–xxxvi; 1997: 46, no. 80). The castle of Saranda Kolones at Paphos in Cyprus,

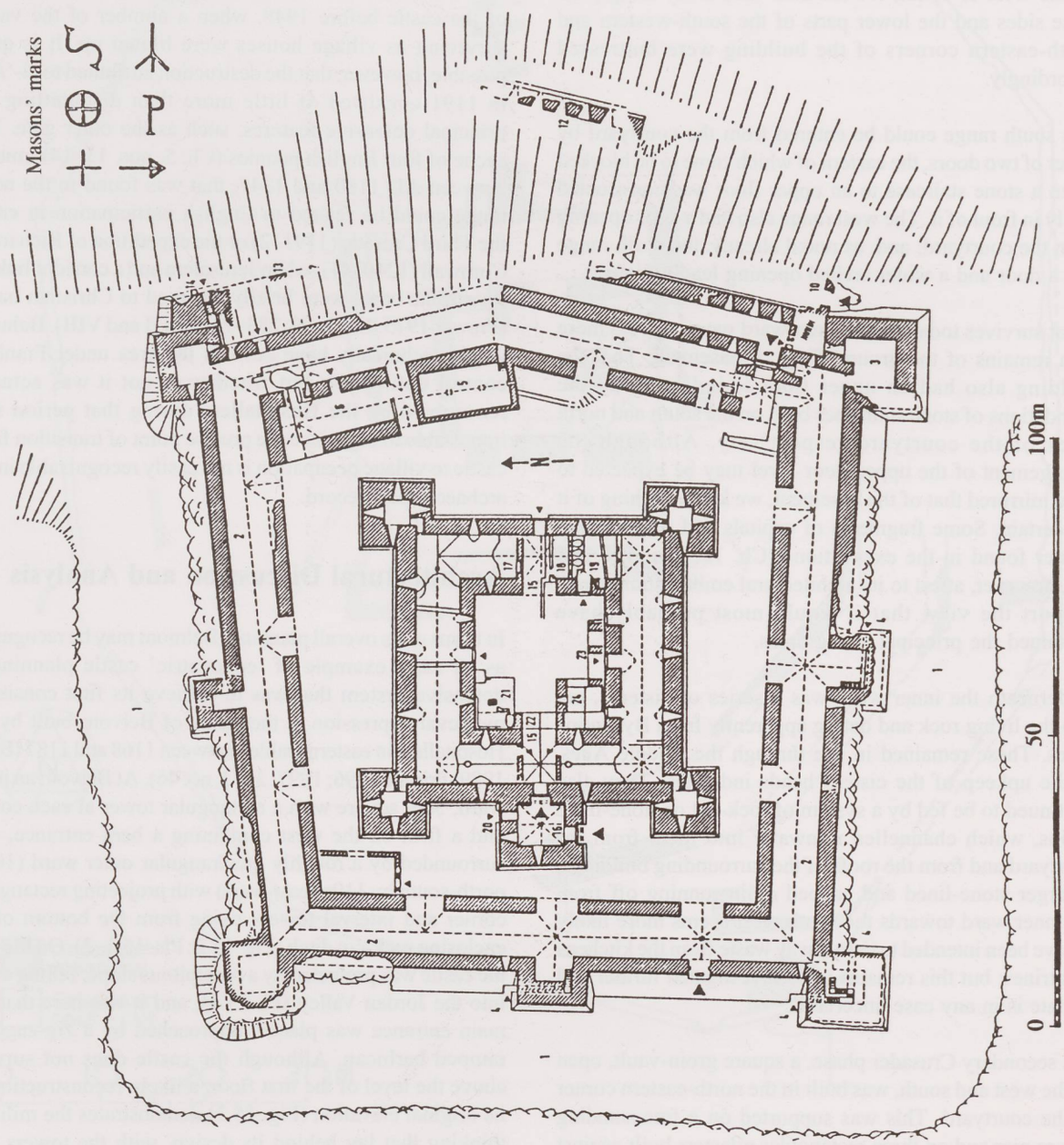


Figure 15.2. Belvoir Castle (Kaukab al-Hawa): plan (after Biller 1989).

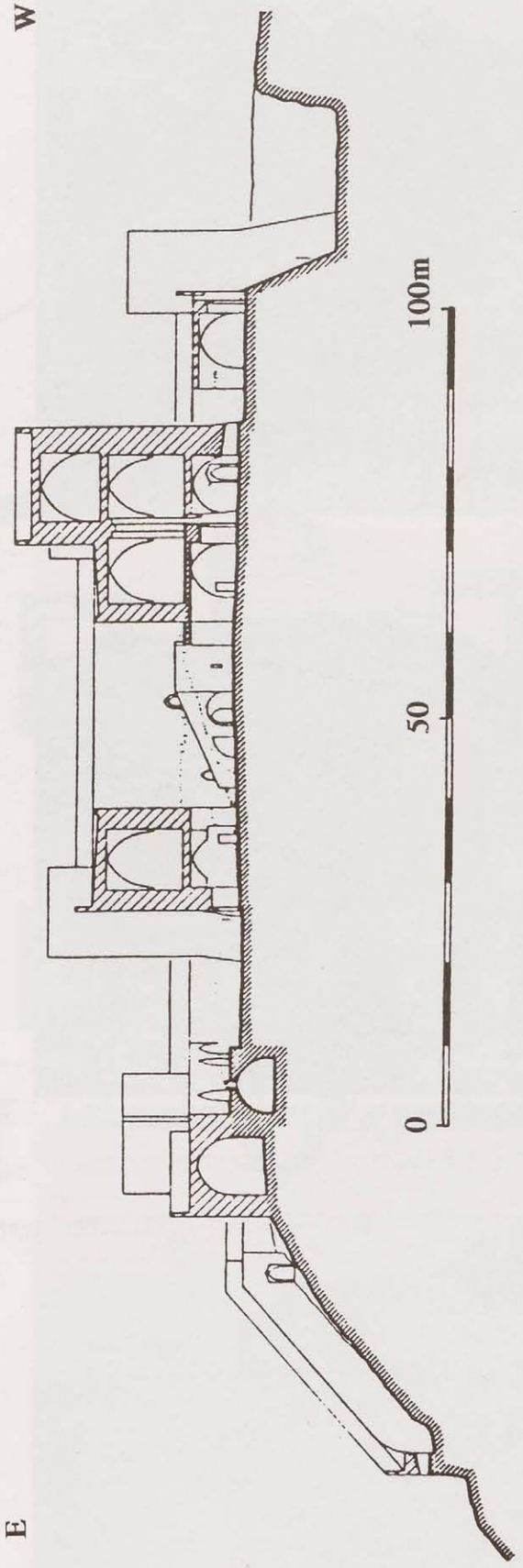


Figure 15.3. Belvoir Castle: east–west section (after Biller 1989).

Plate 15.1. Belvoir Castle (Kaukab al-Hawa): outer *enceinte*, from the SW.

Plate 15.2. Belvoir Castle (Kaukab al-Hawa): inner ward, from the SE.

Plate 15.3. Belvoir Castle (Kaukab al-Hawa): the SE corner-tower overlooking the Jordan Valley.

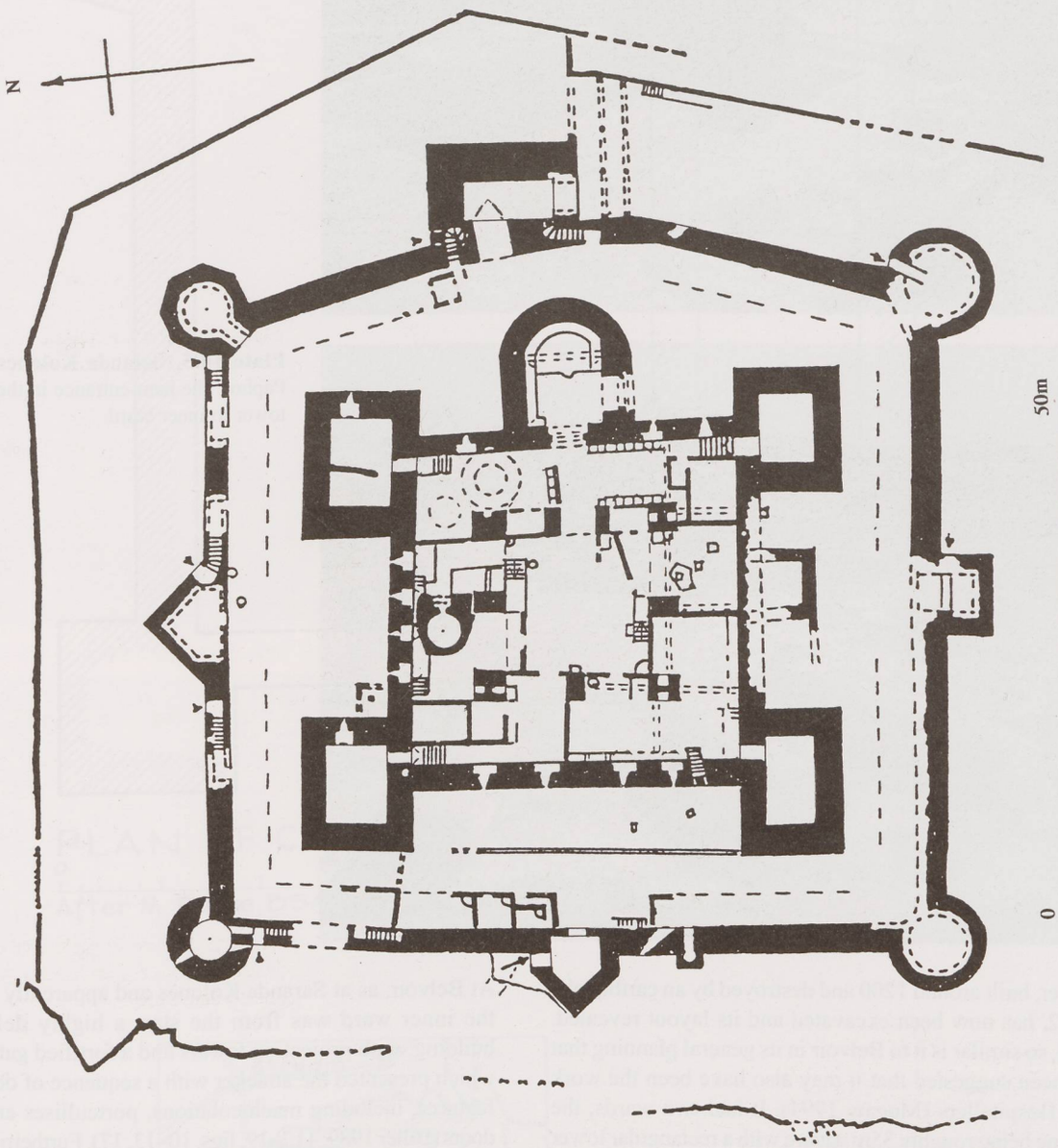


Figure 15.4. Saranda Kolones Castle, Paphos, Cyprus: partly restored plan of the castle (after Megaw 1994).

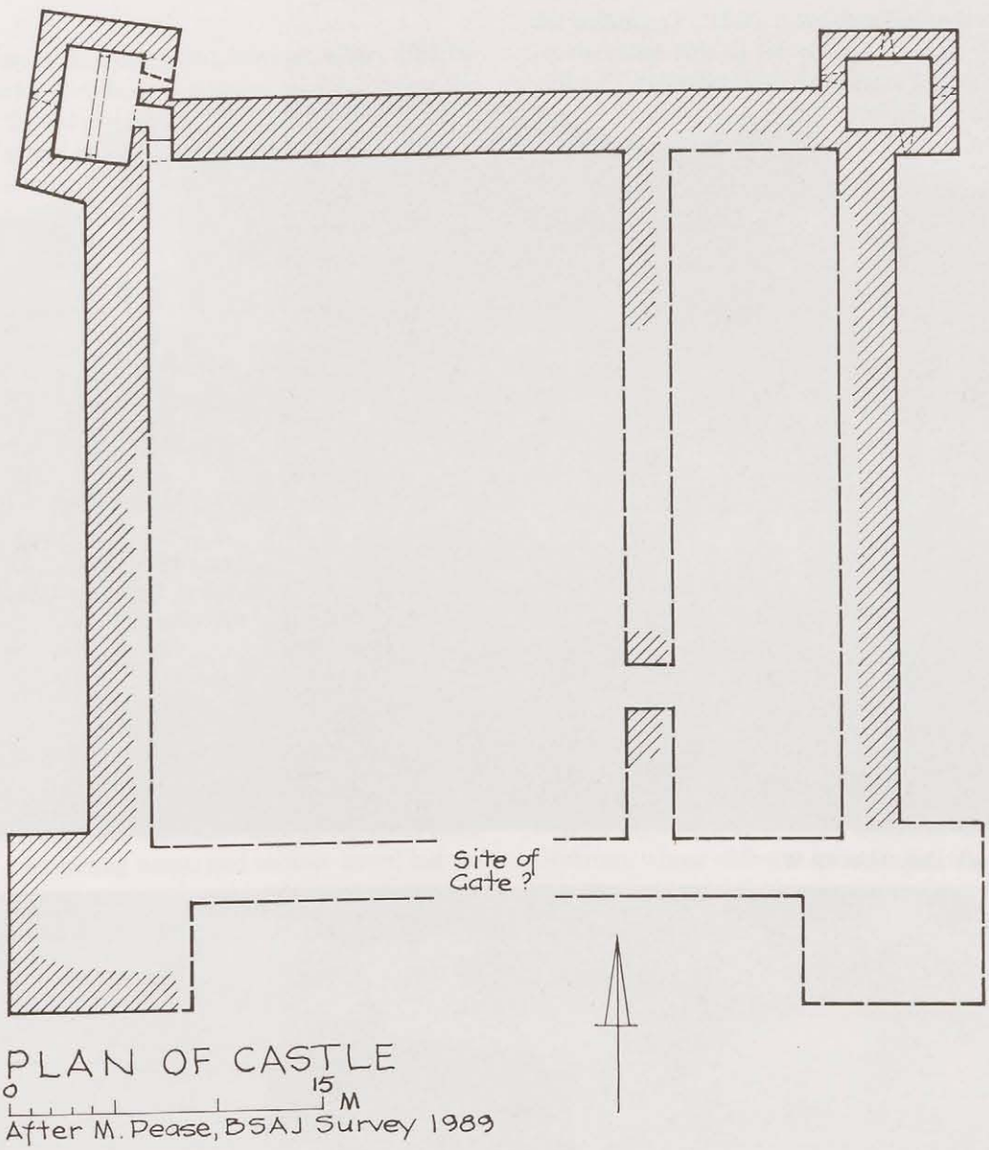
Plate 15.4. Saranda Kolones castle, Paphos: the inner ward, looking SE from the W range.

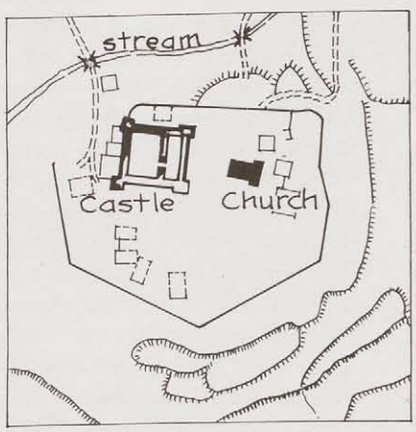
Plate 15.5. Saranda Kolones castle, Paphos: the bent-entrance in the E gate-tower to inner ward.

however, built around 1200 and destroyed by an earthquake in 1222, has now been excavated and its layout revealed. Indeed, so similar is it to Belvoir in its general planning that it has been suggested that it may also have been the work of the Hospitallers (Megaw 1994). It had two wards, the inner one being roughly 35m square with a rectangular tower at each corner and a rounded one containing a bent entrance in the centre of the east side (Fig. 15.4; Pls. 15.4–5). As at Belvoir this gate-tower also contained a chapel on its upper floor. The inner ward was surrounded by an outer one of roughly pentagonal shape, some 75m across, with rounded or polygonal corner towers and cut-water or rectangular interval towers, one of the latter on the east containing another bent entrance, reached by a timber bridge across the surrounding rock-cut ditch. Another similarity with Belvoir was the provision of postern gates leading down into the bottom of the ditch (cf. Megaw 1971; 1972a; 1972b; 1984; Rosser 1985; 1986; 1987; 1997).

At Belvoir, as at Saranda Kolones and apparently *Darom*, the inner ward was from the start a highly defensible building, with projecting towers and a fortified gate-tower which presented the attacker with a sequence of defensive features, including machicolations, portcullises and wing doors (Biller 1989: 117–19, figs. 10–13, 17). Furthermore, it is clear from the layout of the castle, with the inner ward set back from the edge of the precipice, that its concentric plan was conceived from the very beginning, whatever the precise sequence of construction may have been. Despite the novelty of its outer ward, however, the inner ward at Belvoir, built in the style of a Byzantine fort or *quadriburgium* with a rectangular plan and rectangular towers placed at the corners, may be compared with a number of other Frankish castles, constructed during the twelfth century. These include Bait Jibrin (*c.*1134) (Pringle 1997: 27, no. 32), Tall as-Safi (*Blanchegarde*, 1142) (Pringle 1997: 93, no. 194), Yibna (*Ibelin*, 1141) (Pringle 1997: 109, no. 235), Mi'iliya (*c.*1160) (Pringle 1997: 71, no. 152), Jubail (Byblos) (Müller-

Figure 15.5. Mi'iliya (*Castrum Regis*): plan of the Crusader castle (drawn by P.E. Leach, after BSAJ suvey and Ellenblum 1996).





SITE PLAN
0 150 M
After R. Ellenblum
& BSAJ Survey 1989

Plate 15.6. Mi'iliya (*Castrum Regis*): inner ward of the castle, from the NW.

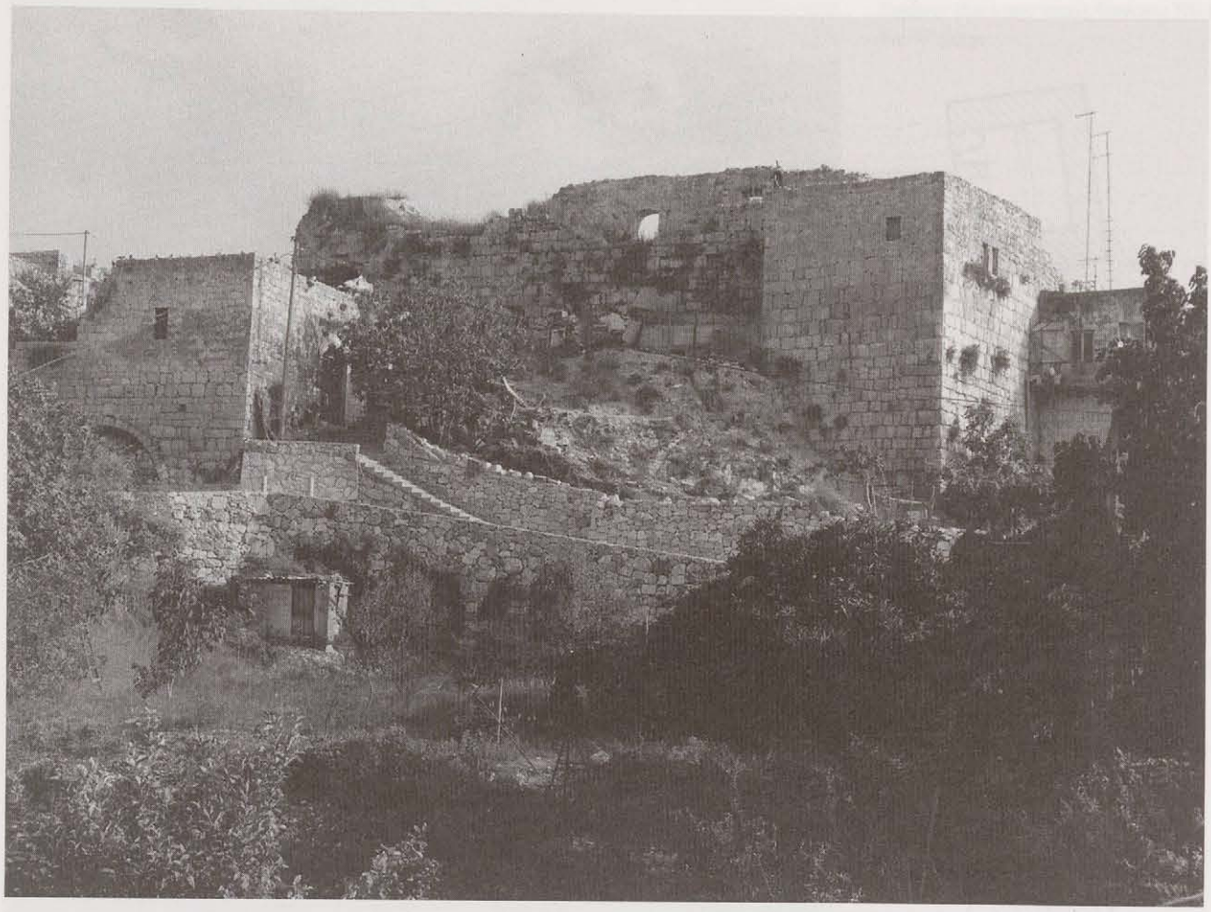


Plate 15.7. Jubail: castle from the W.

Wiener 1966: 64–5, plan 16, pls. 85–7; Deschamps 1973: 203–15) and Qulai'at (*Coliath*) (Deschamps 1973: 311–12, plan 311; cf. Pringle 1988: xxxv–xxxvii) (see Figs. 15.5; Pls. 15.6–7).

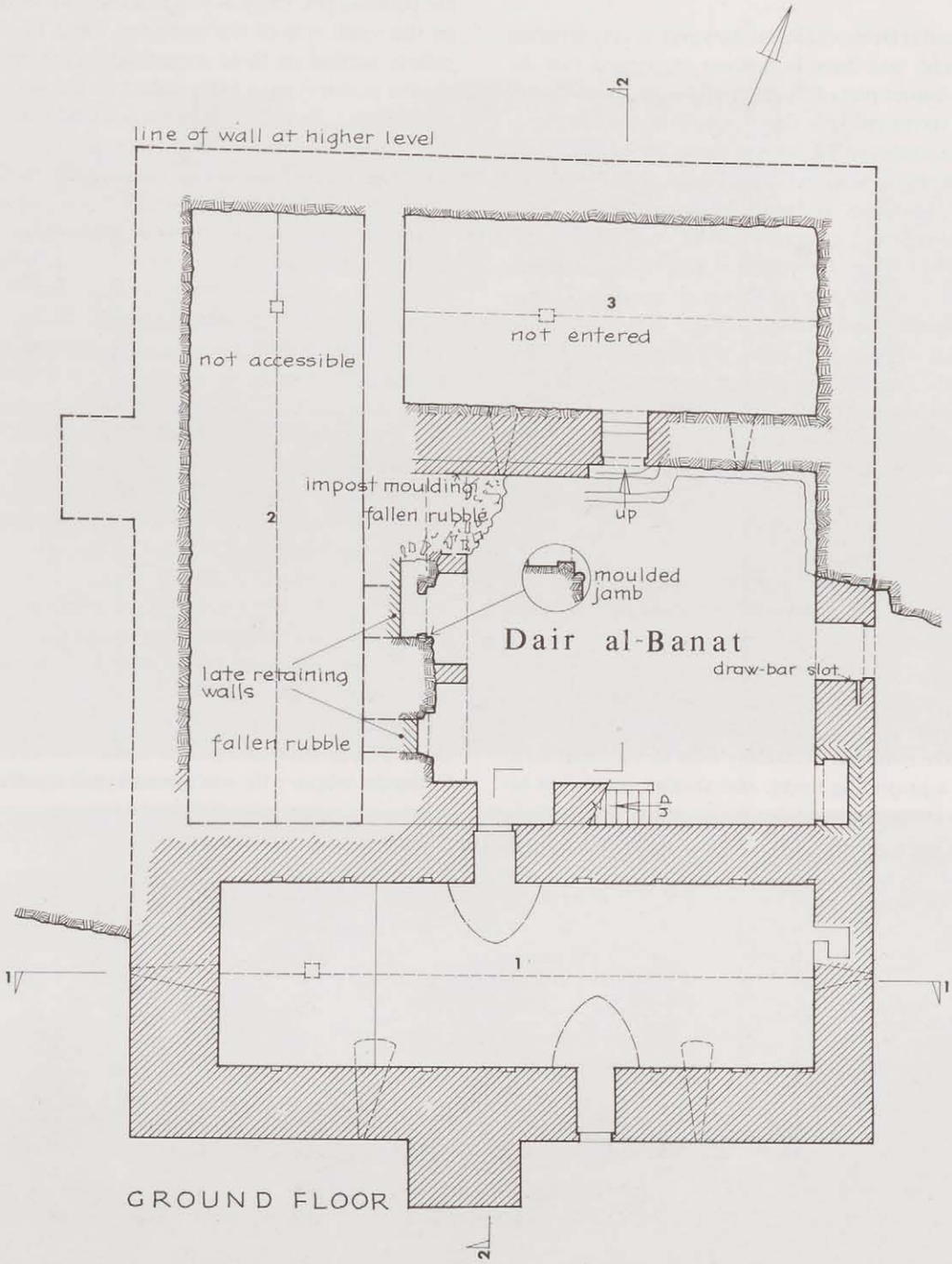
The inner ward at Belmont (Suba), however, is very different to all of these; and there is nothing to suggest that the outer bailey formed part of the original design. Indeed, when first built it seems unlikely that Belmont would have been regarded as a castle at all. Closer parallels for its inner ward lie with a class of Frankish buildings known archaeologically as 'courtyard buildings' and often interpreted, with varying degrees of conviction, as manor houses or *maisons-fortes* (Pringle 1997: 11–12; cf. Benvenisti 1970: 233–45; Ellenblum 1998: 179–91). Remains of another such structure, known as ash-Shaikh Ibrahim and very similar to Belmont from what one can tell, survive on the southern slope of Jabal Suba and would repay more detailed investigation (see Ch. 2 and Pl. 2.3 above). After this, the nearest comparison for Belmont, both geographically and structurally, may be found in the Hospitaller courtyard building that it overlooks at *Aqua Bella* (Kh. 'Iqbala, Dair al-Banat), 1.5km away downhill to the north (Pl. 15.8).

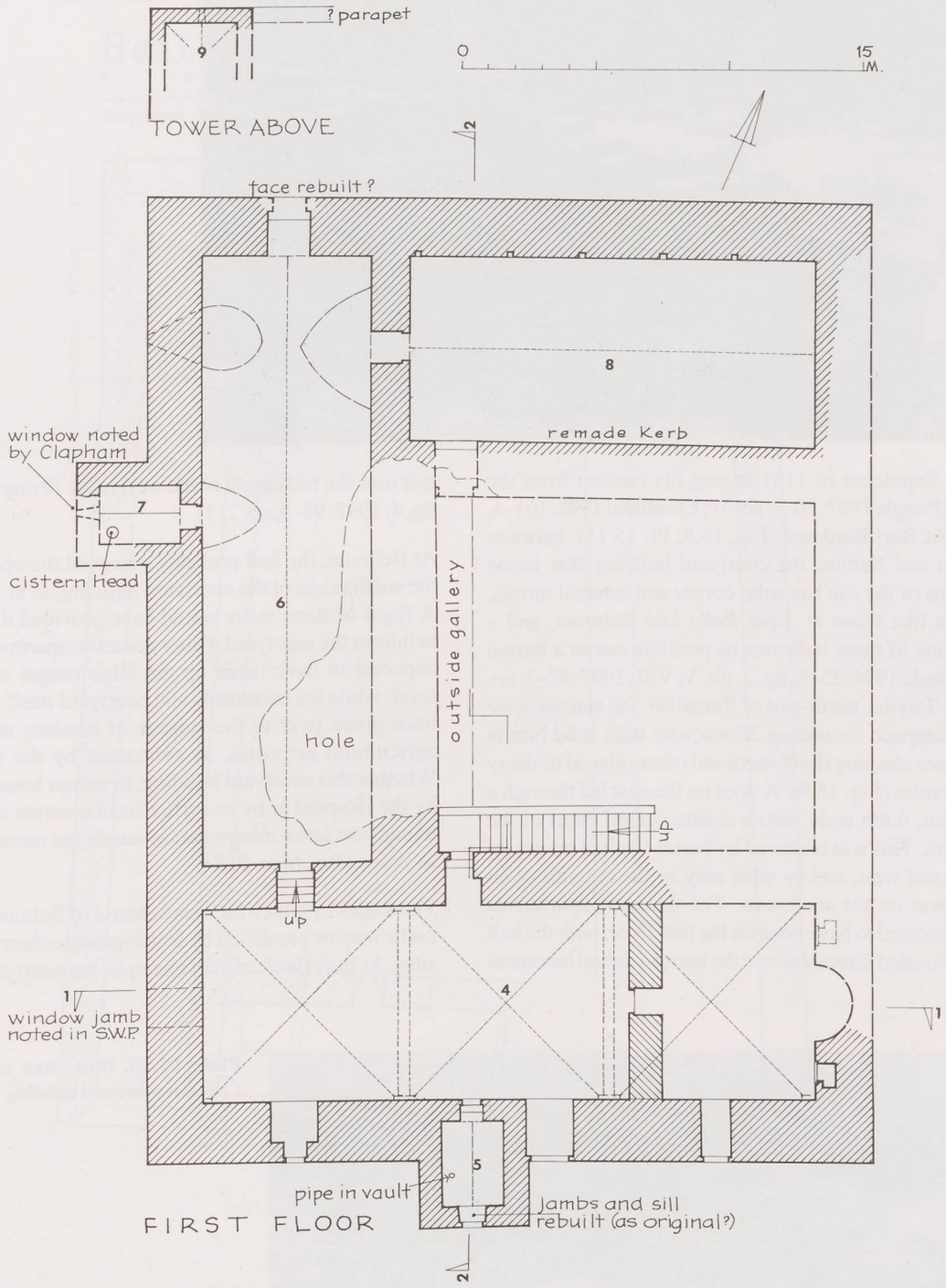
The courtyard building at *Aqua Bella* has slightly smaller overall dimensions than Belmont's, measuring 27m east-west by 36m north-south (Fig. 15.6). Its plan, however, is almost identical, with three barrel-vaulted ranges set around the south, west and north sides of a open courtyard, which was entered on the east through an outer gate, 2m wide. There is also a narrower secondary door in the south wall, flanked by a projecting turret; and another turret, but no door, exists on the west. The south range contains a stone rotary olive-press, which appears to be an original feature. At *Aqua Bella*, much of the first floor also survives, confirming that this represented the principal living area of the building (Pl. 15.9). It was reached by a stone staircase on the south side of the courtyard, from which an open gallery carried on three segmental arches supported on slender pilasters gave independent access to the west and north ranges. In the south range, entered from the top of the stair, lay the hall. This room, measuring 22.86 by 7.25m, was roofed with three bays of groin-vaults, springing from moulded consoles and separated from one another by shallow transverse arches. On the south it was lit by three ample windows and communicated with a closet inside the projecting turret. The other two ranges at this level were barrel-vaulted and similar in plan to the vaults below them. In what was probably a secondary phase a small semi-circular apse, flanked by aumbries, was inserted into the east wall of the hall, and the stone base for a chancel screen with a central door was built 5.5m in front of it. This conversion to ecclesiastical use, possibly as a monastic infirmary hall rather than simply as a priory church, seems likely to have occurred after the estate came into the hands of the Hospital (Pringle 1992; 1993: I, 239–50, no. 101).

A number of other examples of courtyard buildings incorporating a first-floor hall are known to us. At Bait 'Itab (*Bethaatap*), for example, the original nucleus of the courtyard building was a first-floor hall-house, which later came to form its north range (Fig. 15.7; Pl. 15.10). This appears to have been built as a manor house by the knight, John Gothman, whose wife was forced to sell it to the canons of

Plate 15.8. *Aqua Bella* (Kh. 'Iqbala, Dair al-Banat): the Frankish *maison-forte*, from the SW.

Figure 15.6. *Aqua Bella* (Kh. 'Iqbala): plan of the Crusader *maison-forte* (drawn by P.E. Leach, after BSAJ Survey 1986–7).




? parapet
9
TOWER ABOVE
0
15
M.
2
face rebuilt ?
8
remade Kerb
window noted
by Clapham
7
cistern head
6
outside gallery
hole
up
up
4
1
window jamb
noted in S.W.P.
1
5
pipe in vault
jambs and sill
rebuilt (as original?)
FIRST FLOOR
2

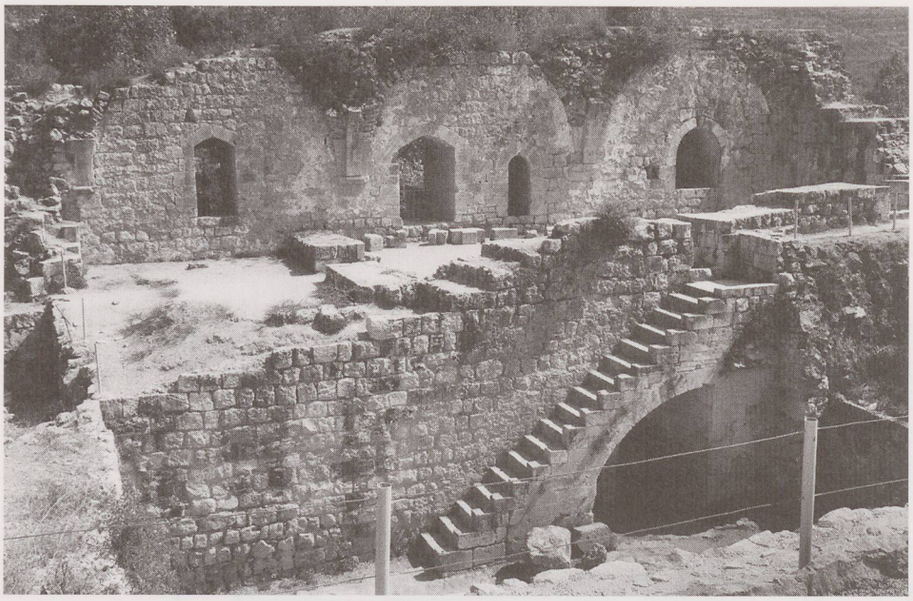


Plate 15.9. *Aqua Bella* (Kh. 'Iqbala, Dair al-Banat): the hall in the S range of the Frankish *maison-forte*.

the Holy Sepulchre in 1161 to pay his ransom from the Muslims (Pringle 1997: 26–7, no. 31; Ellenblum 1998: 161–4, fig. 10). At Burj Bardawil (Fig. 15.8; Pl. 15.11), between Jerusalem and Nablus, the courtyard building that forms the nucleus of the site has solid corner and interval turrets, somewhat like those at *Aqua Bella* and Belmont; and a chute in one of them indicates its possible use as a latrine tower (Pringle 1994: 35–8, fig. 2, pls. V, VIII; 1997: 42–3, no. 74). At at-Taiyiba, north-east of Ramallah, the *maison-forte* is more compact, measuring 28m square with solid turrets or buttresses clasping the corners and others placed midway along the sides (Fig. 15.9). A door on the east led through a barrel-vault, 6.6m wide, into a square central court of the same width. This was enclosed by barrel-vaulted ranges on the north and west, and by what may be the remains of an earlier tower on the south-east. The domestic apartments may be expected to have been on the first floor, with the hall probably located directly above the barrel-vaulted basement that runs the full length of the west range (Pringle 1994: 46, fig. 4; 1997: 98–9, no. 215).

At Belmont, the hall probably occupied the upper floor of the south range of the courtyard building, as at *Aqua Bella*. A flight of stone stairs would have provided direct access to it from the courtyard. Other domestic apartments may be expected to have taken up the other ranges at first-floor level, while the basements and courtyard itself would have been given over to the storage of produce and to other agricultural activities, as evidenced by the wine-press. Whether this courtyard building, or manor house, was built by the Hospital or by an earlier secular owner is unknown, though the latter interpretation seems the more likely, just as it does for *Aqua Bella*.

The stages by which the manor house of Belmont became a castle may be paralleled by developments observed at other sites. At Burj Bardawil, for example, the courtyard building

Plate 15.10. Bait 'Itab (*Bethaatap*): Crusader courtyard building, from the SE.

Figure 15.7. Bait 'Itab (*Bethaatap*): plan of the Crusader *maison-forte* (drawn by M. Pease, BSAJ Survey 1989).

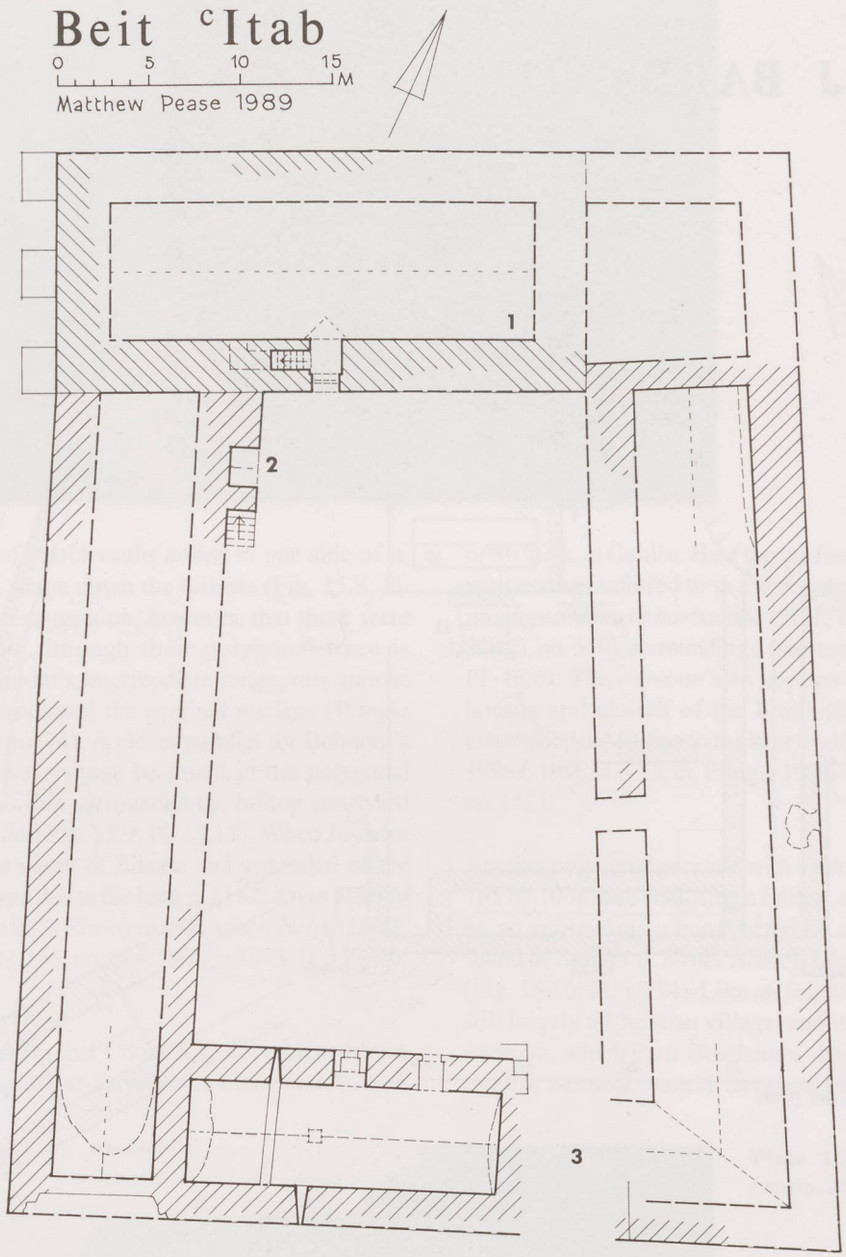


Figure 15.8. Burj Bardawil: plan of the Crusader courtyard building (drawn by D. Pringle, BSAJ/Bir Zeit University Survey 1989).

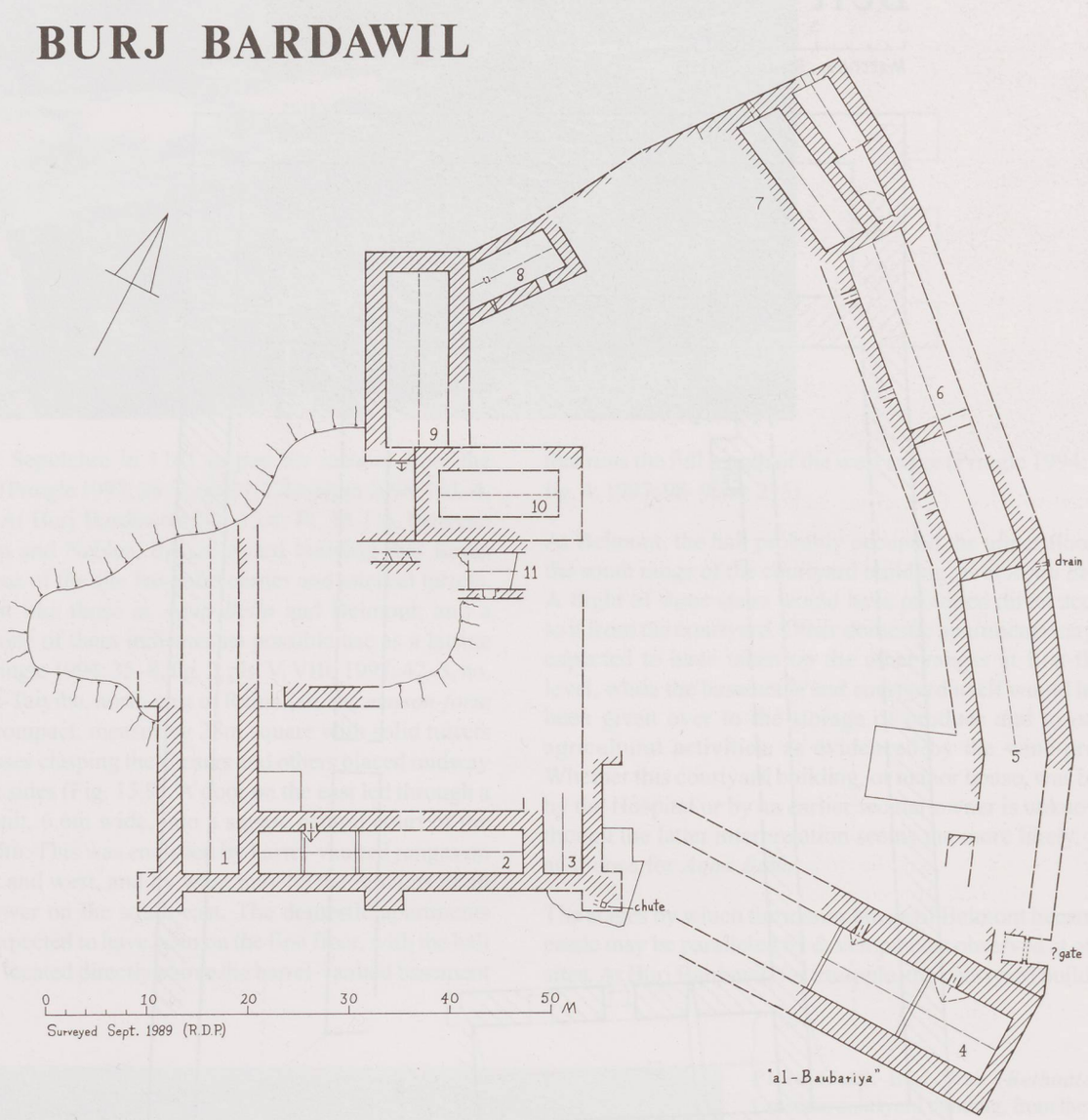


Plate 15.11. Burj Bardawil: central courtyard area, looking S.

later had a series of barrel-vaults added to one side of it, extending in a fan shape down the hillside (Fig. 15.8; Pl. 15.12). There is no suggestion, however, that these were ever fortified; and although their polygonal trace is reminiscent of Belmont's intermediate range, this annexe never completely enclosed the original nucleus (Pringle 1994; 1997: 42–3, no. 74). A closer parallel for Belmont's outer *enceinte*, however, may be found in the polygonal outer wall and *talus* that surrounded the hilltop courtyard building in at-Taiyiba (Fig. 15.9; Pl. 15.13). When Joscelin of Courtney, titular count of Edessa and seneschal of the kingdom, surrendered this to the king in 1182, it was already known as the Castle of St Elias (*castrum sancti Helye*) (*TOT*, 13–14, no. 14l; *RRH*, 163, no. 614; Pringle 1993: II, 339–40; 1994: 45–6, fig. 4).

The castle and lordship that Count Joscelin received from Baldwin IV in return for at-Taiyiba was *Castellum Novum*, or Mi'iliya, in Galilee. Here too we find a polygonal *enceinte* with a *talus*, referred to in the documentary sources as the *propugnaculum* or *barbacana* (*TOT*, 120–21, no. 128; *RRH*, 134–5, no. 510), surrounding a four-towered castle (Fig. 15.5; Pl. 15.6). The *enceinte* also appears to have enclosed the houses and church of the Frankish settlers, who were established in Mi'iliya in the later twelfth century (Ellenblum 1996a; 1998: 41–53; cf. Pringle 1993: II, 30–32; 1997: 71–2, no. 152).

Another polygonal *enceinte* with a *talus*, extending for some 165 by 100m and enclosing a hilltop, dominated in this case by an *église-donjon* constructed by the Templars, is to be found at Safitha (*Chastel Blanc*), in the County of Tripoli (Fig. 15.10; Pl. 15.14). Like at-Taiyiba and Mi'iliya, this is still largely a Christian village; and it seems likely that the *enceinte*, which Paul Deschamps dates to the early to mid twelfth century, would have enclosed the houses of a

Plate 15.12. Burj Bardawil: remains of vault 6, looking SE.

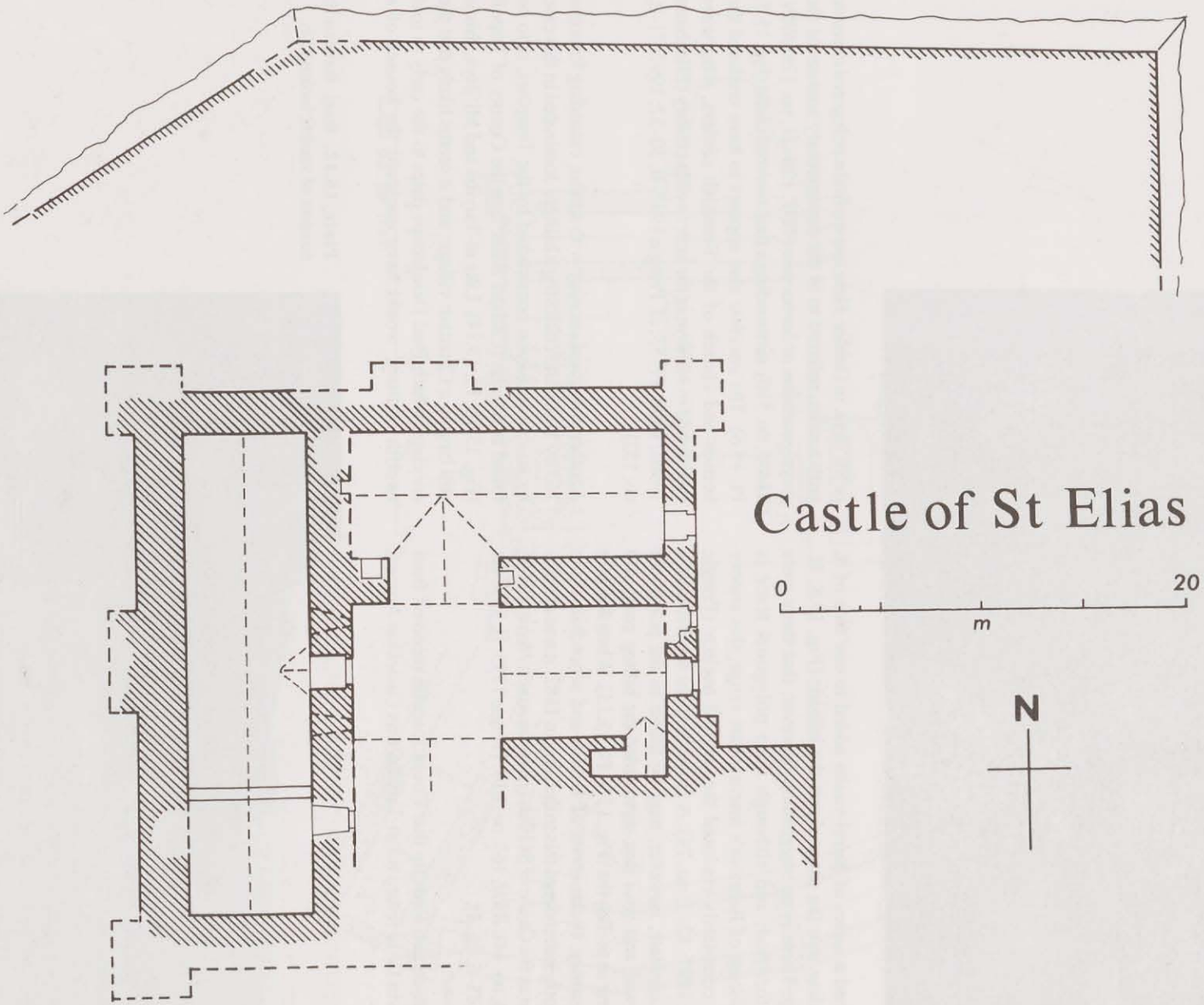


Figure 15.9. At-Taiyiba: plan of the Crusader castle (drawn by D. Pringle, after survey by M. Pease, BSAJ Survey 1988).

Plate 15.13. At-Taiyiba (*castrum Sancti Helye*): NE corner of outer ward.

Plate 15.14. Safitha (*Chastel Blanc*): the *église-donjon* dominating the castle and village, from the E.

Christian settlement dependent on the castle. Although the *donjon* was built later than the outer *enceinte*, it appears to have been constructed over the remains of an earlier inner ward that had been damaged or destroyed by an earthquake in 1170 (1973: I, 249–58; II, fig. 1, pls. XXXI–XXXV; cf. Rey 1871: 85–92, pl. IX; Lawrence 1988: 55–8, figs. 34–7, 45, 51; Müller-Wiener 1966: 51–2, pls. 36–9). Parallels for Belmont's intermediate vaulted range may also be found at Safitha, and are reminiscent of the early phase of the Hospitallers' castle of *Crac des Chevaliers*, also in the County of Tripoli (Deschamps 1934; Müller-Wiener 1966: 59–63, plan 14; Biller 1989: fig. 3). Such vaults, subdivided by cross-walls, could be put to a whole range of different uses.

In summary, although the structural evidence alone does not allow us to determine with certainty the chronological relationship between the two principal wards at Belmont, comparison with other sites make it appear likely that the inner ward predated the outer one. Furthermore, it would seem that in its initial phase the inner ward represented a courtyard building or manor house, and that this semi-fortified structure only developed into a castle when the outer *enceinte* and intermediate range were added to it. Just as the conversion of the manor house at *Aqua Bella* into a priory or infirmary may be attributed to the Hospitallers, so too the conversion of Belmont into a castle seems likely to have been carried out by the order after it acquired both properties around 1140.

Military Functions

Although some possible uses to which the various parts of the castle were put have already been alluded to, direct evidence is elusive. It may be suspected that when Belmont became a Hospitaller castle, the inner ward or former manor house — or at least its upper floor — would have become in effect the monastic enclosure of the knights, chaplains

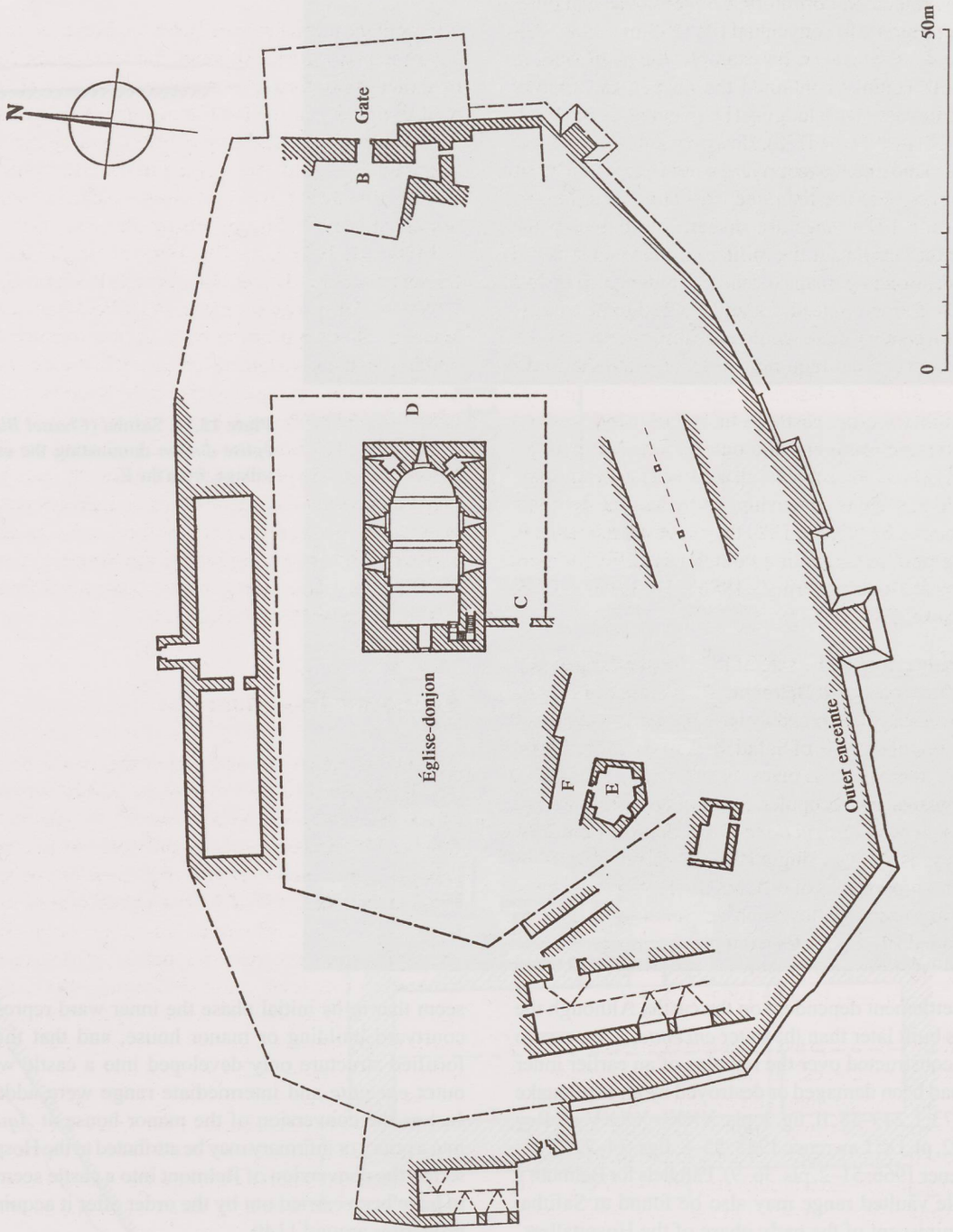


Figure 15.10. Safītha (*Chastel Blanc*): plan of the castle (after Deschamps 1973).

and serving brothers, while the outer ward would have housed the non-religious community associated with them, including servants, artisans and estate workers. A similar interpretation has been suggested for Belvoir, where the inner ward is known to have contained the chapel and a kitchen, and may reasonably be assumed to have also included the refectory, dormitory, chapter house and other facilities appropriate to conventual life (Billings 1987: 82–3). At *Crac des Chevaliers*, for example, the inner ward in the thirteenth century contained the chapel, the chapter house, and the castellan's lodging (Deschamps 1934; 1964: 73–137; cf. Molin 1997: 387–8). However, although an inner ward built around a central courtyard would have been better adapted to monastic use than one consisting of a *donjon*, no significant differences are discernible between the twelfth-century castles of the military orders and those of secular lords, except perhaps for the prominence given to a chapel in the former. Indeed, for anyone designing a castle in the twelfth century there would probably have been little difference between the requirement to separate the lord's *familia* from all other classes in a secular castle and the need in a military order castle to form a division between the monastic enclosure and the outer court. Mi'iliya, at-Taiyiba and *Darom*, for example, all achieved their concentric forms while in secular ownership, and when the Teutonic knights acquired Mi'iliya in 1220 they soon abandoned it in favour of a new castle, with a completely different plan, built near by at Montfort (Pringle 1986b: 52–3; 1997: 73–5, no. 156; Frankel 1988: 265–7).

One may only guess at the size of the Hospitaller garrison that could have occupied Belmont. The number of brother knights, however, would probably have been relatively small. In the vast Templar castle of Safad, in Galilee, in the 1260s, for example, there were as many as 50 knights, but also 30 brother sergeants, 50 turcopoles, 300 archers, 820 workmen and 400 slaves (*de Constructione Castri Saphet*, lines 208–11, ed. Huygens, 41; cf. Pringle 1997: 91–2, no. 191). If the same general proportions of different ranks were applied to other military order castles, such as Belmont, a garrison which included 10 knights, for example, would imply a total occupancy of 330 persons (on castle garrisons in the thirteenth century, see Marshall 1992: 115–20).

Such a garrison would also have required considerable space for the stabling of horses. In the Hospitaller statutes of 1206, for example, castellans and capitular bailiffs were to have three mounts and two esquires, and each might be accompanied by one turcopole; each brother knight was to have four mounts, and each brother serjeant two (King 1934: 49; Riley-Smith 1967: 236–40). On this basis, a garrison of 10 knights including a castellan would have required over 50 horses, excluding pack and draught animals. The evidence for stables in the intermediate range at Belmont, as in other castles such as Saranda Kolones and Belvoir, comes therefore as no surprise. More surprising, perhaps, is the evidence for the consumption, albeit evidently small-scale, of equid meat (probably donkey) in the Crusader phase (see Ch. 14, table 5). Other military activities attested in Belvoir and Montfort Castles include the manufacture, repair and storage of arms and equipment (Ben-Dov 1975: 184; Dean 1926: 32–40); and Saranda Kolones castle in Cyprus had a forge in its inner ward (Megaw 1994: 44). The finds from Belmont include a number of buckles, belt fittings, horse shoes and arrow-heads from the Crusader phase (see Ch. 11), as well as evidence for the working of deer antler (Ch. 14).

The military importance of Belmont, however, may never have been very great. Although it overlooks the Jerusalem road that passes through Abu Ghosh, this was not the main road to the city in the twelfth century (Fischer, Isaac and Roll 1996: 25–40; cf. Pringle 1998); and by the time that Belmont developed into a castle in the late 1150s or early 1160s, the threat from Muslim Ascalon, which had prompted the building of Hospitaller Bait Jibrin around 1134 (Pringle 1993: I, 95–101; 1997: 27, no. 32) and Templar Latrun between 1137 and 1141 (Pringle 1997: 64–5, no. 136; 1998: 94–102) was no more. As Ellenblum has noted, however, there appears to have been a renewal of castle building in the kingdom of Jerusalem in the late 1160s and in the 1170s, in response to a rise in the frequency of Muslim incursions (1996b: 523–9). When Saladin invaded the country in 1177 and was defeated by Baldwin IV on 25 November at *Mongisart* (Tall Jazar, Gezer), near Ramla, it may be expected that castles such as Belmont would have provided logistical support to the Christian army and assistance in transporting back to the Hospital in Jerusalem the 750 reported casualties from the battle (cf. Röhricht 1874: II, 127–8; Kedar 1998: 7; cf. 21–2).

Economic Functions

The manor house around which the castle of Belmont developed would have formed the administrative centre of an agricultural estate; and there is no reason to doubt that the Hospitaller castle would have continued to fulfil this economic function. The continued use of the wine-press in the east range of the inner ward is quite consistent with this view. The manor house of *Aqua Bella*, for example, has remains of a rotary olive-press in the basement of its south range (Benvenisti 1970: 244, pl. p. 258); and a wine-press of similar type to that at Belmont exists in the basement of the Teutonic Order's thirteenth-century castle of Montfort, in Galilee (Frankel 1993: 1072; Hubatsch 1966: fig. 1 (2.3); cf. Dean 1926; Pringle 1997: 73–4, no. 156). The basement of the inner ward at Saranda Kolones castle in Cyprus contained such facilities as stables, a forge, a mill room and a bakehouse (Rosser 1985; Megaw 1982; 1994: 44) (Pls. 15.15–16), while those at Belvoir included the kitchens (Ben-Dov 1975: 184).

Such food-processing facilities may have been intended to supply no more than the immediate needs of the garrison. The lands held by the order in the vicinity of Belmont, however, would doubtless have been capable of yielding a surplus over and above that required to feed the workers on the land and their immediate landlords. Indeed, it may be suspected that the importance of Belmont for the Hospital lay more in its economic role in supporting the general work

Plate 15.15. Saranda Kolones castle, Paphos: mill room in inner ward.

Plate 15.16. Saranda Kolones castle, Paphos: bakehouse in inner ward.

of the order, in particular its hospitalary functions, than in its direct contribution to the defence of the kingdom.

We are informed about the Hospitallers' other economic interests in the area from a number of sources. Among these is a series of documents relating to the 'land of Emmaus'. In 1141, the knight Robert of Sinjil leased the *terra de Emaus* to the Hospital, with the consent of his overlord, Rohard, viscount of Jerusalem, and of King Fulk, for 500 bezants per year (*CGOH*, I, 113–14, no. 139; *RRH*, 50, no. 201). Some three decades earlier, in 1112, Arnulf, patriarch of Jerusalem, had granted the Hospital the right to retain the tithes levied on all the lands that it owned within his diocese (*CGOH*, I, 25–6, no. 25; *RRH*, 15, no. 68; Hamilton 1980: 147). However, perhaps because the land of Emmaus was not held outright by the Hospital, a compromise agreement was made with Patriarch William on 3 February 1141, by which the tithes of the *terra de Emaus* were to be divided between them. This text is of interest for what it tells us of the agricultural régime in the hill country of Judaea in the twelfth century and of the way in which the Hospital was running its estate there. By the charter, the patriarch took pains to uphold the written agreement that:

> the brothers of the Hospital of St John the Baptist, by the common assent of King Fulk and his princes and by an agreement made with Robert of Sinjil (*de casale Sancti Egidii*), have taken a lease of the land of Emmaus (*terra de Emaus*) with its villages (*casalia*) and all its appurtenances, the tenor of which is that they shall return to the canons of the Lord's Sepulchre faithfully and without deceit half of the tithe from all annual produce, that is to say from wheat and barley, from beans and chick-peas, from lentils, peas and all other legumes, and from vineyards and olive groves; and the brothers of the Hospital shall retain all the other things that can be produced from there for the purpose of supporting their chaplains and churches; and in these churches they may have baptisteries, cemeteries, oblations, marriages, purifications, confessions and visitations of the

> sick. But they shall similarly return peacefully to the same canons half of the tithes both from the land [of Emmaus] and from the other villages that they possess near by in the selfsame hills — that is to say from the villages [of] Huldre, of Porcel, of Geoffrey (Gaufridus) Agule, of Ansquetin, of Bacheler and of Gerard Bostgher — and also from others which they legally acquire in the future in the same hills. Moreover, if the brothers of the Hospital rent out any of these villages or lands, be they Christian or Saracen (i.e. Muslim), for an annual render of produce in kind or in bezants, or for money, the aforeasid canons shall similarly have half of the tithes exactly as we have just said. (Bresc-Bautier, 226–8, no. 107; *CGOH*, I, 114–15, no. 140; *RRH*, 51, no. 205)

From this document it would therefore appear that the lands which the Hospital owned or leased in and around the *terra de Emaus* were being run — or might in the future be run — in a number of different ways, including direct management and renting out to another party for payment in cash or kind. It may furthermore be noted that the villages included both Christian and Muslim inhabitants.

The terms of the lease of the *terra de Emaus* were reconfirmed in 1147 by Baldwin III (*CGOH*, I, 135–6, no. 173; *RRH*, 61–2, no. 244) and in 1150 by Robert of Sinjil himself (*CGOH*, I, 149–50, no. 192; *RRH*, 65, no. 257). In February 1152, the rent was reduced from 500 bezants to 400, when the Hospital bought the village of at-Tira, near Qalansuwa in the Sharon Plain, from Pisellus of Sinjil and invested Robert of Sinjil with it (*CGOH*, I, 155–7, no. 202; *RRH*, 69, no. 274; cf. Pringle 1986a: 72). That the Hospital did indeed make additional acquisitions in the area is demonstrated when it bought a piece of land *dans le terroir de Emaüs* in 1152 from Helvis, widow of Roger Bathnos (*CGOH*, I, 161, no. 208; Delaville de Roulx, 'Inventaire', 51–2, no. 49; *RRH Ad*, 18, no. 280a).

But where was the *terra de Emaus*? There are two main contenders for the centre of this estate: 'Amwas (*Emmaus, Nicopolis*), situated in the Shephelah at the foot of the hills of Judaea, and Abu Ghosh (*castellum Emmaus, Fontenoid*) (Pl. 15.17), which as we have seen above (Ch. 1) co-existed with if not actually supplanted 'Amwas as the favoured location for biblical Emmaus in the twelfth century (Vincent and Abel 1932: 357–8; Benvenisti 1970: 349–50; Pringle 1993: I, 52–3). In a recent re-examination of the charters, R. Ellenblum has argued convincingly that *casale Huldre* cannot be Khulda, in the vicinity of 'Amwas, as Fr Abel thought (cf. Beyer 1940: 180 n.5), since the second word appears to represent a Frankish personal name (e.g. Holdredus), just as the others in the 1141 document seem to. Indeed, all these villages appear to be named after knights or burgesses of Jerusalem who appear in other documents about this time (Ellenblum 1998: 111–14). Since the document also says (*pace* Ellenblum 1998: 110) that these villages belonged to the Hospital, these people were presumably either previous fief-holders or existing tenants of the Hospital.

Two further considerations may also help tip the balance further in Abu Ghosh's favour. First, it is clear from the charter of 1141 quoted above that the land of Emmaus and the villages belonging to the Hospital round about it all lay in the hill country, not in the foothills (Shephelah) or in the coastal plain. Secondly, we know from other sources that in the 1160s–70s Abu Ghosh and four other villages near it, including Belmont (Suba), belonged to the Hospital. If the 1141 document is removed from consideration, however, it is not at all clear who would have been the owner of 'Amwas in the twelfth century, though the fact that it lay on the main road between two Templar castles, Latrun (*le Toron*) and Yalu (*castellum Arnaldi*), and less than a kilometre from the former (cf. Pringle 1998) would

Plate 15.17. Abu Ghosh (*castellum Emmaus*): the Hospitallers' church of the Resurrection, from the W.

make it seem an unlikely location for a Hospitaller estate centre. If, as indeed appears more likely, it was a Templar possession, the lack of evidence of such would be unsurprising in view of the general paucity of information about Templar properties in Palestine in the twelfth century.

Whether or not the *terra de Emaus* was centred on Abu Ghosh, however, as now seems likely, the general terms of the patriarch's charter of 1141 would have applied to all the villages and lands owned or rented by the Hospital in the hill country of Judaea. Furthermore, the fact that the named villages do not appear again in the sources under the same names should not surprise us. For it is very likely that they already had other names, and that these would have re-asserted themselves once their Frankish owners had departed. Indeed, it is not impossible that some of them are identical with Belmont and the other villages (*casalia*) near it that are known to have been in Hospitaller hands later in the century.

These villages included *castellum Emmaus* (Abu Ghosh) itself and three others – *Aqua Bella* (Kh. 'Iqbala), *Belveer* (Qastal), and *Saltus Muratus* (probably Qaluniya, *pace* Ehrlich 1996) – which the Hospitallers offered to lease to Bela, duke of Hungary, sometime between 1163 and 1169, in return for 1,000 bezants for as long as he should remain in the Holy Land or until his death (see above Ch. 1). The duke was to have them 'with their cultivated and uncultivated lands, vineyards, orchards and woods' and with 'the wheat and barley, wine and fruit, animals and everything that is found in them' (*CGOH*, I, 222–3, no. 309; *RRH*, 120–21, no. 458). *Aqua Bella*, as we have seen, had a manor house which seems very likely to have been built as such by a feudal tenant before the Hospitallers converted it into a priory or infirmary building; and at Belmont too a manor house preceded the development of the Hospitaller castle that is first referred to in 1171/2. Indeed, the similarity between these two manor houses raises the possibility that the same mason, or landlord perhaps, was responsible for them both; but whether the landlord was the Hospital itself or the previous owner from whom the order acquired them is a matter for speculation.

The officer responsible for administering the Hospital's estates around Belmont and Abu Ghosh would have been the castellan of Belmont, who is first recorded possibly in 1157 and more certainly in 1171/2 (see Ch. 1; cf. Riley-Smith 1967: 320, 429). In 1186, probably in February of that year, there is also mention of a bailiff of *Emaus*, named Bartholomew, who with the prior, preceptor and bailiffs of Antioch and *Spina* (in the lordship of Mirabel) witnessed a charter of Bohemond III in Antioch (*CGOH*, I, 491–6, no. 783; *RRH*, 171–2, no. 649). The existence of this officer, who would have been of equal rank to the castellan of Belmont, has been seen as supporting the view that the *terra de Emaus* lay around 'Amwas, at a more respectful distance from Belmont than Abu Ghosh (Benvenisti 1970: 349–50). However, it is equally possible that the offices of bailiff of *Emaus* and castellan of Belmont were one and the same, and that Bernard *de Asinaria*, who appears as castellan in April 1186 was simply Bartholomew's successor.

One function of the Hospitallers' estate in the Judaean hills would have been to provide resources for the Hospital in Jerusalem (cf. King 1934: 17). These might have been in the form of money rents, such as that offered by Bela of Hungary and those alluded to in the patriarch's charter of 1141. But Jonathan Riley-Smith has shown that in Syria and Palestine the Hospitallers tended to be more interested in the products of their lands than in money rents (1967: 437; cf. 423–50). By a statute of 1176, for example, the produce of two villages north-west of Jerusalem, 'Abud (*casale S. Mariae*) and Kafr ad-Dik (*Caphaer*), were dedicated to the provision of white bread for the Hospital in Jerusalem (*CGOH*, I, 339–40, no. 494; *RRH*, 145, no. 547; King 1934: 29–30); and later statutes mention another four villages, Mount Gabriel (unidentified), *Cotquinanti* (?Shaikh Qatrawani: Palestine Grid 168.155), *Sareth/Saarethe* (Kh. Sha'ratha: Palestine Grid 117.106; Beyer 1942: 185; 1951: 258; Palestine 1948: 141; Israel 1964: 1452), and *Cole* (Qula: Pringle 1997: 87, no. 180), supplying foodstuffs of various types (Luttrell 1994: 67). In the statutes of Roger des Moulins (1182), the bailiffs of Mount Pilgrim (Tripoli) and Tiberias were each required to send annually to Jerusalem 'two quintals [2 cwt.] of sugar, for the syrups and the medicines and the electuaries of the sick' (*CGOH*, I, 425–29, no. 627; King 1934: 37; Edgington 1998: 30; cf. Pringle 1993: II, 358–9).

Cloth and clothing were also required in the Hospital, both for the sick and for use by the members of the order themselves. The Rule of Raymond of le Puy (1120–60) stipulates that the brothers were not to wear cotton or furs, but wool or linen (King 1934: 22–3). The statute of Roger des Moulins (1182) also states that 'each of the sick [is] to have a cloak of sheepskin (*pelice à vestir*), and boots for going to and coming from the latrines, and caps of wool' (King 1934: 35; Kedar 1998: 19). One *pelice de brebis* was to be shared between two sick persons, and one pair of boots, with the result that 'every year the House of the Hospital is accustomed to give to the poor one thousand cloaks of thick lamb skins' (King 1934: 38). Cotton and fustian for sheets were supplied to the Hospital from its priories in Western Europe and Antioch and felt from the prior of Constantinople (King 1934: 36–7); while within the Hospital itself a brother cobbler repaired old shoes that had been donated to the poor (King 1934: 39).

A certain amount is also known from documentary sources about the foods consumed in the Hospital in Jerusalem. The statutes of 1182, for instance, state that the sick had fresh meat, either pork or mutton, three days of the week, and those who were unable to eat it had chicken (*CGOH*, I, 428, no. 627; King 1934: 38; cf. Kedar 1998: 7). This information is amplified considerably in a recently published description of the Hospital, also dating from the 1180s. After describing the bread and wine provided for the sick, this deals in some detail with other foods prepared in the two kitchens serving the wards. Coarser meats, such as pork and mutton, were prepared in the common kitchen on the first, third and fifth days of the week, and on the other days a pottage or *pulmentum*, made from fine wheat flour (*farris*), and chick-peas. Those unable to eat the communal food

were supplied from the private kitchen, used by noble pilgrims staying in the Hospital, with an alternative choice of chicken, pullet, pigeon, partridge, lamb, kid, or other such meat; or, depending on circumstances, eggs or fish. These lighter foods, however, were mostly bought from the *sūq* with money supplied by the Hospital's treasurer, and could be supplemented by other foods, such as pomegranates, pears, plums, chestnuts, almonds, grapes, dried fruits including figs, lettuces, chickling-vetch, radishes, purslane, rock-parsley, parsley, cucumbers, water melons, gourds, Palestinian melons, and much else besides (Kedar 1988: 19–20). Equally telling is the list of food prohibited to the sick. This included beans, lentils, squills, moray eels (*murene*) and meat from breeding sows; indeed, meat from any female animal was considered to be too hard, fatty and glutinous for the sick, and was not therefore recommended (Kedar 1988: 21).

A number of similarities may be noticed between the faunal evidence from Belmont and this list of meats. It is uncertain, however, to what extent they may be due to the general culinary preferences of the medieval Western Christians settled in Palestine, rather than reflecting a specific stock-rearing régime, practised by the order for its own purposes. The bones at Belmont after all came from animals that had been killed and eaten (or otherwise disposed of) at the castle itself, rather than in the Hospital; and most were found in and around the inner ward, where we may expect the knights and serving brothers to have been accommodated.

None the less, it is worthwhile drawing attention to some of the points at which the two sets of data appear to correlate. These include: the rise in importance of pork production during the Crusader phase, as compared with earlier and later periods; the roughly equal importance of sheep and goats, contrasting with the higher proportions of goat in earlier and later periods; the evidence that 42% of the caprines were being killed before they were 2–2½ years old, suggesting that meat (or milk and cheese) production, including the production of fleeces, was more important than wool; the abundance of chicken and the presence of wild and, most likely, domestic pigeons; and the peak in fish bones during the Crusader phase. One major point at which the two data sets appear to differ is in the significance of cattle among the main mammalian species (cattle, pig and caprines) represented at Belmont, where although they are slightly under-represented in terms of individual animals, in terms of meat they outweigh by far the meat weight of pigs and caprines combined. Furthermore the mortality evidence suggests that the meat and dairy products of cattle were both significant in the Crusader period. The explanation for this apparent difference may simply be that cattle were more common in country areas, where they were used for traction, including ploughing and even castle-building, than in towns; and that their meat was in any case considered unsuitably tough for serving in the Hospital.

The wine, and the grape syrup which Suba was still producing in the sixteenth century, would also have been significant products for hospital and liturgical use.

Future Research

The excavations at Belmont, together with the related survey, have added significantly to our understanding of the development of castles in the Latin Kingdom and of the Hospitallers' activities in managing their estate in the Judaean hills west of Jerusalem. More could doubtless be learnt if the site were to be excavated more extensively. As important as the elucidation of the development of the architectural layout of the castle, however, would be the retrieval of stratified deposits that might shed further light on the industrial and other activities going on in the vaulted ranges of its outer ward and on the animal husbandry and agriculture being practised in the estate dependent on it.

It is therefore of the highest importance that the site is preserved an ancient monument, for future generations of scholars and visitors to see and study, together with as much of the surrounding historic landscape as it is practicable to protect from agricultural and suburban development.

APPENDIX 1
CONCORDANCE OF CONTEXTS, PHASES AND PUBLISHED FINDS

In the excavations at Belmont Castle/Suba, the following principal phases were identified:

Phase	Period	Date
A	Iron Age II	8–6c. BC
A	Late Hellenistic	2–1c. BC
A	Early Roman	Late 1c.–early 2c. AD
A	Byzantine	mid 5c.–7c. AD
A	Early Islamic	7c.–11c. AD
B	Crusader	AD 1099–1187
C	Ayyubid and Mamluk	AD 1187–1516
D	Ottoman	AD 1516–1917
E	British Mandate	AD 1917–48

In the following concordance tables, the first three digits of each context number refer to the trench number, while the digits following the point are specific to a layer or feature within the trench.

The classes of finds referred to in the concordance are identified by the following abbreviations:

Coins	Coins and tokens	Chapter 5
PotU:	Unglazed pottery	Chapter 6
PotG:	Glazed pottery	Chapter 7
Lamps	Ceramic lamps	Chapter 8
Seals	Seal impressions	Chapter 9
Glass	Glass	Chapter 10
Metal	Metalwork	Chapter 11
Misc	Objects of stone, bone and terracotta	Chapter 12
Beads	Beads	Chapter 12
Pipes	Tobacco pipes	Chapter 13

Area 100. The Inner Ward

Context	Phase	Description and relationship	Published finds
100.0	E	Topsoil/rubble	Lamps: 4, 7, 30.
101.1	E	Rubble, under 101.0	Coins: 32, 78. Lamps: 37. Misc: 33. Pipes: 104, 121.
101.2	B	Crusader E–W wall, on bedrock	
101.3	B	Crusader pier base, on bedrock	
101.4	D	Rubble/ash layer, under 101.1, =101.13=105.8	Glass: 21.
101.5	D	Lens of lime, over 101.4	
101.6	D	Rubble, part of 101.7	
101.7	D	Main rubble layer, over 101.8	
101.8	D	Trampled plaster surface, under 101.7, over 101.12	Coin: 33.
101.9	D	Blocking of Crusader doorway	
101.10	D	Trampled surface, =101.8	
101.11	E	Village house foundation	Lamps: 38.
101.12	D	Clay floor, under 101.8	Coin: 5.
101.13	D	Pit, cut into 101.7	
101.14	C–D	Mixed layer, under 101.12	Misc: 26, 28. Pipe: 54.
101.15	B	Crusader foundation for 101.3	
101.16	C	Rubble layer, under 101.14	
101.17	B	Plaster/mortar surface, over bedrock	
101.18	C?	Stone paving, under 101.14	
101.19	B	Crusader foundation, under 101.14	
101.20	D	Rubble layer, under 101.8	
101.21	B	Crusader blocking, part of 101.2	
101.22	B	Crusader rock-cut foundation trench, under 101.20, joins 105.28	
101.23	B	Plaster floor, under 101.20, over 101.24	Metal: 71.
101.24	B	Rubble layer, over bedrock	PotG: 8, 65. Metal: 14, 41–2, 47–8.
101.25	B	Paving stones, over bedrock	
101.26	B	Foundation for pier 101.3, part of 101.15	
101.27	B	Foundation for wall 101.2	
101.28	B	=101.27	
101.29	B	Crusader doorway, blocked by 101.9 and 101.21	
102.1	E	Rubble/topsoil	PotU: 112.
102.2	B	=102.1	

Context	Phase	Description and relationship	Published finds
102.3	E	Mukhtar's house	
102.4	B?	Drain, under 102.1, over 102.5	
102.5	E	Rubble, under 102.1, over 102.10	Coins: 6, 27, 34. PotU: 22. Metal: 13, 15, 35, 37, 64. Pipes: 34, 36, 76, 115, 147.
102.6	B	N–S Crusader wall, under wall 102.3	
102.7	B	Pier base, within 102.15	
102.8	D	Pit, over 102.10	PotU: 13. Pipe: 134.
102.9	D	Surface with charcoal lens, under 102.8, =106.9	
102.10	C	Rubble from collapsed vault, under 102.5, 102.9, 102.14, 102.16, 102.19, =101.14, 102.12, 102.13, 106.10	Coins: 91–3. PotU: 70, 72, 86. PotG: 8, 88. Metal: 11.
102.11	D	Wall foundation, over 102.5	
102.12	C	=102.10	
102.13	C	=102.10	PotU: 97. Misc: 27.
102.14	B	Wine-press, shallow trough, under 102.10, =106.11	
102.15	B	Wine-press, deep trough	
102.16	E	Trampled surface, under 102.5, over 102.10, 102.19, =106.14	Pipe: 31.
102.17	B	Pier base, over 102.20	
102.18	E	Rubble, =102.1, 102.5	PotU: 41. PotG: 12.
102.19	C	Collapsed vault, =102.10, 102.13, 106.16	PotU: 1–2, 10, 103, 109–10. PotG: 8, 19. Lamps: 23. Metal: 39, 51, 55.
102.20	A/B	Drain, over bedrock, under 102.6, 102.17	
102.21	B	Occupation layer, over bedrock, under 102.19	PotG: 8.
102.22	B	E–W wall, =106.2	
102.23	B	N half of rock-cut feature	
102.24	B	Mortar surface over bedrock, =106.21	
102.25	B	Cut for 102.27	
102.26	B	Cut for 102.23	
102.27	B	Fill of S rock-cut feature 102.25	
103.1	E	Rubble/topsoil	
103.2	E	Occupation layer/debris	Coin: 85. PotU: 42.
103.3	E	Upper fill of unfinished cistern, under 103.2	
103.4	A	Mosaic, under 103.2	
103.5	A	E–W wall, respecting mosaic, under 103.2	
103.6	B	E–W wall, partly overlying 103.5	
103.7	A	N–S wall, respecting mosaic to W	
103.8	C	Lower fill of unfinished cistern, under 103.3	Metal: 43.
103.9	B	Cut and black gravel fill of small pit, under 103.2	
103.10	B	Cut and white gravel fill of small pit, under 103.2	PotG: 45.
103.11	B	Occupation spread, under 103.2, over 103.12	
103.12	A/B	Rubble to N of mosaic, under 103.2	PotU: 15–17, 23, 56–7, 59–60. Metal: 66.
103.13	B	Occupation layer, under 103.12, over bedrock	
103.14	A	Cut for cistern	
104.1	E	Rubble/topsoil	
105.1	E	Rubble/topsoil	Pipes: 90, 125.
105.2	E	Mortar surface, under 105.1, over 105.3	
105.3	E	Trampled surface, under 105.2, over 105.13	PotU: 39.
105.4	E	Modern pit, within 105.1	
105.5	E	Ash fill for 105.4	Metal: 1. Pipe: 37.
105.6	D	Foundation trench for village wall	
105.7	D	Foundation trench for blocking of Crusader door 101.9	PotU: 5.
105.8	E	Lens of ash, =101.4, over 105.13	
105.9	B	Masonry stairs, over 105.30	
105.10	E	Rubble, under 105.1, over 105.12, 105.16	PotU: 113. PotG: 120. Metal: 25. Pipes: 14, 29, 39, 84–5, 100, 118, 143, 166, 185.
105.11	D	N–S wall, part of 105.9, 105.30	
105.12	D/E	Trampled earth surface, under 105.10, over 105.19	PotU: 105, 126. Lamps: 47. Pipes: 55, 110, 139, 144, 180.
105.13	D	Trampled earth surface, under 101.4, 105.7, over 105.14	
105.14	D	Trampled surface, under 105.13, over 105.17, 105.18	
105.15	B	Part of 105.9	
105.16	D	Occupation layer, under 105.10, over 105.19, 105.32	Coin: 112. PotG: 32, 74. Lamps: 48. Metal: 2, 30. Pipes: 15, 32, 68–9, 160.
105.17	D	Trampled earth surface, under 105.14, over 105.22, 105.23	
105.18	D	Rubble spread, under 105.14, over 105.17	
105.19	D	Compact surface, under 105.12, 105.16, over 105.31	Lamps: 39.
105.20	D	Cut and fill of pit, cut into 105.9	Lamps: 49. Metal: 10. Pipes: 56, 84–5, 178.
105.21	B	Cobbled surface, part of 105.9	
105.22	B	Trampled surface, under 105.23, over bedrock	
105.23	C	Plaster surface, under 105.17, over 105.22	
105.24	B	Rough cobbled surface, part of 105.9, =105.21	
105.25	B	Trampled earth surface, over bedrock	
105.26	B	Foundation trench for stairs 105.9	
105.27	B	Fill of 105.26	PotG: 16.
105.28	B	Rock-cut foundation trench for stair and Crusader wall, joins 101.22	

Context	Phase	Description and relationship	Published finds
105.29	B	Plaster surface, over bedrock	
105.30	C	Masonry stairs, part of 105.9 and 122.12/106.6	
105.31	D	Chalk-rich rubble/debris, over plaster surface 105.33	PotG: 125.
105.32	B?	Occupation layer, under 105.12, 105.16	
105.33	B	Plaster surface, under 105.31, over 105.34	
105.34	B	Compact occupation layer, under 105.33, 109.29, over bedrock	PotU: 61. PotG: 21. Misc: 23.
105.35	B	Rock-cut foundation for stairs 105.9	
105.36	B	Lower blocking of doorway 105.7	
106.1	E	Rubble/topsoil	Coins: 35–6, 94. PotU: 9, 33, 36, 79, 83, 89, 96, 114. Lamps: 33. Misc: 32. Pipes: 17, 32, 41, 51, 107, 116, 123, 140, 163, 173, 198–9.
106.2	B	Wall, =102.22	
106.3	B	Pier base, over 106.17	
106.4	C	Corner of wall, over 106.6	
106.5	C	Rubble, associated with 106.4	PotG: 73.
106.6	B?	Retaining wall, =122.12	
106.7	B	Pier, over 106.21	
106.8	D	Hearth, within 106.1	Metal: 12.
106.9	D	Trampled surface, =102.9	
106.10	D/E	Rubble from collapsed vault, =102.10	PotU: 8, 31–2, 34, 38, 71, 73, 76–7, 81, 98, 104, 117. PotG: 55, 81, 83, 85, 91, 102. Glass: 5. Metal: 3, 49. Pipes: 47, 164, 168, 182, 199.
106.11	B	Wine-press, =102.14	
106.12	Natural	Bedrock	
106.13	C	Wall, over 106.20	PotG: 63, 110, 112. Metal: 32, 50.
106.14	B	Compact surface/occupation layer, =102.16	Lamps: 36.
106.15	B	Stone trough	
106.16	C?	Occupation layer, over 106.20, =102.19	
106.17	B	Rock supporting pier 106.3	
106.18	B	Upper course of 106.11	
106.19	B	Stone tank, out of position, within 106.16	
106.20	B	Flagstone surface, over bedrock, under 106.16	PotU: 62–3, 68. PotG: 38. Metal: 4, 24.
106.21	D	Mortar surface, over bedrock, truncated by 106.22	
106.22	D	Cut and fill of pit, cuts 106.21, N of 106.7	PotG: 3.
106.23	E	Rubble surrounding cistern head, over 106.6	
106.24	B	Cistern head in courtyard, =115.8	
107.1	E	Rubble/topsoil	Lamps: 40. Pipes: 86, 88, 131.
107.2	D	Rubble, under 107.1	
107.3	D	Rubble, under 107.1, over bedrock	
107.4	D	Fill of drain 107.5, under 107.3	
107.5	B?	Rock-cut drain, under 107.3	
107.6	D	Compact rubble, =110.25	Coin: 37.
107.7	B	Cut and fill of drain, under 107.3	PotG: 129.
108.1	E	Rubble/topsoil	Pipes: 13, 46, 52, 154, 176.
108.2	D	Village wall to E	
108.3	D	Lower rubble, under 108.1	Metal: 67. Pipe: 109.
108.4	D	Ash lens, under 108.3, over 108.5	
108.5	D	Trampled surface, under 108.3	PotG: 124.
108.6	D	Foundation for wall 108.2	Lamps: 41. Pipes: 63, 197.
108.7	D	Rubble, over 108.7	Pipes: 12.
108.8	D/E	Robbing pit, cut into collapsed cistern head	
108.9	D/E	Fill of pit 108.8	PotG: 96–7. Pipe: 89.
108.10	C/D	Trampled surface below 108.7	
108.11	A	Rock-cut cistern	
108.12	C–E	Blocking of cistern head W	
108.13	C–E	Blocking of cistern head E	
108.14	C/D?	Rough cobbled surface	
108.15	C/D	Ash spread	
108.16	C/D	Cut for shallow pit, filled by 108.17	
108.17	C/D	Fill of pit 108.16	
108.18	C/D	Trampled earth surface, over bedrock	
109.1	E	Rubble/topsoil, over 109.6	PotU: 74. Pipes: 26, 177.
109.2	E	N wall of S range, =101.2	
109.3	E	E wall of mosque	
109.4	E	Blocking of Crusader doorway in 109.2	
109.5	E	Foundation for 109.3	
109.6	D	Rubble demolition layer, under 109.1, over 109.7	PotG: 40.
109.7	D	Trampled surface, under 109.6, over 109.14, 109.17, 109.22	
109.8	E	Clay oven base and packing, within 109.1	
109.9	E	Oven fragments	
109.10	E	Fill of oven 109.8	
109.11	E	Lower fill of oven 109.8	
109.12	E	Cut for oven, =109.18	
109.13	D	Cut for pit, under 109.7, over 109.17	

Context	Phase	Description and relationship	Published finds
109.14	D	Fill of pit 109.13	PotU: 46.
109.15	D	Fill of pit 109.16	PotG: 36.
109.16	D	Pit in SE of trench, filled by 109.15	
109.17	D	Rubble layer, under 109.7, 109.14, over 109.22, 109.24, 109.26, =109.20	
109.18	E	Cut for oven, =109.12	Pipes: 5, 7.
109.19	D	Lower fill of pit 109.16	PotU: 111.
109.20	D	Part of 109.17	Lamps: 22.
109.21	B	Trampled surface, over 109.22	
109.22	C	Plaster surface, under 109.17, over 109.23, 109.29	
109.23	B	Masonry forming wall of tank, under 109.7, 109.17	
109.24	BC	Plaster surface of tank, joins 109.22/23	
109.25	B	Levelling layer	
109.26	B	Plaster surface, under 109.17, 109.37, over 109.45	Glass: 1.
109.27	C	Rubble spread	
109.28	B	Rubble spread	
109.29	C	Plaster surface, under 109.22, 109.23, over 109.38, =105.33	PotU: 14.
109.30	B	Plaster surface, over step 109.36, =109.31	
109.31	B	=109.30	
109.32	C	Layer associated with oven base 109.8	PotG: 47.
109.33	B	Masonry foundation, over 109.42	
109.34	C	Levelling layer, below 109.27, over 109.37, =109.35	
109.35	C	=109.34	
109.36	B	Retaining stones/steps, associated with 105.34	
109.37	B	Plaster surface, under 109.34, over 109.26	
109.38	C	Plaster surface/make-up, =109.29	
109.39	B	Upper fill of drain cut through 109.26	
109.40	B	Make-up layer, under 109.26	
109.41	B	Lower fill of drain cut through 109.26	PotG: 15, 82.
109.42	A?	Rock-cut original drain, under 109.23, 109.33	
109.43	D?	Plaster surface, part of 109.8	
109.44	D	Plaster surface, part of 109.8	
109.45	B	Plaster surface, under 109.26, over bedrock, part of 105.34	
110.1	E	Rubble/topsoil	Coins: 95–6. PotU: 51. Glass: 6. Misc: 5. Pipe: 130.
110.2	D	Trampled earth surface	
110.3	D	Village wall, over 110.22	
110.4	D	Village wall, over 110.22	
110.5	D	Village wall, over 110.22	
110.6	D	Village wall, over 110.22	
110.7	D	Village wall, over 110.22	
110.8	D	Village wall, over 110.24	
110.9	D	Doorway in wall 110.8	
110.10	D	Village wall, over 110.23	PotG: 24. Pipes: 28, 38.
110.11	C	Foundation trench for 110.3	
110.12	C	Cut for post-hole	
110.13	C	Fill of post-hole 110.12	
110.14	C	Village occupation layer, under 110.2, over 110.22	PotG: 98.
110.15	C	Animal burial pit, cuts 110.9	Lamps: 42. Misc: 8.
110.16	C	Rough clay surface, over 110.15	
110.17	C	Trapled surface, part of 110.15	
110.18	C	Upper fill of pit 110.20	Lamps: 50–51.
110.19	C	Cut and fill of drain	Lamps: 16. Misc: 13.
110.20	D	Large pit, filled by 110.18	
110.21	D	Rubble, under 110.2, =110.14	Coins: 38–43, 97–102. PotU: 27.
110.22	D	Main rubble layer	Glass: 8. Misc: 21, 30. Beads: 14. Pipe: 18.
110.23	C/D	Village wall, under 110.10	
110.24	B	Crusader N wall, under 110.8	
110.25	D	Mixed occupation layer, under 110.22, over 110.27	Coins: 44, 103. Glass: 2.
110.26	C	Clay floor srface, over 110.28	
110.27	A	Mosaic, =103.4, 114.3, 126.5	Lamps: 2.
110.28	B/C	Clay floor surface, over bedrock	Coins: 10–11, 13–14. PotU: 75. PotG: 9. Lamps: 9–11.
110.29	B	Foundation trench for 110.24, cuts 110.28	PotU: 29, 55. PotG: 22. Lamps: 5, 21.
110.30	A	Clay layer within 110.29	
111.1	E	Rubble/topsoil	Coin: 31. Pipes: 117, 171.
111.2	E	Plaster surface, under 111.1, over 111.3	
111.3	E	Rubble make-up layer, under 111.2, over 111.5	Coins: 29–30, 77. Pipes: 114, 148.
111.4	D	Masonry shelf against S wall, over 111.28	
111.5	D	Rubble layer, under 111.3, over 111.14, 111.22	PotU: 53, 113–14. Glass: 24. Misc: 16. Pipe: 155.
111.6	D	Rubble, =111.5, over 111.15, 111.17	
111.7	D	Courtyard wall, over 111.10, 120.7	
111.8	D	Mosque wall, over 111.9	
111.9	B	E wall of W range, =120.7	
111.10	B	Blocking of doorway in 111.9	
111.11	D	Mosque W wall, over 116.16	
111.12	D	Internal wall, over 111.19	
111.13	D	Occupation layer, contained by 111.14, over 111.15, 111.19	PotG: 103, 131.

Context	Phase	Description and relationship	Published finds
111.14	C	Masonry under 111.5, over 111.17	
111.15	C	Rubble, over 111.16	Beads: 7.
111.16	C	Compact clay spread, under 111.17, over 111.21	Coin: 12. PotU: 102. Misc: 18.
111.17	C	Lower masonry of 111.6, over 111.16	
111.18	C?	Ash lens, part of 111.19	
111.19	C	Layer of brown soil, under 111.12, over 111.21	
111.20	C	Lens of dark soil, part of 111.19	
111.21	C	Plaster surface, under 111.16, 111.17, over 111.22	
111.22	C	Make-up layer, under 111.5, 111.21, over 111.23	PotG: 46.
111.23	C	Rough plaster floor, under 111.22, over 111.25	
111.24	C	Soil layer, under 111.22	PotG: 2.
111.25	C	Stone block, collapse, part of 111.9, over 111.21	
111.26	C	Plaster ridge with ceramic feature, under 111.21	
111.27	C	Stone and plaster debris, part of 111.23, 111.26	
111.28	C	Masonry, under 111.4	
111.29	B	Rough plaster floor, under 111.23	
111.30	B	Occupation layer, under 111.23, over 111.32	
111.31	B	Gravel fill of test pit, under 111.30, over 111.32	
111.32	B	Soil layer, under 111.31	Coin: 3.
111.33	B	Lens, under 111.32, over bedrock	
112.1	D/E	Rubble/topsoil	
112.2	D/E	Plaster threshold	
112.3	D	Semi-circular threshold, under 112.2	
112.4	D	Rubble, under 112.1	
112.5	D	Occupation layer, under 112.2, over 112.6	PotG: 111, 127. Pipe: 145.
112.6	D	Earth floor, under 112.5, over 112.7	
112.7	D	Trampled surface, under 112.6, over 112.8	PotG: 59.
112.8	D	Collapsed masonry, under 112.7	
112.9	D	Pit against village wall, under 112.5, cut into 112.8	PotG: 13, 102, 105.
112.10	D	Mixed masonry debris, part of 112.8	PotU: 58. Lamps: 1, 3, 6, 15, 19. Misc: 2, 25.
112.11	B	Small pit, cut and fill, within 112.8	
112.12	B	Channel in plaster of Crusader wall 101.2	
112.13	B	Clay floor surface, under 112.8, over 112.14, 112.15	
112.14	B	Masonry, under 112.13	
112.15	B	Compact clay floor, under 112.13, over 112.16, 112.17	
112.16	B	Plaster surface, under 112.15, over bedrock	
112.17	B	Ash lens, under 112.15, over bedrock	
112.18	B	S edge of bedrock platform	
112.19	B	Ash layer, under 112.16, over 112.20	PotG: 8.
112.20	A/B	Make-up layer in lower rock-cut floor level, under 112.19	
112.21	A/B	Make-up layer, under 112.20, over bedrock	
113.1	D/E	Rubble/topsoil, over 113.5	
113.2	B	Arch of village W wall	
113.3	B	Arch of village E wall	
113.4	D?	Village wall	
113.5	E	Plaster floor, under 113.1	
113.6	B	Drain in SW corner, under 113.1	
113.7	B	Extension to 113.7, by threshold	
113.8	E	Make-up under floor 113.5	Coin: 80, 82. PotU: 45. Misc: 37.
113.9	B	N wall of S range, =109.2	
113.10	C	Make-up layer, under 113.8, over 113.12	PotG: 50, 69.
113.11	C	Plaster, against wall 113.9	
113.12	C	Collapsed masonry, under 113.10	PotU: 65, 80. PotG: 52, 71, 77. Lamps: 12. Misc: 29.
113.13	C	Ash lens, part of 113.12	
113.14	C?	Mortar lens, within 113.12	
113.15	C?	Soil layer, under 113.14	
113.16	C?	Compact soil lens, part of 113.14	
113.17	C?	Ash lens, under 113.14	
113.18	C?	Masonry debris, under 113.14	
113.19	C?	Soil layer in NW corner, under 113.14	
113.20	C?	Compact ash lens, under 113.14	
113.21	C?	Plaster surface, under 113.14, over 113.22	
113.22	C?	Mixed masonry layer, under 113.22, over 113.23	
113.23	C?	Compact clay lens, under 113.22, over 113.24	
113.24	C	Occupation layer, under 113.23	PotU: 43, 69. PotG: 1, 11, 17, 44, 60, 65, 67–8, 70, 76, 80, 82. Lamps: 25–6.
113.25	C	=113.24	
113.26	C?	Ash and clay lens, under 113.24, over 113.29	
113.27	C?	Discrete patch of pebbles, over bedrock	
113.28	D	Shallow pit, part of 113.15	Pipe: 25.
113.29	C?	White plaster surface, over bedrock	
113.30	C?	Yellow plaster surface, over bedrock	
113.31	Natural	Bedrock	
114.1	D/E	Rubble/topsoil	PotG: 122, 132. Glass: 22. Pipes: 21, 33, 35, 42, 59, 70–71, 74–5, 91, 119, 167, 179, 184, 196.
114.2	D	Cut and fill of shallow rock-cut pit, under 114.1	Pipe: 45.
114.3	A	Mosaic, under 114.1, =103.4, 110.27, 126.6, over bedrock	

Context	Phase	Description and relationship	Published finds
115.1	E	Rubble/topsoil	PotG: 58, 119. Pipes: 127, 132–3, 138, 149, 158, 181. 115.2
	D	Occupation layer, under 115.1, over 115.3	
115.3	D	Clay floor, under 115.2, over 115.4, 115.5, bedrock	Coin: 4. Pipe: 142.
115.4	D	Fill of rock-cut channel 115.6, under 115.3	
115.5	D	Fill of rock-cut channel 115.7, under 115.3	
115.6	A	Cut for channel 115.4, part of 119.8	
115.7	A	Cut for channel 115.5	
115.8	A	Cistern, =106.24	
116.1	E	Rubble/topsoil	PotG: 99. Pipe: 153.
116.2	E	Masonry, =120.4	
116.3	E	Concrete floor, over 116.6	
116.4	D	Rubble, under 116.1, over 116.5	Coins: 45–6, 104. PotG: 121. Pipes: 126, 165.
116.5	D	Occupation layer, under 116.4	Coin: 47. PotG: 115.
116.6	B	E–W retaining wall	
116.7	C?D	Trampled surface, under 116.4, over 116.8	PotU: 94. PotG: 37, 56–7.
116.8	C/D	Occupation layer, under 116.7, over 116.9, =120.11	
116.9	B	Plaster floor, under 116.8, cut by 116.10, 116.11	
116.10	C?	Pit, cut and fill	PotU: 37, 116. PotG: 93, 101. Beads: 19.
116.11	C?	Pit, cut and fill	
116.12	C	Rubble, under 116.9	PotG: 37, 116. Glass: 14.
116.13	C	?	
116.14	B	W wall of W range, under 111.11	
117.1	D	Rubble/topsoil	Coin: 16. PotG: 28, 48. Lamps: 13. Glass: 4. Pipes: 40, 48, 84–5, 95.
117.2	B	N–S wall, part of 117.4	
117.3	C/D	Earth and plaster floor	
117.4	C	Masonry allowing access to village doorway, over 117.2	
117.5	C/D	Rough cobble and plaster floor, over 117.11	
117.6	B	Rubble, between walls 117.2 and 117.10, over 117.8, 117.9, bedrock	
117.7	B	Foundation for stair, =119.7	
117.8	B	Clay floor, under 117.6, over bedrock	
117.9	B	Rubble, under 117.6	
117.10	B	Wall face and core, part of 117.11	
117.11	B	S wall of N range, over bedrock	
117.12	B	Rock-cut foundation for 117.7	
118.1	E	Rubble/topsoil	Lamps: 31.
118.2	D/E	Channel to cistern head, cuts 118.3	
118.3	E	Earth floor, over 118.5, 188.8	
118.4	D	Rubble-built cistern head, over 118.7	
118.5	D	Earth floor, under 118.3	
118.6	D	Rubble, over 118.4	
118.7	D/E	Earth floor to W	
118.8	D	Rubble, under 118.3, over 118.5, 118.14	
118.9	D/E	Pit, under 118.3, over 118.14	
118.10	E	Shallow lime-slaking pit, under 118.5, over 118.8	
118.11	D	Layer within 118.10	
118.12	D	Layer, under 118.5, 118.11, 118.14, over 118.13	
118.13	D	Layer, under 118.12	Pipe: 195.
118.14	D	Make-up layer, under 118.5, 118.8, 118.10, over 118.11	
118.15	D	Masonry	
118.16	D	Gravel layer	
118.17	D	Clay surface, over 118.18	
118.18	D	Trampled earth surface, under 118.17	PotU: 85. PotG: 25. Pipe: 186.
118.19	D	Trampled surface, over 118.18, bedrock	
118.20	D	Rubble make-up, over bedrock	
118.21	D	?	
118.22	D	E–W village wall, over bedrock	
118.23	B	Threshold to N range, part of S wall	
118.24	B	Rubble wall core, part of 118.23	
118.25	B	Ashlar stone, corner with W range	
118.26	D?	Cistern head	
118.27	D?	Occupation layer	Glass: 15.
118.28	D?	?	
118.29	A	Cistern	
118.30	D?	Occupation layer	PotU: 85
118.31	D?	?	
118.32	D?	?	
119.1	E	Rubble/topsoil	Coin: 28. Glass: 32.
119.2	E	Earth floor, under 119.1, over 119.3	Coins: 48–9. Lamps: 20. Pipe: 159.
119.3	D	Rubble, under 119.2	Coin: 50. Pipe: 187.
119.4	D?	Built cistern head, under 119.3	
119.5	D	Rubble wall, under 119.3, over 119.9	Pipe: 112.
119.6	C	Rubble feature, within 119.3	
119.7	B	Masonry foundation for external stair, =117.7	

Context	Phase	Description and relationship	Published finds
119.8	D	Rock-cut channel, =115.4, filled by 119.10	
119.9	B	Hard-packed gravel, over 119.7	
119.10	D	Fill of rock-cut channel 119.8	
119.11	B?	Ashlar base for cistern head, under 119.4	
119.12	A	Cut for channel 119.8	
119.13	A	Cut for channel 119.10	
119.14	A	Cistern	
120.1	E	Concrete floor to mosque	
120.2	E	Rubble, under 120.1, over 120.3	Coins: 51–4. PotU: 6, 35. Pipes: 10, 73.
120.3	E	E wall of mosque, over 120.7	
120.4	E	Masonry foundation, =116.2	
120.5	D	Occupation layer, over 120.9	
120.6	D?	Blocked doorway, =111.10	
120.7	B	E wall of W range	
120.8	D	Mortar floor, under 120.3, 120.5, over 120.9	
120.9	D	Rough cobbled floor, under 120.5, 120.8, over 120.11	Coin: 105. PotU: 20, 92, 95. Pipes: 49, 106.
120.10	D	Small hearth, over 120.8	
120.11	C/D	Occupation layer, over 116.9, 120.13, =116.8	Coin: 106. PotU: 25, 84, 87–8, 91, 93, 99, 101. PotG: 18, 72. Glass: 7, 11, 17, 20.
120.12	B?	Flat stones, under 120.9	
120.13	B?	Plaster floor, under 120.11, =116.9	
120.14	C?	Floor surface, over 120.13	
120.15	B/C?	Circular pit, partly covered by 120.6, over 120.13	
121.1	E	Rubble/topsoil	PotU: 47, 50. PotG: 27. Pipe: 30.
121.2	E	Rubble, under 121.1, over 121.6	Coin: 9. Pipe: 66.
121.3	D	Occupation layer, over 121.14	
121.4	D	Part of 121.3	
121.5	B?	Mortared rubble by cistern head, over 121.11	
121.6	D?	Compact gravel layer, under 121.2, over 121.13	
121.7	B	Plaster floor	
121.8	C?	Mortar spread, under 121.3	
121.9	C?	Burnt spread, under 121.3	
121.10	C?	Stones covering drain 121.11	
121.11	D	Cut for drain, covered by 121.10, cuts 121.14	PotU: 7, 106–7.
121.12	C?	Compact surface, over 121.13, 121.14	
121.13	C?	Possible burnt spread, under 121.6, 121.12, over 121.15, 121.16, 121.18, 121.24	
121.14	C?	Cut and fill of rock-cut channel, runs into 119.14, under 121.12, 121.19, 121.20	
121.15	C?	Rubble make-up layer, under 121.13, associated with 121.11, =121.16	
121.16	C?	Make-up layer filling water channel, under 121.13, 121.24, over 121.17	
121.17	C?	Compact plaster spread, under 121.16, 121.24, over 121.18, 121.21	
121.18	B	Plaster and earth floor, under 121.17	
121.19	C?	Mortar spread, under 121.20, over 121.22, bedrock	
121.20	C?	Plaster floor, over 121.19, bedrock	
121.21	B?	Plaster floor, under 121.17	
121.22	A/B?	Water channel, under 119.7, 121.19, 121.20	PotU: 100. Glass: 9.
121.23	B	E wall of W range, masonry wall core	
121.24	C?	Part of 121.16, 121.17	
121.25	D	Clay spread, over 121.26	
121.26	B?	Trampled earth surface, under 121.25, cut by 123.22, over 121.28	
121.27	D	Rubble spread, over 121.26	
121.28	B?	Possible hearth, under 121.26, cut by 123.22, over 121.29	
121.29	B?	Occupation layer between 121.28 and 121.30, under 123.3, 123.5, cut by 123.22	
121.30	B?	Hearth, cut by 123.22	
121.31	B?	Gravel layer, under 121.20, 123.3, 123.5, cut by 121.28, 121.30, over 121.32, 121.34	
121.32	B?	Silty gravel, over 121.35=123.5, 121.36	
121.33	B?	Cut/shaped bedrock	
121.34	B?	Gravel layer, cut by 121.38	
121.35	B?	Rough cobbled surface, under 121.32, =123.5	
121.36	B?	Ash spread, under 121.32, 121.34, over 121.37, 121.38, 121.39	
121.37	B?	Silt spread, under 121.32, 121.35, over 121.38	
121.38	B?	N–S linear slot, under 121.32, 121.37, cuts 121.34	
121.39	B	Plaster surface, cut by 121.38, over bedrock	
121.40	B	Clay levelling deposit, over bedrock	
121.41	B	N–S masonry wall, over 121.42	
121.42	B	Wall foundation, under 121.41	
122.1	E	Rubble/topsoil	Coin: 55.
122.2	B	Masonry wall, =122.17, part of 106.7	
122.3	E	Pier base, =106.7	

Context	Phase	Description and relationship	Published finds
122.4	E	Rubble, fill of 108.8	PotG: 86. Pipes: 11, 58, 83, 152, 175.
122.5	E	Rubble, over 122.9	Coin: 81. Pipe: 99.
122.6	D	Gravel layer, under 122.4, 101.6	
122.7	C/D	Plaster floor, under 122.6	PotG: 87. Pipe: 65.
122.8	C/D	Occupation layer, under 122.6	
122.9	C/D	Plaster floor, under 121.5	PotG: 92.
122.10	C/D	Make-up layer, under 122.9	
122.11	C/D	Mud-brick village wall, over 122.12	
122.12	B	Retaining wall, under 122.11,=106.6	
122.13	D	Rough floor surface, under 122.2, 122.6	
122.14	D	Steps down to cistern, over 122.15	
122.15	C/D	Soil layer, under 122.14	
122.16	C?	?	
122.17	B	Paving stones, under 122.12, over 122.18	
122.18	B	Rock-cut water channel, under 122.12	Coins: 17. Lamps: 8.
122.19	C?	Rubble, under 122.13	PotG: 111.
122.20	C?	Floor surface, under 122.19	
122.21	C?	Floor surface, under 122.19	Coin: 23.
123.1	E	Ruble/topsoil	PotU: 11, 30. Pipes: 16, 22, 82.
123.2	D	Mixed rubble layer, under 123.1	Pipes: 16, 161, 192.
123.3	D	Occupation layer, under 123.2, over 121.31, 123.4, 123.5, 123.15	Glass: 23.
123.4	C?	Occupation layer, under 123.3, over 123.6	
123.5	D	Rough cobbles surface, under 123.3	Pipes: 23, 122.
123.6	C?	Plaster surface, over 121.15, 121.21	PotU: 3.
123.7	C?	Ash layer, under 123.3, 123.5, over 123.8, 123.11	
123.8	C?	Silt spread, under 123.7, over 123.12	
123.9	C?	Stony layer, under 123.8, over 123.12	
123.10	B?	Mortar spread, over 123.12	
123.11	B?	Occupation layer, under 123.7, 123.10, over 123.12	
123.12	B?	Plaster surface, under 123.7, 123.8, 123.9, 123.11	
123.13	B?	Ash/cinder spread, over 123.12	
123.14	B	Gravel/rubble layer, over 123.21	
123.15	B	Plaster floor, under 123.6, 123.12, over 123.17, 123.18	
123.16	B	Silt spread, over 123.15	
123.17	B	Trampled earth surface, under 123.15, over 123.19	
123.18	B	Spread of charcoal/cinders, under 123.19, over 123.20, 123.23	
123.19	B	Plaster surface, under 123.17, over 123.18, =123.21	
123.20	B	Cut and fill of small pit, under 123.18, cuts 123.23, bedrock	
123.21	B	Clay and plaster surface with stakeholes, under 123.14	
123.22	B	Cut and fill of shallow pit, cuts 123.21, 123.26, 123.28, 123.29, 123.30	
123.23	B	Clay surface, under 123.21, over 123.24	
123.24	B	Mixed rubble layer, under 123.23	
123.25	B	Shallow depression in floor surface	
123.26	B	Cut for pit, filled by 123.27, 123.32, 123.33	
123.27	B	Fill of pit 123.26	
123.28	B	Cut and fill of small depression in plaster floor 123.30	
123.29	B	Silt filling depression in plaster floor 123.30	
123.30	B	Plaster surface, over bedrock	
123.31	B	Step/threshold into W range	
123.32	B	Fill of pit 123.26	
123.33	B	Lower fill of pit 123.26	
124.1	E	Rubble/topsoil	Coin: 56. Pipe: 50.
124.2	D	Rubble, under 124.3, 124.4	Pipes: 6, 108, 157.
124.3	D	Plaster surface, under 122.12, 124.2, over 124.4, 124.6	
124.4	D	Trampled earth surface, under 124.3, over 124.8	
124.5	B	Wall, =106.6, 122.12	
124.6	C?	Rubble, over 124.12	
124.7	A	Drain/channel, part of 122.18, over 124.11	
124.8	C?	Mixed layer, under 124.4, 124.6	
124.9	B	Rough mortar surface, over 124.10	
124.10	B	Gravel layer, under 124.10, over 124.11	
124.11	B	Plaster surface, under 124.7, 124.10, over bedrock	
124.12	B	Mortared rubble, under 124.11, over bedrock	
124.13	B	Soil layer, part of 124.12	
125.1	E	Rubble/topsoil	PotG: 66, 128. Misc: 3. Pipes: 105, 128–9, 141, 183.
125.2	D	Cut and fill of shallow pit, over 125.3	
125.3	D	Worn plaster surface, under 125.1, 125.2	
125.4	E	Cut and fill of shallow pit, over bedrock	
125.5	B/C	Rubble spread, under 125.3	
125.6	B	Rough surface, over 125.7, 125.8	
125.7	B	Silt spread	Glass: 16.
125.8	B	Damaged plaster floor, under 125.15, over 125.16	PotG: 109.

Context	Phase	Description and relationship	Published finds
125.9	B	Square pit, cuts 124.16, 125.20, bedrock	
125.10	B	Mixed fill	
125.11	B	Shallow pit containing charcoal, over 125.16, cuts 125.8	
125.12	B	Mixed rubble make-up, under 125.6	
125.13	B	Mixed gravel fill of drain 125.18, over 125.17	
125.14	B	Gravel spread, over 125.13, bedrock	
125.15	B/C	Lens of silt, over 125.8	
125.16	B	Plaster and earth floor, under 125.8, over 125.19	Glass: 13.
125.17	B–D	Lower fill of drain 125.18, under 125.13	
125.18	A/B?	Retaining stones within drain 125.19	
125.19	A/B?	Rock-cut drain, cuts surface 125.16	
125.20	B	Trampled surface, under 125.8, over 125.21	
125.21	A/B?	Drain, under 125.20, part of 125.18	
125.22	B	Cut and fill of pit, cuts surface 125.16	
125.23	B	Cut and fill of pit, cuts surface 125.16	
126.1	D/E	Rubble from collapsed village walls	Coin: 57. PotU: 44. Misc: 31.
126.2	D	Internal house wall and foundations	
126.3	D	Occupation layer, under 126.1, 126.2	Pipe: 191.
126.4	B	Wall foundations	
126.5	D	Occupation layer, under 126.3, over mosaic	PotU: 4, 28, 40. Lamps: 14. Glass: 28. Metal: 5. Beads: 20. Pipes: 3, 62, 72.
126.6	A	Mosaic floor	
127.1	E	Rubble/topsoil	PotG: 50. Pipe: 136.
127.2	E	Rubble	Pipe: 120.

Area 200. East side of the Inner Ward

Context	Phase	Description and relationship	Published finds
201.1	E	Rubble/topsoil	
201.2	B	Outer wall	
204.1	E	Ruble/topsoil	
204.2	D/E		
204.3	B	E wall of inner ward	
204.4	B	Ashlar wallface	
204.5	D/E		
204.6	B	N side of gate passage	

Area 300. South-Eastern Part of the Outer Ward

Context	Phase	Description and relationship	Published finds
301.1	E	Rubble/topsoil	Coins: 1, 25, 83. PotU: 66–7. Seal: 1. Glass: 10. Misc: 1, 15, 22, 24. Beads: 21. Pipes: 19, 92–3, 156.
301.2	E	Rubble from collapsed vault	Coin: 84. PotU: 54, 64. Lamps: 52. Pipes: 27, 81.
301.3	D	Occupation layer	Coin: 107. PotU: 26. PotG: 34, 43. Lamps: 28.
301.4	D	Occupation layer, under 301.3, over 301.6	
301.5	B	Inner wall	
301.6	B	Rock-cut steps	
301.7	B	Outer wall	
302.1	D/E	Rubble/topsoil, over 302.2	Coins: 58–9. PotG: 26. Pipes: 98, 151.
302.2	D/E	Cement floor, under 302.1	
302.3	D	Soil layer, under 302.2, 302.4	Glass: 29.
302.4	D	Rough trampled surface, under 302.3	
302.5	D	Rubble layer, under 302.4, over 302.6	Coins: 21, 24. PotU: 108, 115. PotG: 26, 30, 118. Lamps: 34–5. Glass: 35, 39. Metal: 36. Misc: 10–11. Beads: 1, 9–10, 23–4. Pipes: 2, 190.
302.6	C/D	Rubble layer, under 302.5, over 302.7	Coin: 108. PotG: 42, 62, 75, 84, 89. Lamps: 27, 29. Glass: 18. Metal: 21, 65. Pipe: 64.
302.7	C	Rubble layer, under 302.6, over 302.9	PotG: 29.
302.8	C	Pit, over 302.9	PotG: 29. Lamps: 24a.
302.9	C	Earth floor, under 302.7, 302.8	
302.10	B?	Stone trough, under 302.7	
302.11	C	Plaster floor, under 302.6, 302.12	PotG: 64.
302.12	C	Internal wall, over 302.9, 302.11, 302.13	PotG: 30, 49, 51. Metal: 56.
302.13	C/D	Layer, over bedrock	Metal: 28.
303.1	E	Rubble/topsoil	PotU: 24. PotG: 6–7, 41.
303.2	B	Rock-cut springing for vault	
303.3	B	Outer wall of vault	

Context	Phase	Description and relationship	Published finds
304.1	E	Rubble/topsoil	Coins: 2, 8. Beads: 4. Pipes: 135, 169–70, 172.
305.1	E	Rubble/topsoil, over 305.2	Coins: 26, 60–62. PotU: 48–9. PotG: 95. Lamps: 43–4. Glass: 41. Pipes: 79, 174.
305.2	D/E	Occupation layer, under 305.1, over 305.3	
305.3	B?	Plaster surface, under 305.2, over bedrock	Coin: 113.
306.1	E	Rubble/topsoil, over 306.2	PotG: 90. Pipes: 8, 43.
306.2	D	Shallow pit, cut and fill, cuts 306.1, over 306.3	PotG: 61, 78. Pipes: 4, 80, 146.
306.3	D	Cobbled and plastered surface, under 306.1, over bedrock	
306.4	D	Fill of stone tank	
306.5	D	Layer, under 306.1, over 306.6, 306.7, 306.8, 306.9 cut by 303.3	
306.6	D	Layer, under 306.5	
306.7	D	Internal wall, under 306.5	
306.8	D	Clay lens/surface, under 306.5	
306.9	D	Occupation layer, under 306.5	PotG: 94. Lamps: 17.
306.10	D	Clay surface, under 306.9, over 306.11	Glass: 40.
306.11	D	Layer, under 306.10, over 306.12, 306.13	
306.12	B	Rock-cut drain, under 306.11	
306.12	B	Rock-cut foundation for S wall, under 306.11	
307.1	E	Rubble/topsoil, over 307.1	
307.2	C/D	Occupation deposit, under 307.1, over 307.3	
307.3	C	Clay/mortar foundation, under 307.2, over bedrock	
307.4	C	?	
308.1	E	Rubble/topsoil, over 308.2	
308.2	E	Plaster floor surface, under 308.1, 308.3	
308.3	D	Rubble layer, sealing Crusader features, under 308.2	Coins: 22, 62, 109. Pipes: 101.
308.4	B	E wall of inner ward	
308.5	B?	?	
308.6	B	S jamb of gateway	
308.7	B	?	
309.1	E	Rubble/topsoil, over 309.2, 309.3	PotG: 35.
309.2	C	Fill of oven	Coins: 19–20.
309.3	C	Occupation layer, under 309.1, over 309.4	Coin: 18. PotG: 3, 10, 79.
309.4	B?	Paved floor, under 309.1, 309.3	
310.1	D	Rubble blocking doorway	
310.2	D	Occupation layer over threshold	

Area 500. Northern Part of the Outer Ward

Context	Phase	Description and relationship	Published finds
501.1	E	Rubble/topsoil	
502.1	E	Rubble/topsoil, over 502.4	Pipe: 124.
502.2	E	N village wall, under 502.1, over 502.33	
502.3	E	S village wall with doorway, under 502.1, over 502.33	
502.4	E	Rubble, under 502.1, over 502.6	Coin: 90. Glass: 37. Metal: 9, 62. Beads: 11. Pipes: 44, 57, 60, 94, 193–4.
502.5	E	S village wall, under 502.1	Coin: 87.
502.6	E	N–S village wall, under 502.1, 502.4	
502.7	D	Rubble between walls 502.2 and 502.5, under 502.1, over 502.8	
502.8	D	Rough cobbled surface, under 502.7	PotG: 31. Metal: 23.
502.9	D	E–W wall, =503.2	
502.10	D	Stone feature, under 502.4	
502.11	D	Stone recess within N face of wall 502.2	
502.12	E	Stone bench, against 502.3, over 502.21	
502.13	D	Village wall, =502.15	
502.14	D/E	E–W wall, corner with 502.15, over 502.18, 502.20	Lamps: 45. Metal: 63–63a. Misc: 19.
502.15	D	N–S wall, corner with 502.14, under 502.1	
502.16	D	Rubble, S of wall 502.14, under 502.1	Misc: 20.
502.17	D/E	Rubble, N of wall 502.14, under 502.1	Metal: 6.
502.18	D/E	N–S wall, under 502.14, over 502.20	Coin: 88.
502.19	D/E	Rubble, under 502.18, 502.31, over 502.20, 502.21	Metal: 61.
502.20	B/C	Trampled earth surface, under 502.18, 502.19, over 502.30	Beads: 18.
502.21	D	Compact clay surface, courtyard, under 502.4, 502.12, cut by 502.29, over 502.24	Coin: 63. PotG: 104. Lamps: 18. Metal: 33, 38, 60. Beads: 17. Pipes: 20, 67.
502.22	D	Rubble between walls 502.14 and 502.18, under 502.20	Coin: 7. Pipes: 53, 111.
502.23	E	Trampled surface, N of 502.14	Coins: 64–5, 86, 89, 110. Glass: 38. Metal: 27, 34, 73. Beads: 13, 15. Pipe: 1.

Context	Phase	Description and relationship	Published finds
502.24	D	Ash layer, under 502.21, over 502.3, 502.28, 502.48	Coin: 66. PotG: 130. Glass: 30. Metal: 44. Pipe: 97.
502.25	E	Rubble, under 502.23, over 502.27	Coins: 67, 79. Glass: 31. Beads: 5–6.
502.26	D	N–S wall, under 502.25, over 502.34	
502.27	D	Earth layer, under 502.25, over 502.34	Coin: 68. Pipes: 102, 150.
502.28	D	Earth make-up layer, under 502.24	Glass: 33. Beads: 2.
502.29	D	Robber trench aginst wall 502.9, under 502.1	
502.30	D	Occupation layer, under 502.20	
502.31	D	W side of wall 502.18, under 502.20	Glass: 25.
502.32	D	Base of clay over, over 502.33	
502.33	D	Rough surface and rubble, under 502.24, 502.28, over 502.37, =502.8	Metal: 22, 74. Misc: 17.
502.34	D	Compact earth floor, against walls 502.13, 502.26, under 502.27	Coins: 6970. PotG: 23, 123. Metal: 68–70. Beads: 22. Pipes: 9, 61.
502.35	D	E side of wall 502.18	Lamps: 46.
502.36	C?	Moxed mortar lens, under 502.14	
502.37	B–D	Occupation layer, over 502.38	PotG: 106–8, 117. Lamps: 24. Glass: 3. Metal: 8, 16–17, 45, 52, 54, 57–9. Pipe: 188.
502.38	B	Plaster floor, under 502.37, over bedrock	
502.39	B	Earth floor, over 502.40	Misc: 6.
502.40	B	Rubble, similar to 502.19, 502.22, over 502.41	
502.41	B	Rubble	
502.42	D	Main rubble layer, =502.33, 502.36	Coins: 15, 71–2. Glass: 12, 19. Metal: 18, 53, 72. Misc: 7, 12, 35–6, 38. Beads: 16. Pipe: 78.
502.43	B	Cut and fill of shallow pit, over 502.44	
502.44	B?	Stone-built trough	
502.45	B?	Mortared rubble	
502.46	B?	Paved floor, against 502.45	
502.47	B	Gravel surface, under 502.42, over 502.37, 502.38	
502.48	B?	N–S wall, under 502.2	
502.49	B?	Burnt deposit	PotG: 14. Metal: 26.
502.50	B	W wall of projecting tower, rock cut	
502.51	B	N wall of projecting tower	
502.52	B	Irregular trampled earth and cobble surface, between 502.46 and 502.38	
503.1	C–E	Village wall, over 503.6, 503.18	Coin: 114. PotG: 33. Lamps: 53–4. Pipes: 24, 189.
503.2	D	Stone bench, part of 502.12	PotG: 5. Pipe: 137.
503.3	D	Recess in village wall	
503.4	E	Cement floor, under 503.1	
503.5	E	Village wall, under 503.1	
503.6	B	W wall, under 503.1	
503.7	E	Village wall and foundations, under 503.1, over 503.10	
503.8	E	Wall core, under 503.1, over 503.11	Metal: 29. Misc: 14.
503.9	E	Rubble, over 503.13	
503.10	D/E	Village N wall, under 503.7	
503.11	E	Trampled earth floor, under 503.7, over 503.13	Glass: 27. Metal: 40.
503.12	B	Wall forming corner with 502.9, under 503.11	
503.13	D/E	Gravel layer, under 503.11, over 503.14	Coins: 73, 111.
503.14	D	Mortar and cobble floor, under 503.13	
503.15	E	Rough surface, over 503.18, 503.20	PotU: 18, 118. Metal: 7. Beads: 12.
503.16	D	Rubble fill of shaft	
503.17	E	Rock-cut pit and fill, cuts 503.12, 503.18, 503.19, 503.38	
503.18	B	E–W wall, under 503.15	
503.19	B	Plaster floor, over 503.22	
503.20	B/C	Mixed mortar and rubble, under 503.1, over 503.21	PotG: 20. Glass: 34. Metal: 19–20, 31.
503.21	D	Trampled gravel surface, under 503.20, over 503.25	Metal: 46.
503.22	B	Gravel make-up, under 503.19	PotU: 52. Beads: 8.
503.23	D	Pit cut and fill, between walls 503.6 and 503.18, under 503.21	
503.24	D	Occupation layer, under 503.23, over 503.25	Coin: 74–5. PotG: 6, 53. Pipe: 162.
503.25	B/C	Gravel fill, under 503.24, over 503.26	PotG: 7–8.
503.26	B/C	Mixed sand and rubble layer, under 503.20, over 503.27	PotG: 7.
503.27	B/C	Sand and gravel layer, under 503.26, over 503.28	
503.28	B/C	Sand and gravel layer, under 503.27, over 503.29	PotG: 7.
503.29	B/C	Sand and gravel, under 503.28, over bedrock	PotG: 4, 89.
504.1	D/E	Rubble/topsoil	Glass: 26. Beads: 3. Pipes: 77, 87.
504.2	D/E	E village wall, under 504.1, over 504.4	
504.3	D/E	W village wall	
504.4	D/E	Cement floor, under 504.1, over 504.6	
504.5	D	Earth floor, over 504.6	
504.6	D	Rubble, under 504.5	Coin: 76. Pipe: 96.
504.7	D	Earth floor	
504.8	D	Village wall	
504.9	D	Rubble, over bedrock	PotG: 39, 133. Pipes: 103, 113.
504.10	C/D	Weathered bedrock	
505.1	E	Rubble/topsoil	PotG: 100.

APPENDIX 2
SELECTED METRICAL DATA FOR BELMONT ANIMAL BONES
Paul Croft

The great majority of measurements were taken according to the specifications of von den Driesch (1976), and are not defined here. Other measurements (marked @) are defined below. Estimated values are marked by an asterisk (*). In the case of elements which fuse, only fused specimens were measured (the single exception is indicated). In all of the lists of measurements which follow, each line represents a single specimen. In the caprine table O, C and O/C in the Tax[on] column indicate Ovis, Capra or undifferentiated caprine. For caprine, cattle and pig bones, the various measurements are listed as follows:

	1	2	3	4	5	6	7
Astragalus	GLl	GLm	Dl	Bd			
Atlas & Axis	BFcr	BFcd					
Calcaneum	GL						
Femur	Bp	Bd	GLC				
Humerus	Bd	BT	H@	Bp			
Metapodia	Bp	Dp	DTD@	DTCD@	DAPCD@	GL	
Naviculocuboid	GB						
Phalanx 1 & 2	GLpe	Bp	Bd				
Phalanx 3	DLS	Ld					
Radius	Bp	BFp	Bd	BFd			
Scapula	GLP	LG	BG	SLC	DHA	Ld	HS
Tibia	Bp	Bd	Dd	GL			
Ulna	LO	SDO	DPA				

Cranial and mandibular measurements are numbered after von den Driesch (1976). Measurements marked @ (not defined by von den Driesch) are defined as follows:

Humerus	H	Medial height of trochlea
Metapodia	DTD	Breadth at the distal fusion point
	DTCD	Breadth of distal articulation
	DAPD	Depth at the distal fusion point

Caprines.

Context	Period	Tax	Element	X_0	X_1	X_2	X_3	X_4	X_5	X_6
113.15	?C	C	Astragalus	28.6	26.5	14.4	17.6			
101.24	B	O	Astragalus	33.4	30.9	18.1	22.2			
106.21	B	C	Astragalus	30.5	28.7	16.1	19.4			
112.13	B	O	Astragalus	32.2	30.5	18.5	21.1			
502.42	B	C	Astragalus	33.7	31.8	19.0	22.6			
110.28	B/C	C	Astragalus	34.4	32.2	18.0	23.0			
502.20	B/C	O/C	Astragalus				18.2			
503.25	B/C	C	Astragalus	28.4	27.0	15.2	18.5			
503.25	B/C	C	Astragalus	29.0	27.1	15.5	17.8			
110.14	C	C	Astragalus	32.8	29.8	16.5	19.3			
113.24	C	C	Astragalus	31.1	29.3	16.2	18.2			
113.24	C	O	Astragalus	31.2	29.0	16.1	20.0			
113.24	C	O/C	Astragalus	31.4	28.9	16.4	19.5			
302.07	C	O/C	Astragalus	28.7	27.2	14.8	18.1			
302.08	C	C	Astragalus	31.3	29.6	16.3	20.6			
302.08	C	C	Astragalus	32.0	30.2	16.3	20.9			
302.06	C/D	O/C	Astragalus	28.1	25.7	14.9	18.0			
101.08	D	O	Astragalus	32.6	34.6	19.1	21.8			
105.19	D	C	Astragalus	35.0	31.4	18.4	20.8			
106.10	D	C	Astragalus	26.2	24.6	14.0	16.6			
106.10	D	C	Astragalus	31.6	30.0	17.1	19.7			
108.03	D	O/C	Astragalus	31.0		16.4	19.4			
108.07	D	O	Astragalus	35.1	32.4	19.8	21.9			
110.02	D	O	Astragalus	30.5	27.9	15.7	18.6			
110.25	D	C	Astragalus	29.2	27.6	16.2	19.6			
112.04	D	O/C	Astragalus		28.6		19.7			
113.28	D	O	Astragalus	28.8	27.0	15.2	17.8			
114.02	D	O	Astragalus	34.9	32.3	19.7	21.8			
119.03	D	C	Astragalus	33.9	32.0	18.1	22.2			
119.03	D	O/C	Astragalus	35.0	32.9	19.2	23.2			
120.05	D	C	Astragalus	29.3	27.6	14.7	19.4			
121.27	D	C	Astragalus	29.6	27.6	15.4	17.4			
123.02	D	C	Astragalus	28.9	27.2	15.3	19.3			
123.05	D	C	Astragalus	30.0	27.9	15.9	18.0			
126.05	D	C	Astragalus	28.9	27.4	14.6	14.6			
301.04	D	C	Astragalus	30.1	28.3	15.3	18.4			
502.08	D	C	Astragalus	29.0	26.4	15.5	19.7			

Context	Period	Tax	Element	X_0	X_1	X_2	X_3	X_4	X_5	X_6
502.22	D	C	Astragalus	27.2	25.8	14.0	17.3			
502.30	D	O/C	Astragalus	31.9	29.7	16.4	21.4			
503.24	D	O	Astragalus	35.8	33.8	20.7	22.8			
108.09	D/E	O/C	Astragalus				18.4			
118.01	D/E	C	Astragalus	27.8	26.9	14.7	18.1			
118.01	D/E	C	Astragalus	31.8	29.6	16.3	20.6			
126.01	D/E	C	Astragalus		28.9					
126.01	D/E	C	Astragalus	29.6	27.4	15.1	18.6			
302.01	D/E	C	Astragalus	26.0						
302.01	D/E	C	Astragalus	31.4	29.4	16.0	19.0			
100.00	E	O/C	Astragalus			20.0				
101.01	E	O/C	Astragalus	29.3	27.2	14.1	16.2			
102.05	E	C	Astragalus	32.1	30.0	16.5	19.0			
102.05	E	O	Astragalus	30.3	28.9	16.0	17.3			
105.10	E	C	Astragalus	29.7	28.0	15.2	18.1			
106.01	E	C	Astragalus		30.5		20.6			
106.01	E	C	Astragalus	29.6	26.7	15.4	17.9			
106.01	E	C	Astragalus	30.0	27.1	15.6	18.3			
115.01	E	O	Astragalus	34.0	32.3	18.0	21.1			
118.03	E	C	Astragalus	26.5	24.2	14.4	15.8			
125.01	E	C	Astragalus	30.5	29.2	17.1	19.2			
303.01	E	O	Astragalus	31.9	29.8	17.1	20.3			
505.01	E	C	Astragalus				19.0			
302.06	C/D	O/C	Atlas		43.1					
101.12	D	O/C	Atlas	48.3	48.6					
502.24	D	C	Atlas	50.7						
502.34	D	O	Atlas	50.7	46.4					
100.00	E	O/C	Atlas	49.6	51.0					
100.00	E	O/C	Atlas	53.0	53.5					
101.01	E	O/C	Atlas	45.0	46.3					
102.18	E	O/C	Atlas	46.6						
121.02	E	O/C	Atlas	46.0	43.9					
122.01	E	O/C	Atlas	48.4	42.4					
503.01	E	O	Atlas	54.3	48.8					
302.06	C/D	O/C	Axis	51.7						
105.16	D	O/C	Axis	46.7						
110.22	D	O/C	Axis	47.7						
102.05	E	O/C	Axis	44.1						
106.01	E	O/C	Axis	43.4						
106.01	E	O/C	Axis	47.5						
115.01	E	O/C	Axis	44.5*						
122.05	E	O/C	Axis	42.8						
309.01	E	O	Axis	49.1						
122.19	?C	O/C	Calcaneum	63.1						
109.41	B	O/C	Calcaneum	59.8						
112.13	B	O	Calcaneum	62.7						
502.37	B/C	O	Calcaneum	72.1						
106.10	D	C	Calcaneum	59.5						
126.01	D/E	C	Calcaneum	57.0						
101.01	E	C	Calcaneum	57.6						
101.01	E	O	Calcaneum	61.6						
106.01	E	O	Calcaneum	55.8						
106.01	E	O/C	Calcaneum	55.7						
301.02	E	O	Calcaneum	57.1						
114.03	A	O/C	Femur	41.6						
102.10	C	O/C	Femur	39.0						
106.10	D	O/C	Femur		42.5					
106.10	D	O/C	Femur	37.8						
109.19	D	O/C	Femur		39.6					
126.03	D	O/C	Femur	39.4						
126.03	D	O/C	Femur	40.5						
301.03	D	C	Femur	45.2						
301.03	D	O	Femur	50.5						
502.27	D	O	Femur	48.8						
502.33	D	O/C	Femur		43.1					
108.09	D/E	O/C	Femur		32.5					
102.05	E	O/C	Femur	43.7						
102.18	E	O/C	Femur		37.0					
106.01	E	O/C	Femur	44.9						
109.01	E	O/C	Femur		37.4					
121.02	E	C	Femur	40.8						
303.01	E	O/C	Femur		40.2					
305.01	E	O/C	Femur		36.3					
305.01	E	O/C	Femur	40.7						
502.01	E	C	Femur	49.6						
502.04	E	C	Femur	42.5						
502.04	E	O/C	Femur		38.0					
503.01	E	C	Femur	43.1						
106.21	B	C	Humerus	35.3	33.9	21.3				
503.25	B/C	O/C	Humerus	33.9	32.4	20.1				
503.25	B/C	O/C	Humerus	36.9	36.1	22.1				

Context	Period	Tax	Element	X_0	X_1	X_2	X_3	X_4	X_5	X_6
106.05	C	O/C	Humerus	34.0	33.6	21.0				
109.34	C	C	Humerus	32.3	30.7	17.8				
110.15	C	O/C	Humerus		31.0	20.2				
108.10	C/D	O/C	Humerus		30.0					
120.11	C/D	C	Humerus	34.3	32.4	20.0				
102.09	D	O	Humerus	30.4	28.8	17.4				
102.09	D	O/C	Humerus	36.6	34.2	21.2				
105.20	D	O	Humerus	28.5	27.1	16.6				
108.04	D	C	Humerus	33.5	31.8	17.6				
108.04	D	O/C	Humerus	26.4	25.7	15.2				
108.07	D	C	Humerus	34.5	32.4	18.2				
109.14	D	O	Humerus	33.1	31.5	20.3				
109.15	D	C	Humerus	34.8	30.2	20.8				
110.22	D	O/C	Humerus	27.3	26.5	16.6				
110.25	D	O/C	Humerus				43.6			
111.13	D	C	Humerus	26.2	25.8	15.1				
112.10	D	O/C	Humerus	33.2	30.9	18.9				
115.03	D	C	Humerus	33.9	33.5	20.7				
118.18	D	C	Humerus	30.4	29.3	17.8				
119.03	D	O	Humerus	33.3	30.1	21.0				
119.03	D	O/C	Humerus			19.7				
119.05	D	O/C	Humerus	34.0	32.8	20.8				
123.02	D	O/C	Humerus	30.0	29.3	18.7				
123.03	D	O/C	Humerus	34.1		20.0				
126.03	D	O/C	Humerus			19.3				
126.05	D	C	Humerus			18.5				
126.05	D	O/C	Humerus	34.8	33.0	20.3				
302.05	D	C	Humerus		30.9	19.3				
302.05	D	O	Humerus	32.7	29.6	20.4				
502.16	D	C	Humerus		31.7	19.9				
502.28	D	O/C	Humerus	30.2	29.7	17.7				
503.24	D	O	Humerus	37.5	34.2	23.7				
105.12	D/E	O	Humerus		29.6	17.5				
105.12	D/E	O/C	Humerus		29.9	18.7				
108.09	D/E	C	Humerus		31.3	17.8				
108.09	D/E	C	Humerus	29.4	27.2	17.2				
114.01	D/E	C	Humerus	34.8	34.4	20.3				
114.01	D/E	O/C	Humerus		31.1	18.4				
118.01	D/E	O	Humerus	35.5	33.5	21.8				
126.01	D/E	O/C	Humerus			19.2				
302.01	D/E	C	Humerus			17.9				
101.01	E	C	Humerus	30.5	29.5	16.9				
101.01	E	C	Humerus	31.6	29.5	17.7				
101.01	E	O	Humerus	31.9	29.2	18.3				
101.01	E	O	Humerus	34.3	31.4	20.4				
102.01	E	O	Humerus	35.4	32.8	20.7				
102.05	E	C	Humerus	30.5	29.4	18.4				
102.05	E	C	Humerus	31.6	30.8	18.5				
102.05	E	O/C	Humerus		27.6	17.0				
102.05	E	O/C	Humerus		33.2	19.3				
102.05	E	O/C	Humerus	34.0	33.8	21.4				
105.01	E	O/C	Humerus				44.2			
105.10	E	O/C	Humerus		29.4	19.2				
105.10	E	O/C	Humerus		32.2	20.7				
106.01	E	C	Humerus	31.3	30.5	19.3				
106.01	E	C	Humerus	33.5	32.0	19.6				
106.01	E	O	Humerus	36.5	32.7	21.6				
107.01	E	O/C	Humerus			22.0				
113.08	E	O/C	Humerus		27.6	18.0				
113.08	E	O/C	Humerus		31.1	18.6				
120.02	E	C	Humerus	26.1	25.7	15.4				
121.02	E	O/C	Humerus	32.9	32.1	18.9				
123.01	E	C	Humerus	30.0	29.2	18.0				
124.01	E	O	Humerus	32.8	31.5	21.3				
124.01	E	O/C	Humerus			17.9				
124.01	E	O/C	Humerus	31.5	30.9	19.3				
125.01	E	O/C	Humerus	31.8	30.8	18.9				
125.01	E	O/C	Humerus	32.4	30.4	20.7				
301.01	E	C	Humerus	35.6	31.6	20.7				
303.01	E	O/C	Humerus		34.6	22.5				
304.01	E	O/C	Humerus	31.4	29.5	17.7				
304.01	E	O/C	Humerus	33.0	31.1	18.2				
305.01	E	C	Humerus	31.8	31.3	17.6				
307.01	E	O/C	Humerus	33.2	31.7	20.8				
309.01	E	O/C	Humerus	30.1	28.3	18.0				
502.25	E	O/C	Humerus	30.1	29.7	18.3				
113.22	?C	O/C	Metacarpal			29.2	27.3	12.5		
123.07	?C	O/C	Metacarpal	30.3	20.6	32.7	31.4	16.0	130.8	
101.24	B	O/C	Metacarpal			28.5	29.3	15.4		
106.20	B	O/C	Metacarpal	24.5	17.2	26.2	27.3	12.0	116.4	
125.07	B	O/C	Metacarpal	26.6	19.2					

Context	Period	Tax	Element	X_0	X_1	X_2	X_3	X_4	X_5	X_6
125.08	B/C	O/C	Metacarpal	27.0	19.1					
102.10	C	O/C	Metacarpal	21.8	14.6					
120.11	C/D	C	Metacarpal			26.2	26.6	13.3		
120.11	C/D	O/C	Metacarpal	25.1	17.0					
120.11	C/D	O/C	Metacarpal	26.5	18.7					
105.16	D	O/C	Metacarpal			29.6	29.4	15.2		
106.10	D	O/C	Metacarpal	22.2	16.3					
106.10	D	O/C	Metacarpal	24.2	17.1	27.4	27.7	12.4	113.5	
106.10	D	O/C	Metacarpal	24.9	18.1					
109.14	D	O/C	Metacarpal	26.7	17.3					
110.22	D	O/C	Metacarpal	22.4	14.8					
110.25	D	O/C	Metacarpal			32.4	31.3	17.0		
117.01	D	C	Metacarpal			27.3	26.5	13.9		
117.01	D	O/C	Metacarpal	22.9	16.3					
119.03	D	C	Metacarpal	21.8	15.6	24.7	24.8		106.1	
119.03	D	O	Metacarpal			29.9	30.3	18.5		
123.05	D	C	Metacarpal			28.9	28.2*	14.4		
123.05	D	O/C	Metacarpal	24.3	17.5					
124.04	D	O/C	Metacarpal	24.8	18.3					
126.03	D	C	Metacarpal	23.4	16.0	26.8	25.6	25.6		
126.05	D	C	Metacarpal			26.6	25.8	12.9		
301.04	D	O/C	Metacarpal	26.0	18.5					
502.08	D	O/C	Metacarpal	27.8	18.9					
502.22	D	C	Metacarpal			29.5	29.5	13.6		
502.24	D	O/C	Metacarpal	24.3	16.3					
502.24	D	O/C	Metacarpal	29.0	19.3					
503.16	D	O/C	Metacarpal			31.0	30.3	18.3		
105.12	D/E	O/C	Metacarpal	29.0	19.9				117.2	
126.01	D/E	C	Metacarpal			30.2	28.7			
302.01	D/E	C	Metacarpal			27.4				
302.01	D/E	O	Metacarpal			27.6	28.4	15.8		
504.01	D/E	C	Metacarpal			32.7	32.6	16.2		
504.01	D/E	C	Metacarpal	25.6	18.1	31.0	29.4	15.6		
504.01	D/E	O/C	Metacarpal	32.8	20.5					
101.01	E	O/C	Metacarpal			27.3	26.4	12.8		
101.01	E	O/C	Metacarpal			28.1	26.8	12.5		
101.01	E	O/C	Metacarpal			28.6	27.1	13.2		
101.01	E	O/C	Metacarpal			32.1	31.3	16.3		
101.01	E	O/C	Metacarpal	23.9	15.8					
101.01	E	O/C	Metacarpal	25.0	18.4					
101.01	E	O/C	Metacarpal	25.2	17.3					
101.01	E	O/C	Metacarpal	26.5	18.0					
102.01	E	O/C	Metacarpal			26.4				
102.01	E	O/C	Metacarpal			30.4	29.0	13.5		
102.05	E	O/C	Metacarpal	22.4	15.3					
102.05	E	O/C	Metacarpal	23.0	15.8					
102.05	E	O/C	Metacarpal	26.5	18.1					
105.01	E	O/C	Metacarpal	24.9	16.0	26.2	26.3	12.5	107.8	
105.05	E	C	Metacarpal			29.0	28.0	14.4		
105.10	E	O/C	Metacarpal	24.5	16.5					
106.01	E	C	Metacarpal			37.9	34.0	19.4		
106.01	E	O/C	Metacarpal	21.5		25.6	25.6	11.6	108.1	
106.01	E	O/C	Metacarpal	22.7	16.3	26.3	25.6	11.8	106.6	
106.01	E	O/C	Metacarpal	23.4						
106.01	E	O/C	Metacarpal	24.5	17.2	30.1	28.1	14.2	117.2	
106.01	E	O/C	Metacarpal	24.6	16.8	29.6	28.0	13.9	116.4	
106.01	E	O/C	Metacarpal	24.7	16.7	28.4	28.1	12.3	116.4	
106.01	E	O/C	Metacarpal	24.8	17.3					
106.01	E	O/C	Metacarpal	25.3	18.8		29.0	28.6	140.6	
106.01	E	O/C	Metacarpal	25.4	17.1					
106.01	E	O/C	Metacarpal	26.6	18.6					
106.01	E	O/C	Metacarpal	26.7	17.3					
106.01	E	O/C	Metacarpal	27.0	17.8					
106.01	E	O/C	Metacarpal	27.6	19.7	29.4	29.2	16.5	129.0	
106.01	E	O/C	Metacarpal	30.2	20.8					
108.01	E	O/C	Metacarpal	28.1	19.5	32.4	31.6	15.2	122.6	
109.18	E	O/C	Metacarpal	27.1	18.9					
110.01	E	O/C	Metacarpal			28.1	28.1	12.8		
110.01	E	O/C	Metacarpal	24.4	17.2	26.3	27.1	13.5	113.9	
113.08	E	O/C	Metacarpal			34.8	34.8	16.1	130.5	
113.08	E	O/C	Metacarpal	24.0						
115.01	E	O/C	Metacarpal	30.2	19.7					
119.01	E	O/C	Metacarpal	27.8	19.1					
120.02	E	O/C	Metacarpal	25.1	16.1					
120.02	E	O/C	Metacarpal	26.8	17.8					
122.01	E	C	Metacarpal			28.1	27.0			
122.01	E	O/C	Metacarpal	24.6	18.5					
122.01	E	O/C	Metacarpal	26.9	17.6					
122.05	E	O/C	Metacarpal			28.0	27.6	12.7		
123.01	E	O/C	Metacarpal			29.2	29.5	14.8		
124.01	E	O/C	Metacarpal	24.8						

Context	Period	Tax	Element	X_0	X_1	X_2	X_3	X_4	X_5	X_6
125.01	E	C	Metacarpal				26.3			
125.01	E	C	Metacarpal	23.2	15.6	26.3	25.8	13.2	110.6	
125.01	E	O/C	Metacarpal	29.3	19.6					
127.01	E	O/C	Metacarpal	25.5	17.8					
127.01	E	O/C	Metacarpal	25.8	17.0					
127.01	E	O/C	Metacarpal	26.7	18.1					
301.01	E	O/C	Metacarpal			29.0	27.6	12.4		
301.01	E	O/C	Metacarpal	24.2	17.2					
301.02	E	O/C	Metacarpal	25.8	17.7	28.6	28.6		116.7	
303.01	E	O/C	Metacarpal			29.2	28.3	15.6		
303.01	E	O/C	Metacarpal	23.6	16.6					
303.01	E	O/C	Metacarpal	25.4	18.3	30.1	29.2	13.9	114.2	
303.01	E	O/C	Metacarpal	28.7	19.6					
305.01	E	O/C	Metacarpal			28.4	27.6	12.3		
305.01	E	O/C	Metacarpal	25.0	17.3	28.7	28.8	13.2	107.7	
309.01	E	O/C	Metacarpal	22.0	15.4					
309.01	E	O/C	Metacarpal	24.3	17.1					
502.01	E	O/C	Metacarpal			28.4	28.2	13.0		
502.01	E	O/C	Metacarpal	27.9	19.0					
502.02	E	C	Metacarpal	25.5	17.4	27.9	27.2	12.8	113.0	
502.04	E	O/C	Metacarpal			25.1	25.8	12.9		
503.01	E	C	Metacarpal			25.7	25.5	13.5		
503.01	E	C	Metacarpal			27.1	25.9	14.0		
503.01	E	C	Metacarpal	22.8	15.2	26.0	25.5	12.7	107.7	
503.01	E	O/C	Metacarpal	23.0	15.7	25.9	25.2	12.6	106.9	
505.01	E	C	Metacarpal	22.5	17.1	26.2	26.7	13.0*	122.5	
505.01	E	O/C	Metacarpal	26.8	19.3					
505.02	E	O/C	Metacarpal	27.6	19.9					
122.19	?C	C	Metatarsal	23.5	21.0					
124.08	?C	O/C	Metatarsal	23.0	22.7					
125.08	B/C	C	Metatarsal	21.3	17.9					
502.37	B/C	O/C	Metatarsal			24.0	24.4	13.1		
101.14	C	O/C	Metatarsal			23.5	24.2	12.1		
108.10	C/D	O/C	Metatarsal	20.8	19.0					
302.06	C/D	C	Metatarsal			26.5	26.2	14.0		
102.09	D	O/C	Metatarsal	23.6	21.9					
105.16	D	O/C	Metatarsal	18.8	17.4					
106.10	D	O/C	Metatarsal	20.6	20.3					
106.10	D	O/C	Metatarsal	21.3	20.5					
108.05	D	O/C	Metatarsal	21.5	19.7	23.8	23.9	12.4	112.8	
108.07	D	O/C	Metatarsal	19.1	18.3					
109.2	D	O/C	Metatarsal	23.6	22.3					
110.22	D	O/C	Metatarsal	22.5	20.3					
110.25	D	O/C	Metatarsal			24.5	24.5	13.5		
110.25	D	O/C	Metatarsal	20.8	20.7					
116.04	D	C	Metatarsal			25.5	25.6	12.8		
116.04	D	O/C	Metatarsal	22.0	18.4					
120.09	D	O/C	Metatarsal	20.9	18.8					
121.25	D	C	Metatarsal			25.7	23.9	14.6		
123.02	D	O/C	Metatarsal	23.1	19.9					
302.05	D	O/C	Metatarsal	18.3	15.0					
306.02	D	O	Metatarsal			25.7	26.2	14.4		
502.21	D	O/C	Metatarsal			23.6	23.7	13.6		
502.28	D	C	Metatarsal			25.5	25.0	13.3		
502.34	D	O/C	Metatarsal	17.3	16.3					
108.09	D/E	O/C	Metatarsal	21.6	19.8				110.3	
100.00	E	O/C	Metatarsal	21.5	22.5	26.4	26.8	14.6	143.4	
101.01	E	O/C	Metatarsal			25.8	26.1	14.8		
101.01	E	O/C	Metatarsal			26.7	27.4	15.6		
101.01	E	O/C	Metatarsal	18.9		24.9	26.3	13.4		
101.01	E	O/C	Metatarsal	21.9	22.4					
101.01	E	O/C	Metatarsal	22.3	20.9					
101.01	E	O/C	Metatarsal	23.2	23.1					
102.01	E	O/C	Metatarsal	22.7	23.6					
102.05	E	O/C	Metatarsal			24.7	24.7	13.3		
102.05	E	O/C	Metatarsal			24.9	26.1	14.7		
102.05	E	O/C	Metatarsal	21.1	19.9	24.2	25.0	13.1	121.4	
102.05	E	O/C	Metatarsal	21.7	19.7	24.9	24.4		117.5	
102.05	E	O/C	Metatarsal	23.6	21.2					
106.01	E	O/C	Metatarsal			23.4	23.6	11.8		
106.01	E	O/C	Metatarsal			23.5	24.3	11.8	116.9	
106.01	E	O/C	Metatarsal	21.5	20.0					
106.01	E	O/C	Metatarsal	22.0	22.6					
110.01	E	O/C	Metatarsal			28.7	26.4			
110.01	E	O/C	Metatarsal	21.1	18.9	23.8	24.0	12.9	123.8	
113.08	E	O/C	Metatarsal			26.3	26.1	13.3	122.7	
120.02	E	C	Metatarsal			23.9	24.1	13.8		
120.02	E	O/C	Metatarsal	24.0	23.0					
122.01	E	C	Metatarsal			23.5	24.2	12.5		
122.01	E	C	Metatarsal	22.9	20.7	27.7	27.0	14.5		
122.01	E	O/C	Metatarsal	23.1	21.9					

Context	Period	Tax	Element	X_0	X_1	X_2	X_3	X_4	X_5	X_6
122.01	E	O/C	Metatarsal	25.6	22.2					
122.04	E	O/C	Metatarsal	20.7	18.1					
124.01	E	C	Metatarsal	19.0	17.6					
124.01	E	O	Metatarsal			26.3	26.8			
124.01	E	O	Metatarsal			26.9	26.9			
125.01	E	C	Metatarsal	23.8	21.6					
125.01	E	O/C	Metatarsal	20.8	18.8	25.6	26.1	14.1		
127.01	E	C	Metatarsal	19.8	17.9	23.2	23.3	13.2	116.3	
127.01	E	O/C	Metatarsal			25.0	25.0	14.3		
127.01	E	O/C	Metatarsal			25.2	24.8	14.1		
127.01	E	O/C	Metatarsal		18.3					
301.01	E	O/C	Metatarsal	19.7	19.0					
301.02	E	O/C	Metatarsal			22.2	22.3	11.2		
303.01	E	O/C	Metatarsal	21.3	20.4					
303.01	E	O/C	Metatarsal	23.6	23.1					
304.01	E	O/C	Metatarsal			23.3	20.9			
305.01	E	O/C	Metatarsal			23.1	22.8	12.2		
305.01	E	O/C	Metatarsal			27.1	27.2	15.2		
502.04	E	O/C	Metatarsal	24.0	22.0					
503.01	E	C	Metatarsal	19.8	16.8					
503.01	E	O/C	Metatarsal			25.0	25.6	12.7		
503.08	E	O	Metatarsal			25.9	27.2	15.6		
503.09	E	C	Metatarsal	19.4	17.0	23.2	24.2	12.8	116.0	
503.09	E	C	Metatarsal	20.1	18.5	24.7	24.1	13.5		
112.13	B	O	Navcuboid	25.6						
106.10	D	O/C	Navcuboid	23.1						
118.05	D	O/C	Navcuboid	22.0						
118.05	D	O/C	Navcuboid	22.3						
301.03	D	O/C	Navcuboid	23.2						
503.16	D	C	Navcuboid	22.0						
106.01	E	O/C	Navcuboid	27.2						
113.08	E	O/C	Navcuboid	23.3						
110.29	?B	O/C	Phalanx1	37.8	13.2	12.1				
502.49	?B	O/C	Phalanx1	37.9	13.1	12.5				
121.10	?C	O/C	Phalanx1	37.9	11.4	11.8				
121.16	?C	O/C	Phalanx1	38.8	13.2	14.0				
122.19	?C	O/C	Phalanx1	41.0	13.8	12.8				
103.12	B	O	Phalanx1	30.1	14.8	11.8				
106.11	B	O	Phalanx1	38.5	13.6	12.7				
106.20	B	C	Phalanx1	39.0	12.9	12.7				
107.07	B	C	Phalanx1	37.2	13.1	13.1				
122.18	B	O/C	Phalanx1	42.0	13.7	13.6				
123.19	B	O/C	Phalanx1	41.5	13.9	14.0				
125.19	B	O/C	Phalanx1	40.2	15.3	16.6				
503.20	B/C	O/C	Phalanx1	40.4	13.9	14.1				
102.10	C	C	Phalanx1	40.5	13.4	12.6				
106.13	C	O/C	Phalanx1	38.0	12.6	12.0				
113.24	C	O	Phalanx1	41.5	14.3	13.3				
120.11	C/D	O/C	Phalanx1	42.7	15.0	14.2				
302.06	C/D	O/C	Phalanx1	41.6	13.3	13.6				
101.08	D	O/C	Phalanx1	38.6	12.5	12.1				
102.09	D	O	Phalanx1	39.6	13.9	12.6				
105.16	D	C	Phalanx1	38.1	13.4	13.6				
105.16	D	C	Phalanx1	40.7	15.1	14.0				
105.16	D	C	Phalanx1	41.4	14.1	13.3				
105.16	D	C	Phalanx1	42.4	15.2	13.9				
105.16	D	O	Phalanx1	37.0	13.5	14.6				
105.16	D	O	Phalanx1	37.4	13.7	13.4				
105.16	D	O/C	Phalanx1	41.1	15.2	14.8				
105.19	D	O	Phalanx1	39.7	13.4	13.0				
106.10	D	C	Phalanx1	41.3	13.3	13.5				
106.10	D	O	Phalanx1	42.9	15.6	15.4				
108.06	D	C	Phalanx1	35.8	12.2	12.2				
108.06	D	O	Phalanx1	42.3	13.5	13.4				
109.07	D	O	Phalanx1	38.3	12.1	13.2				
110.21	D	C	Phalanx1	39.2	13.8					
110.22	D	O	Phalanx1	44.3	15.1	15.4				
110.22	D	O/C	Phalanx1	37.8	12.7					
110.25	D	C	Phalanx1	43.3	15.5	14.7				
111.05	D	C	Phalanx1	39.2	13.5	13.5				
112.07	D	C	Phalanx1	41.5	12.2	12.3				
116.04	D	O/C	Phalanx1	37.8	13.1	12.4				
117.01	D	O/C	Phalanx1	39.9	14.3	13.3				
118.05	D	O/C	Phalanx1	38.0	12.9	12.6				
118.18	D	O/C	Phalanx1	40.3	14.3	13.8				
120.09	D	O/C	Phalanx1	37.8	12.7	12.2				
123.05	D	O/C	Phalanx1	42.4	13.7	12.8				
301.03	D	O	Phalanx1	36.2	11.8	11.4				
301.04	D	C	Phalanx1	39.2	12.4	12.1				
306.02	D	O/C	Phalanx1	40.9	15.0	14.7				

Context	Period	Tax	Element	X_0	X_1	X_2	X_3	X_4	X_5	X_6
502.21	D	O/C	Phalanx1	36.3	12.0	11.7				
502.21	D	O/C	Phalanx1	38.0						
502.21	D	O/C	Phalanx1	38.8	12.9	12.7				
502.22	D	O/C	Phalanx1	37.8	11.6	11.1				
502.24	D	O/C	Phalanx1	38.8	12.3	11.3				
502.24	D	O/C	Phalanx1	39.0	13.5	13.0				
502.27	D	O/C	Phalanx1	34.3	12.6	11.9				
502.27	D	O/C	Phalanx1	41.4	12.5	12.5				
502.28	D	O/C	Phalanx1	36.0						
502.28	D	O/C	Phalanx1	39.6	14.4	13.8				
502.29	D	O/C	Phalanx1	36.4	13.0	13.9				
502.34	D	O/C	Phalanx1	39.3	14.3	13.6				
503.16	D	O/C	Phalanx1	43.5	14.1	13.3				
503.16	D	O/C	Phalanx1	44.3	14.6	14.7				
504.06	D	O/C	Phalanx1	37.3	12.1	12.0				
504.06	D	O/C	Phalanx1	39.3	13.1	12.8				
118.01	D/E	O/C	Phalanx1		11.9					
126.01	D/E	O/C	Phalanx1	40.3	13.2	12.5				
504.01	D/E	O/C	Phalanx1	41.6	14.0					
504.01	D/E	O/C	Phalanx1	45.3	14.2	13.7				
504.04	D/E	O/C	Phalanx1	43.0	12.7	12.7				
101.01	E	C	Phalanx1	36.4	12.7	9.6				
101.01	E	C	Phalanx1	38.1	12.2	8.9				
102.01	E	O/C	Phalanx1	40.1	13.0	12.1				
102.05	E	C	Phalanx1	36.7	13.6	12.9				
102.05	E	C	Phalanx1	37.4	13.2	11.7				
102.05	E	C	Phalanx1	37.7	13.2	12.9				
102.05	E	C	Phalanx1	41.2	13.6	12.7				
102.05	E	O	Phalanx1	39.5	14.2	12.8				
102.05	E	O	Phalanx1	43.1	14.8	13.0				
105.10	E	O	Phalanx1	36.2	13.1	12.5				
106.01	E	C	Phalanx1	37.6	12.3	11.6				
106.01	E	C	Phalanx1	38.2	12.2	11.6				
106.01	E	C	Phalanx1	38.4	12.4	12.1				
106.01	E	C	Phalanx1	39.7	13.6	13.6				
106.01	E	C	Phalanx1	39.8	12.2	11.8				
106.01	E	C	Phalanx1	43.2	14.4	14.2				
106.01	E	O/C	Phalanx1	37.6	14.1	13.5				
106.01	E	O/C	Phalanx1	39.2	14.1	14.3				
109.18	E	C	Phalanx1	38.3	12.3	11.9				
113.08	E	C	Phalanx1	39.5	14.0	13.1				
115.01	E	O/C	Phalanx1	36.0	12.4	12.5				
115.01	E	O/C	Phalanx1	44.6	15.6	15.0				
116.01	E	O/C	Phalanx1	36.9	11.6	11.6				
119.02	E	O/C	Phalanx1	39.7	13.8					
121.02	E	O/C	Phalanx1	39.5	12.2					
122.01	E	O/C	Phalanx1	37.0	13.7	13.3				
122.01	E	O/C	Phalanx1	37.3	13.1					
122.01	E	O/C	Phalanx1	38.6	14.1					
122.01	E	O/C	Phalanx1	39.0	12.2	11.5				
125.01	E	O/C	Phalanx1	38.3	14.5	14.3				
127.01	E	O/C	Phalanx1	37.8	13.0	13.0				
127.01	E	O/C	Phalanx1	38.0	12.1	11.3				
127.01	E	O/C	Phalanx1	40.0	14.8	15.0				
127.01	E	O/C	Phalanx1	43.9	14.1	14.0				
301.01	E	C	Phalanx1	38.0	12.6	12.3				
301.01	E	O	Phalanx1	41.8	13.9	13.3				
303.01	E	O	Phalanx1	45.4	15.0	15.2				
303.01	E	O/C	Phalanx1	43.7	14.7	14.5				
304.01	E	C	Phalanx1	38.9	13.7	13.3				
305.01	E	C	Phalanx1	36.7	13.5	12.7				
305.01	E	O/C	Phalanx1	35.7	12.4					
307.01	E	O/C	Phalanx1	41.3	14.3	14.1				
502.02	E	O/C	Phalanx1	41.1	14.1	13.9				
502.04	E	O/C	Phalanx1	36.9	13.9	12.9				
502.05	E	O/C	Phalanx1	39.6	13.1					
503.15	E	O/C	Phalanx1	36.4	12.8	11.6				
503.15	E	O/C	Phalanx1	38.3	12.9	12.9				
503.15	E	O/C	Phalanx1	42.3	15.5	16.2				
505.01	E	O/C	Phalanx1	37.2	12.8	12.5				
110.29	?B	C	Phalanx2	24.3	13.0	11.2				
110.29	?B	O	Phalanx2	24.3	11.7	9.2				
113.14	?C	C	Phalanx2	25.9	12.0	9.4				
113.19	?C	C	Phalanx2		13.2					
113.23	?C	O/C	Phalanx2	23.3	12.7					
113.27	?C	O	Phalanx2	24.3	12.6	10.7				
122.19	?C	O/C	Phalanx2	25.6	15.7	13.1				
101.24	B	O	Phalanx2	26.2	15.0	12.3				
101.24	B	O	Phalanx2	26.4	13.2	11.2				
101.24	B	O	Phalanx2	26.4	14.6	11.9				
106.20	B	C	Phalanx2	25.3	12.9	11.6				

Context	Period	Tax	Element	X_0	X_1	X_2	X_3	X_4	X_5	X_6
123.14	B	O/C	Phalanx2	24.4	11.1	8.9				
123.19	B	O/C	Phalanx2	29.3	13.4	10.7				
106.13	C	C	Phalanx2	24.7	12.7	11.1				
111.21	C	O/C	Phalanx2	26.5	13.7	10.5				
113.24	C	C	Phalanx2	22.7	12.1	10.1				
113.24	C	C	Phalanx2	28.0	14.3	11.9				
302.07	C	O/C	Phalanx2	24.4	12.6					
302.08	C	O/C	Phalanx2	24.1	13.6					
302.06	C/D	O/C	Phalanx2	25.1	10.8					
302.06	C/D	O/C	Phalanx2	28.1	12.4					
105.16	D	C	Phalanx2	21.5	12.6	10.0				
105.16	D	O	Phalanx2	27.3	12.4	10.3				
106.10	D	C	Phalanx2	25.0	13.1	11.0				
106.10	D	O	Phalanx2	23.2	11.0	9.2				
107.06	D	O	Phalanx2	25.7	11.0	9.3				
109.15	D	O	Phalanx2	29.3	16.2	14.0				
110.02	D	O	Phalanx2	27.5	12.3	10.0				
110.21	D	O	Phalanx2	25.3	12.9	10.7				
110.22	D	C	Phalanx2	27.9	14.9	13.1				
112.05	D	C	Phalanx2		12.2					
112.07	D	C	Phalanx2	26.2	15.0	8.6				
112.09	D	O/C	Phalanx2	26.8	12.7	9.9				
112.10	D	O	Phalanx2	22.4	11.2	9.4				
113.28	D	O/C	Phalanx2	25.1	13.4	11.2				
123.02	D	O/C	Phalanx2	25.4	14.8	11.4				
124.02	D	O/C	Phalanx2	31.7	17.8					
126.03	D	O/C	Phalanx2	21.3	10.2	8.3				
302.05	D	O/C	Phalanx2	24.6	13.2					
502.21	D	O/C	Phalanx2	23.8	11.6	9.6				
502.21	D	O/C	Phalanx2	25.2	12.7	10.5				
502.24	D	O/C	Phalanx2	26.9	12.7	10.5				
502.27	D	O/C	Phalanx2	24.4	13.8	12.0				
502.28	D	O/C	Phalanx2	23.8	11.6	9.1				
502.34	D	C	Phalanx2	24.4	13.8					
503.23	D	O/C	Phalanx2	24.0	13.9	11.0				
504.06	D	O/C	Phalanx2	24.0	15.1	13.6				
126.01	D/E	C	Phalanx2	26.2	14.0	12.1				
502.19	D/E	O/C	Phalanx2	25.0	12.6	10.5				
101.01	E	O/C	Phalanx2	23.5	11.9	9.6				
102.05	E	C	Phalanx2	23.3	11.5	9.4				
102.05	E	C	Phalanx2	24.5	12.2	9.8				
102.05	E	O	Phalanx2	24.6	13.0	11.2				
102.05	E	O	Phalanx2	25.9	12.6	10.7				
105.10	E	O/C	Phalanx2	24.2	12.8	10.9				
106.01	E	O/C	Phalanx2	25.5	13.0	11.1				
107.01	E	O/C	Phalanx2	24.5	12.7	10.2				
113.08	E	C	Phalanx2	26.5	13.2	10.8				
118.03	E	O/C	Phalanx2	24.9	11.0	9.0				
118.03	E	O/C	Phalanx2	25.4	12.9	9.9				
119.01	E	C	Phalanx2	23.5						
119.02	E	O/C	Phalanx2	16.3	14.0					
122.01	E	O/C	Phalanx2	30.2	14.3	10.5				
123.01	E	O/C	Phalanx2	24.6	12.2					
301.01	E	C	Phalanx2	25.6	14.2	11.7				
301.01	E	O	Phalanx2	24.5	12.6	11.4				
301.01	E	O	Phalanx2	29.0	15.4	12.1				
503.09	E	C	Phalanx2	25.7	13.6	11.1				
503.15	E	O/C	Phalanx2	24.7	12.2	9.5				
503.15	E	O/C	Phalanx2	25.5	11.1	9.0				
113.16	?C	O	Phalanx3	29.1	23.1					
123.07	?C	O/C	Phalanx3	34.5	28.1					
103.12	B	O	Phalanx3	27.8						
502.42	B	O	Phalanx3	34.0	27.0					
503.20	B/C	O/C	Phalanx3	29.1	22.0					
302.09	C	O	Phalanx3	34.9	25.7					
102.09	D	O	Phalanx3	33.0	27.2					
105.16	D	O	Phalanx3	30.9	25.4					
105.16	D	O	Phalanx3	31.5	25.3					
105.16	D	O	Phalanx3	33.4	26.1					
105.16	D	O	Phalanx3	35.9	30.8					
106.10	D	C	Phalanx3	36.4	30.3					
108.03	D	O	Phalanx3	32.0	26.4					
109.15	D	C	Phalanx3	37.3	31.1					
110.22	D	O	Phalanx3	30.1						
111.13	D	C	Phalanx3	34.4	28.0					
118.17	D	C	Phalanx3	31.2						
502.21	D	O/C	Phalanx3	36.2	30.0					
302.01	D/E	O/C	Phalanx3	30.0	23.1					
106.01	E	O	Phalanx3	26.7	22.5					
106.01	E	O	Phalanx3	29.7	25.6					
109.01	E	C	Phalanx3	31.1	25.9					

Context	Period	Tax	Element	X_0	X_1	X_2	X_3	X_4	X_5	X_6
127.01	E	C	Phalanx3	35.0	28.0					
127.01	E	C	Phalanx3	35.7	28.0					
127.02	E	C	Phalanx3	38.4	32.2					
305.01	E	C	Phalanx3	32.1	26.2					
121.10	?C	C	Radius	34.0*	32.9					
122.19	?C	O	Radius	36.4	35.1					
106.20	B	C	Radius	26.8	26.2					
109.41	B	C	Radius	34.7	33.7					
111.32	B	O	Radius	36.4	33.5					
110.28	B/C	O	Radius	31.6	29.9					
502.37	B/C	C	Radius			30.0	27.0			
503.25	B/C	C	Radius			39.4	34.0			
102.10	C	C	Radius	30.5	29.6					
120.11	C/D	C	Radius	32.2	31.0					
120.11	C/D	C	Radius	32.2	31.3					
120.11	C/D	C	Radius	36.1	34.6					
302.06	C/D	C	Radius			30.2	27.7			
105.16	D	C	Radius	34.2	33.8					
105.16	D	C	Radius	35.0	33.6					
106.10	D	O	Radius	35.3	31.3					
106.10	D	O/C	Radius			31.0	25.3			
108.03	D	C	Radius	33.1	30.6					
108.05	D	O/C	Radius	31.1	29.2					
108.07	D	O/C	Radius			30.6	23.0			
109.15	D	C	Radius	31.7	29.3					
109.20	D	C	Radius	31.1	30.3					
126.03	D	C	Radius	31.0	29.4					
306.02	D	C	Radius	32.6	31.8					
502.21	D	C	Radius	31.7	29.5					
504.06	D	O/C	Radius	32.2	29.4					
108.09	D/E	C	Radius	30.0	28.8					
108.09	D/E	C	Radius	32.3	30.9					
126.01	D/E	C	Radius	33.6	32.4					
302.01	D/E	C	Radius	28.8	27.6					
302.01	D/E	C	Radius	32.5	31.2					
302.01	D/E	O/C	Radius			33.1	30.4			
502.14	D/E	C	Radius	29.9	27.5					
100.00	E	C	Radius	30.9	30.1					
100.00	E	C	Radius	33.3	31.8					
101.01	E	C	Radius	30.1	28.6					
101.01	E	C	Radius	31.7	29.8	30.0	27.3			
101.01	E	C	Radius	34.6	32.5					
101.01	E	O/C	Radius			29.8				
102.01	E	O	Radius	34.8	32.2					
102.01	E	O/C	Radius			31.4	28.0			
102.05	E	C	Radius	29.8	28.7					
102.05	E	C	Radius	32.7	31.4					
102.05	E	O/C	Radius			30.2	28.1			
105.01	E	O	Radius	32.0	29.8					
105.10	E	C	Radius	30.6	28.9					
105.10	E	C	Radius	30.6	29.4					
106.01	E	C	Radius	29.3	28.0					
106.01	E	C	Radius	32.3	31.4					
106.01	E	C	Radius	35.3	33.2					
106.01	E	O/C	Radius			29.5	25.3			
107.01	E	O	Radius	34.1	31.6					
113.08	E	C	Radius	31.7	30.9					
115.01	E	C	Radius	35.8	35.0					
116.01	E	C	Radius	31.3						
120.02	E	C	Radius	24.7	24.3					
120.02	E	C	Radius	29.0	27.7					
121.02	E	C	Radius	30.3	28.6					
122.01	E	C	Radius	31.7	30.0					
122.04	E	C	Radius	28.8	26.6					
124.01	E	C	Radius			29.6	26.0			
124.01	E	O	Radius	34.4	31.4					
124.01	E	O	Radius	35.0	31.6					
125.01	E	C	Radius	28.1	27.8					
127.01	E	C	Radius	31.8	30.4					
303.01	E	C	Radius	29.8	28.8					
303.01	E	C	Radius	32.7	30.7					
304.01	E	C	Radius	33.3	31.8					
502.01	E	C	Radius			30.4	27.0			
502.01	E	C	Radius	30.3	28.3					
502.02	E	O/C	Radius	33.7	32.3					
503.01	E	C	Radius			30.6	26.3			
503.01	E	O	Radius	37.7	34.6					
505.01	E	C	Radius			31.3	28.7			
121.09	?C	C	Scapula	30.2	25.0	21.5*	16.5			
101.24	B	O/C	Scapula	35.9	29.7	22.5				
109.41	B	O/C	Scapula	32.8	25.7	20.1				

Context	Period	Tax	Element	X_0	X_1	X_2	X_3	X_4	X_5	X_6
125.10	B	O	Scapula		26.2	21.9	19.0			
502.42	B	O/C	Scapula	36.4	29.4	24.2				
502.37	B/C	O	Scapula				24.0			
102.10	C	O/C	Scapula	28.5	25.0	19.4				
102.19	C	O	Scapula	37.7	30.0	24.4				
113.12	C	O/C	Scapula	30.6	25.6	22.2	17.7			
113.24	C	C	Scapula	32.5	26.3	21.6	18.4			
113.24	C	O	Scapula	30.2	24.0	20.6	18.8			
302.06	C/D	C	Scapula	32.7	27.8	23.3	19.7			
302.06	C/D	O	Scapula	38.2	29.4	24.0				
101.08	D	C	Scapula				17.4			
102.09	D	O	Scapula			21.6	19.3			
106.10	D	O/C	Scapula	33.2	27.5	22.8	21.3			
106.10	D	O/C	Scapula	36.3	30.4	25.0	21.4			
108.07	D	O/C	Scapula	32.0	27.6	21.2				
109.07	D	O	Scapula	35.4	29.8	23.8				
117.01	D	O/C	Scapula	30.9	25.7	22.6				
117.01	D	O/C	Scapula	32.4	27.5	22.8				
126.05	D	C	Scapula	29.5	24.7	21.1	18.1			
502.21	D	O/C	Scapula	32.0	26.4	22.0				
114.01	D/E	C	Scapula				19.8			
114.01	D/E	O/C	Scapula	42.0	33.6					
126.01	D/E	C	Scapula	32.1	28.0	21.0	20.1			
302.01	D/E	C	Scapula				18.8			
302.02	D/E	C	Scapula				20.6			
502.14	D/E	C	Scapula	31.4	26.7	22.1	19.3			
504.01	D/E	O/C	Scapula	29.3	23.6		18.2			
504.01	D/E	O/C	Scapula	38.1	31.5	26.6	20.4			
100.00	E	C	Scapula	31.3	26.3	21.1	18.4	146.2	88.2	138.6
101.01	E	C	Scapula	33.7	28.3	20.3	20.1			
101.01	E	C	Scapula	36.5		23.5	24.2			
101.01	E	O	Scapula	30.4	26.2	21.4	19.6			
101.01	E	O/C	Scapula					111.8		
102.01	E	O/C	Scapula			25.3	20.7			
102.05	E	C	Scapula	34.9	28.1	23.3	20.8			
105.10	E	O	Scapula	32.3	27.2	22.6				
105.10	E	O/C	Scapula	31.3	25.5	21.0				
106.01	E	C	Scapula	31.9		23.0	18.6			
106.01	E	C	Scapula	32.0	26.2	21.3	17.8			
106.01	E	C	Scapula	33.0	26.7	22.7	17.8			
106.01	E	C	Scapula	35.0	25.9	23.8	19.7			
106.01	E	C	Scapula	35.2	29.0		17.6			
106.01	E	O	Scapula	31.6	26.9	24.2				
106.01	E	O	Scapula	38.6	30.4	23.5	21.6			
106.01	E	O/C	Scapula	32.4	28.3	23.4				
106.01	E	O/C	Scapula	37.0	30.9	25.2	19.8			
107.01	E	C	Scapula	36.0			18.5			
107.01	E	O	Scapula		28.0	22.4	20.7			
108.01	E	C	Scapula	28.2	24.3	19.6	14.2			
108.01	E	O	Scapula		26.2	20.5	19.2			
110.01	E	C	Scapula				15.3			
115.01	E	C	Scapula	31.5	24.5	20.4	18.6			
119.02	E	O/C	Scapula				18.2			
120.02	E	C	Scapula	29.0	24.8	29.5*	14.6			
122.01	E	C	Scapula	29.8	25.0	20.6	17.4			
122.01	E	C	Scapula	32.7	25.5	21.9	19.3			
122.01	E	C	Scapula	33.0	27.2	22.9	21.2			
122.01	E	C	Scapula	37.2	30.0		19.5			
122.04	E	C	Scapula	31.0	25.3	21.2	18.6			
124.01	E	C	Scapula				21.3			
125.01	E	C	Scapula				16.2			
125.01	E	O/C	Scapula				20.8			
127.01	E	O	Scapula	37.7	30.3	22.0	19.4			
301.02	E	O	Scapula				18.9			
303.01	E	C	Scapula	38.8	31.8	25.4	20.3			
303.01	E	C	Scapula	39.0	29.9	25.6	20.6			
304.01	E	O	Scapula	26.9	21.5	18.3	16.0			
305.01	E	O/C	Scapula	33.5	26.9	22.5				
101.24	B	O/C	Tibia		31.0	23.7				
105.22	B	O/C	Tibia		30.0					
112.13	B	O	Tibia		31.0	23.6				
123.19	B	O/C	Tibia		33.1	25.1				
125.16	B	O/C	Tibia		28.0	20.4				
503.25	B/C	O/C	Tibia		28.5	20.9				
503.25	B/C	O/C	Tibia		30.0	22.1				
102.10	C	O/C	Tibia	48.2						
113.24	C	O/C	Tibia		27.4	20.8				
113.24	C	O/C	Tibia		30.1	22.7				
101.08	D	O/C	Tibia	43.6						
105.16	D	O/C	Tibia		25.3	18.4				
108.03	D	O/C	Tibia		27.6	19.5				

Context	Period	Tax	Element	X_0	X_1	X_2	X_3	X_4	X_5	X_6
108.07	D	O/C	Tibia		25.0	18.5				
110.02	D	O/C	Tibia		27.8	20.7				
112.10	D	O/C	Tibia		26.1	19.3				
120.09	D	O/C	Tibia		26.0	19.6				
123.05	D	O/C	Tibia		26.0	20.0				
124.02	D	O/C	Tibia		27.2	19.5				
126.03	D	O/C	Tibia		27.4	19.6				
301.03	D	O/C	Tibia		29.6	21.4				
310.01	D	O/C	Tibia		26.1	19.2				
502.16	D	O/C	Tibia		24.4	18.7				
502.31	D	O/C	Tibia		28.7	21.2				
126.01	D/E	O/C	Tibia		27.7					
302.01	D/E	O/C	Tibia		24.2	18.6				
503.13	D/E	O/C	Tibia		32.5	25.0				
100.00	E	O/C	Tibia		24.3	16.3				
101.01	E	O/C	Tibia		24.2	19.3				
101.01	E	O/C	Tibia		24.3	19.3				
101.01	E	O/C	Tibia		28.1	22.4				
101.01	E	O/C	Tibia		29.3	22.1				
101.01	E	O/C	Tibia		31.3	23.7				
102.01	E	O/C	Tibia		28.3	20.8				
102.05	E	O/C	Tibia		24.8	18.9				
102.05	E	O/C	Tibia		25.7	20.0				
102.05	E	O/C	Tibia		26.9	18.9*				
105.10	E	O/C	Tibia		19.8					
105.10	E	O/C	Tibia		25.9	20.2				
106.01	E	O/C	Tibia		24.4	17.4				
106.01	E	O/C	Tibia		24.4	19.4				
106.01	E	O/C	Tibia		25.4	19.1				
106.01	E	O/C	Tibia		26.2	21.7				
106.01	E	O/C	Tibia		27.1	20.7				
106.01	E	O/C	Tibia	40.6	26.5	18.4	205.0			
109.01	E	O/C	Tibia	44.2						
115.01	E	O/C	Tibia		26.9	20.8				
121.01	E	O/C	Tibia		28.3	20.7				
121.01	E	O/C	Tibia		32.8	23.7				
122.01	E	O/C	Tibia		26.4	20.0				
122.01	E	O/C	Tibia		27.6	19.7				
122.01	E	O/C	Tibia		27.9	21.2				
122.04	E	C	Tibia		27.8	20.9				
122.04	E	O/C	Tibia		27.0	20.3				
122.04	E	O/C	Tibia		27.6	21.4				
127.01	E	O/C	Tibia		29.2	22.4				
303.01	E	O/C	Tibia		24.3	19.2				
305.01	E	O/C	Tibia		26.4	19.2				
502.01	E	O/C	Tibia		27.0	20.0				
502.02	E	O/C	Tibia		30.6	24.0				
502.04	E	O/C	Tibia		25.8	19.2				
502.04	E	O/C	Tibia		27.9	20.0				
505.01	E	O/C	Tibia		26.2	19.7				
101.24	B	O/C	Ulna		26.8	32.0				
307.02	C/D	O	Ulna	41.3	26.9	24.3				
108.06	D	O/C	Ulna		22.1	25.4				
118.18	D	C	Ulna	45.0		24.3				
126.03	D	C	Ulna	41.3	25.0	21.6				
302.05	D	C	Ulna	41.0		20.9				
502.27	D	O	Ulna	44.2		26.1				
100.00	E	O/C	Ulna		26.2	29.8				
101.01	E	O/C	Ulna		22.6	26.3				
102.05	E	C	Ulna		22.1	24.8				
105.01	E	O	Ulna			26.6				
106.01	E	C	Ulna	32.7	31.6	17.8				
301.01	E	O/C	Ulna	41.9	24.1					

Bos

Context	Period	Element	X_0	X_1	X_2	X_3	X_4	X_5
101.24	B	Astragalus				44.1		
101.24	B	Astragalus	61.3	57.3	34.4	37.0		
108.07	D	Astragalus		57.8		37.2		
123.02	D	Astragalus	58.4	54.3	31.5*	37.9		
126.03	D	Astragalus	53.3	49.2	28.1	31.1		
502.27	D	Astragalus	64.2	60.0	35.0	40.0		
102.18	E	Astragalus	75.6		41.8			
105.01	E	Astragalus			36.7			
106.01	E	Astragalus				37.6		
106.01	E	Astragalus	57.3	52.2	31.5	36.7		
106.01	E	Astragalus	62.0	57.6	35.1	37.8		
109.01	E	Astragalus				34.6		
122.01	E	Astragalus	66.0	60.2		43.0		

Context	Period	Element	X_0	X_1	X_2	X_3	X_4	X_5
124.01	E	Astragalus	69.2	63.1	36.8	43.1		
503.01	E	Astragalus	57.0	54.9				
503.01	E	Astragalus	57.0	54.9				
101.12	D	Atlas	77.3					
502.04	E	Axis	78.2					
502.37	B/C	Calcaneum	139.0					
120.11	C/D	Calcaneum	117.5					
122.01	E	Calcaneum	106.0					
305.01	E	Calcaneum	116.5					
502.01	E	Calcaneum	111.8					
123.25	B	Femur		118.8				
504.01	D/E	Femur			78.1			
106.01	E	Femur		105.0				
301.03	D	Humerus		58.9	36.6			
105.01	E	Humerus		66.7	39.3			
121.01	E	Humerus	81.3	71.0	43.6			
123.01	E	Humerus			33.4			
502.01	E	Humerus		68.0	40.3			
502.49	?B	Metacarpal			61.1	64.8	33.3	
123.15	B	Metacarpal				74.4		
117.05	C/D	Metacarpal	51.1	30.7				
108.03	D	Metacarpal	62.6	40.4				
112.09	D	Metacarpal	45.4	26.4				
117.01	D	Metacarpal	47.2	29.6				
126.03	D	Metacarpal			45.8	48.1	22.1	
302.05	D	Metacarpal			46.8	48.7	25.1	
504.09	D	Metacarpal	61.0	39.0				
126.01	D/E	Metacarpal	54.3	32.9				
100.00	E	Metacarpal			46.7	49.9	23.5	
101.01	E	Metacarpal				50.2	24.7	
101.01	E	Metacarpal			53.5	59.5	27.5	
102.05	E	Metacarpal			49.2	55.6	25.7	
102.18	E	Metacarpal			49.1	56.4	26.4	
105.05	E	Metacarpal	48.9					
106.01	E	Metacarpal	45.0	26.9				
106.01	E	Metacarpal	48.0	27.9	47.0	49.2	23.7	189.0
106.01	E	Metacarpal	49.0	30.8				
108.01	E	Metacarpal	47.5	29.1	44.8	49.9	24.4	183.0
121.02	E	Metacarpal	50.4	30.5	45.9	50.2		177.0
122.04	E	Metacarpal			51.7	57.7		
303.01	E	Metacarpal	56.9	33.6				
502.04	E	Metacarpal			48.2	51.3	25.0	
503.01	E	Metacarpal			43.9		23.6	
502.49	?B	Metatarsal	47.7	46.1				
502.49	?B	Metatarsal	48.7	47.7				
123.08	?C	Metatarsal	47.3	44.7				
502.37	B/C	Metatarsal			48.7	49.9	28.7	
109.15	D	Metatarsal	38.1	35.5				
123.05	D	Metatarsal				48.1		
123.05	D	Metatarsal				57.2		
123.05	D	Metatarsal	43.5	41.1				
126.05	D	Metatarsal	33.7	33.7				
502.24	D	Metatarsal	43.6	40.0				
126.01	D/E	Metatarsal			52.3	58.3	27.3	
504.01	D/E	Metatarsal			42.0	45.9	25.0	
100.00	E	Metatarsal			51.8	54.7	26.6	
100.00	E	Metatarsal	40.6	39.8				
101.01	E	Metatarsal			49.3			
101.01	E	Metatarsal	45.2	40.2				
102.05	E	Metatarsal			44.7	47.1	23.8	
105.10	E	Metatarsal	45.0					
106.01	E	Metatarsal			45.5	51.4	24.9	
110.01	E	Metatarsal	46.4	44.8				
116.01	E	Metatarsal			45.1	48.7		
122.01	E	Metatarsal			57.3	59.2	33.6	
122.01	E	Metatarsal	39.2	36.6				
122.04	E	Metatarsal	40.7	39.0				
124.01	E	Metatarsal			39.7	43.7	23.4	
303.01	E	Metatarsal	45.9	44.4				
502.04	E	Metatarsal			47.1	52.7	25.5	
503.08	E	Metatarsal			41.0	45.0	25.4	
101.24	B	Navcuboid	56.5					
503.25	B/C	Navcuboid	52.0					
123.02	D	Navcuboid	50.1					
502.24	D	Navcuboid	46.6					
101.01	E	Navcuboid	46.5					
122.01	E	Navcuboid	41.3					
502.05	E	Navcuboid	46.8					
502.49	?B	Phalanx1	63.5	33.3	31.0			
101.24	B	Phalanx1	52.2	28.1	26.1			
101.24	B	Phalanx1	58.2	29.9	27.9			

Context	Period	Element	X_0	X_1	X_2	X_3	X_4	X_5
101.24	B	Phalanx1	58.2	32.1	31.0			
101.24	B	Phalanx1	58.4	28.9	28.4			
101.24	B	Phalanx1	59.1	28.0	26.7			
101.24	B	Phalanx1	63.5	29.1	27.7			
101.24	B	Phalanx1	65.9	35.9	33.6			
106.21	B	Phalanx1	51.1					
123.25	B	Phalanx1	58.9	28.3	28.2			
502.39	B	Phalanx1	56.1	26.1	24.6			
502.42	B	Phalanx1	53.5	28.0	27.6			
502.42	B	Phalanx1	57.8	32.0	30.9			
502.47	B	Phalanx1		38.1	37.4			
502.37	B/C	Phalanx1	56.7	24.4	25.0			
102.19	C	Phalanx1	54.5	29.2	28.2			
102.19	C	Phalanx1	55.0	26.4	24.3			
109.34	C	Phalanx1	58.1	27.8	25.8			
302.11	C	Phalanx1	60.2	25.8	25.7			
101.12	D	Phalanx1	57.7	32.7	33.9			
101.12	D	Phalanx1	65.3	30.5	29.1			
105.16	D	Phalanx1	53.8	27.6	26.4			
105.16	D	Phalanx1	57.4	28.3	25.0			
106.10	D	Phalanx1	55.3	23.5	22.8			
106.10	D	Phalanx1	69.2	30.5	29.3			
112.10	D	Phalanx1	53.4	27.1	24.5			
121.27	D	Phalanx1		30.7	28.6			
122.06	D	Phalanx1	52.2	28.3				
123.02	D	Phalanx1	54.0	27.1	27.0			
123.05	D	Phalanx1		24.1				
123.05	D	Phalanx1		24.4				
124.02	D	Phalanx1	51.9	25.1	23.7			
126.03	D	Phalanx1	50.4	25.6	23.4			
502.33	D	Phalanx1	56.6	29.6				
504.09	D	Phalanx1		34.1				
126.01	D/E	Phalanx1	51.9	25.6	23.4			
302.01	D/E	Phalanx1	52.7	27.7	26.2			
504.01	D/E	Phalanx1	51.8	26.1	22.6			
504.01	D/E	Phalanx1	53.3	22.9	21.2			
100.00	E	Phalanx1	51.4	26.0	26.0			
100.00	E	Phalanx1	53.4	23.9				
101.01	E	Phalanx1	49.5	27.2	25.1			
101.01	E	Phalanx1	58.1	31.7	28.4			
106.01	E	Phalanx1	50.7	22.6	21.2			
106.01	E	Phalanx1	53.6	25.2	24.0			
106.01	E	Phalanx1	54.8	23.8	23.6			
106.01	E	Phalanx1	56.3	27.4	26.2			
108.01	E	Phalanx1		21.6				
122.04	E	Phalanx1	54.6	24.0				
125.01	E	Phalanx1	60.6	30.8	27.5			
304.01	E	Phalanx1	51.7	31.1	29.5			
309.01	E	Phalanx1	55.6	26.6	26.6			
502.05	E	Phalanx1		23.7				
503.08	E	Phalanx1	60.7					
505.01	E	Phalanx1	50.4	22.9	21.0			
505.01	E	Phalanx1	53.3	28.0	25.7			
113.14	?C	Phalanx2	34.1	21.8	19.7			
101.24	B	Phalanx2	35.2	28.2	25.4			
101.24	B	Phalanx2	35.3	25.4	22.4			
101.24	B	Phalanx2	36.1	25.6	22.0			
101.24	B	Phalanx2	36.4	26.9	24.2			
101.24	B	Phalanx2	36.4	27.5	24.2			
101.24	B	Phalanx2	37.3	28.7	25.6			
101.24	B	Phalanx2	38.5	31.8	28.0			
101.24	B	Phalanx2	39.5	29.7	25.5			
101.24	B	Phalanx2	39.8	25.4	21.4			
101.24	B	Phalanx2	40.0	30.7	26.0			
101.24	B	Phalanx2	42.5	27.4	24.3			
101.24	B	Phalanx2	42.5	28.5	23.5			
101.24	B	Phalanx2	44.6	32.3	28.5			
502.42	B	Phalanx2	41.4	30.0	27.0			
101.08	D	Phalanx2	35.5	25.5	21.4			
101.12	D	Phalanx2	43.1	30.4	29.2			
102.09	D	Phalanx2	40.0	25.7	22.1			
105.16	D	Phalanx2	53.5	37.6	30.7			
106.22	D	Phalanx2	45.3	30.7	24.4			
109.20	D	Phalanx2	37.9	26.5	23.7			
112.09	D	Phalanx2	35.6	27.7	23.4			
115.03	D	Phalanx2	32.4	22.6	20.1			
121.25	D	Phalanx2	37.7	27.0	21.8			
121.27	D	Phalanx2	36.7	29.3	25.2			
123.02	D	Phalanx2	38.0	27.8	22.9			
123.02	D	Phalanx2	39.3	27.4	22.7			
123.05	D	Phalanx2	33.9	26.0	21.7			

Context	Period	Element	X_0	X_1	X_2	X_3	X_4	X_5
126.03	D	Phalanx2	32.8	24.8	22.7			
101.01	E	Phalanx2	33.6	25.9	22.2			
102.05	E	Phalanx2	41.8	31.9	27.8			
105.10	E	Phalanx2	38.0	24.3	20.2			
106.01	E	Phalanx2	37.1	24.1	20.5			
106.01	E	Phalanx2	37.4	26.9	21.5			
106.01	E	Phalanx2	38.1	24.8	21.2			
106.01	E	Phalanx2	39.6	31.5	26.1			
107.01	E	Phalanx2		23.4				
107.01	E	Phalanx2		24.5				
109.18	E	Phalanx2	36.2	24.2	20.5			
122.01	E	Phalanx2	35.3	28.9	22.9			
122.01	E	Phalanx2	46.2	38.4	29.4			
301.01	E	Phalanx2	53.0	31.1	29.1			
304.01	E	Phalanx2		28.4	23.6			
304.01	E	Phalanx2	36.7	26.9	23.4			
502.05	E	Phalanx2	30.8	20.8	18.2			
503.01	E	Phalanx2	40.5	29.2	27.0			
503.15	E	Phalanx2	32.2	22.2	19.0			
503.15	E	Phalanx2	33.4	23.4	19.9			
110.29	?B	Phalanx3	67.4					
101.24	B	Phalanx3	59.5	48.2				
101.24	B	Phalanx3	61.3	53.8				
101.24	B	Phalanx3	62.2	52.3				
101.24	B	Phalanx3	69.7	53.5				
502.41	B	Phalanx3	66.0	51.9				
502.42	B	Phalanx3	71.5*					
502.42	B	Phalanx3	56.5					
502.42	B	Phalanx3	67.5	55.6				
502.42	B	Phalanx3	83.3	65.1				
113.24	C	Phalanx3	56.3	47.5				
108.10	C/D	Phalanx3		73.0	23.1			
102.09	D	Phalanx3	61.6	50.1				
108.07	D	Phalanx3	53.6	45.4				
108.07	D	Phalanx3	76.4	62.7				
118.01	D/E	Phalanx3	60.6	48.5				
100.00	E	Phalanx3	62.3	51.9				
101.01	E	Phalanx3	64.1	48.1				
101.01	E	Phalanx3	73.9	54.2				
101.01	E	Phalanx3	77.9	59.7				
105.01	E	Phalanx3	61.0					
106.01	E	Phalanx3	56.1	46.9				
116.01	E	Phalanx3	60.4	47.4				
127.01	E	Phalanx3	66.3	56.1				
305.01	E	Phalanx3	54.8	43.1				
123.25	B	Radius		78.3				
113.24	C	Radius		74.0	68.0			
101.12	D	Radius		78.2	71.0			
109.15	D	Radius		73.4	66.7			
110.02	D	Radius		41.5				
126.03	D	Radius		67.6	62.5			
118.01	D/E	Radius		67.0	60.4			
101.01	E	Radius				61.2		
101.01	E	Radius		74.4	67.5			
105.10	E	Radius		71.2	62.1			
106.01	E	Radius		70.4	62.0			
108.01	E	Radius		79.5	72.5			
303.01	E	Radius		66.8	61.3			
305.01	E	Radius				65.6	63.4	
503.25	B/C	Scapula		86.4	67.4			
123.05	D	Scapula		64.7	55.2	44.8		
502.21	D	Scapula		62.9	52.8	45.0*		
504.01	D/E	Scapula		46.3	41.0			
101.01	E	Scapula		56.2	45.8	38.2	42.6	
102.05	E	Scapula		54.6	47.6	34.3	32.1	
102.05	E	Scapula		58.5	49.7	38.7	41.8	
102.05	E	Scapula		65.7	60.1	44.2	46.3	
105.10	E	Scapula		66.5	55.4	49.8		
106.01	E	Scapula		49.9	44.3	37.6	38.9	
109.01	E	Scapula		63.7	54.7	46.0		
109.01	E	Scapula		64.8	54.0	44.1		
110.01	E	Scapula		55.3	46.5	36.3		
305.01	E	Scapula		54.5	45.4	38.8		
101.24	B	Tibia		60.7	46.0			
102.10	C	Tibia		46.5	26.2			
102.10	C	Tibia		52.9	41.4			
110.21	D	Tibia		60.8	43.6			
119.03	D	Tibia		61.2	43.7			
100.00	E	Tibia		53.8	39.6			
101.01	E	Tibia		59.3	42.0			
102.05	E	Tibia		56.8	42.5			

Context	Period	Element	X_0	X_1	X_2	X_3	X_4	X_5
102.05	E	Tibia		57.0	42.1			
102.05	E	Tibia		58.4	43.0			
102.18	E	Tibia		73.9	49.8			
106.01	E	Tibia		55.5	40.6			
115.01	E	Tibia		54.0	38.5			
123.25	B	Ulna	93.7	51.3	58.7			
105.10	E	Ulna		54.5				

Pig

Context	Period	Element	X_0	X_1	X_2	X_3	X_4	X_5
111.30	B	Astragalus				23.5		
502.42	B	Astragalus	41.8	38.1				
125.08	B/C	Astragalus	42.3	39.8				
113.24	C	Astragalus	36.4	34.8		21.7		
102.09	D	Astragalus	40.9	38.2				
301.01	E	Astragalus	37.5	36.2		22.1		
301.02	E	Astragalus	42.6	38.2				
503.01	E	Astragalus	41.4	38.0				
106.10	D	Atlas	52.9	47.8				
113.24	C	Axis	47.4					
109.19	D	Axis	47.8					
102.18	E	Axis	45.6					
123.15	B	Calcaneum	86.1					
124.08	?C	Humerus	37.1	32.8	28.0			
101.24	B	Humerus	38.5	31.9	25.6			
123.24	B	Humerus			25.4			
502.37	B/C	Humerus		29.0	23.8			
503.25	B/C	Humerus	38.5	31.9	28.3			
503.25	B/C	Humerus	39.7	33.9	26.5			
302.06	C/D	Humerus	33.5	29.3	29.3			
302.13	C/D	Humerus	36.1	30.0	26.3			
504.01	D/E	Humerus	37.6	31.1	25.5			
301.01	E	Humerus	37.5	31.1	26.4			
301.01	E	Humerus	38.0	31.4	26.5			
309.01	E	Humerus	34.8	30.3	25.2			
124.06	?C	Metacarpal iii		16.4				
101.24	B	Metacarpal iii	18.2					
502.42	B	Metacarpal iii		16.4				
502.42	B	Metacarpal iii		19.1				
125.08	B/C	Metacarpal iii		13.3				
503.21	D	Metacarpal iii		18.4				
123.06	?C	Metacarpal iv		15.1				73.8
101.24	B	Metacarpal iv	13.3					
101.24	B	Metacarpal iv	16.0					
123.14	B	Metacarpal iv		16.0				81.2
123.15	B	Metacarpal iv		11.9				
123.15	B	Metacarpal iv		14.2				78.1
502.42	B	Metacarpal iv		14.3				
502.42	B	Metacarpal iv		15.1				
502.37	B/C	Metacarpal iv		12.7				
123.19	B	Metatarsal iii		14.0				
502.42	B	Metatarsal iii		13.8				
125.08	B/C	Metatarsal iii		13.8				
125.08	B/C	Metatarsal iii		14.3				
502.37	B/C	Metatarsal iii		14.1				
306.02	D	Metatarsal iii		15.2				
301.01	E	Metatarsal iii	16.6					90.3
101.24	B	Metatarsal iv	13.8					
111.32	B	Metatarsal iv	15.0					91.5
123.23	B	Metatarsal iv		16.0				
125.08	B/C	Metatarsal iv		14.4				
109.15	D	Metatarsal iv	15.8					
110.29	?B	Phalanx1	36.5	15.9	14.8			
123.15	B	Phalanx1	37.6	17.0	15.5			
125.08	B/C	Phalanx1	37.8	17.9	16.6			
125.08	B/C	Phalanx1	37.9	18.5	16.1			
502.37	B/C	Phalanx1	33.0	14.4				
502.37	B/C	Phalanx1	36.9	15.0	14.0			
502.37	B/C	Phalanx1	39.8	16.8	15.6			
503.26	B/C	Phalanx1	38.0	16.0	14.2			
503.27	B/C	Phalanx1	51.2	22.0	20.1			
111.23	C	Phalanx1	39.8	17.8	16.2			
301.01	E	Phalanx1	41.5	16.6	15.6			
301.02	E	Phalanx1	36.2	16.8	15.4			
503.15	E	Phalanx1	34.0	18.2	16.0			
101.24	B	Phalanx2	20.2	15.4	14.1			
101.24	B	Phalanx2	23.7	16.4	15.3			
111.30	B	Phalanx2	25.2	15.4	13.6			
502.47	B	Phalanx2	25.1	16.8	14.0			

Context	Period	Element	X_0	X_1	X_2	X_3	X_4	X_5
125.08	B/C	Phalanx2	21.1	15.3	12.9			
503.27	B/C	Phalanx2	22.3	16.9	16.9			
101.12	D	Phalanx2	20.3	14.1	12.6			
113.26	?C	Phalanx3	30.5	29.9				
502.42	B	Phalanx3	29.7	27.4				
502.42	B	Phalanx3	29.8	28.5				
502.47	B	Phalanx3	27.4	26.9				
125.08	B/C	Phalanx3	31.5	29.4				
301.01	E	Phalanx3	26.9	26.3				
502.42	B	Radius	25.6					
125.08	B/C	Radius	24.1					
503.25	B/C	Radius	28.9					
101.14	C	Radius	27.2					
102.09	D	Radius	22.7					
124.01	E	Radius	23.3					
301.01	E	Radius	26.2					
502.42	B	Scapula	34.4	30.2	24.3	20.8		
502.47	B	Scapula	29.0	24.1	20.9	17.3		
111.22	C	Scapula	34.2		25.1	22.6		
101.24	B	Tibia	29.3	25.6				
124.09	B	Tibia	31.2	27.3				
502.47	B	Tibia	28.6	26.8				
502.37	B/C	Tibia	29.4	25.8				
502.33	D	Tibia	27.9	23.8				
301.02	E	Tibia	30.2	26.7				
301.02	E	Tibia	30.7					
101.24	B	Ulna	21.3	24.5				

Camel

Context	Period	Element	
100.00	E	Astragalus	GLl >79.0 GLm 72.0 Dl 47.3 Bd 59.2
100.00	E	Astragalus	GLl 79.2 GLm 70.3 Dl 44.5 Bd 55.4
303.01	E	Astragalus	Bd 54.8
100.00	E	Calcaneum	GL 144.0
100.00	E	Calcaneum	GL 153.6
118.01	D/E	Metacarpal	Bp 75.7 Dp 47.9
100.00	E	Metatarsal	Bp 64.3 Dp 49.4
101.24	B	Phalanx 1	GL 93.1 Bp 37.1 SD 20.2 Bd 37.5
101.01	E	Phalanx 1	Bp 34.7 SD 20.9
106.01	E	Phalanx 1	GL 78.2 Bp 35.2 SD 21.0 Bd 30.4
123.01	E	Phalanx 1	GL 90.3 Bp 39.7 SD 21.8 Bd 35.8
306.02	D	Phalanx 2	GL 57.6 Bp 27.2 Bd 33.0
122.01	E	Phalanx 2	GL 73.2 Bp 34.2 SD 27.8
502.01	E	Phalanx 2	GL 68.6 Bp 34.9 Bd 38.4
125.05	B/C	Radius	Bd 99.8 BFd 87.2
106.01	E	Scapula	LG 66.1 BG 68.6
100.00	E	Tibia	Bd 87.4 Dd 53.5

Dog

Context	Period	Element	
113.08	E	Femur	SD 13.1
503.13	D/E	M/tarsal iii	GL 57.2 Bd 8.2
108.06	D	Phalanx 1	GL 33.3 Bp 10.2 SD 6.5 Bd 8.6
502.37	B/C	Sacrum	BFcr 20.0 HFcr 9.8
305.01	E	Tibia	GL 217* Bd 26.4 Dd 19.5

Fox

Context	Period	Element	
101.24	B	Radius	Bd 12.6
503.15	E	Radius	Bp 10.7
503.20	B/C	Humerus	Bd 17.6
108.04	D	Humerus	GL 125.1 GLC 122.9 Bp 19.8* Dp 25.8 SD 7.6 Bd 21.1
502.37	B/C	Ulna	DPA 12.2 SDO 10.7 BPC 8.7
504.04	D/E	Ulna	DPA 13.0 SDO 11.0 BPC 8.7

Cat

Context	Period	Element	
302.01	D/E	Atlas	GL 16.6 BFcr 20.4 BFcd 15.8 GLF 13.7 LAd 7.2 H 13.5
106.01	E	Atlas	BFcr 22.7 BFcd 16.0 GLF 16.5
109.15	D	Calcaneum	GL 28.7 GB 12.0
114.01	D/E	Calcaneum	GL 27.0
502.08	D	Femur	Bd 20.0
502.08	D	Femur	Bp 20.7 DC 10.0

Context	Period	Element	
125.01	E	Femur	Bp 16.1 DC 8.3
505.01	E	Femur	Bp 17.8 DC 8.8
118.01	D/E	Humerus	Dp 16.5
126.01	D/E	Humerus	Bp 14.7 Dp 18.9 Bd 17.5
302.01	D/E	Humerus	Bd 15.6
106.01	E	Humerus	Bp 14.7 Dp 18.8
119.01	E	Humerus	Bd 17.9
503.15	E	M/carpal iv	GL 28.4 Bd 4.0
105.12	D/E	M/tarsal iii	GL 43.9 Bd 5.8
107.01	E	M/tarsal iii	GL 42.9 Bd 5.2
106.01	E	M/tarsal iv	GL 53.2 Bd 5.8
117.01	D	Scapula	DHA 63.6 SLC 10.8 GLP 12.3 LG 10.3 BG 8.2
114.01	D/E	Tibia	GL 102.9 Bp 17.0 Bd 13.9
302.01	D/E	Tibia	Bd 13.2 Dd 8.5
100.00	E	Tibia	Bd 14.2 Dd 8.7
109.15	D	Ulna	DPA 10.7 SDO 9.8 BPC 8.6
302.01	D/E	Ulna	DPA 9.5 SDO 8.7

Hare

Context	Period	Element	
302.06	C/D	Femur	Bp 23.4 BTr 21.6
126.01	D/E	Femur	GL 115.7 GLC 110.9 Bp 23.7 DC 9.5 SD 9.3 Bd 17.8
502.02	E	Femur	Bp 23.7 BTd 23.3
502.33	D	Humerus	Bd 11.2
503.15	E	M/tarsal iii	GL 49.5 Bd 5.4
106.10	D	Scapula	SLC 7.1 GLP 12.9 BG 10.7
504.06	E	Tibia	Bp 17.1

Fallow Deer *(Dama mesopotamica)*

Context	Period	Element	
502.37	B/C	Astragalus	GLl 41.9 GLm 40.8 Dl 23.8 Bd 27.2
502.37	B/C	Naviculocuboid	GB 35.5
502.37	B/C	Tibia	Bd 41.0* Dd 30.2*
301.01	E	Phalanx 1	GLpe 49.9 Bp 18.1 SD 14.3 Bd 15.8

Equid

Context	Period	Element	
105.10	E	Astragalus	H 41.8 LmT 40.7 GB 41.5 BFd 33.7
502.49	?B	Femur	DC 59.6
502.02	E	Metacarpal	GL 169.8 GLl 167.3 Ll 164.4 Bp 34.1 Dp 24.0 Bd 31.6 Dd 23.6
110.21	D	Metatarsal	Bp 33.5 Dp 30.1 SDD 20.1 Bd 30.8 Ll 206.5 GLl 209.5
122.01	E	Metatarsal	GL 217.2 Bp 35.7 Dp 28.6
114.01	D/E	Phalanx 1	GL 59.8 Bp 32.5 BFp 30.7 Dp 25.0 Bd 27.2 BFd 26.2
502.02	E	Phalanx 1	Bp 32.9 Bd 24.2
503.01	E	Phalanx 1	GL 62.4 Bp 31.9 BFp 31.0 Dp 23.1 SD 18.8
126.03	D	Phalanx 2	GL 31.9 Bp 29.4 BFp 28.1 Dp 19.4 SD 25.0 Bd 28.0
126.03	D	Phalanx 3	GL -33.7 GB 34.5 LF 17.0 BF 26.0 Ld 30.9 HP 23.6
306.02	D	Radius	Bd 52.2 BFd 42.7
504.07	D	Radius	Bd 50.5 BFd 43.7
502.02	D	Radius	Bd 51.6 BFd 43.1
102.13	C	Tibia	Bp 67.2
122.01	E	Tibia	Bd 46.3 Dd 31.2
125.01	E	Tibia	Bp -66.5

Gazelle

Context	Period	Element	
105.16	D	Femur	Bp 41.2
502.02	E	Humerus	BT 25.4 H 19.5
502.04	E	Mandible	(von den Driesch no.3) 41.0 (5) 94.0 (6) 111.3 (7) 54.3 (8) 35.0 (9) 18.8 (10) L16.7 B6.8 (11) 32.7 (15a) 24.4 (15b) 14.9 (15c) 12.0
106.13	C	Metacarpal	Bp 24.3 Dp 17.1
101.01	E	Metatarsal	Bp 20.8 Dp 22.7 DTD 22.3 DTCD 23.0 DAPD 12.3 GL 181.0
101.06	D	Radius	Bp 27.3 BFp 26.8
101.01	E	Radius	Bp 29.1 BFp 27.0 Bd 27.2 BFd 25.5 GL 152
101.01	E	Scapula	GLP 30.3 LG 25.6 BG 22.0 SLC 19.1 DHA 174.0
101.01	E	Ulna	LO 40.4 DPA 23.1

Rabbit

Context	Period	Element	
108.10	C/D	Femur	GL 80.9 GLC 77.3 Bp 16.0 BTr 16.3 DC 7.2 Dd 14.1
108.10	C/D	Tibia	GL 87.2 Bp 14.6 Bd 12.6
108.09	D/E	Femur	BTr 16.7 DC 7.2 Bd 14.1
108.09	D/E	Tibia	GL 87.0 Bp 14.3 Bd 12.4
502.31	D	Femur	GL 87.5 GLC 81.7 Bp 15.8 BTr 16.9 DC 6.8 Bd 13.9
502.34	D	Tibia	Bd 11.3

Miscellaneous

Context	Period	Taxon	Element	
102.13	C	Hyaena (Hyaena hyaena)	Astragalus	GL 28.6
503.01	E	Otter (Lutra lutra)	Femur	Bd 26.2
502.21	D	Porcupine (Hystrix indica)	Humerus	Bd 29.5
102.10	C	Leopard (Panthera pardus)	Humerus*	Bp 49.3 Dp 58.5

**NB Leopard humerus is unfused*

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Abbreviations

AASOR	Annual of the American Schools of Oriental Research
ADAJ	*Annual of the Department of Antiquities of Jordan*
CCCM	*Corpus Christianorum, Continuatio Mediaeualis.* Turnhout (1900–).
CGOH	*Cartulaire général de l'Ordre des Hospitaliers de Saint-Jean de Jérusalem (1100–1310)*, ed. J. Delaville le Roulx, 4 vols. Paris (1894–1906).
DRHC	*Documents relatifs à l'histoire des croisades*. Paris (1946–).
EAEHL	*Encyclopaedia of Archaeological Excavations in the Holy Land*, ed. M. Avi-Yonah and E. Stern, 4 vols. Jerusalem (1975–8)
ESI	*Excavations and Surveys in Israel*
IHC	*Itinera Hieroslymitana Crucesignatorum (saec. XII–XIII)*, 4 vols, ed. S. de Sandoli, Studium Biblicum Franciscanum, Collectio Maior, vol. XXIV. Jerusalem (1978–84).
Itin. Ric.	*Itinerarium Peregrinorum et Gesta Regis Ricardi*, ed. W. Stubbs, *Rolls Series*, vol. XXXVIII.i. London (1864). Trans. H.J. Nicholson, *The Chronicle of the Third Crusade*, Crusader Texts in Translation, vol. III. Aldershot (1997).
LA	*Liber Annuus Studii Biblici Franciscani*
NEAEHL	*The New Encyclopedia of Archaeological Excavations in the Holy Land*, ed. E. Stern, 4 vols. Jerusalem (1993).
PPTS	*Palestine Pilgrims' Text Society Library*, 13 vols. London (1890–97).
RDAC	*Report of the Department of Antiquities, Cyprus*. Nicosia.
RHC Occ	*Recueil des Historiens des Croisades, Historiens occidentaux*, 5 vols. Paris (1844–95).
RHC Or	*Recueil des Historiens des Croisades, Historiens orientaux*, 5 vols. Paris (1872–1906).
RRH	*Regesta Regni Hierosolymitana*, ed. R. Röhricht. Innsbruck (1893).
RRH Ad	*Regesta Regni Hierosolymitana, Additamentum*, ed. R. Röhricht. Innsbruck (1904).
SP (1934)	*Suba. Jerusalem Sub-District Map. Surveyed in 1933*. Survey of Palestine, March 1934. Scale 1:10,000. Jerusalem.
SWP (1880)	*Map of Western Palestine in 26 Sheets from Surveys Conducted for the Committee of the Palestine Exploration Fund by Lieutenants C.R. Conder and H.H. Kitchener, R.E., During the Years 1872–1877.* Scale 1 inch to a mile. London.
TOT	*Tabulae Ordinis Teutonici ex Tabularii Regii Berolinensis Codice Potissimum*. Berlin (1869); reprinted with preface by H.E. Mayer, Toronto (1975).

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