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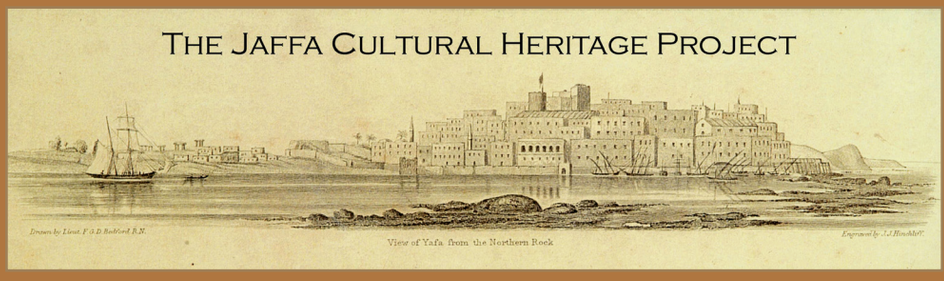

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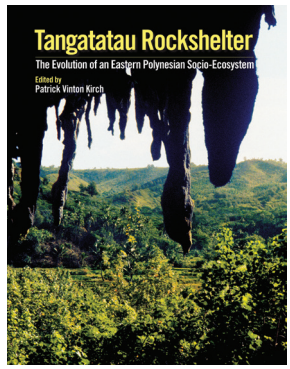

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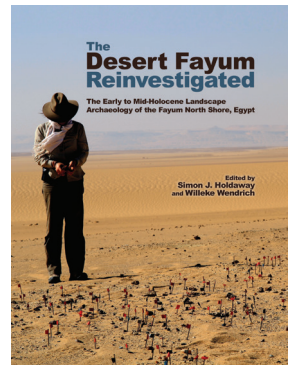

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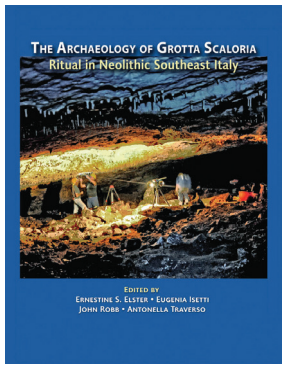

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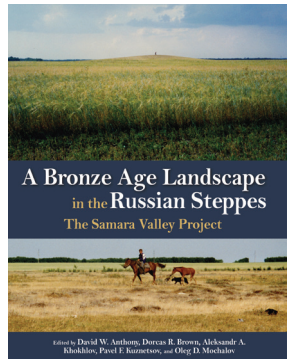

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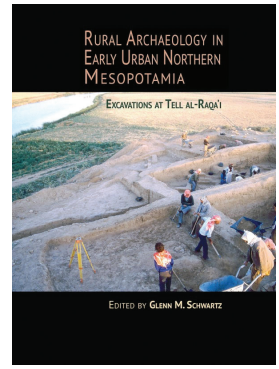

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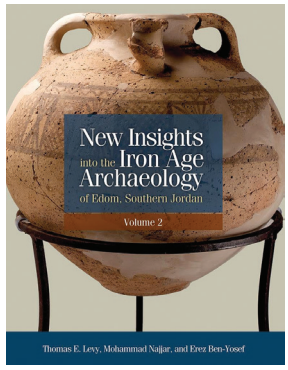

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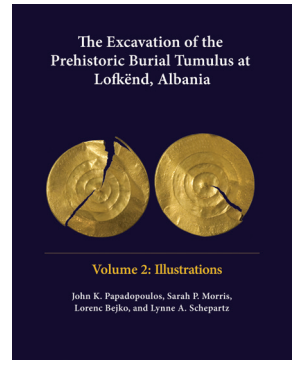

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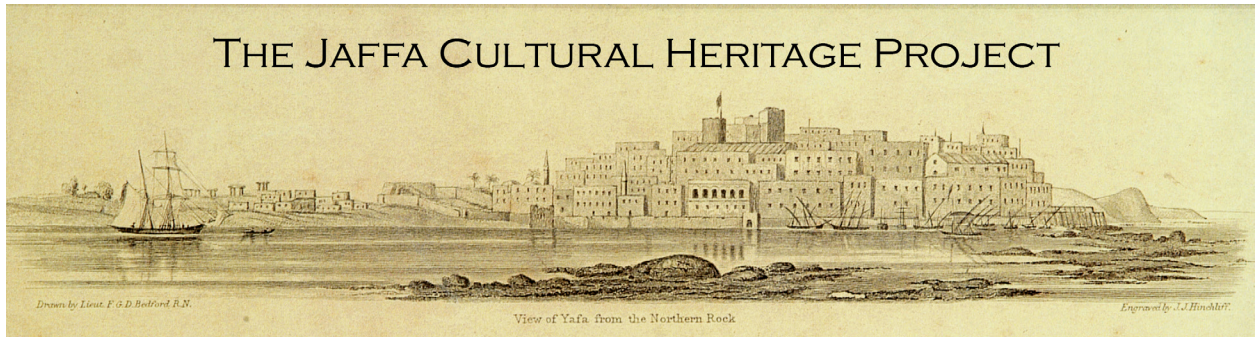

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AARON A. BURKE AND MARTIN PEILSTÖCKER, SERIES EDITORS

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EDITED BY
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In memoriam

Yehoshua (Shuka) Dorfman (1950–2014)

Director General of the Israel Antiquities Authority

Without whose vision, the Jaffa Cultural Heritage Project would not have existed.

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Preface

The present volume is the second in the Jaffa Cultural Heritage Project publication series. It represents the culmination of a decade of fieldwork and analysis by the Jaffa Cultural Heritage Project, under the direction of Aaron A. Burke and Martin Peilstöcker and the publication of *HAJ* 1 (Peilstöcker and Burke 2011). While the project has successfully carried out seven seasons of excavations since 2007, a significant contribution of the project has been the fostering of a collaborative research environment, which has created a dialogue among a growing number of researchers in Israel and abroad who have worked on various aspects of Jaffa's history and archaeology. The present volume is a testament to the extent of these collaborations, which involve not only archaeologists but also historians, geographers, and specialists from a wide range of disciplines, with coverage extending from prehistory through the modern period.

A major problem for research of Jaffa prior to the Jaffa Cultural Heritage Project's inception was a lack of visibility of studies relating to Jaffa's history and archaeology, which were scattered among preliminary reports, specialist studies, and a number of publications in Hebrew that were largely inaccessible to many researchers. Before the publication of *HAJ* 1, the only book-length treatments of Jaffa's archaeology or premodern history in English were Samuel Tolkowsky's nearly century-old but still indispensable *The Gateway of Palestine: A History of Jaffa* (Tolkowsky 1924), later published in Hebrew in 1926, and Ruth Kark's *Jaffa: A City in Evolution (1799–1917)* (Kark 1990), which was translated from the Hebrew edition.

Many large edited volumes suffer from a lack of integration and editing that provide coherence to disparately themed, if still related, studies of a subject. To avoid this, the editors have adopted a number of measures that are all the more significant for Jaffa given the number of contributors to this volume, the diverse character of their contributions, and the many periods represented. Some contributions have been retitled, with the author's permission, to clarify the content of individual articles. We have also supplemented all articles, except those in Parts III and IV, with abstracts, which will assist in clarifying the significance of individual contributions. Among the most superficial but essential measures has been the standardization of placenames. This has resulted in an extensive and revised gazetteer for Jaffa (see Appendix 1). Since a number of excavations have been conducted in certain places (e.g., Armenian Compound, Postal Compound), excavation license numbers have often been relocated to notes but are important for identifying all of the excavations carried out in one area. These are collected in Appendix 2, updating the list published in *HAJ* 1 and providing references for reports that have appeared at least through the end of 2015. Whenever possible, efforts have also been made to standardize the presentation of ceramic and other finds. Likewise, repetitive historical background information has been extensively abbreviated and sometimes shortened by inserting references to discussions among earlier publications, notably to historical overviews in *HAJ* 1, which were not cited in the original submissions. Many terms in foreign languages, particularly Arabic, are rendered in italics, and Arabic plurals are retained (e.g., *bayāra*, pl. *bāyarāt*). Insofar as this may complicate recognition of their significance, these terms are included with

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definitions in the index. The index itself is extensive and includes references to all historical personages, as well as places of relevance to Jaffa and its setting. Last, the reader may encounter a few occasions where the editors have added endnotes, prefixed as *Editor's note*, intended to include information that was otherwise unknown to the authors during their study. Such measures, taken together, we hope will add to the utility of individual contributions and create further cohesion among the themes addressed in the five parts of this work.

The present volume has been under production for several years. We would like to thank the contributors for agreeing to have their works included in this venue and for their patience during its production. It is our hope that these works, collected together in a single volume with notable unifying themes, will increase the visibility of these studies and thus further the integration of Jaffa's history and archaeology in these related disciplines. The editors thank Nadia Ben-Marzouk (UCLA) for her assistance with the assembly of the volume and fact-checking of the bibliography, and Amy Karoll (UCLA) for her work on many of the figures. Likewise, we thank Krister Kowalski (Johannes Gutenberg Universität, Mainz) for his assistance in the production of maps for a number of the contributions. We also thank Randi Danforth and the Cotsen Institute of Archaeology Press for agreeing to publish the volume, but also for the excellent appearance of the final product. Additional acknowledgments are included at the end of each contribution.

Aaron A. Burke, Katherine Strange Burke,
and Martin Peilstöcker
The Jaffa Cultural Heritage Project
October 2017

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Abbreviations

HAJ	*History and Archaeology of Jaffa*. The Jaffa Cultural Heritage Project Series, 2011 to present
IAA	Israel Antiquities Authority
IDAM	Israel Department of Antiquities and Museums
J. *BJ*	Josephus, *Bellum Judaicum* [Wars of the Jews]
JCHP	Jaffa Cultural Heritage Project
JGU	Johannes Gutenberg Universität, Mainz
NRSV	*The New Oxford Annotated Bible.* New Revised Standard Version (New York: Oxford University Press, 1991)
OJDC	Old Jaffa Development Corporation, Ltd.
R.	Rabbi (for street names)
TAU	Tel Aviv University
UCLA	University of California, Los Angeles

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Introduction

Aaron A. Burke, Katherine Strange Burke, and Martin Peilstöcker
University of California, Los Angeles, and Humboldt Universität zu Berlin

While final excavation reports for major excavations both on the tell and off of it are in preparation, *The History and Archaeology of Jaffa* (*HAJ*) 2 provides a collection of independent studies and final reports on smaller excavations that do not require individual book-length treatments. The work builds upon the project's initial volume, *The History and Archaeology of Jaffa 1* (Burke and Peilstöcker 2011). As such, this volume is divided into five parts and includes an extensive set of appendixes to facilitate its consultation. The volume's content is arranged around overviews of archaeological research in Jaffa (Part I), historical and archaeological studies of Medieval and Ottoman Jaffa (Part II), reports on excavations by the Israel Antiquities Authority at both the Postal Compound on 6 Ben Shetah St. between 2009 and 2011 (Part III) and the Armenian Compound in 2006 and 2007 (Part IV), and discrete studies of the excavations of Jacob Kaplan and Haya Ritter-Kaplan in Jaffa on behalf of the Israel Department of Antiquities and Museums from 1955 to 1974 (Part V). The primary content of the volume is supplemented with a number of appendixes that update and expand upon data first collated for *HAJ* 1. Table 0.1 lists the periods and dates generally used in this work.

Table 0.1. Periods discussed in the text with approximate dates.

Period	Dates
Early Bronze Age	3800–2000 BCE
Middle Bronze Age	2000–1550 BCE
Late Bronze Age	1550–1100 BCE
Iron I	1100–980 BCE
Iron IIA	980–840 BCE
Iron IIB–C	840–586 BCE
Babylonian	586–539 BCE
Persian	539–332 BCE
Hellenistic	332–176 BCE
Hasmonean	176–66 BCE
Early Roman	66 BCE–74 CE
Late Roman	74–313 CE
Byzantine	313–634 CE
Early Islamic	634–1099 CE
Crusader	1099–1244 CE
Mamluk	1244–1512 CE
Ottoman	1512–1917 CE
British Mandate	1917–1947 CE

Part I (Archaeological Research in Jaffa) reviews the accomplishments of the Jaffa Cultural Heritage Project since its establishment in 2007 (Chapter 1). This also includes preliminary reports on the project's excavations by Aaron Burke and Martin Peilstöcker in Jaffa's Visitors Center (Area C) in 2008 and 2009, as well as the Ramesses Gate and Lion Temple areas (Area A) from 2011 to 2014 (Chapter 2; see Figures 0.1 and 0.2). These excavations are the most extensive excavations on Tel Yafo (i.e., on the mound itself) since archaeological work in Jaffa began, outside of those by Jacob Kaplan, which ended on the mound in 1974. The renewed research excavations in Area A have provided substantial insights into the Late Bronze Age settlement of the site, which included an Egyptian fortress occupied from the fifteenth century BCE to the end of the twelfth century BCE, the dates for the latter of which are now confirmed by radiocarbon methods. In addition, the excavations in Area C (see Figure 0.2) not only revealed the extent of the Hellenistic and Early Roman architecture at

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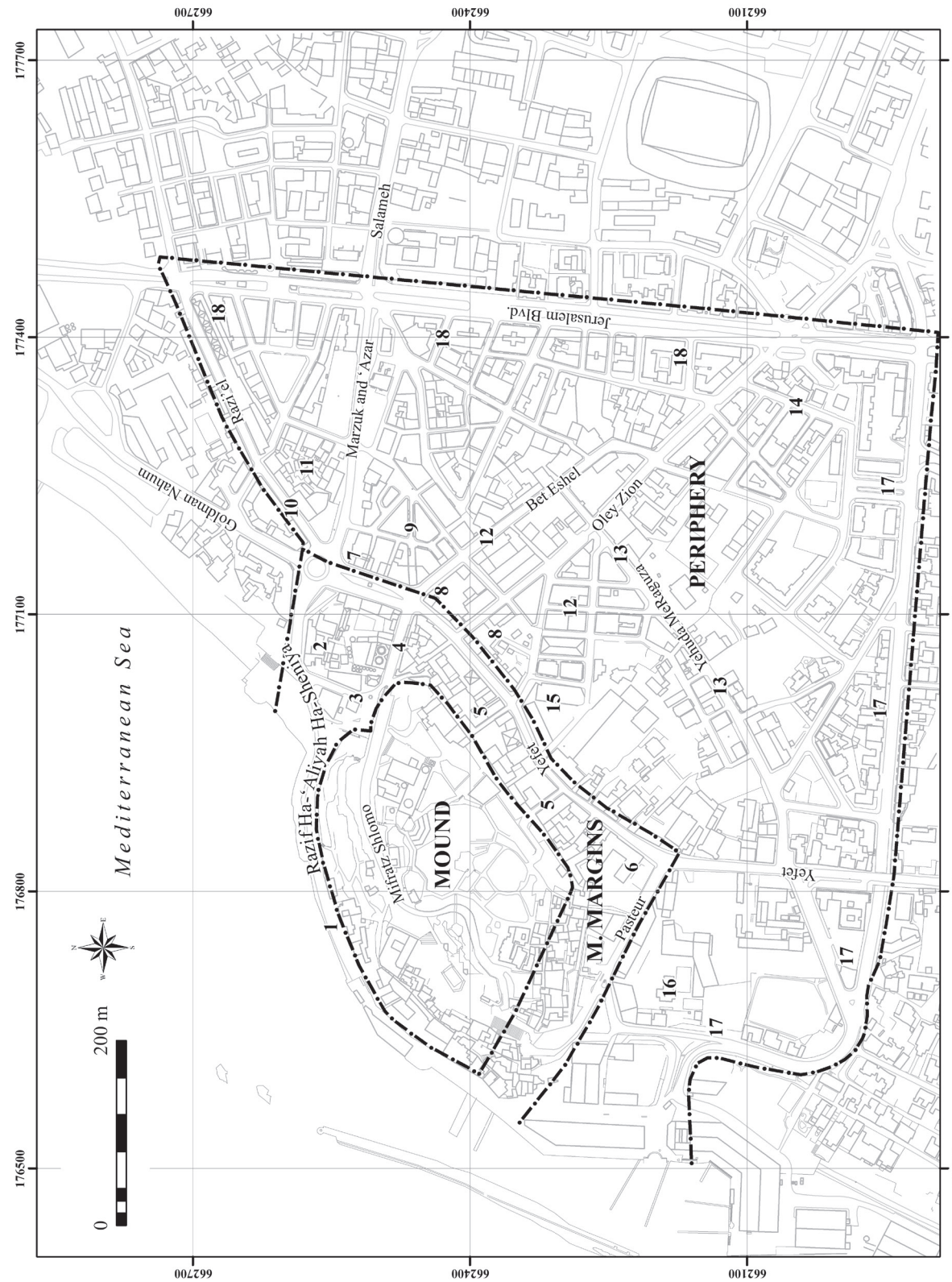

Figure 0.1. Map showing the main divisions of the archaeological site of Jaffa and excavation areas within the mound's margins and periphery. 1. Armenian Compound, 2. Qishle, 3. Ruslan and Mifraz Shlomo St., 4. Ottoman city (Jerusalem) gate, 5. Ha-Tsorfim St., 6. French Hospital; 7. Clock Tower Sq., 8. Yefet St., 9. Greek Market, 10. Razi'el St., 11. Postal Compound, 12. Flea Market, 13. MeRagusa St., 14. Magen Avraham Compound, 15. Ganor Compound, 16. Andromeda Hill, 17. Ha-Yamit St., 18. Jerusalem Blvd. *Plan by Krister Kowalski, adapted from A. Dagot.*

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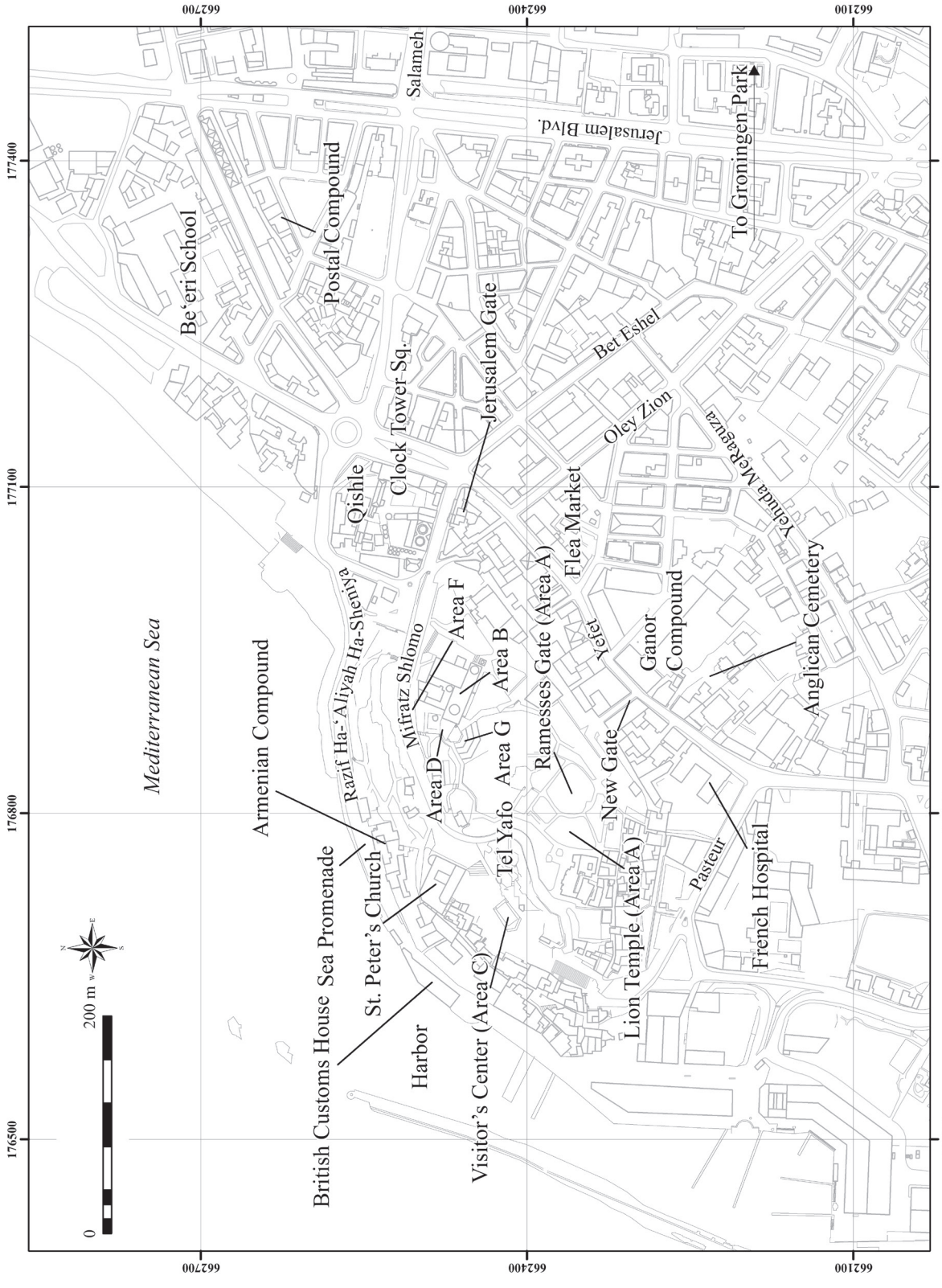

Figure 0.2. Main excavation areas and monuments in Jaffa discussed in this volume.

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the site but also fundamentally facilitated the presentation of these archaeological remains as they appear today within the renovated facility that opened in 2011.

While the *HAJ* series is intended to facilitate the publication of historical and archaeological studies of Jaffa's cultural heritage, occasionally central themes emerge as a result of concentrated exploration in particular areas of the site, which were intensively settled during certain periods and topics. This is true for the present volume, particularly as it pertains to extensive salvage excavations almost exclusively off the mound of Jaffa (Tel Yafo) itself that have been conducted primarily by the Israel Antiquities Authority (IAA) since the mid-1990s. Much work has also been done off the mound in what is commonly referred to as the Lower Town (Chapter 3). East of this recent efforts have also been made to identify an ancient estuary that likely functioned as a sheltered anchorage (Chapter 4). Part II (Historical and Archaeological Studies of Medieval and Ottoman Jaffa) addresses the extensive research of Jaffa's Crusader and Ottoman phases, particularly during the late Ottoman period, that has been undertaken during the past two decades, providing a watershed of information for understanding how the city functioned, especially during the nineteenth century. While salvage excavations occasionally provide finds useful for understanding Jaffa during early periods (Chapter 5), such as the Bronze and Iron Ages, they are most significant for providing an archaeological perspective on the late Ottoman period, when the area grew enormously. Until the excavations by Yoav Arbel and other researchers featured in this volume, this period was not treated as archaeological and still remains legally excluded from such protection, despite the protection of standing monuments that fall under other safeguards for cultural heritage.

Among the factors that make Jaffa so interesting during the Ottoman period was its increasingly frequent appearance among the accounts of Western travelers to the Holy Land (see Silberman 1982), for which Jaffa served as its port of entry (see Chapter 6). But the lower town that emerged during the late Ottoman period, as we learn from salvage excavations, had already seen sporadic expansion or use for cemeteries during the Hellenistic, Roman, Byzantine, Islamic, and Crusader periods. Consequently, the history and archaeology of settlement on the slopes of and around Tel Yafo during these periods, but especially during the late Ottoman period, is extensively addressed in this work. When they are not the primary focus of a contribution, the reader will note that later periods affected the cultural remains of earlier periods and thus are significant for understanding the cultural processes that shaped Jaffa's earlier archaeological remains.

In addition to archaeological excavations, a number of studies have been undertaken of Jaffa's cultural heritage during the late Ottoman period in recent years. As Tzvi Shacham explains (Chapter 7), the fortuitous discovery of several photographs that provide a panoramic view of the eastern side of Jaffa now provides us with a never-before-seen view of the city's late Ottoman defenses, including its moat, walls, and Jerusalem Gate (see Figure 0.1). This coincides with recent excavations by Yoav Arbel and Lior Rauchberger in the location of Jaffa's Jerusalem Gate (Chapter 8; see Figure 0.1). The resulting reconstruction of this gate's role in Jaffa stands in contrast with other elements of Jaffa's late Ottoman defenses. As Samuel Giler and Or Aleksandrowicz reveal concerning the so-called New Gate (see Figure 0.1), misidentifications have sometimes led to urban legends about the association of extant features with Jaffa of Abū Nabūt's time (Chapter 9). While much attention has been dedicated to the study of Jaffa's late Ottoman defenses, especially in light of the changes they underwent in the late nineteenth century, other monuments and elements of the city outside Jaffa's walls during this period have also attracted study. These elements reveal a cosmopolitan city, rooted in the Ottoman world. Samuel Giler provides the first treatment of the Anglican Cemetery (see Figure 0.1) that was established in 1842 and served many of Jaffa's English residents and travelers until the early twentieth century (Chapter 10). The area outside Jaffa's walls was home to its many citrus orchards, famous for Jaffa oranges. The identification of an inscription associated with one of these provides an opportunity for an expanded discussion on the role of *bāyarāt* or orchard houses and their function, as offered by Avi Sasson and Nitzan Amitai-Preiss (Chapter 11). However, for many of Jaffa's foreign visitors during the late Ottoman period, Jerusalem and not Jaffa was their ultimate destination. Avi Sasson provides a detailed treatment of the infrastructure that supported the functioning of the road between Jaffa and Jerusalem, which began at Jaffa's Jerusalem Gate discussed above and ended at the Jaffa Gate in Jerusalem (Chapter 12).

The rich character of life in Ottoman Jaffa is amplified by finds from IAA salvage excavations in the lower city. Among these are metal artifacts from the Flea Market and Ganor Compound (see Figure 0.1), which are analyzed by Kate Raphael (Chapter 13). They include relics of Jaffa's

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violent history, such as cannon, musket balls, and other weapons, as well as implements that reveal daily life like agricultural tools, household items, cosmetic and surgical implements, and jewelry. Among them are a number of finds dating to the Medieval period as well. Hardly any study of the archaeology of an Ottoman city would be complete without a discussion of ceramic Ottoman pipes. Lior Rauchberger provides a typology of well-preserved exemplars of such pipes from archaeological contexts in Jaffa (Chapter 14).

Part III (Excavations at the Postal Compound) summarizes the IAA's excavations at 6 Shimon Ben Shetah St. (see Figure 0.1) directed by Eriola Jakoel. The site, which is located to the northeast of Tel Yaof, provided evidence of Iron Age, Persian, Hellenistic, Roman, Byzantine, Early Islamic, and Ottoman use (Chapter 15). The most significant discovery, however, was the identification of the Roman period cemetery that included numerous burial types. The ceramics from these excavations, analyzed by Peter Gendelman and Eriola Jakoel, offer several in situ assemblages that corroborate this dating and its history of subsequent disturbances during the periods mentioned above (Chapter 16). Gerald Finkielsztejn examines a Rhodian and a Phoenician stamped amphora handle (Chapter 17), while Daniel Ariel (Chapter 18) discusses the numismatic finds, and Vered Eshed analyzes the human skeletal remains from the site associated with the cemetery (Chapter 19). The overall conclusions of these excavations also provide the necessary context for confirming the results of the analysis of cemetery remains from the Be'eri School excavated by Jacob Kaplan in 1965, just to the west of the Postal Compound (see Part V, Chapter 26).

Part IV provides a summary of IAA salvage excavations within the Armenian Compound (see Figure 0.1), from 2006 to 2007, by Yoav Arbel. These excavations, which comprise one of three stages in the excavations of the Armenian Compound, provided a basis for exploration of features of Jaffa's Early Islamic fortifications and various other installations (Chapter 20). A later, albeit more discrete, stage of the Armenian Compound excavations was undertaken in 2006 by Lior Rauchberger within the so-called room over the church (Chapter 21). Ceramics from these excavations, analyzed by Anna de Vincenz, include a wide range of forms from the Byzantine, Early Islamic, and Ottoman periods (Chapter 22). Nitzan Amitai-Preiss presents the first published example of an Abbasid stamped handle from Jaffa (Chapter 23). The most impressive find from the 2006 excavations was an Athenian black-figured krater fragment, one of only several such sherds recovered from Jaffa's excavations, published by Peter Gendelman (Chapter 24).

In keeping with *HAJ* 1, Part V presents additional studies of excavations in Jaffa by Jacob Kaplan and Haya Ritter-Kaplan between 1955 and 1982 (see Peilstöcker 2011). A final report for the excavations at the northern end of Jaffa in Areas B, D, F, and G (see Figure 0.1), focused on an exploration of the northern limits and fortifications of the upper mound (Tel Yafo) between 1959 and 1964, is presented by Kyle Keimer (Chapter 25) within the framework of the Kaplan Excavations Publication Initiative (Burke 2011). Although many challenges face the interpretation of these early salvage excavations, the soundings provided a unique opportunity to explore this portion of the mound, as Kaplan worked within the halls of the late Ottoman bathhouse (i.e., Hammam). To the north of the Qishle, Kaplan also carried out salvage excavations in 1965 in advance of the addition of a bomb shelter to the vocational Be'eri School (see Figure 0.1). An examination of the materials from this site along with the excavated records, and in light of the excavations in the Postal Compound (Part III), permits Aaron Burke, Brett Kaufman, and Katherine Burke to identify this area as a Roman burial ground (Chapter 26). The findings of Medieval steel nails suggest a later use of this area during the Crusader period, as Davide Zori and Brett Kaufman reveal (Chapter 27). A separate study of Bronze and Iron Age figurines from Kaplan's excavations in Areas A and Y (see Figure 0.1) by Michael Press provides yet another view of the artifacts excavated from these periods on Tel Yafo and parallels for them from the southern Levant (Chapter 28).

This volume of the *History and Archaeology of Jaffa* is supplemented with online appendixes, which are largely the by-product of studies undertaken since the inception of the Jaffa Cultural Heritage Project. Appendix 1 is an updated and expanded gazetteer for Jaffa, while Appendix 2 updates the list of licenses issued for Jaffa with the addition of bibliographic references for many excavations for which publications have appeared since *HAJ* 1. Appendix 3 provides a working bibliography for Jaffa, supplementing a few synthesis works on Jaffa produced to date. Appendix 4 provides a first attempt to collate the locations of displayed artifacts excavated from Jaffa. Finally, Appendix 5 lists presentations made by project members concerning archaeological research in Jaffa made between 2007 and 2016.

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PART I

Archaeological Research in Jaffa

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Chapter 1

The Jaffa Cultural Heritage Project, 2007–2016

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This chapter summarizes the various activities and accomplishments of the Jaffa Cultural Heritage Project during the decade since its inception in 2007. In light of the fact that changes in the directions and objectives of archaeological projects often occur but are not usually documented, the intention of this summary is to provide a context for ongoing developments in the research of Jaffa's history and archaeology.

In 2007, the Jaffa Cultural Heritage Project (JCHP) was established as a collaborative research program between the Israel Antiquities Authority (IAA) and the University of California, Los Angeles (UCLA). In the decade since then, both the project and our archaeological understanding of Jaffa have changed considerably. Between 2009 and 2016, for example, Johannes Gutenberg Universität (JGU) of Mainz, Germany, joined the project, resulting in the incorporation of its researchers and students, and in 2014, the IAA ceased to be a formal partner in the project. This chapter reports on the activities of the JCHP from its inception in 2007 to 2016, using the framework defined in *The History and Archaeology of Jaffa 1* (Burke and Peilstöcker 2011). Our intention is to provide an update on research, publication, conservation, and public outreach efforts by the project, as well to create an opportunity to acknowledge sources of support and funding for the project.

Archaeological and Historical Research

Excavations and Study Seasons, 2007–2016

Following an initial season of collaborative work in the salvage excavations within the Ganor Compound (Figure 1.1) by staff members from UCLA and the IAA along Yefet St. in 2007 (Peilstöcker and Burke 2009, 2011), excavations were conducted in 2008 and 2009 within the Visitor's Center (Figure 1.2) in Qedumim Sq. outside of St. Peter's Church (Burke and Peilstöcker 2009a, 2009b; Burke et al. 2014). As described in Chapter 2, these excavations revealed the potential for the successful consultation and integration of the unpublished excavation records of Jacob Kaplan's excavations in Jaffa, which included those in Area C within Qedumim Square in 1961 and 1965. Following a study season in 2010 during which staff members worked with the records and artifacts from the excavations in the Ramesses Gate portion of Area A, excavations by the JCHP resumed from 2011 to 2014 in the Ramesses Gate (Figure 1.3), expanding to include the Lion Temple portion of Area A in 2014 (see Burke et al. 2017). Analysis of the corpus of unpublished materials excavated by Jacob Kaplan in Area A—from 1955 to 1962 in the Ramesses Gate and from 1970 to 1974 to the west and south within the Lion Temple and its environs—made clear that a nuanced picture of Egyptian imperialism in Canaan could be reconstructed, providing a view from an Egyptian fortress that experienced several violent destructions over more than three hundred years.

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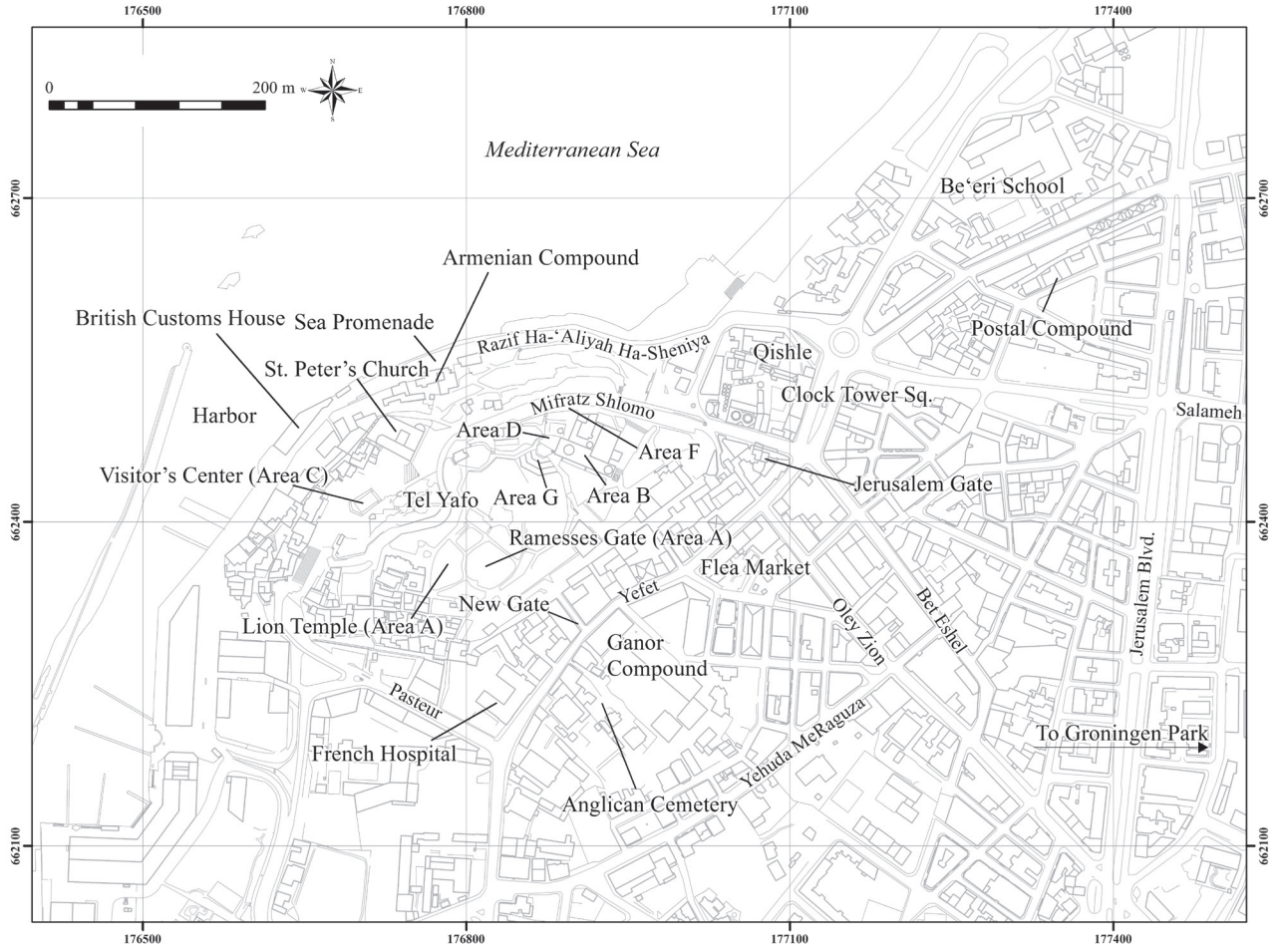

Figure 1.1. Map showing locations within Jaffa that are discussed in the text. *Map by Krister Kowalski.*

This work has been carried out under a research program funded by the National Endowment for the Humanities titled "Insurgency, Resistance, and Interaction: Archaeological Inquiry into New Kingdom Egyptian Rule in Jaffa" (Burke et al. 2017),[1] continuing with study seasons in 2015 and 2016 (Burke and Peilstöcker 2016).

Archaeological Research of Islamic, Crusader, and Ottoman Jaffa

Although largely emanating from recent salvage excavations, predominantly carried out by Yoav Arbel, an extensive corpus of archaeological data has emerged for the Islamic, Crusader, and Ottoman Jaffa (Figure 1.4). These have centered on a series of IAA excavations since the late 1990s that have brought to light significant occupational remains associated with Jaffa's settlement history from the early Islamic period on. The main areas yielding these remains are largely on Tel Yafo's periphery and include the Flea Market, Ganor Compound, Armenian Compound, Qishle, and French Hospital excavations (for specific excavations and related publications, see Appendixes 1 and 2). In conjunction with this work, a series of studies have been undertaken by Katherine Strange Burke (2007, 2011, 2012) and Edna Stern of the Islamic and Crusader ceramics (Figure 1.5), the Ottoman ceramics by Anna de Vincenz (see also Chapter 22), and Ottoman pipes by Lior Rauchberger (see Chapter 14).[2] The history and archaeology of the late Ottoman period are also now amply documented for the first time in a series of studies included in the present volume (see Part II).

The Cultural Atlas of Jaffa

Although in a nascent stage, various studies and a growing collection of photographs (Figure 1.6) and artistic and cartographic sources concerning Jaffa, many of which appear in this volume, continue to be collected and integrated

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Figure 1.2. JCHP excavations of Area C (Visitor's Center) in July 2009. *Photograph by Aaron A. Burke.*

into historical and archaeological studies, revealing the importance of such collections. This collection is referred to as the Cultural Atlas of Jaffa, and a number of the works collected as part of this appear in this volume (see figures in Chapters 4, 6–12, and 26; also Pierce 2011; Shacham 2011). Among these are recent studies of Jaffa's landscape as it may reveal evidence for the existence of an early harbor and the premodern environment of Jaffa's hinterland (see the Ioppa Maritima Project below and Chapter 4). These are also significant for the study of Jaffa's Medieval and Ottoman harbor facilities (see Chapter 6). Tzvi Shacham has also offered a recent comprehensive publication of Jaffa's most important cartographic sources (Shacham 2011), which greatly aid in the study of late Ottoman Jaffa. Appendix 1 of this volume likewise provides an updated gazetteer of streets, monuments, and excavation areas within Jaffa as discussed in the *History and Archaeology of Jaffa* volumes and other JCHP publications. Further exploitation of this rich documentation will no doubt shed further light on archaeological and historical studies of Jaffa during the Ottoman period.

The Ioppa Maritima Project: Investigating Jaffa's Maritime Connections

Additional to the above excavation efforts in 2013, a collaborative project was initiated between Aaron Burke and Shelley Wachsmann of the Institute for Nautical Archaeology at Texas A&M University. The aim of this project was to explore the long-hypothesized possibility that Jaffa's original allure as a harbor was likely due to an inland anchorage afforded by a now-extinct body of water sometimes referred to as the "Solomonic Harbor" (see review of question in Chapter 4, this volume). In 2014, fieldwork included geophysics (Figure 1.7) and geological coring east of Tel Yafo, and deep-sea maritime exploration off the coast (Wachsmann 2014; Wachsmann et al. 2014).[3] While the results are being prepared for publication, the research will permit a refinement of the suggested location of a previous inlet or estuary that may have served as Jaffa's earliest anchorage. This then was presumably the Bronze and Iron Age anchorage or harbor that would have played a pivotal role not only in the transport of Phoenician timber and labor to Jerusalem but also earlier for the Egyptian fleet during the New Kingdom. A number of interesting maritime targets, which were known from multibeam surveys, were also explored off the coast as part of this project. Unfortunately, none of them was found to predate the twentieth century.[4] The Ioppa Maritima Project's work, while preliminary, reveals the significant potential for an improved understanding of Jaffa's landscape through various means that do not involve archaeological excavations.

Publications

Along with recent preliminary reports (see references under "Excavations and Study Seasons, 2007–2016" above), significant strides have been made in the publication of archaeological findings from Jaffa since the project's inception in 2007.[5] In addition to the appearance of the first volume in the Jaffa Cultural Heritage Project series, *The History and Archaeology of Jaffa 1* (Peilstöcker and Burke 2011), publications include work now culminating in reports on the excavations and finds from Jacob Kaplan's and Haya Ritter-Kaplan's excavations in Jaffa as part of the Kaplan Excavations Publication Initiative (A. Burke 2011).

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Figure 1.3. Final stage of JCHP excavations of the Area A, Ramesses Gate (twelfth century BCE) in late July 2013. View southeast. *Photograph by Aaron A. Burke.*

Figure 1.4. Collection of Medieval ceramics from excavations in Jaffa on display during "Jaffa: Tor" exhibit at the Bibelhaus Erlebnis Museum, March 2014. *Photograph by Aaron A. Burke.*

Among these is a forthcoming report on the material remains from the Persian to Byzantine periods edited by Orit Tsuf[6] and the Bronze and Iron Age remains that will be published in two volumes by the project's directors. Additional studies of findings by Kaplan include an overview of the remains of the Egyptian garrison early in our research (Burke and Lords 2010; Burke and Mandell 2011), Bronze and Iron Age figurines (Chapter 28, this volume), and publications on the excavations at the northern end of Tel Yafo in Areas B, D, F, and G (Keimer 2011; also Chapter 25, this volume), as well as within the Be'eri School (Chapters 26 and 27, this volume).

Alongside the highlighting of the Ottoman period archaeology of Jaffa in the present volume, publications for recent excavations of elements of Ottoman Jaffa are under way, providing a unique treatment of one of Palestine's most important Ottoman cities. A final report on the IAA's salvage excavations in the Qishle, the Ottoman fortress located on Jaffa's north side, is in the final stages of editing. An extensive list of preliminary (and some final)

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Figure 1.5. Edna Stern (left) and Katherine Strange Burke (right) discuss ceramics in August 2008. *Photograph by Aaron A. Burke.*

Figure 1.6. Recently identified photo from 1918 of the entrance to Jaffa's rocky seaward harbor showing "the Rocks of Andromeda." *Courtesy of Shelley Wachsmann.*

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Figure 1.7. Geophysics work near Bloomfield Stadium, east of Jaffa, in association with Ioppa Maritima project in August 2014. Rick Dunn, project geologist, tows equipment while Simona Avnaim-Katav, microforaminifera specialist, observes. *Photograph by Shelley Wachsmann.*

reports of IAA and research excavations is published in this volume, as well a number of studies resulting from related collaborations and information sharing.[7]

The greatest support to the publication efforts has been the Cotsen Institute of Archaeology, with generous support from the Shelby White-Leon Levy Program for Archaeological Publications for the publication of the Kaplan legacy of excavations in Jaffa.[8] Additional support for the analysis of finds has come from a number of institutions, including various entities at University of California, Los Angeles[9] and the Johannes-Gutenberg Universität, Mainz.[10] Among the publications for Jaffa during the past few years has been an extensive catalog of archaeological artifacts from Jaffa and neighboring sites for an exhibit at the Bibelhaus Erlebnis Museum in Frankfurt, Germany (Figure 1.8), that ran from September 27, 2013, to June 29, 2014 (Peilstöcker et al. 2013). This catalog features 21 articles on Jaffa's history and archaeology addressing not only archaeological finds from Jaffa but also subjects such as Operation Anchor during the British Mandate, which extensively shaped Jaffa's archaeological record as well as our access to the archaeological remains (Gavish 2013).

Figure 1.8. Poster for the "Jaffa: Tor zum Heiligen Land" exhibit at the Bibelhaus Erlebnis Museum, 2013–2014.

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Conservation

Conservation work in Jaffa has resulted in only limited success during the inception of the project. The overwhelming costs associated with conservation work provide the greatest impediment to these efforts, which have been largely restricted therefore to conservation work in relation to ongoing IAA salvage excavations funded by the projects themselves (Strul 2011). Although a part-time IAA staff member has been dedicated to the issue of conservation of Jaffa's monuments, which has contributed to a number of recently restored works (Figure 1.9), there is little disagreement that a full-time staff member dedicated to Jaffa's cultural heritage is required if monuments are to be preserved as they are in many other nations (Figure 1.10). Samuel Giler (see treatment of the Anglican Cemetery in Chapter 10) and other interested scholars have committed considerable energies to meetings with the municipality of Tel Aviv–Jaffa to address development concerns that increasingly overlook Jaffa's traditional appearance as developments continue at a breakneck pace (Figure 1.11). The statutory restrictions on development (see Ajami 2011) have done little to stem creative efforts to circumvent well-intentioned limitations on development, as witnessed, for example, in the recent construction of additional stories

Figure 1.9. Early stage of restoration of *sabīl* of Abū Nabūt along Ruslan St. below Mifratz Shlomo St. as seen on February 28, 2012. View northwest. *Photograph by Aaron A. Burke.*

Figure 1.10. View of the renovated Visitor's Center in July 2013 during a tour led by Old Jaffa Development Corporation staff. *Photograph by Aaron A. Burke.*

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Figure 1.11. Martin Peilstöcker and Samuel Giler discuss upcoming concerns regarding the management of Jaffa's historic buildings in 2012. *Photograph by Aaron A. Burke.*

atop the boutique hotel that is nearing completion on the grounds of the former Qishle on the Clock Tower Square (Samuel Giler, personal communication, 2013). Likewise, underground parking structures off Tel Yafo such as for the Ganor Compound, French Hospital, and Qishle hotel projects inexorably change the archaeological landscape in irreversible ways. Unfortunately, the projects carried out within these areas, which are usually mandated to "excavate" to bedrock, cannot reasonably employ the highest level of archaeological recovery or the conservation of these remains under the time and funding constraints of these projects. In this respect, Yoav Arbel's extensive effort for the publication of the Ottoman remains exposed during the Qishle project, which will culminate in a major edited volume on the predominantly late Ottoman remains of this excavation area, may begin to rectify this problem. Such a treatment is analogous, for example, to the treatment afforded contemporaneous remains that are encountered in most European cities, thus elevating the practice and discourse of archaeology in Jaffa to a level not reached in most of Israel, with the exception perhaps of Jerusalem. Nevertheless, a major infusion of resources from the municipal agencies overseeing property management on Tel Yafo and throughout the lower city will be necessary to address the many deteriorating buildings and monuments throughout Jaffa, particularly in the lower city.

Within the excavation areas, considerable project resources have been invested in stabilization, the construction of permanent fencing, midterm conservation of remains, and the sheltering of remains between seasons (Figure 1.12). Furthermore, the JCHP has extensively collaborated with development efforts, including the preparation of the Visitor's Center in Qedumim Square following the 2009 excavations and the preparation and installation of on-site signage in 2013 (Figure 1.13). Even so, the demands of the Old Jaffa Development Corporation (OJDC)—the municipal body that manages property on Tel Yafo—and the requirements of the Israel Antiquities Authority have frequently been at odds, which has complicated the coordination of activities and the design and implementation of a straightforward plan for the conservation of archaeological remains. This is further exacerbated by a lack of OJDC budgetary support for the excavation areas, which since prior to the project as early as the mid-1990s have laid open to the elements and are also subject to unrestrained irrigation of gardens and lawn on the tell itself.[11] Only in 2011 following the first season of excavations in the Ramesses Gate by the JCHP was adequate fencing provided, and the permanent infrastructure—not temporary fencing, which is the minimum of IAA requirements—was paid for and completed at cost to the project. Similar scenarios, where excessive cost burdens for permanent development upgrades have been demanded from the project, unfolded following excavations in the Visitor's Center in 2008 and

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Figure 1.12. Conservation work being done by ARCO staff in the Ramesses Gate of Area A during September 2015. View southeast. *Photograph by Martin Peilstöcker.*

Figure 1.13. New signs added by the Old Jaffa Development Corporation to the excavation areas and tourist attractions across Tel Yafo in 2013. *Photograph by Aaron A. Burke.*

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2009, as well as following the 2013 and 2014 seasons in the Ramesses Gate area. Such expectations not only siphon funds from the research, publication, and public outreach of the JCHP but also unsustainably and irresponsibly shifts necessary costs for infrastructure and regular maintenance to nonstate entities such as the JCHP and reveals a lack of planning and attention paid to Jaffa's antiquity, which is the very basis for the public's interest in the site and ultimately the success of its development.

Public Outreach

A major element of the project's public outreach has been the incorporation of volunteer participants (i.e., nonstaff members) in veritably every facet of the project's activities. These include not only in the fieldwork in Jaffa but likewise in the research and data curation that occur in both the United States (UCLA) and Germany (JGU), making the experience for these participants second to none among archaeological field schools in Israel. In addition to work within the excavation areas, in difference to most archaeological field schools, participants in JCHP fieldwork are involved in every step of the processing of all types of artifacts, including cleaning, restoration (Figure 1.14), and documentation. Participants included not only college students but also nonstudent volunteers, local schoolchildren, and a number of members of the community (see page 15). In 2014, the project also incorporated participants from the SHARE[12] program coordinated by its staff member, Casey Sharp. Participants are treated to a robust series of lectures on site and off from a wide variety of specialists, including archaeologists, historians, architects, and conservation personnel (Figure 1.15). A number of developments during the course of the project, such as the incorporation of 3D laser scanning of ceramics for the production of 3D models of artifacts (Figure 1.16) and scientific illustrations of ceramics (Figure 1.17), afford unique opportunities for participants to recognize the requirements and resources necessary in scientific documentation of archaeological remains.

Figure 1.14. Kaitlyn Roller completing restoration of an Egyptian meat jar in July 2014. *Photograph by Amy Karoll.*

Figure 1.15. Martin Peilstöcker providing introductory overview on Jaffa to UCLA excavation field school participants and staff members during the orientation day in late June 2014. View north. *Photograph by Aaron A. Burke.*

Figure 1.16. 3D VRML image of section of stone mold for metal production (MHA 4817) found in a Byzantine pool (L.752) during 1972 excavations by Jacob Kaplan within Area A. *Illustration provided by Aaron A. Burke.*

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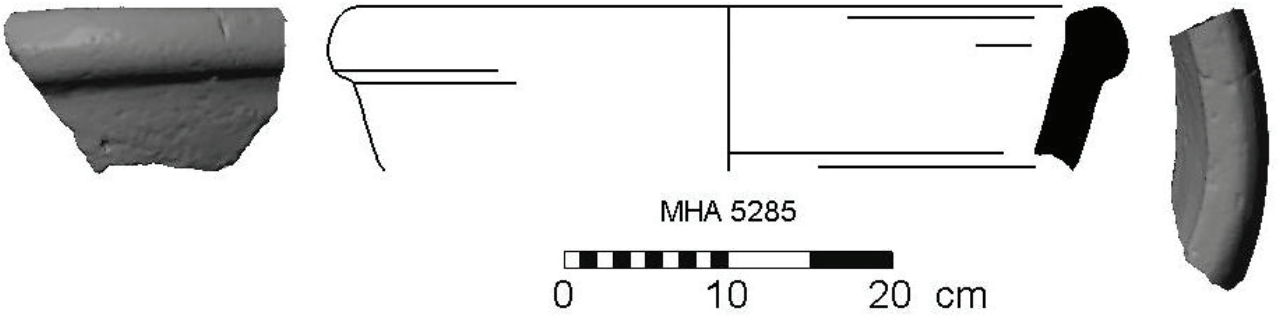

Figure 1.17. Drawing of ceramic sherd generated after 3D scanning with NextEngine 3D laser scanner. Stance is determined by software and sherd rendered to traditional conventions from scan. *Illustration provided by Amy Karoll.*

While conservation, with its excessive costs and problematic requirements (see discussion above), is traditionally regarded as the primary means of presenting archaeological remains, its ability to engage the public is limited. This is due, on one hand, to its static character and the fundamental limitation that artifacts cannot be shown in their original context within the excavations and, on the other, to the realization that conservation usually impedes future research by sealing or freezing architectural remains, either forcing a cessation of excavations or restricting the area available for excavation. Consequently, computer modeling of archaeological remains provides a new avenue through which unrestricted access to architectural and archaeological remains can be provided to the public. Since the start of excavations in Jaffa, the JCHP has engaged resources at UCLA to undertake the modeling of excavation areas, and this process has informed various aspects of the research of these areas. Most recently, the project has undertaken the modeling of the Egyptian gate of Phase RG-4a/Level IVb in the Ramesses Gate area (Figure 1.18). This model, created by Jeremy Williams, a graduate student in the Near Eastern Languages and Cultures Department at UCLA, provides a first glimpse of the restored gateway of the Egyptian fortress, the only such structure in all of Israel (Williams and Burke 2016). In difference to the consolidation of archaeological monuments or the reconstruction of features, computer modeling permits the resituating of archaeological remains in their findspots, providing for both the scientific documentation of such information and enlivening these environments (Figure 1.19). The integration of models in the project's OCHRE database (Schloen and Schloen 2012), which features the ability to provide public presentations of data, reveals the fundamental intersections between the requirements for scientific documentation and public presentation (Figure 1.20).

Figure 1.18. Digital reconstruction of Phase RG-4a gate excavated in Area A, Ramesses Gate in 2013 (see Williams and Burke 2016). View north-northwest. *Model by Jeremy Williams.*

Many of the findings of the project have been made public through frequent presentations in public venues as well as a carefully curated web presence. Presentations by the project's staff members have been made throughout Israel, Europe, and the United States since 2007 (see Appendix 5). A series of lectures dedicated to social interactions in Jaffa were likewise organized around the "Jaffa: Tor zum Heiligen Land" exhibit at the Biblehaus Erlebnis Museum in Frankfurt from September 2013 to May 2014.[13] In 2016, the exhibit "Pharaoh in Canaan: The Untold Story" featured a reconstruction of the gate façade of Ramesses II, which results from the project's efforts to reexamine, fully document, and publish the records of Jacob Kaplan's excavations in Jaffa.

The project's main web presence has led to a wider dissemination of the project's accomplishments, as well as resources for the study of Jaffa resulting from the project's efforts, and the incorporation of student and nonstudent participants in the project's activities, as outlined above.[14]

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Figure 1.19. Digital reconstruction of the interior passage of the Phase RG-4a gate in Area A, Ramesses Gate (see Williams and Burke 2016). View northwest from exterior of fortress. *Model by Jeremy Williams.*

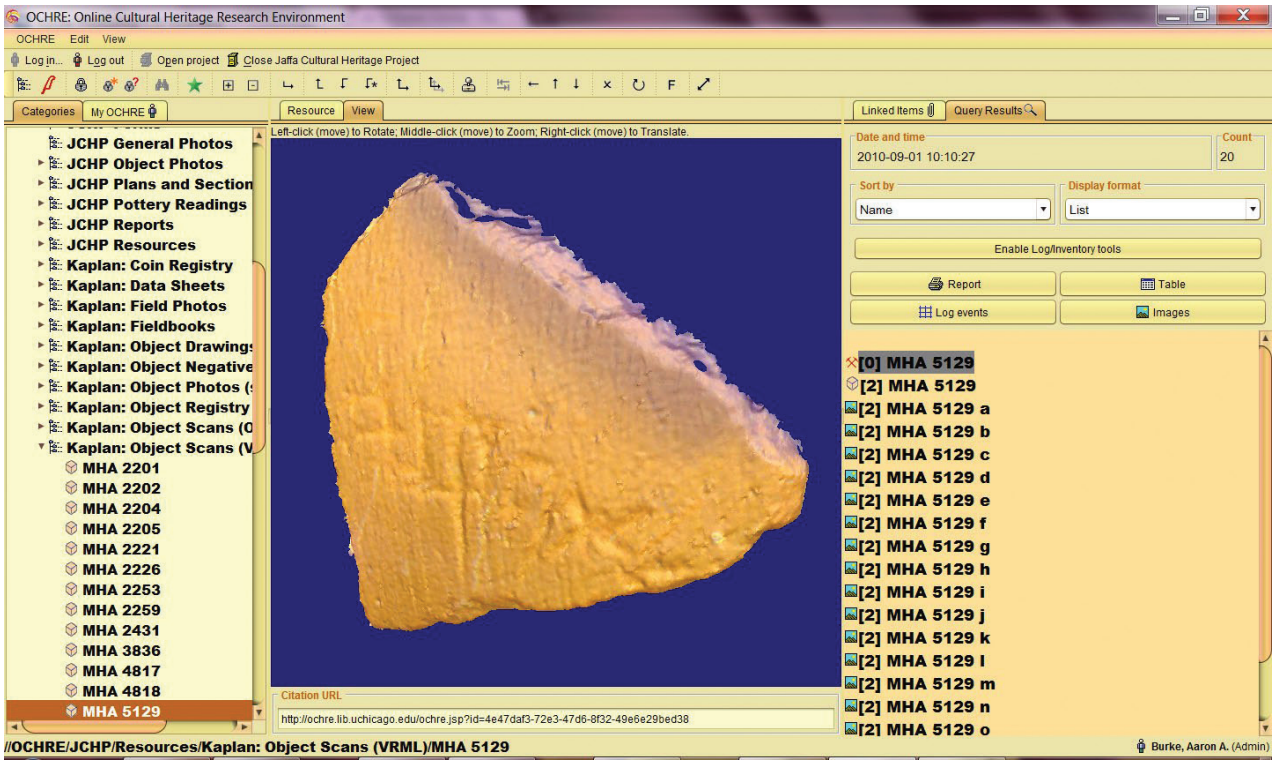

Figure 1.20. View of 3D VRML of registered item (MHA 5129) as viewed from within OCHRE database.

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Public events, such as those mentioned above, and opportunities for participation with the project are advertised in advance through social media such as Facebook and Twitter.[15] In addition to social media venues, the project has contributed to visual aids available online, such as 3D reconstructions of current and historical photographs.[16] The UCLA-based website has likewise served to aggregate data concerning resources for Jaffa, ranging from annual reports, presentations by the project, and links to videos and image resources hosted across the Internet. Further employment of available websites and services in the near future will provide even greater visibility to the project's accomplishments.

Conclusions

Insofar as the future of archaeological research in Jaffa remains uncertain, during a decade of collaborative research, the Jaffa Cultural Heritage Project has forged a new approach to the historical and archaeological studies of multiperiod sites within urban settings. Recent collaborative umbrella projects such as the Tel Akko Total Archaeology Project and the Jezreel Valley Regional Project reveal the appeal of broad but integrated research programs that seek to avoid prejudicing their research by focusing exclusively on a single research question. Instead, this new approach favors a subdivision of research agendas into discrete programs or initiatives of limited duration and focus, which exist within and inform a larger project design that usually features a number of research goals. This more than anything else may signal a long-overdue abandonment of the so-called expeditionary approach to archaeology in Israel, which traditionally featured a far more limited investment of energies into seemingly tangential research interests. Perhaps even more so, the older model for research design frequently resulted (and still does when implemented) in a cherry-picking approach to the investment of resources that are expressly related to a narrow line of inquiry. The shortcoming of this approach is the fundamental reality that multiperiod archaeological sites do not permit the dedication of project resources strictly to a single interest, period, or question. We suggest, therefore, referring to the latter approach as the "cultural heritage" approach to archaeological research design, where multidisciplinary, diachronic inquiry combining historical, archaeological, and environmental data results in the most informed answers to any questions that are posed. Inasmuch as such an approach can potentially go in a number of directions, it is difficult to articulate how such a program should be put together. This, as in Jaffa, is ultimately a historical process in and of itself, which must develop to take advantage of opportunities as they develop.

Participants in JCHP Excavation and Study Seasons by Year

Staff and participants in the Jaffa Cultural Heritage Project's excavations and study seasons are listed below by year. A number of names are not included here for participants whose activities may have been shorter or intermittent (e.g., OJDC Visitor's Center staff, SHARE participants, and local schoolchildren). We apologize for this omission. The list preserves, however, at least those whose investments of time and energy were formalized with the project. The directors, Aaron A. Burke (UCLA) and Martin Peilstöcker (IAA/JGU, now Humboldt Universität zu Berlin), are ex officio for all seasons.

2007
Staff: Katherine Strange Burke (UCLA), Kyle Keimer (UCLA), and George Pierce (UCLA)

2008
Staff: Katherine Strange Burke (UCLA), Kyle Keimer (UCLA), and George Pierce (UCLA)
Participants: Ursula Barghouth (UCLA) and Meira Rubin (UCLA)

2009
Staff: Katherine Strange Burke (UCLA), Heidi Dodgen (UCLA), Leslie Friedman (Getty Conservation), Brett Kaufman (UCLA), Kyle Keimer (UCLA), Benjamin Marcus (Getty Conservation), George Pierce (UCLA), Krystal Pierce (UCLA), Hillary Pietricola (UCLA), and Adi Keinan (Tel Aviv University)
Participants: Erez Ben-Eliezer (Old Jaffa Hostel), Jacqueline Berman (University of Massachusetts, Amherst), Klaus Bungert (Germany), Evmarie Frenze-Bungert (Germany), Karin Grosskop (Germany), Anne Gudme (Copenhagen), Emily Holms (UCLA), Lior Levy (Tel Aviv), Alice Mandell (UCLA), Reinhard Müller-Hollenhorst (Germany), Judith Sacks (Los Angeles), Beth Sanders (New York University), William

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Sanderson (UCLA), Kate Scherer (Hunter College), Isabela Siepmann (UCLA), Victoria Schniedewind (Los Angeles), Cynthia Simpson (Trinity International University), Batia Uner (Tel Aviv), Andrew Vogler (University of Wisconsin–Madison), and Chelsea Woodhouse (Mary Washington University)

2010

Staff: George Pierce (UCLA) and Krystal Pierce (UCLA)
Participants: Martina Haase (JGU), Anna Schwartz (United States), and Marie-Paule Fischbach (Luxembourg)

2011

Staff: Katherine Strange Burke (UCLA), Heidi Dodgen (UCLA), Martina Haase (Mainz), Christine Hofmann (Mainz), Amy Karoll (UCLA), Krister Kowalski (JGU), Ed Maher (Field Museum, Chicago), Stefan Mehlig (I3, Mainz), and George Pierce (UCLA)
Participants: Sarah Bitar (Mainz), Melissa Collins (UCLA), Martina Haase (JGU), Christine Hofmann (JGU), Emily Hsiang (UCLA), Kristen Ibarra (UCLA), Klaus Klepper (Germany), Stefan Mehlig (I3 Mainz), Stacey Miller (UCLA), Carly Orlenick (UCLA), and Lorena Becerra Valdivia (UCLA)

2012

Staff: Katherine Strange Burke (UCLA), Nadia Ben-Marzouk (UCLA), Dror Cohen (Tel Aviv), Heidi Dodgen (UCLA), Martina Haase (JGU), Christine Hofmann (JGU), Brittany Jackson (UCLA), Amy Karoll (UCLA), Krister Kowalski (JGU), Ed Maher (Field Museum, Chicago), Zachary Margulies (UCLA), Stefan Mehlig (I3, Mainz), George Pierce (UCLA), Krystal Pierce (UCLA), and Catherine Pratt (UCLA)
Participants: Has Czap (Germany), Vincent Hennerty (UCLA), Ulrich Hofeditz (JGU), Ana Leticia Ma Huang (UCLA), Alice Mandell (UCLA), Catrin Ohrmann (Mainz), Jessica Pitchford (University of Pittsburgh), Bianca Ponce de Leon (UCLA), Tiffany Raymond (Mississippi State University), Diana van Renswoude (University of Glasgow), Jane Rovener (UCLA), Juan Vidal (Tel Aviv University), Chad Washburn (UCLA), Jody Washburn (UCLA), and Danielle Zwang (University of Wisconsin–Madison)

Figure 1.21. 2009 Area C, Visitor's Center excavation team. From left to right: Victoria Schniedewind, William Schniedewind, Cynthia Simpson, Brett Kaufman, Iyabela Siepmann, George Pierce, Judith Sacks, Krystal Lords, Hillary Pietricola, Heidi Dodgen, Chelsea Woodhouse, Alice Mandell, Jacqueline Berman, Kyle Keimer, Reinhard Müller-Hollenhorst, Karin Grosskop, Beth Sanders, Emily Holms, Evmarie Frenze-Bungert, Klaus Bungert, William Sanderson, Anne Gudme, Andrew Vogler, Martin Peilstöcker (Director), Aaron A. Burke (Director), and Adi Keinan.

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Figure 1.22. 2011 Area A, Ramesses Gate excavation team. Back row: Aaron A. Burke (Director), Amy Karoll, George Pierce, Heidi Dodgen, Krister Kowalski, Brett Kaufman, and Martin Peilstöcker (Director). Second row: Klaus Klepper Martina Haase, Stacey Miller, Carly Orlenick, and Melissa Collins. Bottom row: Sarah Bitar, Christine Hofmann, Kristen Ibarra, Emily Hsiang, and Lorena Becerra Valdivia. *Photograph by Aaron A. Burke.*

Figure 1.23. 2012 Area A, Ramesses Gate excavation team. Left to right: Krystal Pierce, George Pierce, Nadia Ben-Marzouk, Heidi Dodgen, Zachary Margulies, Danielle Zwang, Jody Washburn, Alice Mandell, Christine Hofmann, Vincent Hennerty, Amy Karoll, Ulrich Hofeditz, Martina Haase, Jane Rovener, Has Czap, Ana Leticia Ma Huang, Catrin Ohrmann, Krister Kowalski, Jessica Pitchford, Martin Peilstöcker (Director), and Aaron A. Burke (Director). *Photograph by Aaron A. Burke.*

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2013
Staff: Nadia Ben-Marzouk (UCLA), Andrew Danielson (UCLA), Jacob Damm (UCLA), Dror Cohen (Tel Aviv), Heidi Dodgen (UCLA), Amy Karoll (UCLA), Krister Kowalski (JGU), Ed Maher (Field Museum, Chicago), Elizabeth Waraksa (UCLA), and Danielle Zwang (University of Wisconsin–Madison)
Participants: Kayla Allen (Wheaton College, MA), Leonie Breil (JGU), Amy Chan (UCLA), Tania Fennwick (Australia), Kandis Gordon (UCLA), Ann-Kathrin Jeske (JGU), Ashley Melvin (UCLA), Aaron Paddock (UCLA), Jonathan Schadeberg (University of Wisconsin–Madison), and Molly Stevens (Bodwoin)

2014
Staff: Nadia Ben-Marzouk (UCLA), Leonie Breil (JGU), Andrew Danielson (UCLA), Jacob Damm (UCLA), Dror Cohen (Tel Aviv), Steven Edwards (University of Toronto), Tania Fennwick (Australia), Daniel Griswold (SUNY Buffalo), Ann-Kathrin Jeske (JGU), Amy Karoll (UCLA), Krister Kowalski (JGU), Andrea Orendi (Tübingen University), Casey Sharp (Haifa University), and Jeremy Smoak (UCLA)

Participants: Maria Amante (UCLA), Anna-Maria Bortz (JGU), Danielle Bui (Orange, CA), Denny Copf (University of Guelph), Gabrielle DiBattista (Johns Hopkins University), Claire Dobson (UCI), Tyler Dunagan (UCLA), Jenna Garcia (UCLA), Celsiana Gera (UCLA), Jacob Heisler (McGill University), Timothy Hogue (UCLA), Yiwen Huang (UCLA), Eric Hubbard (College of Wooster), Na Jeon (UCLA), Sam Ko (UCLA), Tobias Konrad (JGU), Andrea Kruppke (Mainz), Katie Ligmond (UC Berkeley), Martin Martinez (UCLA), Erin Matthews (Northridge, CA), Judith Melton (Texas A&M), Vanessa Monson (UC San Diego), Sarah Moore (UCLA), Mara Page (University of Washington), Jason Price (UCLA), Kenneth Raggland (San Pedro, CA), Kaitlyn Roller (UCLA), Tory Sampson (Boston University), Issuree Sarada (Boise State), Cynthia Solloa (UCLA), Christina Stansell (College of Charleston, SC), Cindy Vargas (UCLA), Kathryn Webb (UCLA), and Emily Weisman (The College of New Jersey)

2016
Staff: Nadia Ben-Marzouk (UCLA), Andrew Danielson (UCLA), Jacob Damm (UCLA), Amy Karoll (UCLA), Krister Kowalski (JGU), Edward Maher (North Central College)

Figure 1.24. 2013 Area A, Ramesses Gate excavation team. Back row: Aaron A. Burke (Director), Heidi Dodgen, Jonathan Schadeberg, Aaron Paddock, Krister Kowalski, Andrew Danielson, William Schniedewind, and Martin Peilstöcker (Director). Second row: Elizabeth Waraksa, Jacob Damm, Danielle Zwang, Nadia Ben-Marzouk, and Leonie Breil. Bottom row: Kandis Gordon, Amy Chan, Molly Stevens, Ann-Kathrin Jeske, Amy Karoll, Ashley Melvin, and Kayla Allen. *Photograph by Aaron A. Burke.*

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Notes

1. This research has been supported by a Collaborative Research grant from the National Endowment for the Humanities (RZ-51445-12) for the period from 2013 to 2016. Additional support for various in-residence studies by Aaron A. Burke and Edward Maher was provided by the W. F. Albright Institute for Archaeological Research in Jerusalem, 2009–2010.

2. A number of reports for the remains from these periods for excavations in the Qishle and along HaTsorfim St., as well as the Flea Market and Ganor Compounds, are in preparation or forthcoming.

3. This work was made possible by generous support from the MacDonald Center for the Arts and Humanities and Charles Steinmetz (Los Angeles, CA), online at www.dig.ucla.edu/jaffa-2.

4. Reports for this research are in preparation by S. Wachsmann and the participating specialists.

5. For the most recent bibliography on Jaffa, see Appendix 3, online at www.dig.ucla.edu/jaffa-2.

6. An early publication from this effort was included in *HAJ* 1 (Tsuf 2011).

7. See Appendix 3, §3, www.dig.ucla.edu/jaffa-2.

8. Funding from the White-Levy program has supported the work of Orit Tsuf on the Persian to Byzantine remains from Jaffa, as well as the publication of the Bronze and Iron Age remains from the Ramesses Gate excavations in Area A by Burke and Peilstöcker.

9. Funding from UCLA has included (in historical order) the Cotsen Institute of Archaeology (2006 on), the Near Eastern Languages and Cultures Department (2007 on), Senate grants (2007 on), the International Institute (2009), the Office of the Vice Chancellor for Research (2011–2012), and graduate student support from the Graduate Division.

10. Support from the Seminar für Altes Testament und Biblische Archäologie.

11. These conditions, while perhaps not unusual within such an environment, are particularly problematic for the uniquely preserved remains encountered during excavations in Area A by the JCHP. Since the tell was covered until 1936 by the Ottoman city and the buried remains seem to have experienced virtually no exposure to the precipitation that many other sites have experienced, the site affords an unusually high degree of preservation for perishable materials. This was demonstrated in 2013 when approximately two dozen samples of timber, each more than a meter in length, were recovered from the Ramesses Gate (see Chapter 2, this volume).

12. Society for Humanitarian Archaeological Research and Excavation. http://www.archshare.org/

13. We thank the Bibelhaus Erlebnis Museum and its director, Jurgen Schefzyk, for their support of the Jaffa exhibit and the related lectures.

14. http://www.nelc.ucla.edu/jaffa

15. https://www.facebook.com/groups/jaffaculturalheritage/; https://twitter.com/JCHP_Jaffa

16. https://photosynth.net/search.aspx?q=Jaffa

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CHAPTER 2

EXCAVATIONS OF THE JAFFA CULTURAL HERITAGE PROJECT, 2008–2014

AARON A. BURKE AND MARTIN PEILSTÖCKER
University of California, Los Angeles and Humboldt Universität zu Berlin

Since its inception in 2007, the Jaffa Cultural Heritage Project has conducted six seasons of excavation between 2008 and 2014. These excavations focused on Hellenistic and Early Roman deposits in Area C and the Late Bronze Age occupation within Area A, also known as the Ramesses Gate and Lion Temple areas. Preliminary results from these excavation areas provide much-needed data from Tel Yafo that can be integrated with information provided by salvage excavations in Jaffa.

Since the inauguration of the Jaffa Cultural Heritage Project, six excavation seasons have been conducted on Tel Yafo between 2008 and 2014 under the direction of Aaron A. Burke (University of California, Los Angeles) and Martin Peilstöcker (then Johannes Gutenberg Universität, Mainz). These excavations were undertaken in the only two areas in which Jacob Kaplan carried out research excavations over extended periods during his work in Jaffa: Area A (1955–1958, 1970–1974) and Area C (1961, 1965). All of the remaining fields in which he excavated were effectively salvage excavations, and for this reason, these areas are not at present available for excavation (see Peilstöcker 2011:19–20, tab. 2.1). Both of these areas were open for excavation at the start of the project and provided unique opportunities for clarifying the results of Kaplan's excavations and the potential for integrating not only the results of renewed excavations but also the results of subsequent excavations by both the Israel Antiquities Authority and other institutions such as Tel Aviv University. Excavations in both areas were facilitated by permissions from the Old Jaffa Development Corporation, which manages both the properties atop Tel Yafo and the public spaces. This chapter therefore summarizes the excavations in Area C, the Visitor's Center from 2008 to 2009 and in Area A, the Rameses Gate from 2011 to 2014, and the Lion Temple portion of Area A in 2014.

Visitor's Center (Area C) Excavations, 2008–2009

After initial work in 2007 within the salvage excavations of the Ganor Compound (Peilstöcker and Burke 2011), the first two seasons of research excavations in 2008 and 2009 were carried out within the Visitor's Center below Qedumim Square just outside St. Peter's Church, on the west side of Tel Yafo (Figures 2.1 and 2.2). These excavations were intended to clarify stratigraphic questions within Area C of Jacob Kaplan's excavations during 1961 and 1965 and to lay the groundwork for future excavations by the project. The 2008 excavations facilitated the development of a clear strategy for the exposure of the Hellenistic and Roman phases (Burke and Peilstöcker 2009). A second

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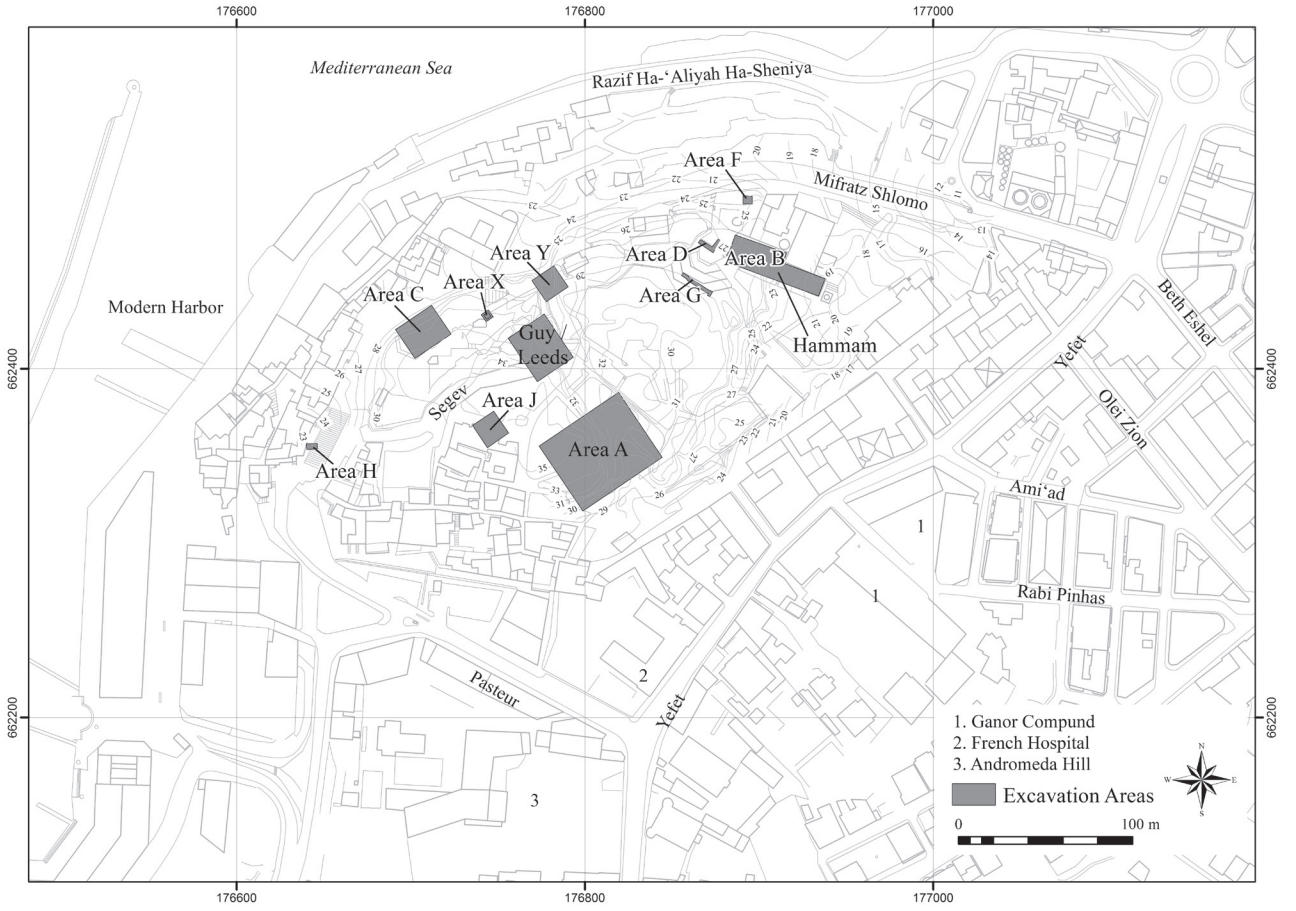

Figure 2.1. Map of Tel Yafo showing location of excavation Areas A and C among areas excavated by Kaplan. *Plan by Krister Kowalski.*

and more extensive season of excavations in 2009 permitted a broader exposure within this area of one of the best-preserved examples of Hellenistic architecture in the southern Levant and also suggests the existence of a Hippodamian-style town plan in Jaffa from as early as the late Persian period (Burke et al. 2014).[1]

Six squares were excavated in 2009 within the Visitor's Center (Figure 2.3) to clarify the stratigraphy of earlier excavations in this area by Jacob Kaplan in 1961 and 1965 (Kaplan 1962, 1966) and those in 1992 by Etty Brand on behalf of the Israel Antiquities Authority (Brand 1994).[2] The principal objective of opening excavations in this area was to answer unresolved questions about the extent and nature of a large ashlar building preserved to two stories in various locations, which underlay the Roman period remains. Consequently, it has been dated to the Hellenistic period on the basis of stratigraphic position and architectural parallels. Furthermore, a deep sounding was planned within the central excavation unit (Square 7) to permit the identification of Iron and Bronze Age remains and the establishment of their relationship to what was likely the western edge of the settlement at that time. Work was made possible by and coordinated with the renovation plans for the Visitor's Center undertaken by the Old Jaffa Development Corporation, exemplifying such planned collaborations as part of the project's aims (Burke and Peilstöcker 2011).

Phasing

As summarized here, at least five main phases of construction and habitation from the Early Roman period and earlier were encountered in relation to the massive ashlar building that underlies the entire eastern half of the excavation area. Of central significance is the identification of the monumental ashlar structure as an important public structure in Hellenistic Jaffa, which was probably erected over another important building dated to the Persian period. Table 2.1 summarizes the phases encountered in 2009 and their relationship to Kaplan's stratigraphy (Kaplan 1962).

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Figure 2.2. Aerial view of Qedumim Square on the western side of Tel Yafo. The built-over depression in the square above St. Peter's Church is the Visitor's Center and location of the Area C excavations. View southwest. *Photograph courtesy of Sky View.*

Phase V (Persian–Early Hellenistic)

The earliest phase encountered by the 2009 excavations consisted of walls that served as foundations for the large ashlar building constructed during Phase IV (discussed below), which spans most of the excavation area within the Visitor's Center (Figure 2.3). No previous excavations in this area indicated any architectural remains dated to this period, stating only that earlier phases were encountered in a deep sounding made by Kaplan within a "trial-pit in the cellar floor" (Kaplan 1963:113). The top of the northern wall (L.1024) to the room forming Square 7, which belongs to this phase, was encountered in 2008 (Burke and Peilstöcker 2009:224). In 2009, a western wall (W.1168) below W.1006, which would join with W.1024, was also identified (Figure 2.4). Since both the upper and lower portions of these walls were robbed toward the south between Squares 6 and 7, it was possible to examine the cross section of the wall. This illustrated that the earlier wall (1) consisted of larger, more roughly hewn ashlars than the later building; (2) employed plaster as mortar in large gaps between ashlars that would be unnecessary for a foundation; and (3) lacked evidence of a foundation trench (also absent in Square 9). Furthermore, the bottom of this wall is preserved to no fewer than seven courses, and its lowest course was never reached during the excavations. The number of courses, the different quality of the masonry, the use of plaster, and lack of a foundation trench all suggest that its use as a foundation for the western wall (W.1006) of the Hellenistic ashlar had belonged to an earlier structure. Therefore, the western and northern walls within excavation Square 7 provide the first substantive evidence for an architectural phase dated to the Persian period on the western side of Tel Yafo.

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Table 2.1. Area C phasing and stratigraphic correlations with Kaplan's strata. Note that Kaplan's strata 1 to 4 were not encountered during the JCHP's excavations.

Phase	Kaplan Strata	Period	Date
—	1	Byzantine-Umayyad	500–700 CE
—	2	Byzantine	400–500 CE
—	3	Late Roman–Byzantine	300–400 CE
—	4	Roman	200–300 CE
Phase I, Early Roman	5	Roman	70–200 CE
Phase II, Early Roman	6	Herodian	1–70 CE
Phase III, Late Hellenistic–Early Roman		Hasmonean/Early Roman	167–1 BCE
Phase IV, Early Hellenistic	7	Early Hellenistic	332–167 BCE
Phase V, Persian	8	Persian	500–332 BCE

Figure 2.3. Plan of Area C integrating Kaplan, Brand, and JCHP excavation data. Numbers indicate excavation squares and dashed lines their boundaries. *Plan by George A. Pierce.*

A second area on the west side of the excavations also reached the Persian phase. Work in Square 9, to the north of Square 7, revealed a wall constructed solely of header stones (W.1158; Figure 2.5), which served as the foundation for a later wall (W.1110).[3] W.1158 is tentatively identified as Persian in date, based both on the comparable style of ashlar construction and elevation with respect to the early walls discussed above, which lay below the large Hellenistic structure. The date of the all-headers wall (W.1158) is also indicated by its relationship to the walls exposed in Square 7, discussed above.

The picture that emerges of the Persian period Phase V below the Hellenistic ashlar building of Phase IV is therefore of a nascent Hippodamian city plan upon which the Hellenistic building was constructed. While, according to Stern (2000:157–164), the Hippodamian plan is well known from Persian period sites such as Dor from as early as the sixth century, the evidence from the Area C excavations

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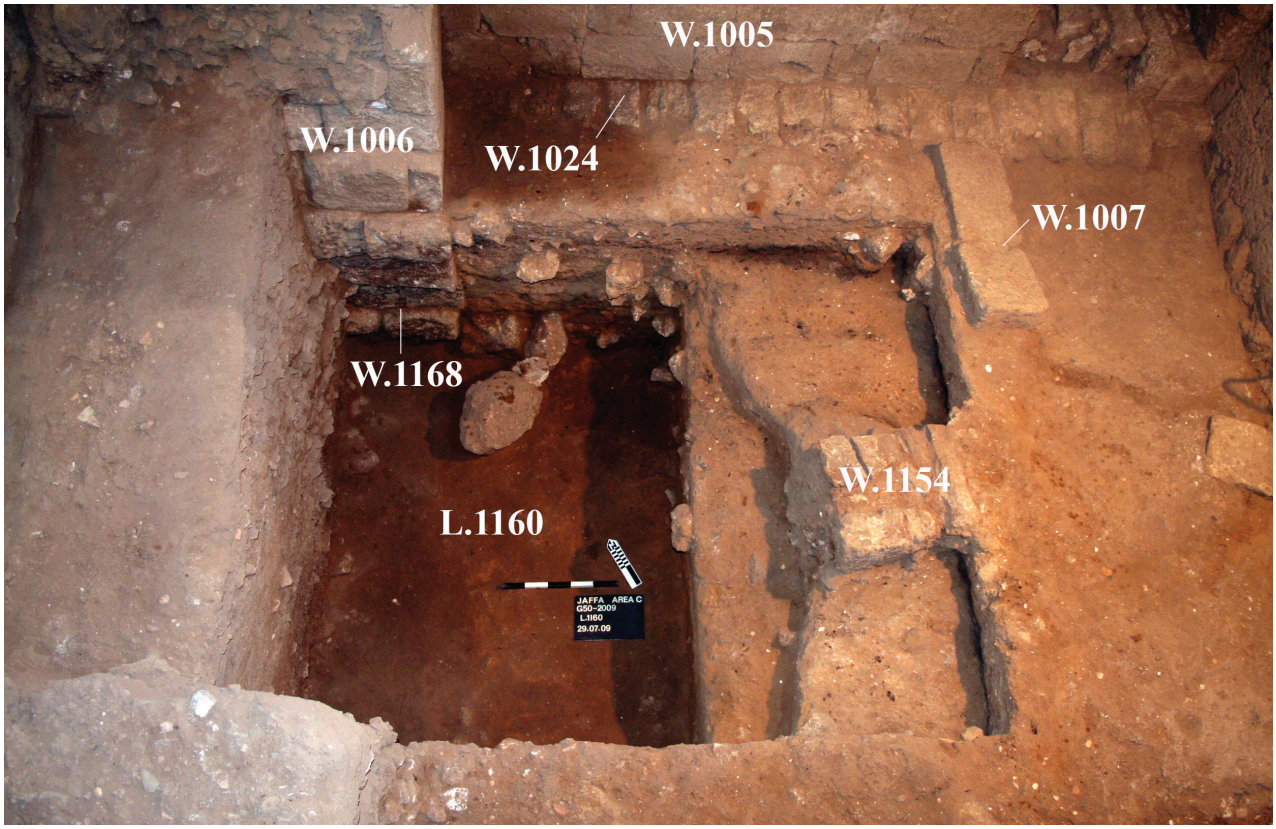

Figure 2.4. Deep sounding in Square 7 exposing the earliest phase in Area C encountered during the 2009 excavations. View north-northeast. Photograph 2009-P281. *Photograph by Aaron A. Burke.*

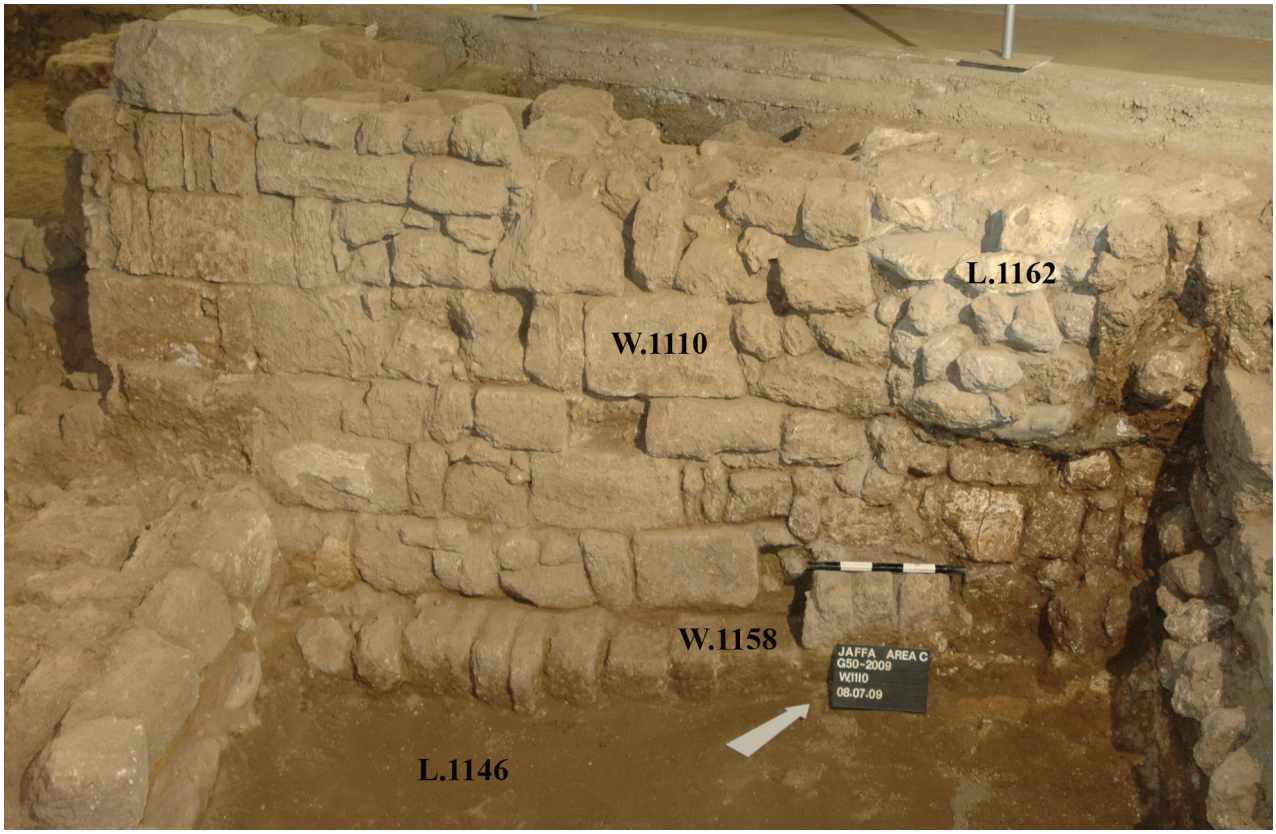

Figure 2.5. Later Roman period wall (W.1110) built atop the all-headers W.1158. View northwest. Photograph 2009-P111. *Photograph by Aaron A. Burke.*

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in Jaffa dates no earlier than the end of the Persian period. Given, however, the association of Persian town plans of Jaffa and Dor, two cities within the Phoenician sphere, it is quite possible that such planning can be traced to an early period in the Levant. As during the Hellenistic period, along the western side of the main building ran a street on a north-northeast to south-southwest orientation (see Figure 2.3), which is likely to have been a main corridor of traffic within Jaffa during this period. Unfortunately, no surfaces from this street survive. W.1158 on the west side of the street appears to constitute the southeastern corner of a massive building, while the lowest courses of ashlar masonry identified in Square 7 belong to the precursor to the ashlar building of Phase IV.

Phase IV (Hellenistic)

Within the probe in Square 7, which reached the greatest depth in the excavations (Figure 2.4), a series of layers were identified as part of a filling operation, probably undertaken to prepare for the construction of the large ashlar building atop the repurposed walls of Phase V (Figure 2.3). The earliest of these (L.1160) was composed predominantly of sand and was largely devoid of pottery but included ceramics ranging from the Iron II to the Hellenistic period. Although this was the deepest that our excavations were able to penetrate, this sounding reveals the likelihood that occupational layers of the Persian period and Iron II lay below the Hellenistic phase in Area C. Above L.1160, another layer of fill (L.1155) of similar composition was deposited. A perforated sheet of lead (JCHP 137), probably a constructional support for wooden beams, was recovered from this fill. The identification of these layers as part of a filling operation with some short interludes is supported by evidence of a pure charcoal debris layer 5 cm thick (L.1153) consisting of substantial wood fragments but entirely free of any material culture, ceramics, and so on. Analysis of this wood revealed the presence of evergreen oak (*Quercus calliprinos*), terebinth (*Pistacia palaestina*), and olive (*Olea europaea*) and suggests that it was cut in the spring.[4] A fill composed of brown soil, charcoal, plaster, and shell inclusions (L.1149) likely served as the subfloor matrix of the plaster floor of the first story of the Hellenistic structure (L.1148), which was first identified in 2008 (L.1025).

The dominant feature of this phase is, however, the ashlar masonry building of header-stretcher construction, the walls of which are visible in almost every excavation unit on the eastern side of the Visitor's Center (Figure 2.6):

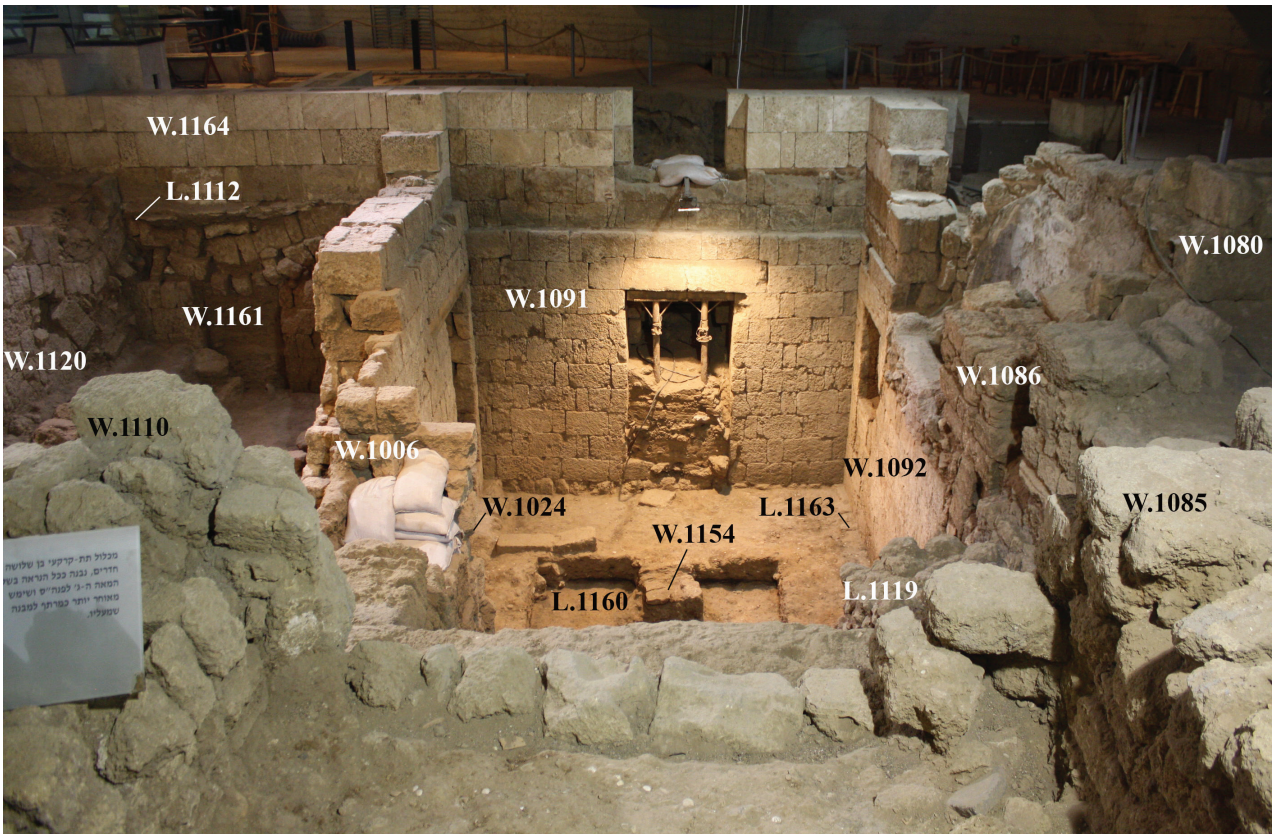

Figure 2.6. Rooms of the western side of the Hellenistic building of Phase IV looking across Square 6 and down to probe in Square 7. View southeast. Photograph 2009-P406. *Photograph by Aaron A. Burke.*

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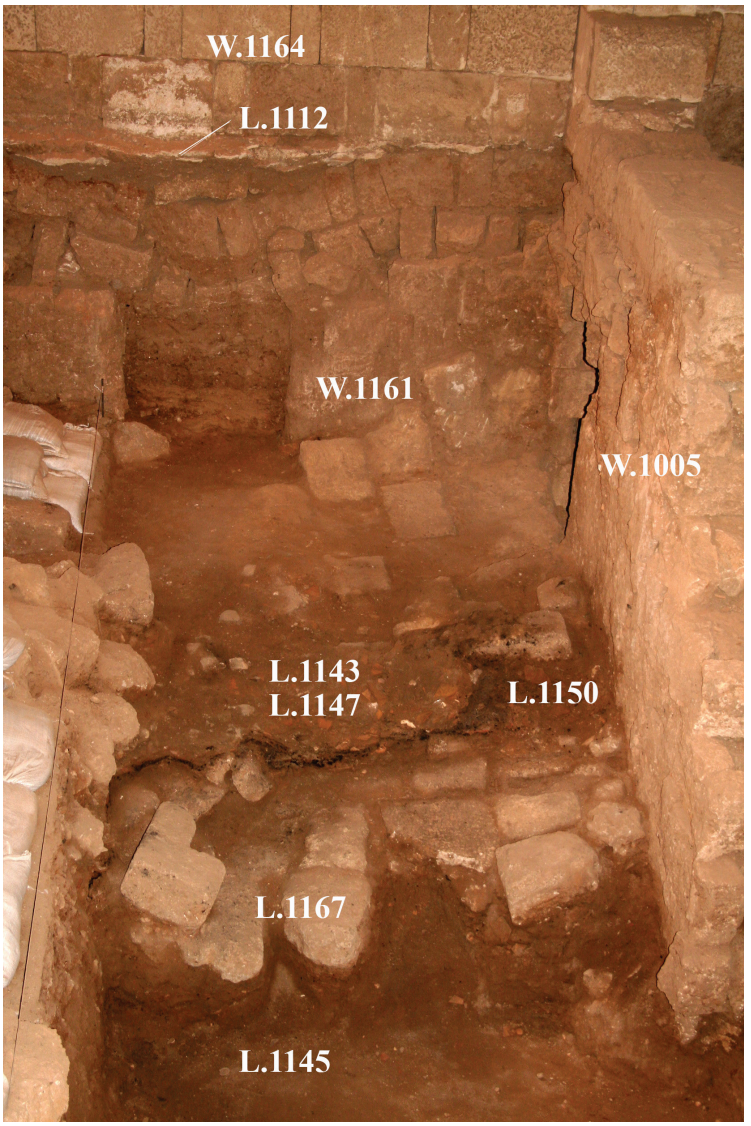

Figure 2.7. Squatter habitation levels in Square 10 showing phases of ashlar building with collapsed doorway and later floor. Note collapsing doorway of Phase IV in background. View southeast. Photograph 2009-P213. *Photograph by Aaron A. Burke.*

Squares 4 (W.1058, 1061–1062, 1081–1084, 1095), 5 (W.1079), 6 and 7 (W.1005–1006, 1092), 10 (W.1120, 1161/1164/1091), and 11 (W.1093, 1094). Until our excavations, this phase of construction was regarded as the "cellar," thought to have been "dug deep into the older strata" during the second century CE (Kaplan 1963:111). Where they can be identified after the excavations as well as from exploration within the unexcavated spaces to the east, the ashlar walls bound a number of rooms on the first story of the building. On the west, these include from north to south Rooms 10, 7, and 13 and, to the east of these, Rooms 11, 8, and 12 (see Figure 2.3). It is particularly noteworthy in regards to the building's potential function that each room is connected to adjacent rooms by a doorway, leaving no room to be qualified as private as might be suggested were access more restricted. The northern doorway (to an unexcavated space to the north) and the eastern doorway (see Figure 2.7) in Room 10 collapsed in a later period, while the southern doorway of Room 10, which remained intact, connected to Room 7 (formerly identified as the "catacomb" and "cellar"). Room 7 also gave access to Room 8 to the east via a well-preserved doorway (Figure 2.6) and to Room 13 via its southern doorway, which was later blocked, as seen in an unpublished photo from Kaplan's excavations (Figure 2.8). It is also possible to identify the doorways within the unexcavated first-story rooms to the east in 8, 12, and 13. Within these it is possible to see above the backfill across the spaces to where doorways are located,

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Figure 2.8. Photograph from 1961 excavations by Jacob Kaplan showing in situ stones blocking southern door of Square 7. View southeast. Kaplan Archive Photograph 1005. *Photograph courtesy of the Israel Antiquities Authority.*

as well as to see indications of the locations of the doorways from above (see Figure 2.3 for doorway identifications). Owing to the reuse and reconstruction of the second story as the first story of the Phase III building, the location of the second-story doorways is less certain. However, on the basis of architectural remains as observed for the second-story eastern doorway in Square 7 (see Figure 2.6), it seems that the same degree of room access existed on the second story as on the first.

In style and appearance, the ashlars of the Phase IV building are far more regularly cut than those used in the structures of the Persian period (Phase V). Although walls of similar construction were also identified in the Square 3 probe below W.1052 and W.1078, these are probably to be identified with a building across a street or alley to the west of the large ashlar structure, which continued the tradition of the Persian period when a structure had been built there as well. In Squares 6 and 7, W.1005 and W.1092 rest on the reused "headers-out" walls of the preceding phase (W.1024 and L.1163, respectively). Examination of the construction techniques of the ashlar building revealed that the construction of W.1092 and W.1091 in the southern corner of Square 7 were integrated, while the east end of W.1005 only abuts W.1091 and was obviously constructed only when W.1006 and likely all of the western wall of the structure that cut across Squares 6 to 7 and 9 to 10 were constructed. Based on the existence of a ledge on upper parts of the northern and southern walls of Square 7 (see Figures 2.6 and 2.8), the second-story floor during this period appears to have been constructed of wooden planks. Since Jaffa was a port, scrap wood and timber would have been more greatly available, and the proximity of the site would have made shipments of wood from the north much easier. Jaffa's role in timber imports from Lebanon is well known in the biblical narratives (e.g., 2 Chron 2:16) but likewise confirmed by recent discoveries of cedar from Lebanon in the Late Bronze Age Egyptian fortress.

While it was not possible to corroborate Kaplan's third-century dating for this building (Kaplan 1962:149), the

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Figure 2.9. Greek dedicatory inscription of Ptolemy IV Philopator (MHA 2715) found by Jacob Kaplan. *Photograph by Aaron A. Burke.*

fills excavated, as discussed above, do suggest a Hellenistic date for its construction. It may be therefore that it is to this structure that the monumental Greek inscription of Ptolemy Philopator IV belongs (IAA 1993-2061 [MHA 2715]; Lifshitz 1962:82–84; Woodhead 1964:no. 357), which was found by Jacob Kaplan in the fill of the lower level of the building. Unfortunately, nothing other than names with honorific titles were preserved on the marble fragment (Figure 2.9), and the bottom half has not been recovered. Since no intact floors were identified, a precise date for the final occupation of the building remains problematic. This, therefore, is one of the most important questions to be addressed concerning this structure, and the potential to address this problem may lie in the rooms to the east of those excavated, which appear to have suffered less damage than the westernmost rooms.

Phase III (Late Hellenistic–Early Roman)

Although the precise context for the abandonment of the ashlar building of the Hellenistic period cannot be determined, it appears that the structure was decommissioned when the stone lintels that supported the doorways of the first story began to collapse at the end of Phase IV (Figure 2.7). The fracture of the northern and eastern door lintels leading from Square 7, the northern of which was replaced with wooden planks shortly after Kaplan's excavations in the 1960s, are another indication of the stress to which these large slabs had been subjected. Despite the condition of the building, after the partial backfilling of the rooms to support the walls, squatters inhabited parts of the structure. At least within Square 10, the mixed plaster-dirt floor (L.1150) was supported by flat-lying stones and even a piece of mosaic (L.1167). Above this were found various layers of debris and pottery (L.1143, L.1147), which included at least one coin (JCHP 128) tentatively dated to the Hasmonean period and a Hellenistic lamp (JCHP 160; Figure 2.10). During this period, doorways within Square 10 were at best only two-thirds of their intended height and therefore are likely not to have functioned to connect these spaces.

The phase detected in Square 10, which is probably to be characterized as a period of squatter occupation, was rather short-lived and is not indicative of the use of the entire building. Instead, other parts appear to have been abandoned. The room bounded by W.1006 on the west,

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Figure 2.10. Hellenistic lamp (JCHP 160) found in L.1143. *Photograph by George A. Pierce.*

within Squares 6 to 7, was used as a dumping ground as indicated by a series of fills excavated in Square 6 (L.1142, L.1132, L.1127, L.1126), which were observed (in a probe in 2008) to slope up on the west toward W.1006 (L.1012, L.1008, L.1004) and terminate on the line formed by it and its robber trench (L.1145). Before these fills were deposited in Square 7, a wall (W.1007; Figure 2.4) was laid across the room from north to south, thus demarcating the eastern boundary of the fills. This wall may have maintained a north-south corridor of access between the rooms in Squares 10, 12, and 13. It remains unclear, therefore, if a contemporaneous fill occupied the space excavated by Kaplan to the east of W.1007, which we designated Square 7.

Additional evidence of what also appears to be part of a phase of late Hellenistic squatter occupation was encountered in Square 3, where a probe was undertaken beneath the floor of a room excavated by Kaplan and identified by him as destroyed during the First Revolt in the first century CE. This probe in Square 3 on the south side of the excavation area was excavated in the northwest corner formed by the western (W.1052) and northern (W.1078) walls of the early Roman building dated to the first century CE. (Kaplan 1962:149). The probe had been undertaken to determine if these walls, like others in the excavation area, had been constructed upon the remains of earlier walls. The earliest level reached in this probe was a fill with some stones (L.1137), which contained Persian period jars and Attic black-glazed ware. Into this fill later features were built, including a probable fieldstone wall (W.1136) and a *kurkar*, sand, and shell installation (L.1135). Set into this installation was the upper half of a Rhodian amphora bearing a stamped handle reading ΝΙΚΑΣΙΜΑΧΟΣ ΔΑΜΟΣΘΕΝΗ (Nikasimaxos Damosthene; JCHP 204; Figure 2.11). The pottery, including an intact inverted rim bowl (JCHP 14) and a stamped amphora handle (JCHP 205), dates to the Hellenistic period.

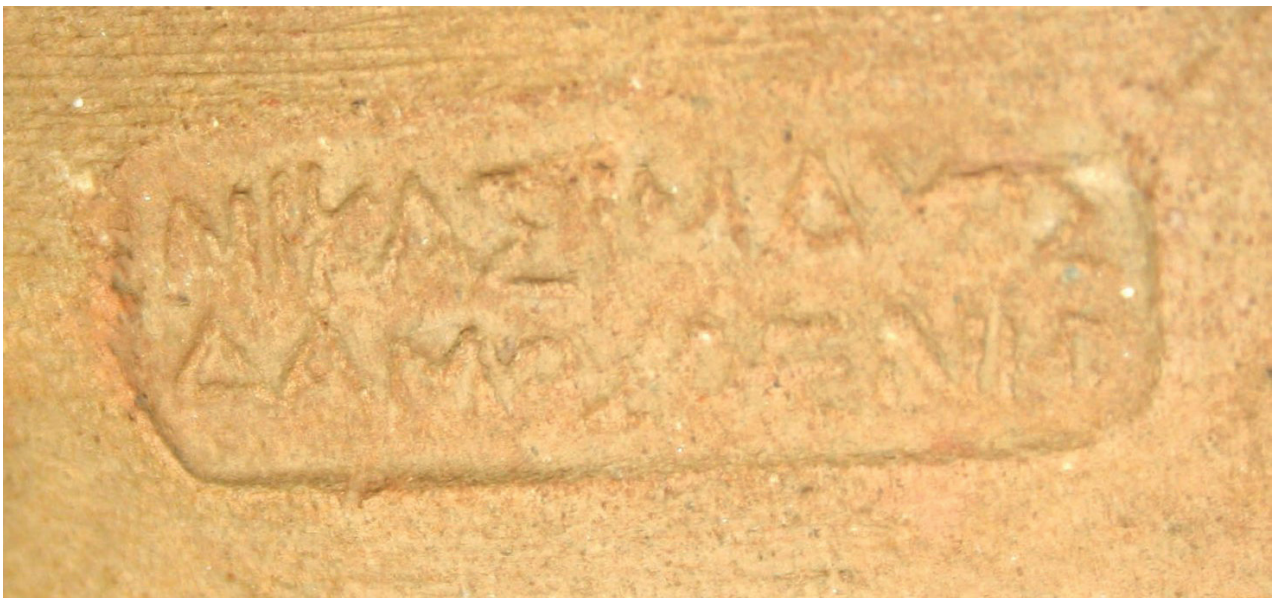

Figure 2.11. Detail of Rhodian amphora handle (JCHP 204) stamped with the name of ΝΙΚΑΣΙΜΑΧΟΣ ΔΑΜΟΣΘΕΝΗ. *Photograph by Brett Kaufman.*

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Phase II (Early Roman)

This phase consists of the preparation and reuse of walls throughout the area for incorporation into a phase of an Early Roman domestic complex likely dating to the late first century BCE and continuing in use through the First Revolt. This architecture can be connected with the findings concerning the Jewish house identified by Kaplan in 1965 (Kaplan 1966:282). One of the most striking aspects of this house is the preservation of a collection of ceramics and stone vessels of the Judean type, which suggest the identification of the household as Jewish (Tsuf 2011).[5] In Square 10, stones and soil (L.1139, L.1134, L.1128) were deposited to level the area before construction during the Early Roman period, a date that is based on recovered ceramics. However, before the construction atop these fills was undertaken, a trench (L.1145, L.1159) was cut to rob the extension of W.1006, the western wall of the ashlar building, where only a few ashlars remain at its juncture with W.1005 (Figure 2.12). The trench extended from the north-eastern edge of the excavations through Squares 9 and 6 to W.1086 and W.1092. As the ashlar blocks were removed, the rubble core simply fell into the trench and served as a partial backfill, and additional Early Roman pottery from the trench provides a *terminus post quem* for the wall's robbing and the filling of the trench. Why the wall was robbed only after the effort to fill the room is unclear, but this suggests that some time separated these two events. The ashlars robbed from the wall were probably employed nearby in the Early Roman structures that were built across the area with ashlar blocks of the size and type associated with the Phase IV building.

After the robber trench was backfilled, a layer of soil (L.1116) was deposited in Square 10 over the robber trench, providing a surface from which the Phase II building was constructed. Ceramics from this layer, which was probably an exterior space, indicate an Early Roman date. It is possible that plaster (L.1112) protruding from below the face of W.1164 in Square 10 reveals the presence of a plaster floor in this area that was located above various fills deposited on top of W.1161 (Figure 2.7). Although none of this floor was found intact at the time of our excavations, this plaster layer can be traced through to the opposite side of W.1091. It indicates that the ashlar masonry above the plaster was added later and was not a part of the original

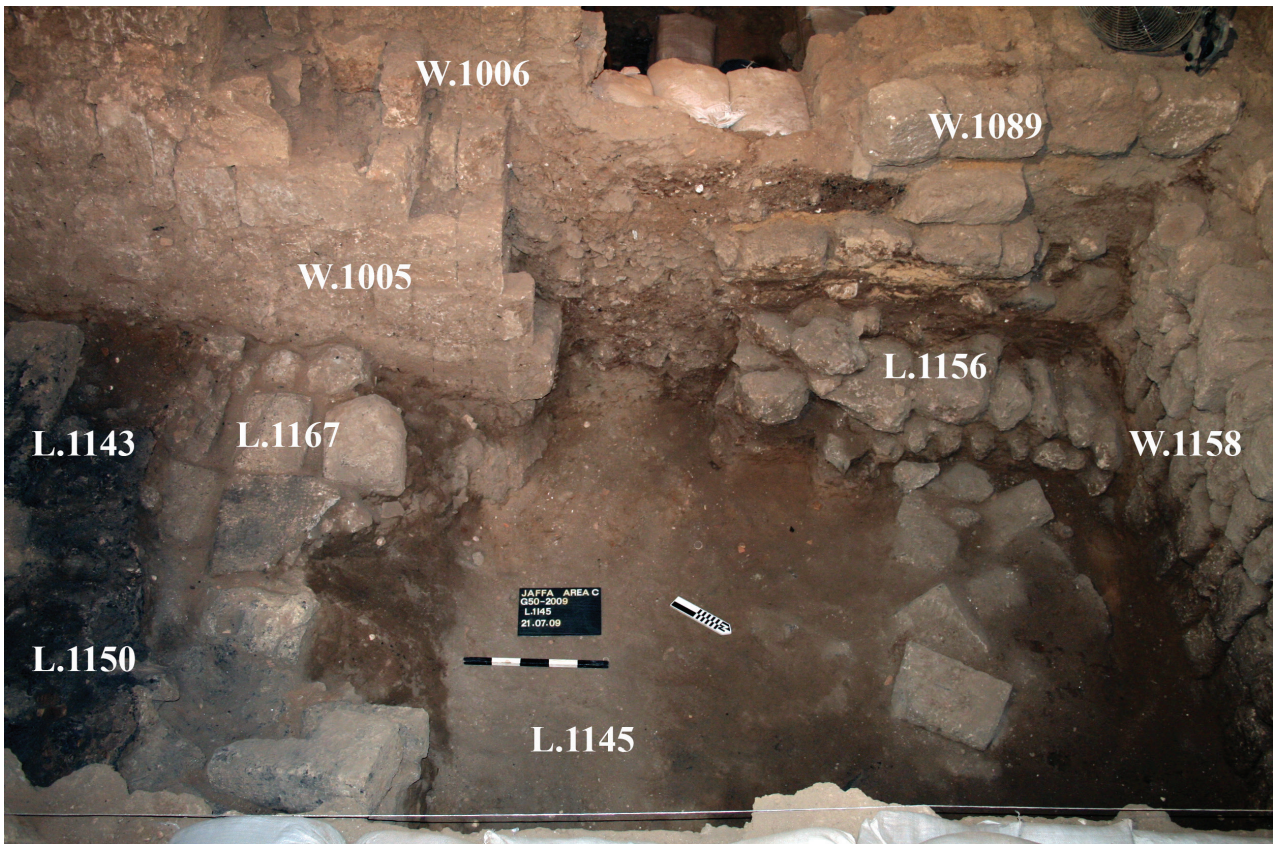

Figure 2.12. Robber trench (L.1145) dividing Squares 9 and 10 and squatter occupation on left in Square 10. View south. Photograph 2009-P237. *Photograph by Aaron A. Burke.*

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construction of the second story of the Phase IV building and is therefore likely an example of the reuse of the ashlar masonry in the Early Roman period, which is attested across the excavation area. In Square 3, for example, the reuse of ashlar blocks is evident in W.1052 and W.1078. The eastern face of W.1052 was coated with a backing for plaster, as was the southern face of W.1078, and traces of plaster were preserved on both surfaces.

Elsewhere, the decommissioned rooms of the first story of the Hellenistic building of Phase IV were sealed by stone paving supported by a vault as seen in Square 8 (see Figure 2.3). This technology was not employed in the region prior to the Roman period and provides therefore a *terminus post quem* for its construction. Kaplan had encountered these vaulted stone floors (Figure 2.13) and likewise attributed them to the Early Roman period, although he suggested that this flooring also functioned as a ceiling over the former "cellar" (Kaplan 1963:113). Similar vaulting was employed to seal the pre-Roman phase below Square 5 and probably Squares 12 and 13. Although Squares 12 and 13 have been covered by modern flooring since the 1990s, the doorway leading from Square 7 into Square 13 permits a view into this now subterranean space and confirms that a similar vaulted construction was employed there. That these vaults were not intended as ceilings for the repurposing of the lower level is evident in the space below Square 8, where the vault's footings protrude into the doorway. Furthermore, the vaults appear to have sealed late Hellenistic and Early Roman fills within these spaces, as evident from the excavations in Square 7, discussed above. The employment of vaulting in these spaces, which added considerably to the pressure against the ashlar-constructed walls, was probably only possible due to these fills, which buttressed the lower walls that served therefore only as foundations during this phase. Whether or not such a vault ever sealed Square 7 is unclear, and the absence of any remains of such a structure contributed to Kaplan's misidentification of this space as a catacomb and cellar.

On the western side of the excavation area, construction of this phase was characterized by more rudimentary fieldstone walls as seen in the northwestern part of the excavation area. W.1117, which effectively replaced the robbed out wall line in Square 10, was constructed of large fieldstones with lower courses of smaller fieldstones set directly on fill (L.1113). It lay in the same alignment

Figure 2.13. Early Roman vault-supported floor in northwest corner of Square 8 as exposed in 1965 by Jacob Kaplan. Walls 1093 and 1091 are seen in lower left and along right side of photograph, respectively. View south. Kaplan Archive photograph. *Courtesy of the Israel Antiquities Authority.*

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as W.1007 in Square 7, which was of similar construction. In Square 9, W.1110 (excavated by E. Brand), which runs in a northeast-southwest orientation and probably corresponds with W.3 of Early Roman date, was built on the all-headers wall W.1158 as a foundation. W.1089 directly abutted W.1110 on its east face and formed the northern enclosure to Square 6, while W.1157 abutted the east face of W.1110 and continued the alignment of the wall below (W.1120). Since all three of these walls are in an area previously excavated by Kaplan, construction dates for the Square 9 walls depend on Kaplan's preliminary findings and correlations with Brand's excavations. Excavations on the western side of W.1052 revealed that W.1097 abutted W.1052, which was composed of roughly dressed fieldstones. To the north of W.1097, a conflagration layer (L.1007) was identified, which was composed of burned debris and ceramics over a plastered surface (L.1065). Although the latest pottery recovered was Hellenistic in date, the floor is laid in relation to W.1097, which directly abuts the upper courses of W.1052, dated by Brand to the Early Roman period (Brand 1994:82, fig. 75).

Phase I: Later Phases (Late Roman to Modern)

Traces of various later phases were encountered during the course of the clearance and cleanup of wall remains at the southern end of Area C. None of these, however, permit a coherent phase plan or narrative within the renewed excavations, although each feature was systematically excavated and recorded and may permit integration with the published excavations of Kaplan in Area C in the future. One of the major fills associated with the modern period was that of Kaplan's excavation backfill from 1965 in Square 9. Among one of the most interesting finds of the season originated here (L.1129), although no reference to it exists among Kaplan's records. Here was found an Attic black-glazed bowl base inscribed with the characters ΔΙΙ (Figure 2.14), which is a possible variant of the name Zeus, likely the name of the vessel's owner in this context. Unfortunately, like the Ptolemy IV inscription, it is of Hellenistic date and yet lacks a productive context.

Summary

As a result of the renovations to the Visitor's Center that were completed in 2011, further archaeological exploration of Area C, which was undertaken between 1961 and 2009 by three separate institutions, will be impossible for the foreseeable future. In this light, the conclusions

Figure 2.14. Inscribed Attic black-glazed bowl base (JCHP 194). Inscription is located in lower right quadrant of base. *Photograph by Heidi Dodgen.*

reached in the course of the 2009 excavations by the Jaffa Cultural Heritage Project are critical to clarifying a number of issues related to earlier exploration. Foremost among these is the recognition of a phase of architecture dated to the Persian period (Phase V), which appears to have influenced the later layout of the Hellenistic city on the western side of the site. Additionally, the recognition that the lower courses of ashlar masonry constitute, the first story of a public building dated to the Hellenistic period (Phase IV) and do not belong to a cellar or catacomb complex of the Late Roman period as once suggested by Jacob Kaplan is very significant. To our knowledge, this structure represents one of the most completely preserved public buildings of the Hellenistic period in Cisjordan. The access provided to each room suggests its identity as a public building, which might also be supported by the discovery of the dedicatory inscription of Ptolemy IV, albeit in a later fill within the structure. Only exploration of the unexcavated rooms to the east holds can further clarify the building's function and provide, consequently, a clearer picture of the Hellenistic city of Jaffa.

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Ramesses Gate and Lion Temple (Area A) Excavations, 2011–2014

Between 2011 and 2014, the JCHP carried out four seasons of work within the Ramesses Gate (2011–2014) and a partial season of work within the Lion Temple (2014), both of which comprise Area A (Figures 2.1 and 2.15; Burke et al. 2017). These excavations follow on excavations by Jacob Kaplan from 1955 to 1974 and those of Ze'ev Herzog in 1997 and 1999 (Herzog 2008).[6] The condition of this area prior to work by the JCHP was poor, and the earlier phases were unintelligible to visitors to the site (Figures 2.16 and 2.17).[7] However, the area offered direct access to Late Bronze Age levels directly below the remains of a Persian period wall (W.3), which was first exposed by Jacob Kaplan in 1955. The excavations were largely supported by a collaborative grant from the National Endowment for the Humanities, exploring the issue of insurgency and social interaction as witnessed in the archaeological remains from Area A.[8] The discussion that follows is restricted to phases encountered during excavations between 2011 and 2014 and their integration with the respective levels excavated by Kaplan (i.e., Levels V and IV) within the Ramesses Gate (see also Burke et al. 2017).[9]

Ramesses Gate (RG) Phasing

Phase RG-4b/Level V (LB IIA, Fourteenth Century BCE)

Although no occupational contexts dating to the fourteenth century BCE were encountered by the JCHP during its first four seasons in Area A, the earliest architectural remains of the Egyptian gateway are tentatively assigned to this period on the basis of the relative stratigraphy of the Ramesses Gate area.[10] This phase consists of the first evidence for the insertion of the fortified gateway into the site, following the earliest phase of Egyptian settlement at the site during Kaplan's Level VI of the Late Bronze I, which we designate Level VI *late.* This late stage of Level VI is assigned by us to the LB IB, distinguishing it from the earlier phases of the LB I that Kaplan encountered during his excavations in 1958 but which he simply lumped together as belonging to the period from ca. 1550 to 1400 BCE (Kaplan and Ritter-Kaplan 1993:657).

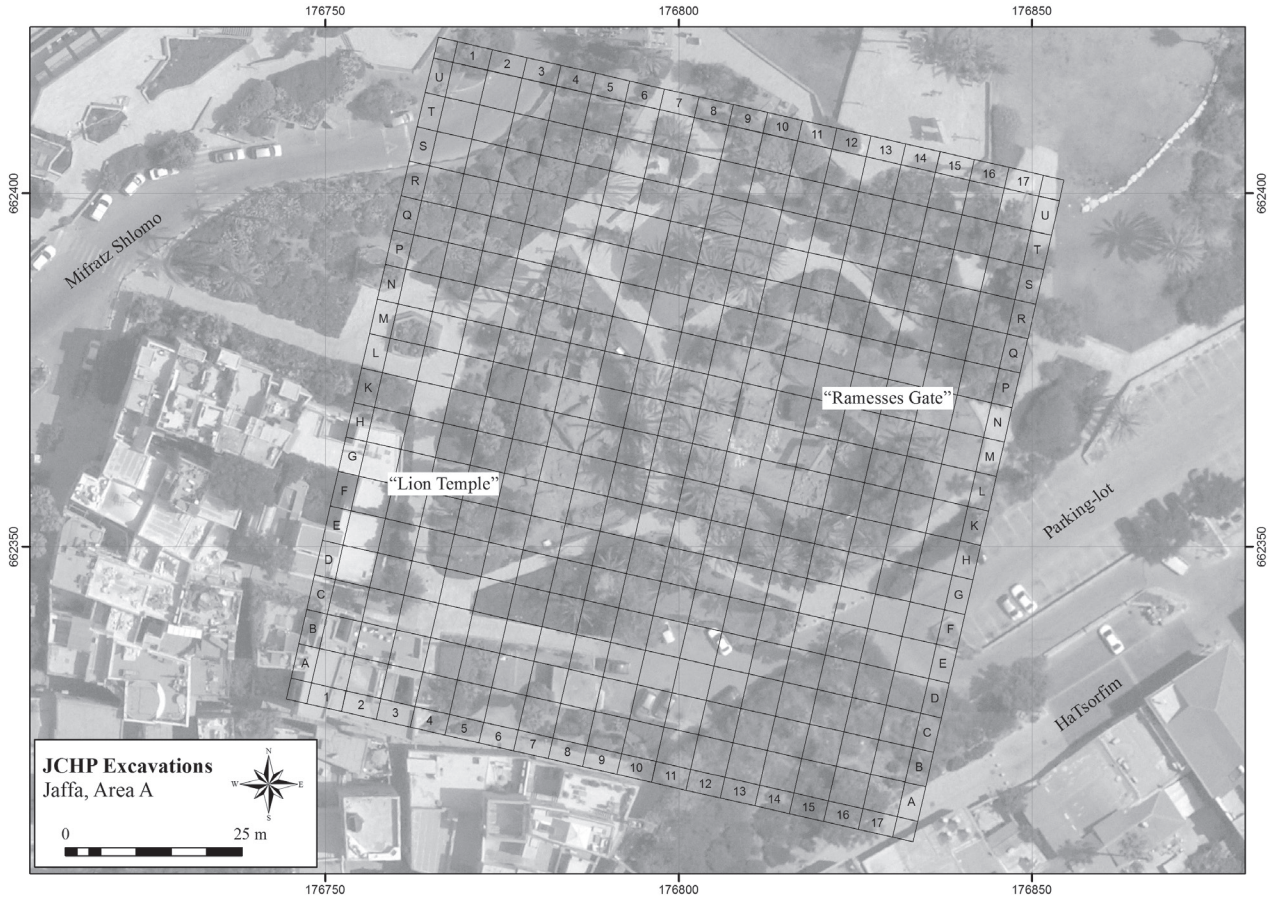

Figure 2.15. Excavation fields of JCHP within Area A from 2011 to 2014. *Plan by Krister Kowalski.*

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Figure 2.16. Condition of Area A, Ramesses Gate prior to JCHP excavations. View north. JCHP Photo 2011-P0006. *Photograph by Aaron A. Burke.*

Figure 2.17. Condition of Area A, Ramesses Gate prior to JCHP excavations. View east. JCHP Photo 2011-P0047. *Photograph by Aaron A. Burke.*

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Following the 2013 excavations (Figure 2.18), our assessment of the sequence of various mudbrick superstructures of the earliest Egyptian gate revealed an early architectural phase that belonged between the LB IB (Level VI *late*) destruction excavated by Kaplan to the south of the gate (Figure 2.19) and the destruction of the Phase RG-4a gate that was adorned with a monumental façade of Ramesses II, which is equal to Kaplan's Level IVB. Respectively, the Egyptian ceramics from the Level VI *late* kitchen located to the south of the gate are dated to the LB IB (ca. 1460 to 1400 BCE), and Phase RG-4a began no later than the reign of Ramesses II. Consequently, the original construction of the RG-4b gate can be reconstructed on the basis of its stone foundations, which also continued to function for the Phase RG-4a gate, and a portion of its yellowish-orange mudbrick superstructure (L.3205; see Figure 2.19), which is preserved several meters high at the western end of the southern tower. Additional evidence of this phase of yellowish mudbrick architecture was also identified over the stone foundations of the north tower from the passageway to the north.

Although tentative, it would appear that the fourteenth-century gate construction represents the first Egyptian effort to "harden" the security of its fortress by means of the construction of a fortress and gate complex. Presumably, this means that the Level VI *late* Egyptian habitation, which is reflected by the garrison kitchen consisting of mid-eighteenth Dynasty forms, simply coopted Canaanite buildings for the earliest garrison facilities in the second half of the fifteenth century BCE. Thus, the construction of the Phase RG-4b/Level V gateway, which employed sandy yellow and orange bricks, seems to have been part of an extensive effort to properly fortify the garrison by building a gate complex characteristic of New Kingdom fortresses in Egypt and Nubia (Figure 2.20). The result was a gate complex featuring towers more than 22 m long and 6 m wide, with a 4-m-wide passageway between them. As indicated by the stratigraphic profile, its construction required digging down into the earlier remains in this area, thus bisecting the stratigraphic sequence recorded by Kaplan to the south of the southern tower (see left side of Figure 2.19). Despite its impressive construction, the gate complex appears to have been destroyed, being

Figure 2.18. Area A, Ramesses Gate during 2013 excavations. *Photograph by Aaron A. Burke.*

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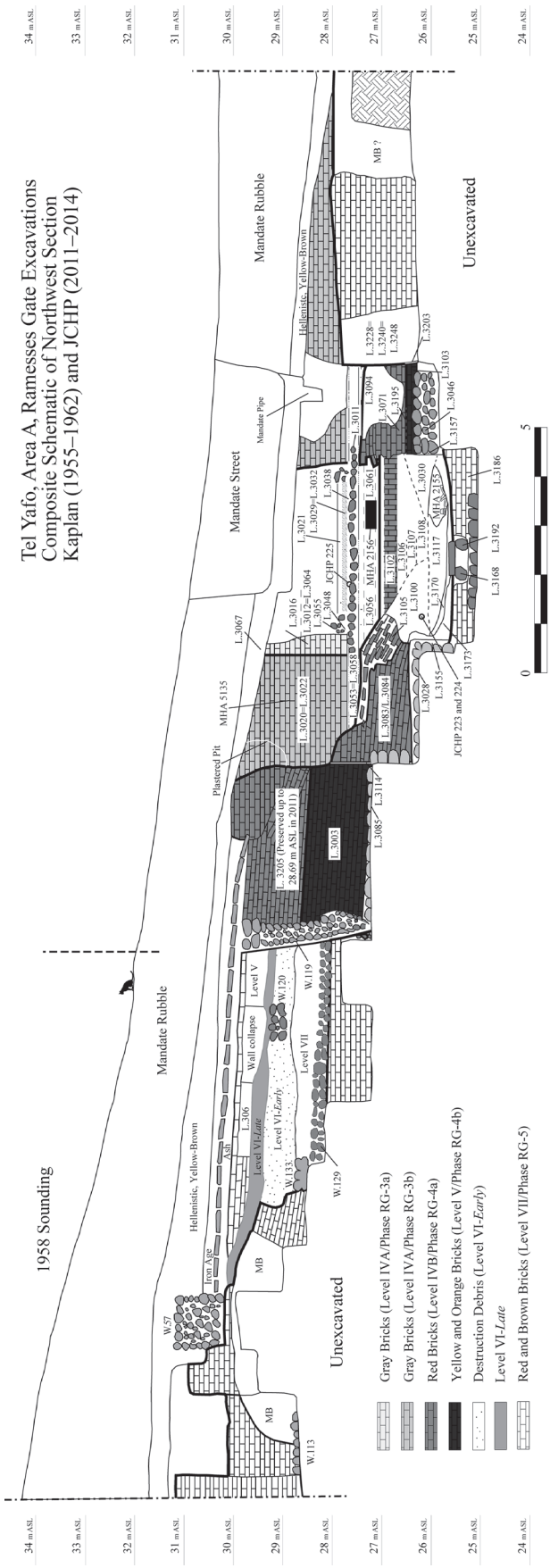

Figure 2.19. Composite schematic section drawing across gate drawn by Kaplan (Plan A58-008) and annotated with locus numbers from excavations by Kaplan and the JCHP. View northwest.
Drawing by Amy Karoll and George Pierce.

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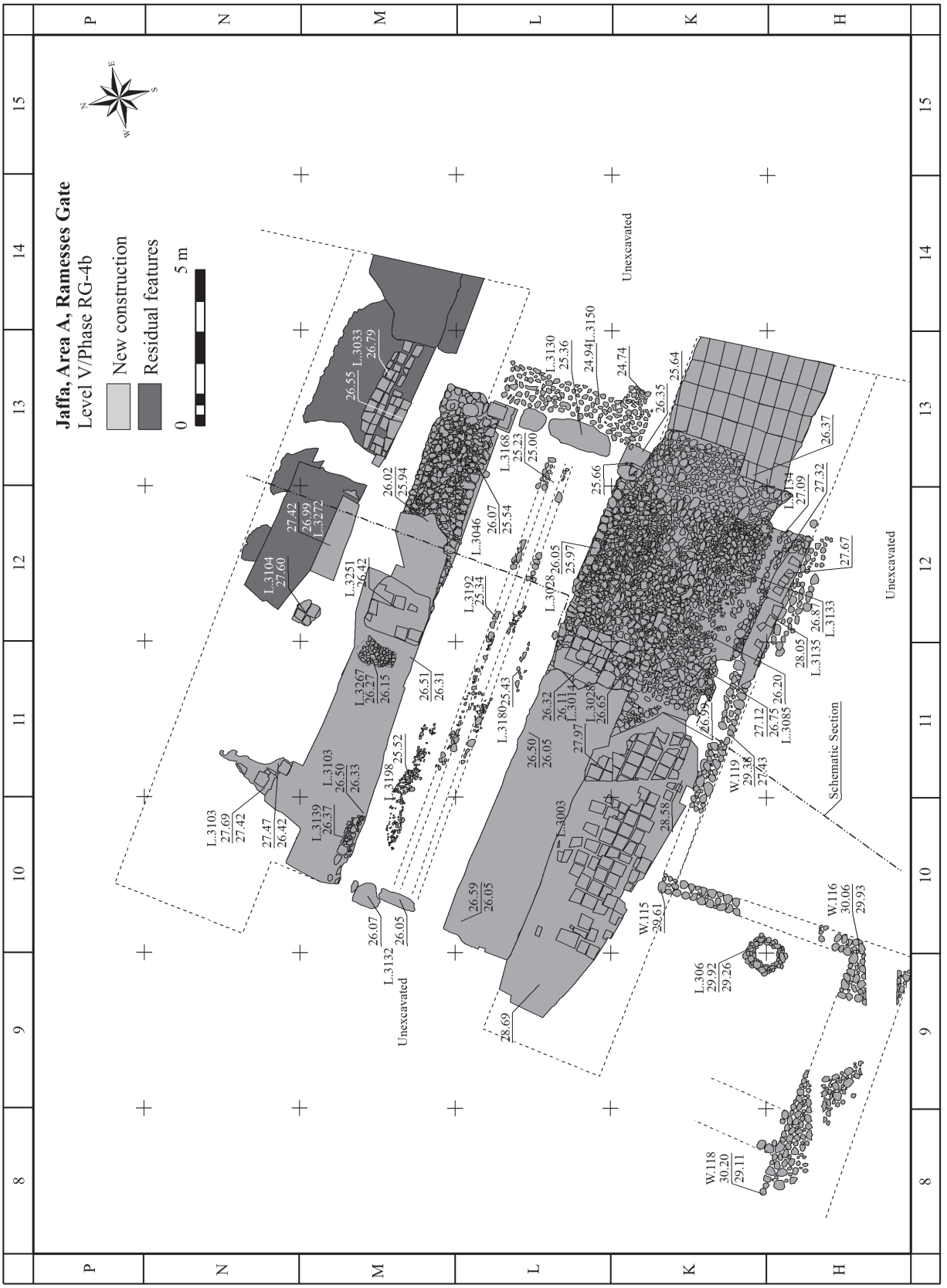

Figure 2.20. Plan of Area A, Phase RG-4b gate complex. Note location of Kaplan's section *Plan by Krister Kowalski.*

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later rebuilt during Phase RG-4a when an entirely different type and color of mudbricks were employed. The lack of habitation levels to go with this gate appears to have been the result of the extensive rebuilding efforts at the start of Phase RG-4a, which sought to salvage the gate complex and thus appears to have not even left a separate floor or associated occupation debris within the passageway.

Phase RG-4a/Level IVb (LB IIB, Thirteenth to Twelfth Centuries BCE)

The earliest phase for which occupational or destruction debris was encountered during the JCHP's excavations is Phase RG-4a, which is equivalent to Kaplan's Level IVb (see Kaplan and Ritter-Kaplan 1993:656). This phase is the second of the Egyptian gate complex and originates with a rebuilding of the Phase RG-4b gate complex discussed above. Kaplan recovered a number of fragments of a monumental gate façade of Ramesses II within the debris of the Level IVa gate (i.e., Phase RG-3b, discussed below) that enable the recognition of a phase of use of the Phase RG-4a/Level IVb gate during this pharaoh's reign (Figure 2.21). This conclusion is corroborated by the resituation of one of these elements within the fills added for the construction of the RG-3b gate passageway (see MHA 2156 in Figure 2.19). The net result of this rebuilding effort was a gate complex of identical proportions that was constructed with a passageway at the same elevation as the original gate of Phase RG-4b (Figure 2.22).

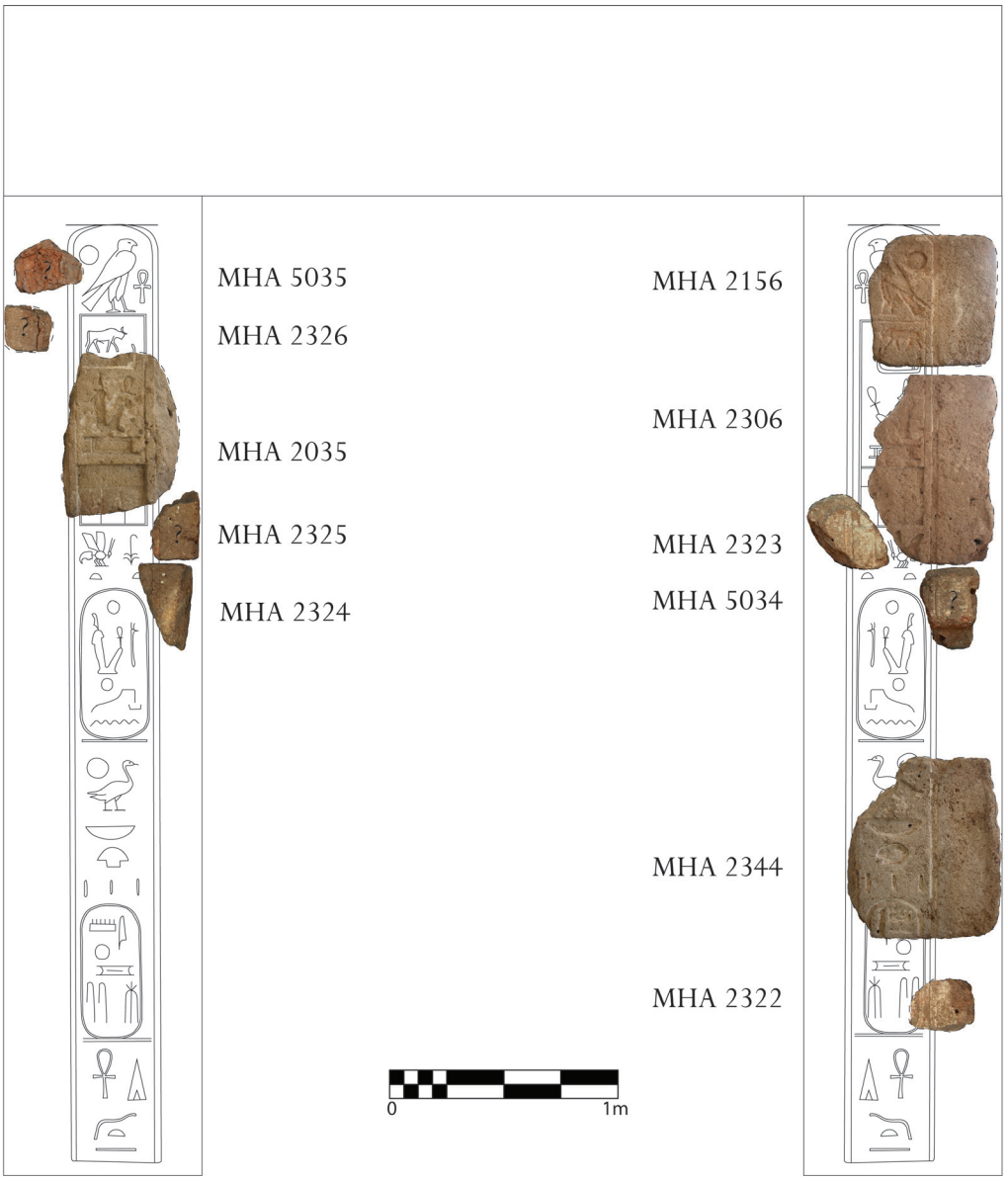

Figure 2.21. Phase RG-4a portal façade of Ramesses II reconstructed from fragments excavated by Jacob Kaplan. For suggested location, see Figure 2.28. *Drawing by Amy Karoll.*

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Figure 2.22. Aerial view of Phase RG-4a gate from quadcopter. North is up. Photo 2013-P0525. *Photograph by Aaron A. Burke.*

Aspects of the gate's construction were revealed during the 2013 excavations of the Phase RG-4a destruction debris. The gate's superstructure can be restored to more than two stories based on several lines of evidence. First, the solid mudbrick superstructure of the ground floor of the south tower (see L.3205 in Figure 2.19) was preserved to nearly 4 m above the passageway floor in the southern tower. Second, the restored elevation corresponds with the minimum elevation for the ceiling of the passageway, which can be inferred from the top of Ramesses II's ornamental façade (see Figure 2.21), and based on Egyptian parallels, this level would have been surmounted by a second story from which the fortifications could be defended. Third, the associated habitation level for Phase RG-4a, as excavated by Kaplan to the south of the southern tower, is at approximately the same elevation as the ceiling level. Elements of the upper story were found buried below the collapsed remains of the inner elevation of the south tower, which was the last part of the structure to have fallen, collapsing to the north across the passageway (Figure 2.23). Among these were more than two dozen burned sections of olivewood and cedar timbers and planks preserved between 1 and 2 m in length (Figure 2.24). These samples represent the most extensive collection of wooden architectural elements of the Bronze Age from the southern Levant excavated to date (Figure 2.25). Last, the discovery of a necklace with over 800 beads and a large-size scarab of Amenhotep III (Figure 2.26) within a crevice of the upper part of the destruction debris clearly indicates that it fell from a room above, presumably from an office above the south tower. The unique preservation of this find along with smaller scarabs of Amenhotep III, one found by the JCHP in 2012 in the same context as the necklace remains and another found during Tel Aviv University's excavations (see Sweeney 2003), suggests that the space above the gateway was used by an individual of status within the fortress.

Buried under the destruction debris on the floor of the passageway was an extensive collection of seed remains

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Figure 2.23. Overhead view of the top of the destruction of the Phase RG-4a gate complex at the end of 2012 excavations. Note collapsed brick courses (L.3102) across passageway. View northeast. Photo 2012-P1027. *Photograph by Hai Ashkenazi, Tel Beth-Shemesh Excavations.*

Figure 2.24. Upper level of debris of collapsed olive and cedar timbers in Phase RG-4a gate passageway. North is up. Photo 2013-P0525. *Quadcopter photograph by Aaron A. Burke.*

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Figure 2.25. JCHP staff preparing remains of timbers for removal from passageway destruction debris of Phase RG-4a gateway. View north. *Photograph by Aaron A. Burke.*

Figure 2.26. Large Egyptian scarab (JCHP 223) of Amenhotep III recovered from Phase RG-4a destruction.

from at least thirteen species. As identified by Andrea Orendi, the project's botanist, these included barley (*Hordeum vulgare*) and wheat (*Triticum dicoccum*; *durum/aestivum*), olive pits (*Olea europea*), grape pips (*Vitis vinifera*), chickpeas (*Cicer arietinum*), lentils (*Lens culinaris*), legumes (*Lathyrus sativus*), broad beans (*Vicia faba*), vetch (*Fabaceae sativae*), and pistachios (*Pistacia*). Since these were found directly on the floor in the thousands and as much as 2 cm in deposition in places, these seeds are not occasional finds but likely represent, among other evidence, the use of the passageway as part of a marketplace in a fashion in keeping with Canaanite and later Israelite practices.[11] Additional evidence for the use of the passageway as a market includes the ceramic storage vessels and simple bowls recovered from the passageway (Figure 2.27) and the remains of an ivory box(?), gold elements to a necklace, and a possible weight. The discovery of worked and unworked fragments of 32 deer antlers smashed directly on the floor of the south side of the passageway suggests that these were also sold in the market located here.[12]

A variety of finds from within the gate passageway reveal the distinctive character of this space, providing a sense of its appearance in antiquity that is quite different from traditional portrayals of gateways with spartan, dark, and unobstructed corridors. A lamp excavated from the destruction debris by Kaplan in 1962 (see MHA 2341 in Figure 2.27) suggests that there may have been a need for additional lighting in parts of the passageway. Nevertheless, we would also suggest the presence of a light shaft in the center of the gate, based on some Egyptian exemplars (see Figure 1.19), which provided adequate lighting to this lengthy passageway.

That the destruction of the gate was a deliberate act is illustrated by both the forensic and artifactual evidence from the 2013 excavations. Artifacts included a number of individual points, presumably arrowheads of different weights, although one could have functioned as a spearhead (Figure 2.28). Such evidence might be ambiguous in its interpretation were it not for the intensive burning of the complex, specifically the timbers that spanned the 4-m-wide passageway. That the burning was only successful when undertaken in stages is illustrated from the depositional history of the complex. One set of timbers lay atop the burned occupational and destruction debris of the floor, which featured the seeds that likely served as the first stage in the structure's destruction, as efforts were made to burn the interior passageway to cause the second story

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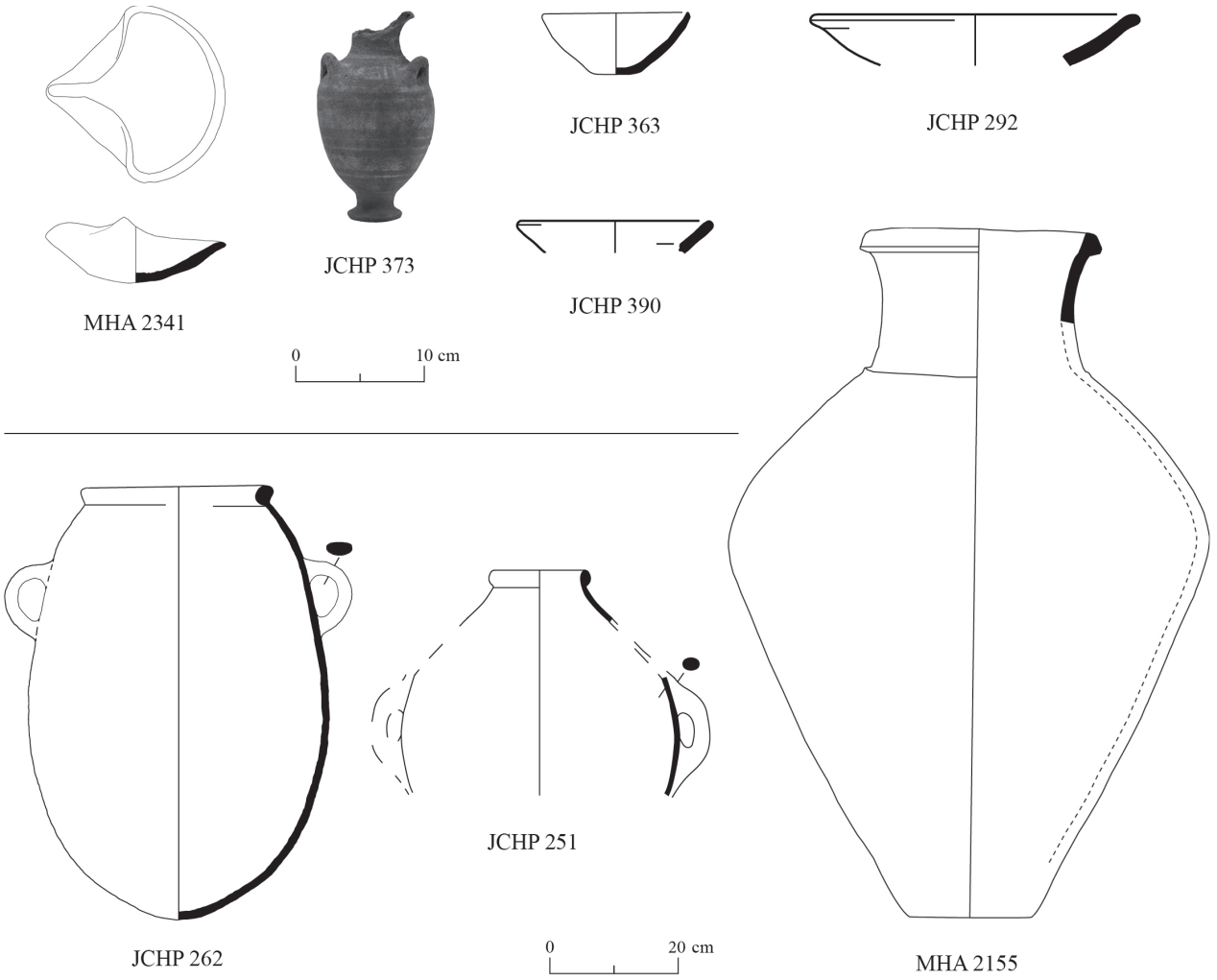

Figure 2.27. Egyptian ceramics from destruction debris of Phase RG-4a passageway. MHA 2341: Egyptian-style lamp; JCHP 373: imitation Mycenaean piriform jar; JCHP 292, 363, 390: Egyptian-style simple bowls; JCHP 262: imported(?) Egyptian two-handled ovoid meat jar; JCHP 251: "Canaanite" transport amphora; MHA 2155: Late Cypriot pithos.

to collapse. To the extent that this was accomplished, this did not evidently cause the entire structure to collapse, and additional burning was then undertaken, which appears to have resulted in the reduction of the north tower. That the south tower constituted a final stage in the destruction of the gate complex is evidenced by the collapse of the north elevation of the south tower up and over the 1.75 m of destruction debris that had filled the passageway. Sections of fired orange bricks within the collapse that now sealed the debris of the passageway reveal locations where pieces of wood continued to smolder, baking the bricks around them (Figure 2.23). Although it was less distinctive within the destruction debris itself, similar instances of burned timbers and planks that baked the mudbrick debris and bricks adjacent to them were encountered throughout the debris, suggesting distinct episodes in the gate's destruction, as outlined above, during which the debris smoldered before the next act of destruction was undertaken. The calibrated radiocarbon date of the destruction is determined as ca. 1135 BCE on the basis of 16 samples run in two laboratories.[13] From this date, it is clear that the gate outlived Ramesses II's reign by a little more than two generations, but the reigning pharaoh at the time of the destruction cannot be determined more clearly. Likewise, the date provides no basis for assertion that the destruction was owed to the arrival of the Sea Peoples.

Phase RG-3b/Level IVa (LB III, Twelfth Century BCE)

Following the Phase RG-4a destruction, efforts seem to have been made to quickly rebuild the fortress, indicating the impermanence of the achievement of its destruction, very likely the result of resistance by the region's Canaanite and allied inhabitants. The rebuilding began with variously

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Figure 2.28. Plan of lowest levels of destruction debris of Phase RG-4a gate complex. *Plan by Krister Kowalski.*

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colored layers of mud slurries with the consistency of mudbrick poured across the raked debris of the passageway (Figure 2.29). There are no indications of the passage of time (i.e., layers indicative of outdoor surfaces) before or during the rebuilding process. Atop these levelling fills a boulder subfloor was added and a beaten earth floor. The gate complex, which was built of gray mudbricks of a distinctly Ramesside size, was constructed to exactly the same dimensions as the earlier gate (Figure 2.30) but now 2 m higher, with no effort made to remove the extensive debris in the passageway (see also section, Figure 2.19).[14] These gray bricks are identical to those used in the building ("citadel"; see W.833 below) that overlay the rear wall of the so-called Lion Temple in the area by the same name (Kaplan and Ritter-Kaplan 1993:658). It was from the gray bricks of the south tower of the gate of this phase that the Tel Aviv University excavations recovered the Lion Hunt scarab of Amenhotep III (Herzog 2008:1791). This phase is equivalent to Kaplan's Level IVa (see Kaplan and Ritter-Kaplan 1993:656). No short-lived samples could be assigned exclusively to this phase of the gate's use, but see samples from Phase RG-3a (Figure 2.31).

Phase RG-3a/Level IVa (LB III, Twelfth Century BCE)

This subphase of the Phase RG-3 gate comprises a minor modification or repair of the Phase RG-3b gate and the final phase of the Egyptian gate complex and of Egyptian New Kingdom occupation of Jaffa. This phase of the gate consists of evidence for a row of mudbricks overlying the occupational debris, floor, and boulder subfloor of the Phase RG-3b gateway and a number of stones functioning as a curb, detected along the north elevation of the south tower (see Figure 2.29). These architectural modifications, which may have been repairs made to the structure, were not identified by Kaplan after his excavations (see Kaplan and Ritter-Kaplan 1993:656). If they were repairs, then they indicate the security concerns that plagued the fortress since the destruction of the Phase RG-4a gate shortly before.

The interpretation that the repairs at the start of Phase RG-3a were necessitated by hostile action against the fortress rather than basic maintenance is suggested by the

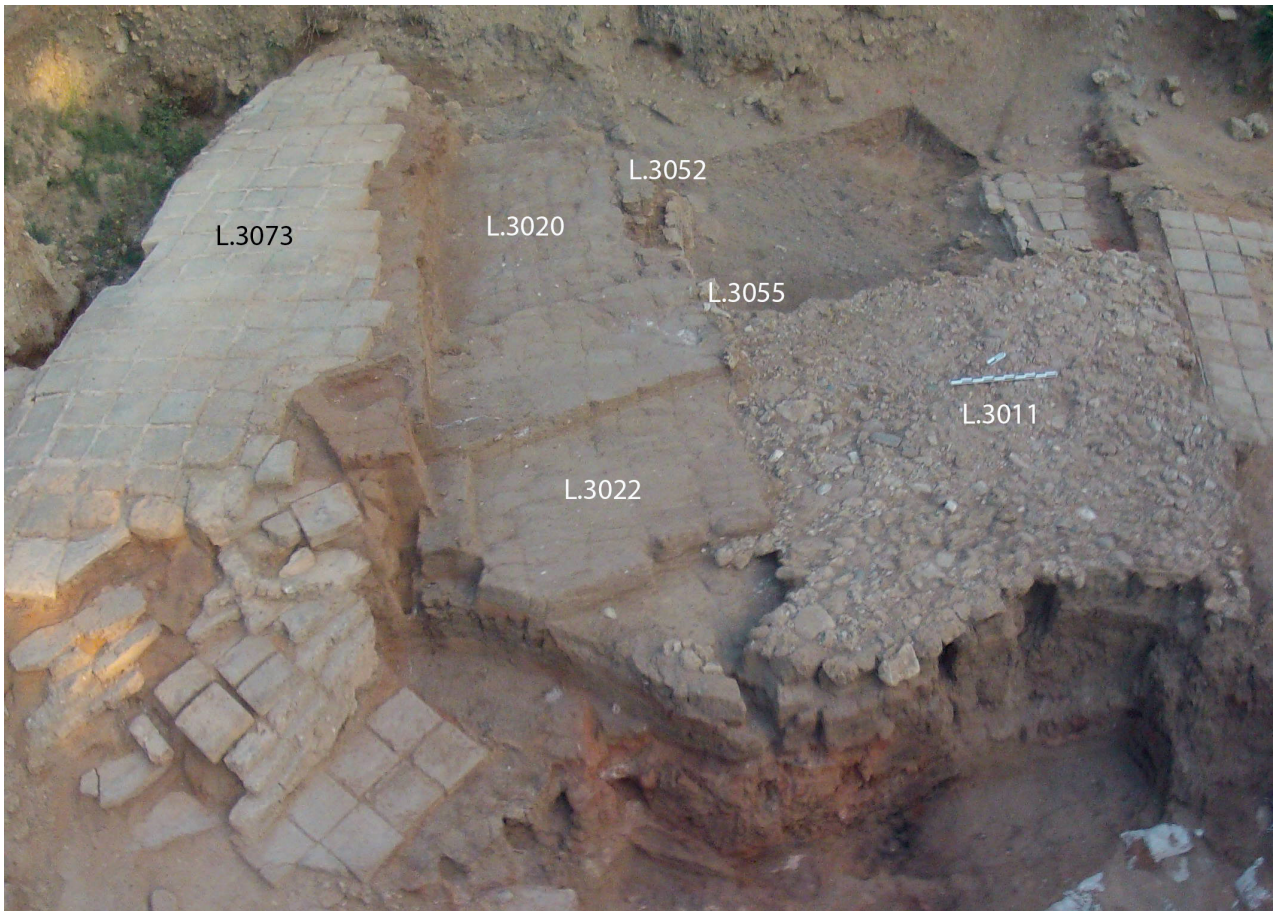

Figure 2.29. Phase RG-3b gate and stone subfloor of passageway (L.3011) with Phase RG-3a restoration (L.3052). View southwest. Field photo 2012-P0035. *Photograph by Aaron A. Burke.*

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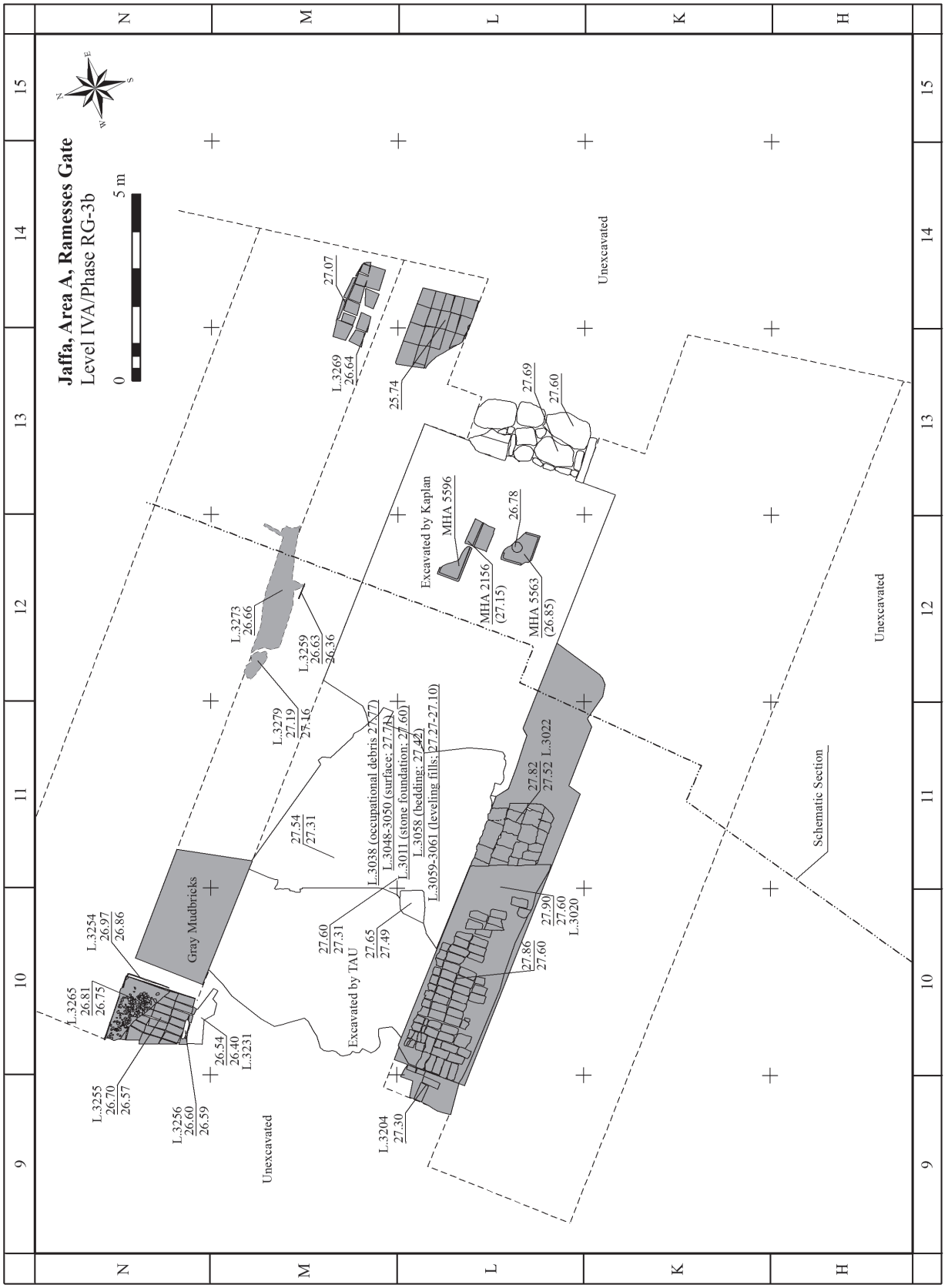

Figure 2.30. Plan of Area A, Phase RG-3b gate complex. Note that features belonging to the northern half of the gate in Phases RG-3b and RG-3a were entirely excavated by Kaplan. *Plan by Krister Kowalski.*

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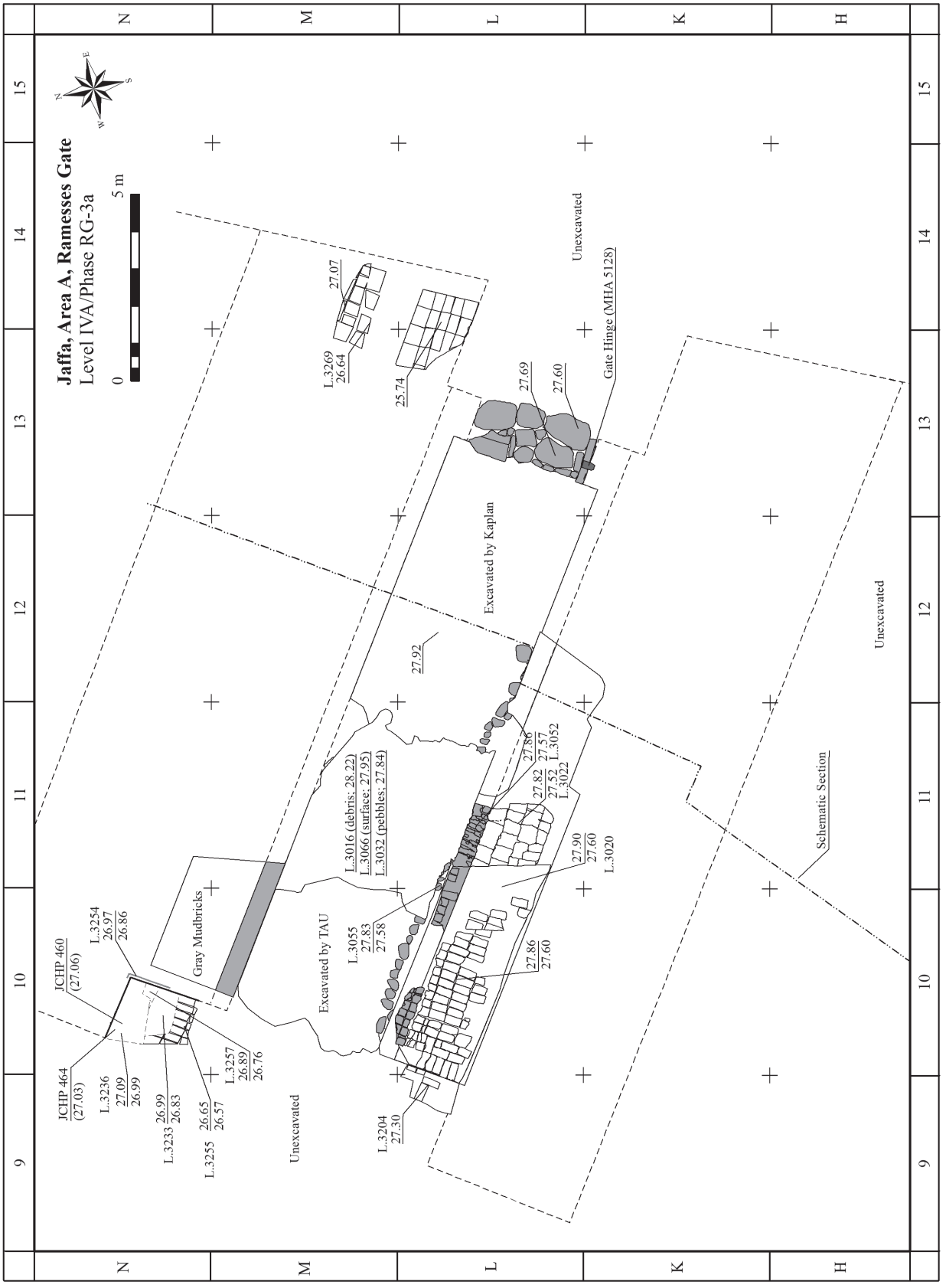

Figure 2.31. Plan of Area A, Phase RG-3a gate complex. *Plan by Krister Kowalski.*

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evidence for the violent destruction of the Phase RG-3a gate complex and the dating of this final event within approximately two decades after the Phase RG-4a destruction. Four short-lived radiocarbon samples (i.e., seeds) recovered from the 2011 excavations within the passageway and a small corner of the floor in the northern niche at the western end of the gate structure encountered in 2014 yielded a date ca. 1125 BCE for the terminus of Phase RG-3a. The destruction is unequivocally demonstrated by the recovery of the southern gate hinge on the south end of the gate's threshold by Kaplan in 1956. It was found in the gate-closed position with the ash of the door leaf remaining within its frame (Kaplan and Ritter-Kaplan 1993:655). Although less impressive, the 2011 JCHP excavations recovered extensive samples of burned wood within the gray mudbrick detritus that filled the passageway.

Phase RG-2/Level II (Persian)

Remains of the Persian period were limited to the removal of the so-called Sidonian wall excavated by Jacob Kaplan in 1955 and left standing throughout his excavations (see Kaplan and Ritter-Kaplan 1993:656). The wall sat directly atop the stratigraphy of the Egyptian gateway at the start of the excavations (see Figures 2.1, 2.16, and 2.17). This feature was extensively recorded and dismantled in 2011 prior to excavation of the Late Bronze Age levels described above.

Lion Temple (LT) Phasing

Excavations in the Lion Temple area by the JCHP were restricted to eight days during 2014.[15] Consequently, only the briefest description of these excavations can be provided. Much of the effort involved orienting the JCHP's efforts with respect to excavations by Jacob Kaplan from 1970 to 1974 (see Kaplan and Ritter-Kaplan 1993:657–658) and Ze'ev Herzog in 1999 (Herzog 2008). Owing to the presence of at least two distinct phases, the area was divided into two fields of excavation. On the north side, a terrace of stratigraphy beginning with Hellenistic walls was left standing by the Tel Aviv University excavations. The second area encompassed the entire area below this "terrace" to its south, which had been excavated by Kaplan but continued by Herzog.[16] Seven phases, ranging from modern remains to the Middle Bronze Age, were identified during the 2014 excavations in the Lion Temple area (Table 2.1).

Figure 2.32. Archaeological features remaining at south end of Lion Temple area following 2014 excavations. Note light spots on left side of image are remains of Middle Bronze Age stone glacis. View southwest. *Photograph by Aaron A. Burke.*

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Late Bronze Age Excavations (South)

The other area of excavations in 2014 was the southern half of the Lion Temple area (Figure 2.32). Here, about four major phases were identified, including Middle Bronze Age (LT-7), Late Bronze Ib (LT-6b), LB II to III (LT-6a and LT-6), and the Iron II (LT-5; see Table 2.2). Middle Bronze Age remains consisted of the *kurkar* surface of the glacis identified at the very south end of the excavation area (see light-colored areas on the left side of Figure 2.32). Late Bronze Age phases were encountered in probes through what remained of this stratigraphic sequence following both Kaplan's and Herzog's excavations in the proximity of the encased mudbrick remains of the Late Bronze III "citadel" (W.833) that lay on the west side of the excavation area (Figure 2.33).

Persian Period Excavations (North)

Most of the work in the northern terrace involved cleaning and detailed recording of the remains of fieldstone walls and associated debris layers (Figure 2.34). Phases encountered were restricted to the Persian (LT-4) and Hellenistic (LT-3) periods. Owing to the removal of associated debris layers (and with them most of the artifacts), criteria for the distinction of these phases were limited to the association of architectural features with walls tentatively phased by Kaplan in the unpublished records of his excavations. Nonetheless, this resulted in improvements to earlier plans offered by Kaplan, largely made possible by the integration of walls exposed during excavations by Tel Aviv University (Figure 2.35). Further work will be possible on these remains as they are integrated into a reappraisal of the unpublished records and artifacts from Kaplan's 1970s excavations here.

Ottoman Period

Substantial remains of the Ottoman period were mapped during the JCHP's excavations in the Lion Temple area and from Kaplan's excavation records (Figure 2.36). Together, these data for the structural footprints of Ottoman period buildings on Tel Yafo provide the initial evidence necessary to begin to reconstruct Ottoman contexts from archaeological evidence in Jaffa's upper town.

Summary

After four years of excavation in the Ramesses Gate of Area A, our picture of the Late Bronze Age Egyptian garrison has vastly improved over that provided by earlier expeditions. The incorporation of the records of Jacob Kaplan's excavations during the 1950s provides a unique opportunity to maximize the results of these excavations through vastly higher resolution data collection during the resumption of excavations by the JCHP. The results have been resoundingly positive. They provide a unique perspective on this context not only by means of the Egyptian gate complex—the only such feature excavated in Israel to date—but also by providing a chronological resolution by means of radiocarbon dates on short-lived samples from the site, which provide the best such dates for the Late Bronze Age in Canaan and likewise the solid dating for the end of Egyptian rule in Canaan, ca. 1125 BCE.

Despite very preliminary work in the Lion Temple in 2014, it provides the first ability to ground-truth the standing remains within the area and to associate them with unpublished excavation records of Jacob Kaplan. Given the extent of the Ramesses Gate excavations in 2013 and 2014, the area faces structural limitations to further excavation. As a result of this, the Lion Temple

Table 2.2. Preliminary phasing for the Area A, Lion Temple based on 2014 excavations.

Phase	Architectural Features	Preliminary Date
LT-1	Winter wash, remains of Herzog and Kaplan's excavations	Modern
LT-2	Ottoman footings	Ottoman
LT-3	Fieldstone walls	Hellenistic
LT-4	Ashlar pier and rubble walls	Persian
LT-5	Pit 5a	Iron II
LT-6	Mudbrick walls	Late Bronze Age
LT-6a	Stone architecture, column bases	Late Bronze II
LT-6b	Stone architecture	Late Bronze Ib
LT-7	Mudbrick wall, kurkar glacis (?)	Middle Bronze Age

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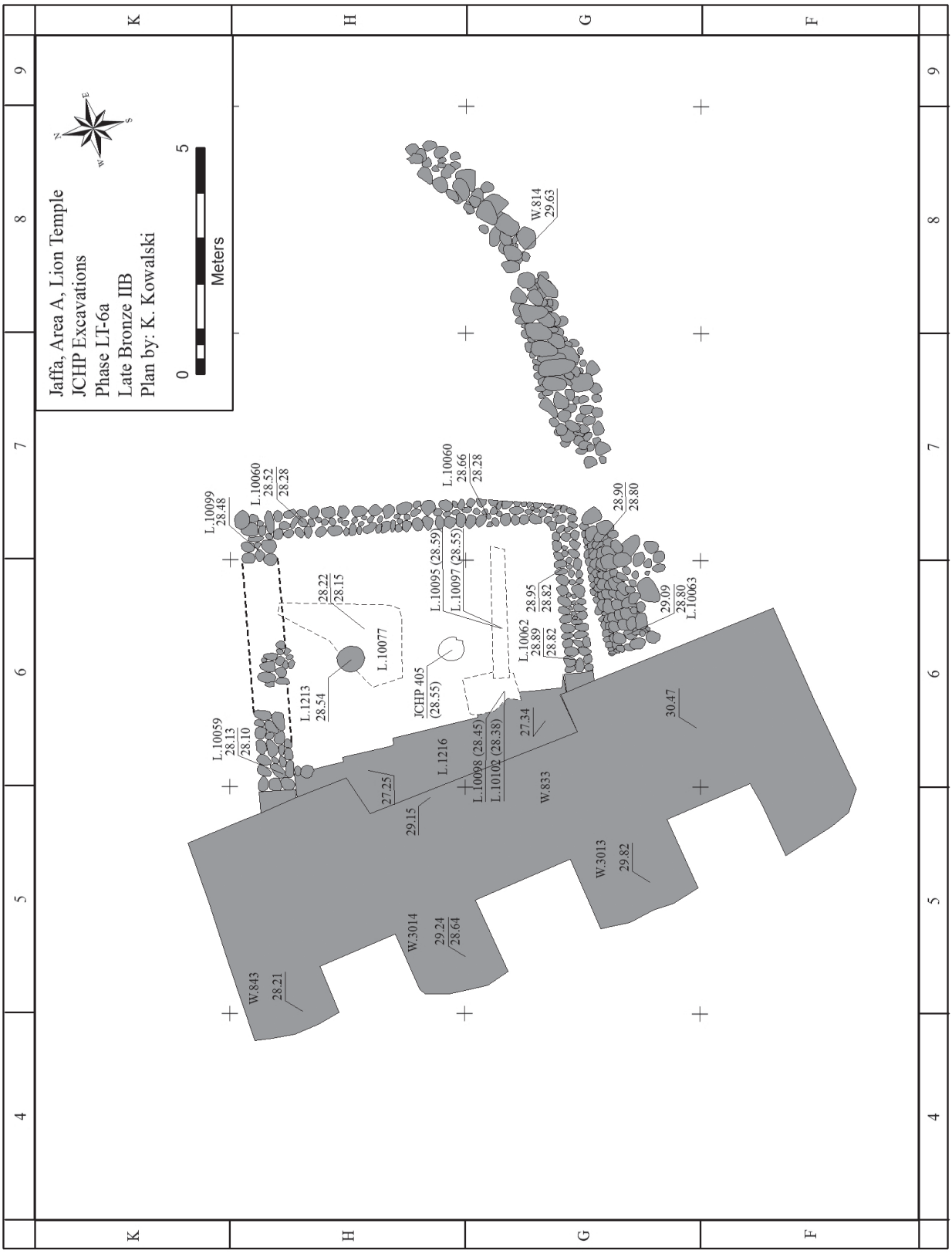

Figure 2.33. Phase LT-6A, Late Bronze IIB, remains excavated in 2014 on south side of area. *Plan by Krister Kowalski.*

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Figure 2.34. Persian period wall remains at north end of Lion Temple area following 2014 excavations. View south. *Photograph by Aaron A. Burke.*

becomes of paramount importance for understanding Jaffa's Bronze Age contexts, and yet substantial obstacles exist to work within this ever-deepening trench, which provides almost no potential to be widened to provide broader exposures of these occupational phases in the archaeological sequence of Tel Yafo.

Conclusion

Six seasons of research excavations on Tel Yafo by the Jaffa Cultural Heritage Project have set Jaffa within its rightful place in discussions of the archaeology of coastal communities during the Bronze and Iron ages and classical periods. This research not only has afforded an opportunity to undertake the application of new methods to Jaffa's archaeology but also has likewise created a context for the intensive analysis of former excavations that ultimately means that these earlier records can be exploited as fully as possible. The net result of these efforts, alongside intensive salvage excavations throughout Jaffa's lower town, is an increasingly robust picture of Jaffa's archaeological sequence and its cultural history.

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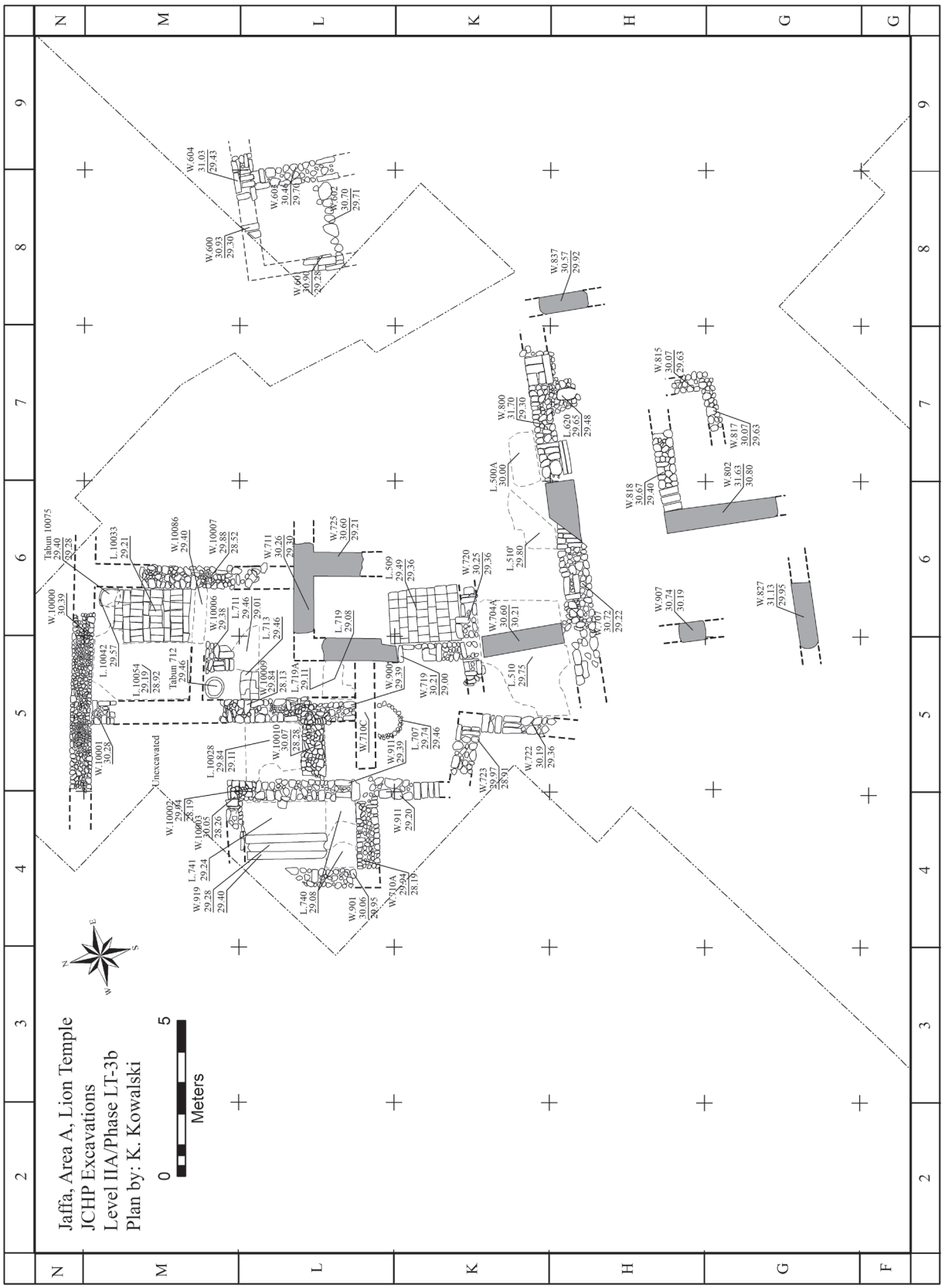

Figure 2.35. Phase LT-3b, Persian period, remains excavated in 2014 on north side of area. *Plan by Krister Kowalski.*

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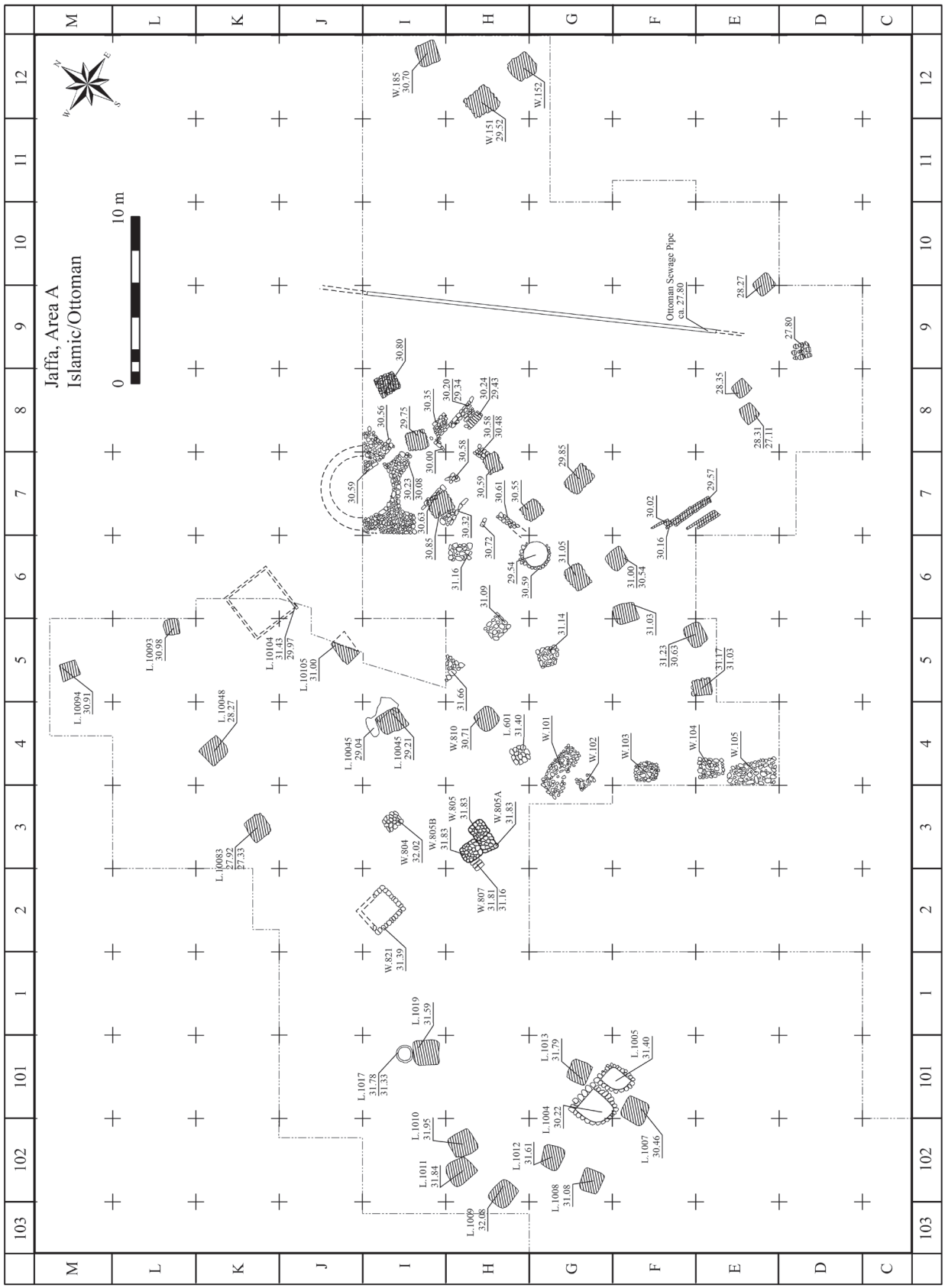

Figure 2.36. Ottoman period features in Lion Temple mapped in 2014 and integrated from Kaplan excavation records. *Plan by Krister Kowalski.*

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Notes

1. JCHP excavations in Area C were conducted from 2008 (Lic. No. G-35/2008) and from June 21 to July 30, 2009 (Lic. No. G-50/2009). Logistics for the excavations were coordinated with the Old Jaffa Development Corporation, which incorporated the excavated remains within its renovation of the Visitor's Center following these excavations; the renovations were completed in spring 2011. Excavations were supervised by graduate students from the Department of Near Eastern Languages and Cultures and the Cotsen Institute of Archaeology at UCLA: G. A. Pierce (area supervisor) and unit supervisors K. Keimer, B. Kaufman, K. Lords, H. Pietricola, and H. Dodgen. O. Tsuf served as the project's Classical ceramicist, while Benjamin Marcus and Leslie Friedman organized conservation, which made possible these excavations. Logistical support and equipment were provided by the Israel Antiquities Authority as part of the project's cooperation.

2. The boundaries of each of the new squares, designated 1 to 13, were necessarily determined by the standing walls of Phase III, identified by Kaplan with Level 6. In relation to Kaplan's excavation grid, the JCHP's excavation squares spanned his original squares, CC100–101 and DD100–103.

3. While the fill (L.1146) against the eastern face of L.1158 was excavated, it was apparent that this fill consisted of a backfilling operation carried out by Kaplan after completion of his excavations in Square DD101. This was confirmed by the discovery of a stone marked in red chalk "DD101" that was used by Kaplan throughout photography in his excavations as evidenced in early field photographs. This meant that only limited stratigraphic relationships could be established between the early walls associated with this phase (W.1024, W.1168, L.1158). It is doubtful that Kaplan exposed the loci directly below the stones of the wall, and therefore some of the Persian pottery that was collected from here is likely to have been in situ.

4. Information provided by Brita Lorentzen, Cornell Dendrochronology Laboratory, 2012.

5. The Area C excavations of Jacob Kaplan are being prepared for publication by Orit Tsuf.

6. The former excavations are being integrated with current excavation records and published by the JCHP. The latter excavations are being prepared for final publication by Z. Herzog of Tel Aviv University.

7. For a 3D view of the excavation area, see "Ramesses Gate (Area A Kaplan Excavations) 2009 Photosynth" at https://photosynth.net/view.aspx?cid=ea864822-fbc6-4181-ac79-9133618767a6.

8. See NEH grant no. RZ-51445-12.

9. JCHP excavations were conducted from July 10 to August 4, 2011 (Lic. No. G/35-2011); July 1 to August 2, 2012 (Lic. No. G/44-2012); June 17 to August 2, 2013 (Lic. No. G/60-2013); and June 27 to August 1, 2014 (Lic. No. G-33/2014). Staff included G. A. Pierce (2011-2012), B. Kaufman (2011), H. Dodgen (2011–2013), A. Karoll (2011-2014), N. Ben-Marzouk (2012-2013), A. Danielson (2013-2014), J. Damm (2013-2014), and Z. Margulies (2012); K. Kowalski, GIS (2011–2014); and K. L. Pierce (2012) and E. Waraksa (2013), Egyptian specialists. 2011 support included UCLA Senate Faculty Research, Field Research (Cotsen Institute, UCLA), and Ross Travel (Center for Jewish Studies) grants and the Seminar für Altes Testament und Biblische Archaeologie (JGU, Mainz). The IAA provided logistical support from 2011 to 2013. 2012 support featured grants from the UCLA Transdisciplinary Seed Grant (Office of the Vice Chancellor for Research) and the Near Eastern Languages and Cultures Department. Additional support included UCLA Graduate Summer Research Mentorships and fellowships from the American Schools of Oriental Research.

10. The Ramesses Gate (1950s excavations) and the Lion Temple (1970s excavations) areas were provided with distinct phasings, despite the fact that the two fields of excavation were physically joined (see Kaplan and Ritter-Kaplan 1993). The 1970s excavations simply resumed by expanding the original excavation area of the 1950s to the west and south.

11. Orendi examined more than 24,000 individual seeds as part of her analysis of samples from the 2013 excavations of the Phase RG-4a passageway deposits.

12. Ed Maher, project faunal specialist, analyzed these in 2016. A few additional fragments were found east of our excavation by Kaplan but not in the same quantity.

13. These samples will be published in detail in collaboration with Felix Höflmayer, who provided this information and ran the dates with OxCal.

14. That the Phase RG-4a destruction was far more extensive than those of Phase RG-4b is suggested by the fact that its remains were simply built over and no attempt was made to restore or clean the gate out. It also suggests that it is quite likely that the entire site was destroyed along with the gate, whereas the Phase RG-4b destruction may have been restricted to the gate complex.

15. The 2014 excavations were cut short by the start of hostilities between Hamas and Israel, which lasted more than 50 days and ended only after the excavation season was over.

16. Owing to the fact that Herzog's excavations were not published beyond an encyclopedia entry (see Herzog 2008), it was impossible to be certain where the excavations 15 years earlier had been conducted.

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Chapter 3

Salvage Excavations in Jaffa's Lower Town, 1994–2014

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Between 1994 and 2014, numerous salvage excavations were conducted throughout Jaffa, principally around Tel Yafo, preceding construction projects and infrastructure upgrades. Most of the excavations were carried out by the Israel Antiquities Authority. These off-mound excavations reveal the various uses of this space from the Bronze Age to the Ottoman period and the development of Jaffa's Lower City from the Persian period onward. These excavations therefore supplement the picture from excavations on the mound since 1948.

Since the mid-1990s, the municipality of Tel Aviv–Jaffa has invested considerable funds and effort in the renovation of Jaffa, aiming to attract new residents and encourage domestic and foreign tourism. Outdated infrastructure was replaced, streets were repaved, and stronger regulations were instituted in the popular Flea Market. Cafes, bars, and restaurants now dot its streets and alleys along with traditional shops. At the same time, ecclesiastical and government institutions moved from nineteenth-century buildings and compounds into new complexes, and the historical sites and structures were sold or leased to investors for conservation and renovation as boutique hotels. As a consequence, densely built areas previously beyond reach for research were made available for archaeological investigation (Ajami 2011:34–36; see Figure 3.1).

Previously, there was little evidence for urban growth before the nineteenth century beyond the traditional limits of Tel Yafo, the archaeological mound of ancient Jaffa. Testimony to periodic expansion could nevertheless be expected in light of Jaffa's long history as a thriving harbor, trade center, and agricultural haven. That history is well attested in original texts and substantiated by the results of archaeological exploration. Excavations on Tel Yafo by various expeditions from1948 to the present attest to almost constant occupation since the Middle Bronze II period (Bowman et al. 1955; Kaplan 1961, 1962, 1964a, 1964b, 1970, 1972, 1975; Kaplan and Ritter-Kaplan 1993; Herzog 2008; Burke et al. 2014; Burke et al. 2017). Recent analysis of pottery from Kaplan's excavations and from Herzog's later project led to the conclusion that permanent settlement in Jaffa likely has even earlier origins. Sherds are relatively few and with no architectural or distinct layer context, but they range from the Early Bronze I to the Early Bronze III, a rare span in Early Bronze sites from the area (Gophna 2002:419; also Yitzak Paz, personal communication, 2013). However, until two decades ago, Tel Yafo's borders marked the limits of known habitation before the nineteenth century CE. Historical sources were by and large mute about the settlement off of the mound, and archaeological remains were known only from a few scattered probes (e.g., Hanauer 1903).

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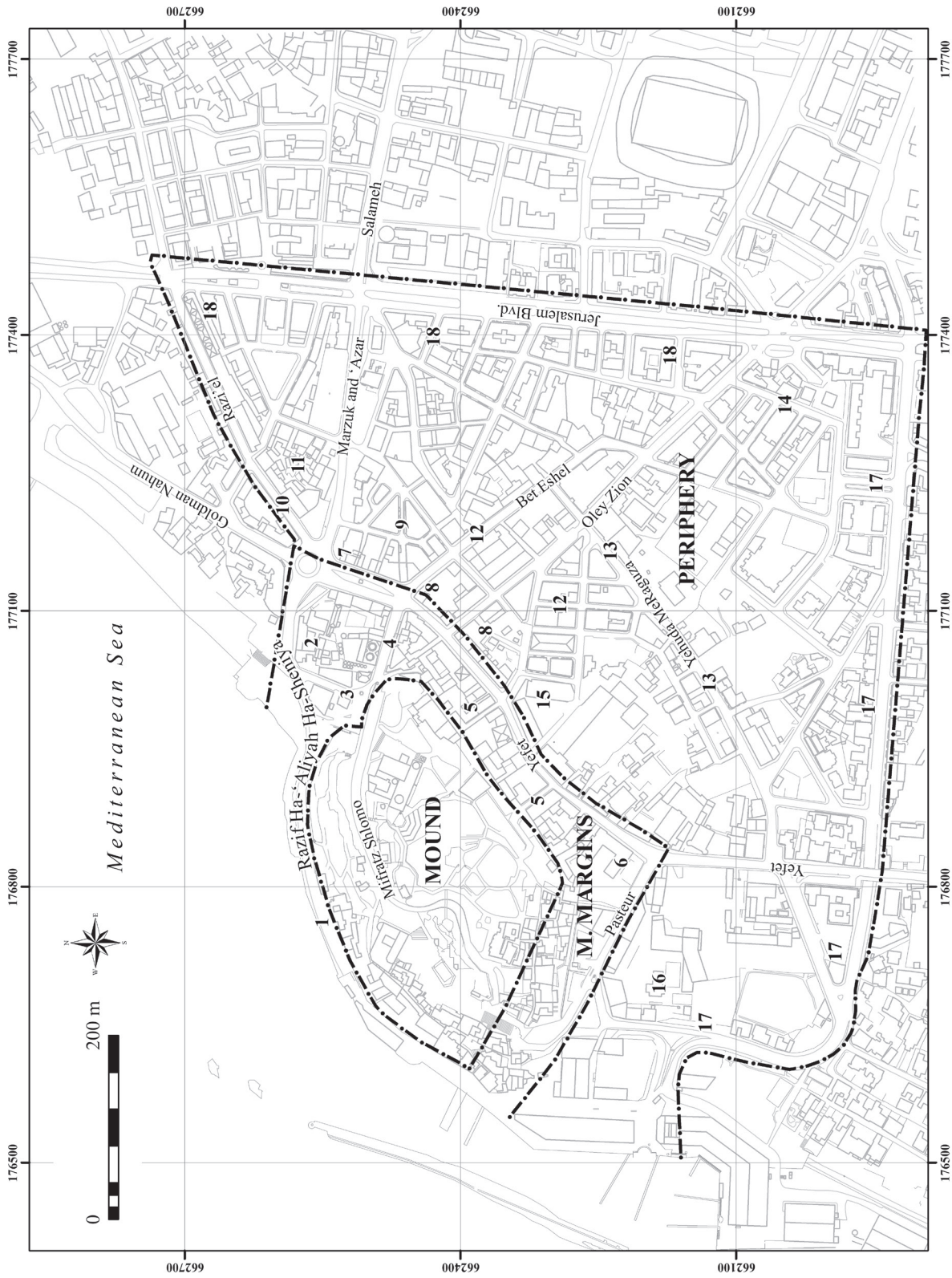

Figure 3.1. Map showing the main divisions of the archaeological site of Jaffa and excavation areas within the mound margin and periphery. 1. Armenian Compound, 2. Qishle, 3. Ruslan and Mifratz Shlomo St., 4. Ottoman city (Jerusalem) gate, 5. Ha-Tsorfim St., 6. French Hospital, 7. Clock Tower Square, 8. Yefet St., 9. Greek Market, 10. Razi'el St., 11. Postal Compound, 12. Flea Market, 13. MeRagusa St., 14. Magen Avraham Compound, 15. Ganor Compound, 16. Andromeda Hill, 17. Ha-Yamit St., and 18. Jerusalem Blvd. *Plan by Krister Kowalski, adapted from A. Dagot.*

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Nevertheless, major salvage projects undertaken in recent years centered precisely on the areas flanking Tel Yafo. Challenging both archaeologically and logistically,[1] they shed light on Jaffa's urban expansion and contraction through the ages. Material evidence spanning from the Middle Bronze II to the late Ottoman period attests to times of agricultural and funerary exploitation and to days when these areas were part of Jaffa's urban sprawl (Figure 3.2 and Figure 3.3). The fluctuating urban tides were directly related to Jaffa's role as part of a network of coastal sites that shared in the political and economic realities of each period, and these changing fortunes are well reflected in the archaeological record.

Methodology

This chapter provides the second general survey of archaeological work in Jaffa over recent decades. In an earlier article, Martin Peilstöcker reviewed the history of archaeological investigation on the mound and its surroundings since its inception in 1948, referring to main projects and listing excavation licenses granted up to time of writing (Peilstöcker 2011a). This chapter summarizes in chronological order the archaeological evidence for the various phases and types of occupation off of the mound or tell, excluding the harbor.[2] Data so far scattered in dozens of preliminary or brief final reports and several articles

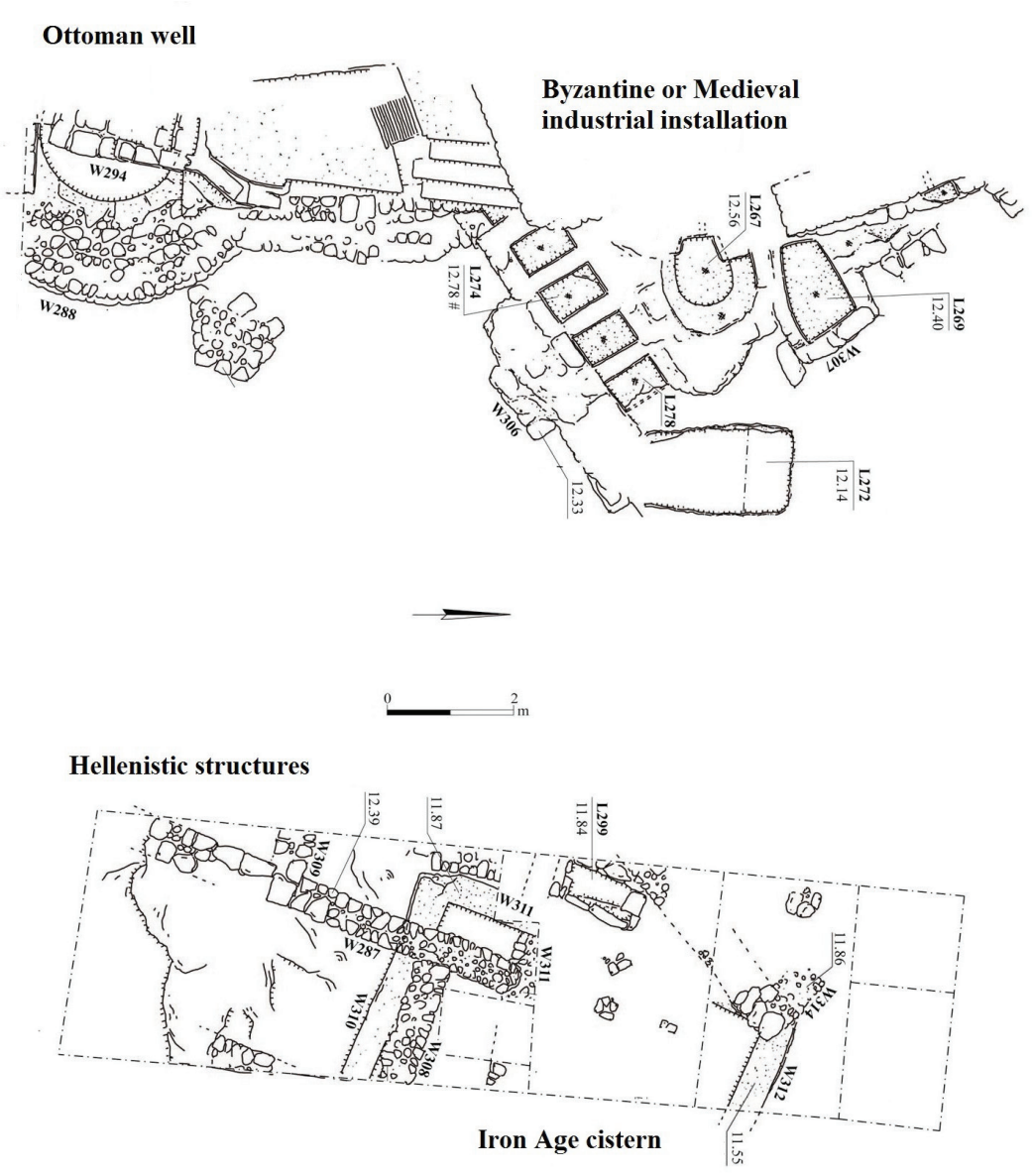

Figure 3.2. Four representative layers (Ottoman, Byzantine or Medieval, Hellenistic, and Iron Age) under the Flea Market's Rabbi Hanina St. *Plan by V. Essman and V. Pirsky.*

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Figure 3.3. Late Ottoman channel (left) and structures (right) flanking a Crusader wall under 3341 St. in the Greek Market. *Photograph by Yoav Arbel.* Photo B348045.*Courtesy of the Israel Antiquities Authority.*

have been brought together, in addition to unpublished materials mentioned here by permission of the excavators. This synthesis by no means claims to represent the evidence or conclusions of all the excavations that have taken place below Tel Yafo. It takes into account, however, all major projects and smaller affiliated excavations or such that yielded substantial findings.

To facilitate the readers' orientation, the grounds covered in this chapter were divided into two spheres: *mound margins* and *periphery*. The mound margins extend from the Sea Promenade to Pasteur St., following the eastern line of the Ottoman fortifications along Yefet St. (see Figure 3.1). The periphery spreads between Yefet St. to the west and the Jerusalem Blvd. to the east, as well as from Razi'el St. to the north to Ha-Yamit St. to the south (Table 3.1). The division follows the line of the late Ottoman fortifications (see Chapters 7 and 8, this volume); the mound margins were within, the periphery outside. While both spheres saw periods of settlement and others as part of Jaffa's necropolis, there are also general distinctions in the intensity and nature of exploitation based on the distance to the city core.

Nearly all information on extra-mound salvage excavations in Jaffa appeared in *Excavations and Surveys in Israel* (*ESI*), published by the Israel Antiquities Authority, in its printed and more recently digital versions.[3] Numerous other excavations are at various writing or editorial stages, including large-scale final reports,[4] and parts of this survey are also based on them. Some of these reports include detailed chapters on ceramic, glass, coin, metal, and other types of finds, which, upon their publication, will offer a substantial corpus of comparative materials.

To avoid a disproportionate number of bibliographic references to yet inaccessible reports, all unpublished projects are referred to by the excavator and official license

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Table 3.1. Salvage excavations on the margins and periphery of Jaffa's mound. For license numbers, see Peilstöcker (2011) and Appendix 2: Excavation Licenses.

Area	Site	Periods Attested	Main Architectural Finds	References
Mound margins	Armenian Compound (and Sea Promenade)	Iron Age, Crusader, Ottoman	Architecture, fortifications	Peilstöcker and Priel 2000; Priel 2002; Arbel and Volynsky 2011; Arbel 2010b
	Clock Tower Square	Mamluk, Ottoman	Architecture, graves	Peilstöcker 2009; Talmi 2010
	French Hospital	Late Bronze, Persian, Hellenistic, Byzantine, Crusader, Mamluk, Ottoman	Architecture, fortifications, moat, cesspools, graves	Re'em 2010; Dayan and Levy 2012
	Ruslan and Mifratz Shlomo Sts.	Iron Age, Hellenistic, Crusader, Ottoman	Architecture, fortifications, streets, drain channels, industrial installations, moat, bridge, graves	Kletter 2004; Arbel et al. 2012
	Ha-Tsorfim St.	Crusader, Ottoman	Architecture, fortifications, streets, channels, industrial installations, cesspools	Arbel 2010a
	Qishle	Hellenistic, Roman, Crusader, Ottoman	Architecture, fortifications, moat, cesspools, wells, drain channels, graves	Arbel 2009a, 2009b; Arbel and Talmi 2009
Periphery	Amiad	Crusader	Architecture	Peilstöcker et al. 2006
	Andromeda Hill (*also* Ha-Migdalor St.)	Byzantine, Persian, Hellenistic	Graves	Avner-Levy 1998; Haddad 2015
	Bet Eshel St.	Crusader	Architecture	Peilstöcker 2000
	Flea Market (*also* Ben Ya'ir, Hanina, Pinhas Sts.)	Hellenistic, Roman, Byzantine, Early Islamic, Crusader, Mamluk, Ottoman	Architecture, industrial installations, public building, well	Peilstöcker et al. 2006; Arbel 2008; Arbel and Peilstöcker 2009b
	Ganor Compound	Late Bronze Age, Iron Age, Persian, Hellenistic, Roman, Byzantine, Early Islamic, Crusader, Ottoman	Public structure, wall remains, industrial installations, fortifications, channels, streets, wells, well houses, graves	Fantalkin 2005; Gorzalczani 2008; Peilstöcker and Burke 2011; Rauchberger 2012
	Greek Market	Crusader, Ottoman	Architecture, channels, graves, well	Arbel 2016a
	Jerusalem Blvd., (*also* Gamliel, Koifmann, Razi'el Sts.)	Hellenistic, Byzantine, Ottoman	Architecture, road, drain system, graves	Jakoel 2011a, 2011b; Jakoel and Marcus 2011, 2013
	Magen Avraham Compound	Byzantine, Ottoman	Architecture, well, well house, irrigations channels, industrial installation	Arbel and Rauchberger 2015a
	Postal Compound and Ben Shetah St.	Iron Age, Hellenistic, Roman, Ottoman	Architecture, drain channels, well house, graves	Rauchberger 2010, 2015; Jakoel 2012
	Me-Raguza St.	MIDDLE BRONZE, Hellenistic, Roman, Byzantine, Ottoman	Architecture, channels, graves	Peilstöcker 1998
	Razi'el St.	Ottoman	Graves	Sion, IAA Lic. No. A-5322/2007
	Ha-Tzadik St.	Hellenistic, Byzantine		Glick, IAA Lic. No. A-6247/2011
	Ha-Yamit St.	Persian, Hellenistic, Byzantine, Crusader, Ottoman	Architecture, graves, channels, wells	Haddad 2010, 2011, 2013; Arbel 2012, 2015

numbers. The interested reader should be able to trace related materials through those details.

The Bronze and Iron Ages

There is no archaeological indication of dense urban construction outside the mound boundaries throughout the Bronze Age periods. Remains from the Middle Bronze II and Late Bronze Age include a small number of burials. Building remains, installations, floors, and concentrations of pottery in various sites indicate budding extra-mound Iron Age occupation.

The Mound Margins

Two rock-cut Late Bronze burial caves were discovered at the French Hospital (Re'em 2010). Human remains were accompanied with sherds of diagnostic jars, jugs, and bowls. Adjacent shafts and pits may mark additional burials. Iron Age Philistine pottery associated with floors came to light at the Armenian Monastery, near Jaffa's harbor. Iron Age II plain jars, jugs, and cooking pots were also found further east at the Sea Promenade (Peilstöcker 2005), near the entrance to the Mahmudiyya Mosque and at Mifratz Shlomo St. (Arbel et al. 2012).

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The Periphery

The earliest archaeological elements met outside the mound were Middle Bronze Age infant jar burials found at the Andromeda Compound (Avner-Levy 1998:55) and on Me-Raguza St. Next to the jar at the Andromeda Compound was a carinated bowl with a juglet within it. The top of the jar at Me-Raguza St. was removed to accommodate the body, of which nothing remained (Arbel and Rauchberger 2015b). A jug placed with it in the jar was found almost intact (Figure 3.4). All these vessels are Middle Bronze II types commonly used in infant burials. Similar burials from this period are known from other sites near Jaffa (Kaplan 1955:3; Kletter and Ayash 2000:35–36; Yannai 2004:fig. 1.10) and the southern coastal plain (Gershuny 1996:131, 1997, 2007; Zelin 2002:86; Jakoel and Be'eri 2016). Grave goods associated with several graves found at the junction between the streets Yefet and Louis Pasteur included ceramic vessels dated to the Middle Bronze II and the Late Bronze periods (Ayash and Buchennino 1999). Two Late Bronze pit graves were discovered at the Ganor Compound, a new residential complex to the south of the Flea Market (Peilstöcker 2011b).

Part of a large cistern exposed at the Flea Market's Rabbi Hanina St. was sealed with fill containing Iron II pottery, including intact lamps (Arbel 2008; see also Figure 3.2). Remains of an Iron II structure apparently incorporating simple stone columns were found in the same street. Iron IIA installations comprising five round or elliptical plastered pits with inner depressions in their floors were discovered at the Ganor Compound, and the excavator relates them to wine production (Fantalkin 2005). Iron II remains were also identified at Ganor, which included some wall remains and a well, and at the Clock Tower Square, where they were associated with fragmentary earth floors (Peilstöcker 2009). An industrial installation similar to the element from Ganor came to light at the Postal Compound (Figure 3.5). The rim of a cooking pot dated to the ninth century BCE was found near it (Rauchberger 2015). Excavations at the Clock Tower Square reached Iron IIA pottery associated with earth floors (Peilstöcker 2009). Iron Age pottery with no architectural context appeared in the Jerusalem Blvd. (Jakoel and Marcus 2013) and Flea Market's Rabbi Pinhas St. (Arbel 2008) excavations.

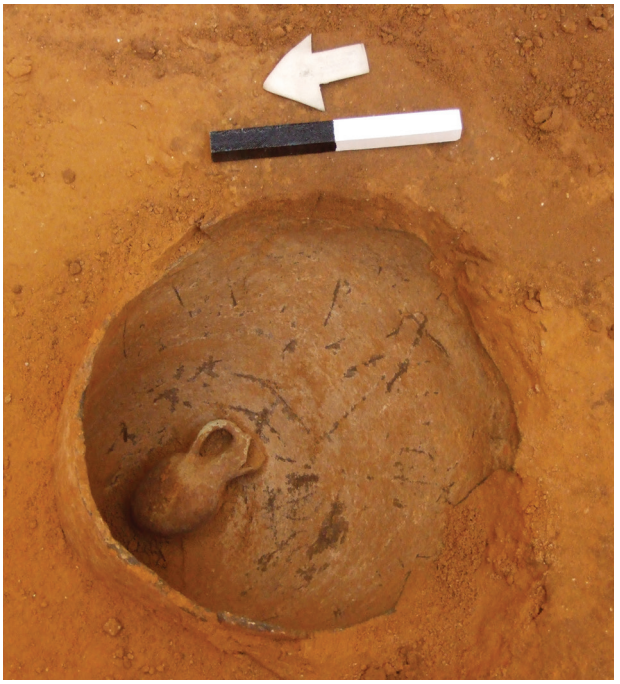

Figure 3.4. Jug and jar offerings of a Middle Bronze II infant jar burial, Me-Raguza St. Photo B315595. *Courtesy of the Israel Antiquities Authority.*

The Persian and Hellenistic Periods

Iron Age remains off of Tel Yafo itself are scarce, yet they represent budding extramural development, a process that continued into the Persian period and peaked during the Ptolemaic period (third century BCE). Unfortunately, later dismantling of walls for building materials, on one hand, and technical limitations on the breadth and depth of the excavations, on the other, have precluded a more comprehensive archaeological picture from this important period.

The Mound Margin

Fragmentary Hellenistic walls, foundation trenches of dismantled walls, and remains of hearths were discovered at the Qishle and Mifratz Shlomo St., near the Clock Tower Square (Arbel 2009a, 2009b; Arbel et al. 2012). These meager remains reflect extra-mound settlement during this period, as do scatters of contemporaneous household pottery found at the Sea Promenade (Peilstöcker 2005) and at Ha-Tsorfim St. on the tell's eastern limits (Arbel 2010a). However, the most significant testimony to Jaffa's urban expansion during this period comes from cemeteries. A large Persian-Hellenistic burial ground was discovered at the Andromeda Compound, located by the southern limits of the mound (see discussion of "The Periphery," below). The hill reaches the French Hospital. Over thirty associated burials were investigated by IAA excavators at the latter site (Re'em 2010; Dayan and Levy 2012), and additional graves were exposed by Tel Aviv University teams.[5] Features

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Figure 3.5. The Iron Age IIa installation at the Postal Compound. *Photograph by L. Rauchberger.*

included rock-hewn caves for multiple burials and single pit graves cut into the bedrock. A skeleton in one of the pit graves was covered by large jar fragments, possibly an improvised imitation of an anthropomorphic sarcophagus. Grave goods comprised bowls, amphorae, skyphoi juglets, and oil lamps. Assemblages from soil accumulations over the bedrock represented an array of eastern Mediterranean ceramic groups, mostly of third-century BCE types (Re'em 2010). Among the finds were also stamped amphorae handles and coins. Zoomorphic figurines and an alabaster vessel from that period were discovered in later contexts. Many of these artifacts may have originated from disturbed burials. Some of the graves were disturbed by a later Hellenistic building, the stones of which were laid headers out, as sometimes characterizes Hellenistic construction. The excavator suggests the building was a mausoleum or a fortified position outside the city walls (Re'em 2010). If the second option is correct, this is the only segment of Hellenistic fortifications to have been found in Jaffa so far, although several historical records discuss such defenses. It should be noted that a massive retaining wall exposed at the Armenian Convent—possibly part of a defensive system—was dated by the original excavator to the Hellenistic period, based on its architectural style and detachment from the convent and other later structures (Re'em, IAA Lic. No. 4620/2005).

The Periphery

A Hellenistic occupation layer was found under Rabbi Hanina St. and Rabbi Pinhas St., at the southwestern part of the Flea Market (Arbel 2008; Segal, IAA Lic. No. A-5463/2008). Remains included foundations of several stone structures over or near bedrock level, adjoining tamped floors and pottery assemblages that included imported storage jars, serving plates, wheel-made lamps, and stamped amphorae handles, most of which date from the

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fourth to third centuries BCE. A similar Hellenistic layer was exposed at the adjacent Ganor Compound (Peilstöcker and Burke 2011:179). Later Byzantine and Crusader activity caused significant damage to the Hellenistic remains. A large building of unclear function from the Persian period was also discovered at Ganor, as was an unusual seal in Paleo-Hebrew script, dated between the sixth and the fourth centuries BCE (Peilstöcker and Sass 2001).

A 17 m-long wall along with more modest Hellenistic architectural remains was exposed at the northern part of Jerusalem Blvd. (Jakoel and Marcus 2013). The wider architectural context of the wall and its purpose could not be determined. Short wall segments or floors from the same period were exposed at the junction between Jerusalem Blvd. and Ha-Yamit St. (Haddad 2010; Arbel 2012), Ben Shetah St. (Jakoel 2012, 2013:20), Bet Eshel St. (Barkan and Buchennino 2012), the Postal Compound (Rauchberger 2010, 2015), and Shimon Ha-Tzadik St. Hellenistic pottery of various types, including several stamped amphorae handles, was recovered from the contexts of those buildings. A 9 m-long wall (Figure 3.6), other scant building remains, and a broad waste concentration rich with Hellenistic pottery were recently exposed at Ben Gamliel St., to the west of the Jerusalem Blvd. (Arbel, IAA Lic. No. A-7213/2014). The pottery included an unusual percentage of imported amphorae sherds, among them twelve stamped handles. It is unlikely that the Hellenistic city reached as far from the mound as the locations suggested by these finds. They may therefore represent farms and agricultural estates. The frequency of imported wares, including numerous Greek wine amphorae, suggests an affluent population living outside the city proper, resembling patterns found in Jaffa of the nineteenth century (see below).

As mentioned above, dozens of Persian and Hellenistic graves were discovered in the grounds of the Andromeda Compound (Avner-Levy 1998:55). The cemetery spread farther into the French Hospital (Re'em 2010; Dayan and Levy 2012) and to the northwestern segment of Ha-Yamit St., near the modern harbor, where approximately 60 Persian-Hellenistic spots with disarticulated human bones were discovered (Haddad 2011). Jars found among the spots, which probably represent graves heavily disturbed by modern development, may have been used for burial. Contemporaneous burials were exposed in sites in the immediate vicinity (Kapitaikin 1999:98*; Ayash and Bouchenino 1999; Ginzburg 2000), further east toward Jerusalem Blvd. (Haddad 2013a) and in the western extension of Me-Raguza St. (Arbel and Rauchberger 2015b). It can now be determined that the Andromeda Compound and its surroundings served as Jaffa's necropolis from the Late Bronze until the Byzantine period, with a possible gap during the Iron Age. The shallow bedrock level and the subsequent cultivation disadvantages were probably among the reasons for the centuries-long use of this area as a burial field.

The Roman, Byzantine, and Early Islamic Periods

Jaffa was twice fought over during the First Jewish Revolt against Rome (66–73 CE). Following the war, the town was rebuilt and became significant enough to be granted the right of minting coinage. Nonetheless, there are no signs of urban settlement beyond the mound during this period, and pottery is scarce. It is now clear that the urban sphere withdrew to the mound, while the eastern and northeastern grounds were used primarily for burial. Settlement resumed there under Byzantine rule. Following an apex in the sixth century CE, urban exploitation of off-mound land saw some decline but continued into the Early Islamic period.

Figure 3.6. Hellenistic wall at Ben Gamliel St. 10. Photo B424499. *Courtesy of the Israel Antiquities Authority. Photograph by Yoav Arbel.*

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The Mound Margin

Roman cist graves framed and capped with stone slabs were discovered at the eastern limits of the Qishle and at the Clock Tower Square and its surroundings (Peilstöcker 2009; Tsuf forthcoming; Jakoel 2013:41–46; Part III: Excavations at the Postal Compound). Several Late Roman jars with animal bones were found in niches apparently cut into the bedrock at the French Hospital. There were no related walls or floors. This site was part of the Andromeda Compound ancient cemetery also used during the Late Roman period, leading the excavators to raise the option that the jars were left as funerary gifts (Dayan and Levy 2012).

No Byzantine interments were exposed in the eastern grounds, yet burying continued to the south of the city. A burial cave with a cross by its entrance was found at the French Hospital (Dayan and Levy 2012), as was a cist grave built of cut stones, which may have belonged to a mausoleum. Decorative artifacts were suggested by the excavator to have belonged to a church or chapel (Re'em 2010). His proposal finds circumstantial support in the discovery of Byzantine vessels adorned or marked with crosses. The option of a chapel was also raised in regard to a Byzantine mosaic with a funerary-related inscription also found at that site (Ayelet Dayan, personal communication, 2013). The chapel may have been part of the mortuary complex. Insufficient evidence precludes the association of all these elements with a single religious structure.

The presence of building remains, cesspits, and installations from the late Byzantine period at the site suggests a cessation of burials there in that phase (Dayan and Levy 2012). The domestic occupation continues into the Early Islamic period, although with a time gap in between. The Early Islamic layer includes building foundations, plastered installations, pools, and cesspits (Dayan and Levy 2012). Among the finds were ninth-century CE coins, household vessels, spindle whorls, and jar handles with Arabic-inscribed stamps (Re'em 2010). Other such stamps were found at Ruslan St. (Arbel et al. 2012) and the Greek Market (Arbel 2016a). Early Islamic dwellings also were also found under Pasteur St., immediately to the south of the French Hospital (Arbel and Rauchberger, IAA Lic. No. 7423/2015). Separate Early Islamic phases are indicated in the northern parts of Jaffa, with Early Islamic burials discovered at the Qishle (Edrey and Gross forthcoming) and an architectural complex unearthed at the adjacent Clock Tower Square (Peilstöcker 2009).

The church of the mid-seventeenth-century Armenian Convent was built over several meters of fill rich with pottery of the eighth and ninth centuries CE (see Part IV: Excavations at the Armenian Compound). At bedrock level were the remains of several structures, apparently domestic units and courtyards built between a retaining wall against the natural cliff to the east and a defensive wall to the west (Arbel 2010b). The wall (W.4911) was 1.5 m wide and preserved to a height of approximately 6 m (see Figure 20.6). Architectural links between the defensive wall and the buildings prove a single phase. All sherds from the occupation contexts, including such that were sealed under floors, dated to the Early Islamic period.

The Periphery

A substantial concentration of Early Roman graves was discovered at Ben Shetah St. (Jakoel 2012, 2013:20–41; see Part III: Excavations at the Postal Compound). It included 10 cist tombs, two built tombs, and a sarcophagus containing multiple burials. Ossuary fragments in one of the cist tombs and sherds of chalkstone vessels found in a refuse pit confirm Jewish ethnicity. A hinge-rotating sealing stone of an unknown burial cave, with a schematic three-legged candelabrum etched over its face, was found incorporated in a Crusader wall at the Flea Market's Rabbi Tanhum St. (Arbel 2008; and see Chapter 5, this volume). Fragments of chalkstone vessels were also found next to a group of graves near the Clock Tower Square (Tsuf forthcoming; Jakoel 2013:46; Part III: Excavations at the Postal Compound) and at the French Hospital (Re'em 2010). Other than the more famous Abu Kabir necropolis (Ecker 2010)[6] and a limestone mold from the mound carrying the name of a Jewish *agoranomos* (Kaplan 1972:93), these are the only archaeological elements of distinct Jewish identity found in Jaffa so far.[7]

Several cist, pit, and sarcophagi burials were found at the Ganor Compound (Peilstöcker and Burke 2011:180). They were dated to the Early Roman period through associated glass and ceramic artifacts. Four Late Roman cist graves were discovered at the southern part of Me-Raguza St., near its junction with Yefet St. (Arbel and Rauchberger 2015b). One of the tombs was partly excavated, yielding four candlestick-type glass bottles of a late second or early third century CE date. Other graves from the same period were excavated in adjacent sites (Ginzburg 2000:42). These graves were associated with the large Andromeda Compound burial field, which continued to be used into Roman

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and Byzantine times (Avner-Levy 1998:56). Thirty-four graves excavated in that burial field were dated to the Late Roman period (Jakoel 2013:86; Part III: Excavations at the Postal Compound). Three pit graves were discovered at the eastern part of Rabbi Pinhas St. (Arbel 2008). At the street's opposite end was a large cist grave lined and capped with well-cut stone slabs (Figure 3.7). The tomb was broken into by robbers, probably during the Crusader or Mamluk period, and the capping stones were found cast aside. As the three graves could not be excavated, Roman dating rests on pottery found in adjacent layers.

Construction reappears to the east of the mound during the Byzantine period in remarkable variance. A large public building adorned with mosaic floors and marble elements was discovered at Ganor and identified as a church, based on its basilica plan and the eastern direction of its apse (Peilstöcker and Burke 2011:181). It should be noted, however, that in Byzantine days, Jaffa was home to both Christian and Jewish communities, and these markers could also fit a synagogue. The remains of a bathhouse were also found at the same site.

Another public building with an apse toward the east was discovered at a site in Shimon Ha-Tzadik St., near the Jerusalem Blvd (Glick, IAA Lic. No. A-6247/2011). Only part of the building could be exposed, and there is no clear indication to the building's function. The church or synagogue option mentioned in regard to the Ganor building is similarly applicable to the structure at Shimon Ha-Tzadik. Both buildings are dated to the sixth century CE. Earlier Byzantine architectural remains were detected below the foundations of the Ha-Tzadik public building.

A winepress with at least seven compartments was exposed in the Flea Market excavations along Oley Zion St. (Peilstöcker et al. 2006). Ceramic finds attest to Byzantine construction and ongoing utilization in Early Islamic times, when either wine or nonalcoholic liquids in agreement with Muslim religious taboos were produced. Another winepress was exposed at the corner of Amiad and Yohanan St. A large

Figure 3.7. Early Roman tomb at Flea Market's Rabbi Pinhas St. *Photograph by Yoav Arbel.* Photo B69945. *Courtesy of the Israel Antiquities Authority.*

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Figure 3.8. Industrial press at Hai Ga'on St., Magen Avraham Compound. *Photograph by Yoav Arbel.* Photo B327312. C*ourtesy of the Israel Antiquities Authority.*

irregular press installation was discovered at the junction between Hai Ga'on St. and Resh Galuta St. at the Magen Avraham Compound (Figure 3.8). The small collection vats challenge the notion of wine production, yet other options remain unclear (Arbel and Rauchberger 2015a).

Traces of domestic buildings containing clay baking ovens were exposed at the Flea Market's Amiad and Yohanan St. (Peilstöcker et al. 2006). Fragmentary Byzantine or Early Islamic architectural remains were also discovered at Rabbi Nahman and Bet Eshel St., as well as a Byzantine reservoir (Arbel 2008; Barkan and Buchennino 2012). A Byzantine building uncovered at the Flea Market's Pinhas ben Ya'ir St. had an *opus sectile* floor. On the same street were also parts of Early Islamic structures built in the *terre-pisée* technique and an installation that may have been a furnace for smelting metals, as suggested by large quantities of slag found at close vicinity (Peilstöcker et al. 2006). Early Islamic installations were also exposed at the Ganor Compound (Peilstöcker et al. 2006; Peilstöcker and Burke 2011:181).

A large Byzantine waste pit was discovered at Ha-Migdalor St., near the southern edge of the modern harbor (Haddad 2015). The pit contained dozens of discarded jars and imported amphorae, some of which were stamped. Fish bones found between the vessels may represent the contents of some of those vessels. Finally, a well-paved road on a north-south orientation was unearthed at the northern part of the Jerusalem Blvd. (Jakoel 2011a). It served as a perimeter track in Jaffa's agricultural fields or the initial segment of one of the routes inland.

Twenty-seven Byzantine burials of various types were discovered at the Andromeda Compound burial field (Avner-Levy 1998:56), to which the above-mentioned Byzantine funerary contexts at the French Hospital also belonged. Although most archaeological evidence points to

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the urbanization of the grounds east of the mound during the Byzantine period, some burials were also found at Me-Raguza St. (Arbel and Rauchberger 2015b), which marks the Flea Market's eastern boundaries (Peilstöcker 1998). The graves may indicate the eastern limit of Byzantine urban spread or possibly belong to an early phase of the period, before domestic and industrial activity spread to these parts.

The Crusader and Mamluk Periods

During the Crusader period, Jaffa experienced its largest expansion before the late nineteenth century, no doubt to a large extent thanks to pilgrimage (Boas 2011:122). Dwellings and fortifications were found in various sites, often under late Ottoman strata and sand accumulated through subsequent centuries of abandonment. Some of those dwellings show standardization in the construction style and general form. Few artifacts remain from the Mamluk period, during most of which no civilian settlement existed in Jaffa (Arbel 2013).

The Mound Margin

Most Crusader architectural remains did not join into a clear plan. A noteworthy exception is a complex exposed at the Qishle (Arbel 2009a), which included rooms around a stone-paved courtyard with a cistern in its midst and a drain system under the flagstones (Figure 3.9). Such courtyard-centered plans follow much earlier traditions (Mazar 1992:485–489; Hirschfeld 1995:57–85) and could be found as late as the twentieth century (Canaan 1933:23, 65; Kark 1990:59). Portions of Crusader dwellings were discovered in other parts of that site, near the main entrance to the Mahmudiyya Mosque (Arbel et al. 2012), at the central and southern parts of Ha-Tsorfim St. and at adjacent Ha-Pninim St. (Arbel 2010a). Other nondefensive Crusader elements included a small industrial installation at Ruslan St. (Arbel et al. 2012), a burial cave and a pit grave at the French Hospital (Ayelet Dayan, personal communication, 2013), and water cisterns at the Qishle (Arbel 2009a).

Figure 3.9. Courtyard in Crusader dwelling, the Qishle. *Photograph by Yoav Arbel.*

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Jaffa's Crusader fortifications are the least preserved in excavated coastal towns in Israel. Impressive remains were found at the French Hospital (Re'em 2010), where an elliptical or circular glacis (35 m in diameter) was preserved up to 3 m in height. Its slope was lined with mortar-consolidated ashlars reaching down to the bedrock. The abutting moat was up to 14 m wide at the top and narrowed toward the bottom. Both elements were systematically sealed following the Mamluk takeover. Crusader weaponry from that site is the richest to be found so far in Jaffa and included numerous arrowheads, spearheads, and caltrops (i.e., spiked iron artifacts aimed at stopping horses). A fortification resembling the French Hospital glacis in size, character, and preservation was discovered at the adjacent Pasteur St. It was sealed under thirteenth-century dwellings (Arbel and Rauchberger, IAA Lic. No. 7423/2015).

Two short segments of large ashlar walls were found at Amiad St. (Arbel 2010a) and at Ruslan St., near the Clock Tower Square (Arbel et al. 2012). Both were built on a north-south orientation, parallel to the Ottoman eastern fortifications that stood along present-day Yefet St. Crusader artifacts, including a dagger and arrowheads, were found in the abutting layers. These walls may have been part of the twelfth-century fortifications, yet narrow exposure leaves the question open. Walls of a possible defensive role were also revealed at the northern end of Ha-Tsorfim St. (Arbel 2010a) and at the Sea Promenade (Peilstöcker and Priel 2000).

With Jaffa in ruins through most of the Mamluk period, related archaeological remains are scarce (Arbel 2013), mostly pottery and coins met within later contexts (K. Burke 2011b).[8] The only noteworthy exception found in an archaeological context on the mound margin is a refuse pit at the French Hospital that contained fourteenth-century pottery and several coins (Re'em 2010).

An IAA restoration crew discovered two large fragments of an inscribed marble slab dated to the fourteenth century that were incorporated as building material into the upper frieze of the Sabīl al-Mahmudi, an ornate water fountain from 1809 facing Jaffa's main Ottoman city gate.[9] The inscription, dated between 1382 and 1387, commemorates the founding of a mosque during the rule of the Mamluk sultan al-Malik aẓ-Ẓāhir Barqūq (Sharon 2017). This is unique testimony to the construction of a significant building at a time when other than the harbor and two overlooking forts, the town was reportedly desolate.

The Periphery

A 12 m-wide segment of a Crusader moat was discovered at Ha-Yamit St., to the south of the harbor (Haddad 2011). A sloping wall built of stones and mortar preserved up to four courses lined the moat's southern face. Its floor was covered with massive debris, the stones showing the diagonal dressing characteristic of Crusader masonry. Pottery between the debris dated to the thirteenth century CE, suggesting a destruction and the blocking in the aftermath of the Mamluk conquest.

Two short parts of Jaffa's Crusader fortifications were discovered at the easternmost limit of the Medieval city, near the junctions of Me-Raguza St. with the Flea Market excavations at Pinhas and Oley Zion St. (Figure 3.10 and Figure 3.11). The wall at Pinhas was built of large ashlars 2.5 m wide and surviving to a height of 2.7 m (Arbel 2008). The Oley Zion segment was 4 m wide and incorporated a gate or postern flanked by four pillars at its eastern side (Peilstöcker et al. 2006). Parts of Me-Raguza St. were paved over a thick layer of sand, possibly filling a moat. Westward on Oley Zion St. was a large Crusader building, perhaps of administrative function. Skeletal remains of horses and donkeys were concentrated near it. Several arrowheads were found in that general context, one of which was wedged between the ribs of one of the animals. The find may be linked to fighting during the Mamluk conquest. Another large Crusader building, located at Bet Eshel St., was divided into several parallel walls on a north-south orientation. The building was interpreted as a storage facility. A Crusader road passed by it (Peilstöcker et al. 2006). Another Crusader road with Byzantine origins was discovered under Amiad St. (Peilstöcker et al. 2006).

Domestic buildings from the Crusader period were exposed at the Ganor Compound, as well as in the Flea Market's streets: Rabbi Hanina, Rabbi Nahman, Rabbi Tanhum, and Rabbi Aha (Peilstöcker et al. 2006; Dagot 2008; Arbel 2012). Planning is evident from the common orientation of the Ganor buildings and from terracing in preparation for their construction (Peilstöcker and Burke 2011:181).

Among the finds from Ganor were a capital adorned with engravings of a cross and a pair of keys (the symbolic attribute of St. Peter and the Vatican) and an oval bronze pendant with a double cross and a Latin inscription affiliating it to a nun (Arbel and Peilstöcker 2009:40). In a courtyard next to Rabbi Hanina St. was an unusual industrial installation, comprising several rows of plastered

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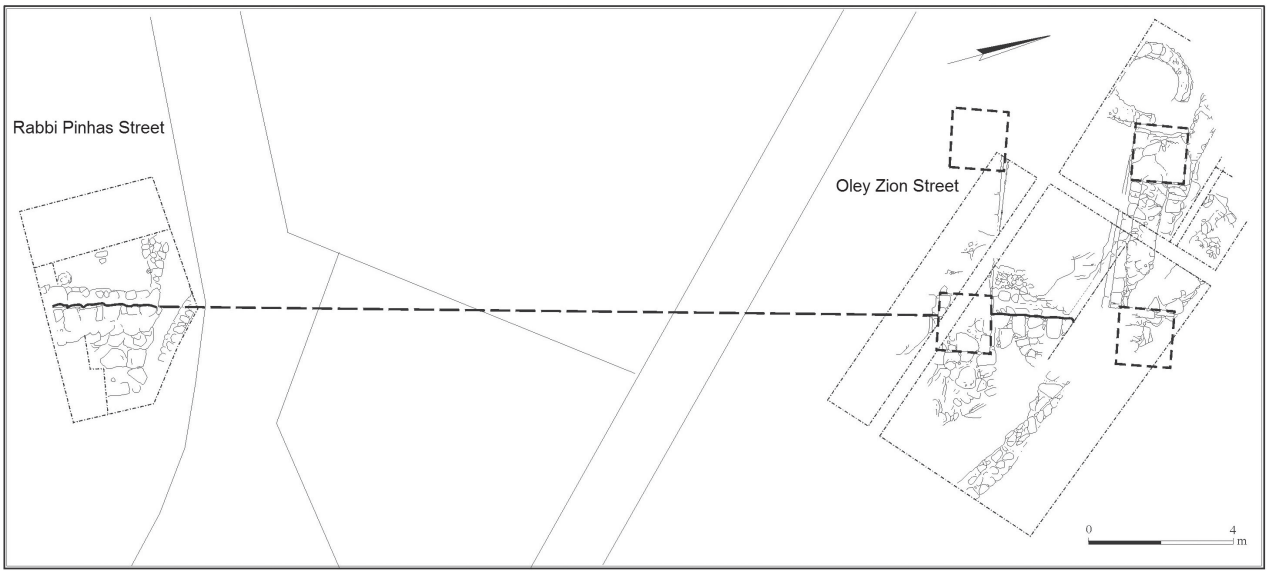

Figure 3.10. The two segments of the Crusader wall, between Oley Zion and Rabbi Pinhas St. *Plan by V. Essman and V. Pirsky.*

Figure 3.11. Thirteenth-century fortification, junction between Pinhas and Me-Raguza St. *Photograph by Yoav Arbel.*

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basins. The structure has no known parallels, with the nearest archaeological and ethnographic examples related to the cloth dyeing industry (Arbel 2008; Segal, IAA Lic. No. A-5463/2008).[10] Dating is based on Crusader sherds discovered under debris associated with the building's walls.

Crusader artifacts in Jaffa show diverse ceramic wares, including numerous European, Cypriot, and Levantine types (K. Burke 2011a:203–207), a large selection of glass vessels, and various weapon types. The numismatic assemblage features coins from both local and foreign Crusader and Muslim rulers and a rare issue of Crusader Jaffa, found in a later Ottoman context (Robert Kool, personal communication, 2013). Comparative analysis with assemblages from other coastal towns, chiefly Acre (Akko; Stern 2012), allows a better understanding of various commercial, cultural, and technological aspects of the period.

No Mamluk occupation was detected at Jaffa's periphery, yet a cemetery spreading through parts of Bet Eshel St. (Peilstöcker et al. 2006), the Clock Tower Square (Peilstöcker 2009), and Yehoshua Ben Prahia St. in the Greek Market may belong to that period (Arbel 2016a). The cemetery's stratigraphic position between the Crusader occupation and the late Ottoman orchards indicate either Mamluk or early Ottoman date. Twenty-five of the twenty-six skeletons, of which the gender could be determined, belonged to males, most aged 20 to 40 years (Nagar 2011:222). Nagar, who analyzed the remains, raises the options of cemetery arrangement, which is uncommon but not unknown in Muslim funerary tradition or warfare casualties. As there were no traumatic lesions in the analyzed material and taking into consideration the gender and age of the dead, it could be proposed that the remains are of naturally deceased guards known to have been positioned at the fort overlooking the harbor during the centuries when Jaffa had no civilian settlement (Tolkowsky 1924:134–136; Nagar and Arbel forthcoming).

The Ottoman Period

Contexts or even single artifacts from the sixteenth and early seventeenth centuries are virtually nonexistent in Jaffa, corresponding to historical records of the city being then still in ruins. Archaeological evidence reappears in the late seventeenth century and early eighteenth century, reflecting Jaffa's gradual recovery under the Ottomans, from modest beginnings to the fast extra-mound urban expansion of the nineteenth century. The British conquest of November 16, 1917, remains archaeologically transparent, as Jaffa was spared military violence.

The Mound Margin

Rare structural remains dated to the seventeenth century were discovered under one of the buildings facing the harbor (Glick et al. 2014:105). An Armenian inscription relating to the construction of the Armenian Convent (see Part IV: Excavations at the Armenian Compound), found embedded in a later wall, is a unique element from that period (Glick et al. 2014:107–114).[11] Early eighteenth-century archaeological contexts are also rare. A layer containing pottery from that phase was discovered below the floor of a room over the church of the Armenian Convent (see Chapters 21 and 22, this volume). Far richer assemblages come from layers dating from the late eighteenth to early twentieth centuries, beginning with the city's restoration after the Napoleonic invasion (and other episodes of violence), which affects the city plan to the present.

Jaffa's earliest Ottoman fortifications date to the second half of the eighteenth century. Depicted in French and British contemporaneous maps, these ramparts (Shacham 2011:137–138) were breached twice, by Abū Dahab's Egyptian army (May 19, 1775) and more famously by Napoleon (March 7, 1799). Towers and wall segments of these fortifications were discerned in the Qishle (Arbel 2009a, 2009b), at Ruslan St.'s northern end (Arbel et al. 2012), and in the French Hospital (Re'em 2010). The eighteenth-century ramparts were repaired and partly rebuilt in the early nineteenth century by the Ottoman governor Muḥammad Agha Abū Nabūt, with British assistance. The new or renovated nineteenth-century walls were drawn in detail in British maps of the time (Shacham 2011:138–139). This cartographic testimony was corroborated by the discovery of parts of the ramparts, such as walls, towers, and filled-in moats in the Qishle and the French Hospital (Figure 3.12). Segments of Jaffa's 2.5-m-thick seawall, also represented in the maps, were found in excavations along the Sea Promenade (Martin Peilstöcker, personal communication, 2013).

Details of the Jerusalem Gate complex, Jaffa's main entryway, were exposed under the modern Ruslan St., near the junction with the Clock Tower Square (Arbel et al. 2012). The gate complex comprised a bridge that linked to an outer courtyard adorned with an ornate Ottoman *sabīl* (Kana'an 2001). The access into the city was through a gate tower built opposite the *sabīl*. Parts of the gatehouse

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Figure 3.12. Part of early nineteenth-century CE bastion, Qishle. *Photograph by Yoav Arbel.*

survived, including the arched entryway, although they are unfortunately obscured by later buildings (see Chapter 8, this volume). The moat, double-arched bridge crossing it, the back wall of the gate courtyard, and the *sabīl*'s drain channel were discovered in the excavations. Two impressive photographs of the gate complex were taken by the French photographers Louis Vignes and Félix Bonfils (see Chapter 7, this volume). The analysis of those photographs along with the material remains discovered in the excavations illustrates the merits of matching original historical imagery and archaeological evidence in the research of the recent past.

Derelict cannons recovered from various nonarchaeological contexts are presently in display along Mifratz Shlomo St., which links the Clock Tower Square to the Qedumim Square atop the mound. An additional gun was identified during archaeologically inspected infrastructure work at Oley Zion St., nor far from the gate complex, where artillery was positioned. Dozens of cannonballs of various sizes and types were found in Ottoman layers throughout Jaffa (see Chapter 13, this volume). A forge for the production of such balls was discovered at the French Hospital (Re'em 2010), while another forge, apparently for the recycling of cannonballs no longer in need, was exposed at the northern end of Ha-Tsorfim St. (Arbel 2010a). Other weaponry occasionally found in Ottoman strata are musket balls made of lead or rarely iron,[12] flint artifacts used in the ignition system of muskets, and particles of bullets and cartridges of artillery shells from the early twentieth century, up to World War I.[13]

Many of Jaffa's late nineteenth-century mansions, once home to Jaffa's wealthiest residents, lined Ha-Tsorfim St. and its subsidiaries. Some of those buildings are still in use, some stand derelict, and others were demolished and attested by arched foundations and red-and-white or black-and-white checkered tile floors exposed in the excavations. Remains of three houses with such floors were located at the junction between Ha-Tsorfim and Amiad St. (Arbel 2010a), as well as on the Sea Promenade (Peilstöcker

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Figure 3.13. Paved Ottoman road under Ruslan St. *Photograph by Yoav Arbel.* Photo B199704. *Courtesy of the Israel Antiquities Authority.*

and Priel 2000:41). Lower courses or foundations of late Ottoman houses were also discovered at the northern part of Ha-Tsorfim St. (Ayash 1999:99; Arbel 2010a), along the Sea Promenade (Peilstöcker and Priel 2000; Priel 2002; Arbel and Volynsky 2011), Ruslan and Mifratz Shlomo St. (Kletter 2004; Arbel et al. 2012), the Qishle (Arbel and Talmi 2009), and the Greek Market, to the east of the Clock Tower Square (Arbel 2016a). As far as it could be determined, all these belonged to private homes. An exception came to light at Mifratz Shlomo St., opposite the former Jaffa Museum of Antiquities. A perfectly preserved octagonal fountain basin with a marble central spout exposed within a fine paved courtyard (Arbel et al. 2012) may have belonged to a bathhouse marked roughly at this spot in Theodor Sandel's map of 1878–1879.[14]

Street paving and sanitation were central objectives in the establishment of Jaffa's municipality in 1871 (Kark 1990:207). Several examples of late Ottoman streets were discovered in the excavations under the asphalt layer of modern streets. Flagstone paving appeared under Abulafia and Ha-Halfanim alleys between Ha-Tsorfim and Yefet St., the southern part of Ha-Tsorfim St., the inner courtyard of the city gate (for all these, see Arbel 2010a), and Ruslan St. to the east of the Qishle (Arbel et al. 2012). The latter, linking the Mahmudiyya Mosque to the coast, is the best-preserved example (Figure 3.13), having survived to 28 m in length and 4 m in width despite disturbance by British and Israeli infrastructure. A subsidiary gate of the eighteenth-century wall was incorporated in the street's northern end, where it meets the present Sea Promenade.

Sewer channels were installed under the streets, an important sanitary improvement against the spread of epidemics for which Jaffa was notorious (Kark 1990:211–212). The original substreet draining system at Ha-Tsorfim St. (Arbel 2010a) consisted of stone-lined conduits capped with slabs. The slabs were later replaced with European-type brick vaults. The top of the vaults was in turn removed so British brown-glazed ceramic sewer pipes could be laid in

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the conduit. The system drained the new buildings along the street by means of dozens of perpendicular channels linking with the main artery flowing north toward the sea.

A drain channel under the Qishle cleared seawater from the foot-washing fountain under the Mahmudiyya Mosque. It may have served other sources further south, possibly also the Ha-Tsorfim St. main artery. Waste water that was not washed to the sea drained into cesspools (Kark 1990:211). Three underground stone-lined cesspools were discovered under Ha-Tsorfim, Abulafia, and Ha-Pninim St. (Arbel 2010a); two under the Qishle (Arbel 2009a); and three more at the Greek Market (Arbel 2016a).

Three types of Muslim funerary contexts are known in Jaffa: cemeteries, mass graves, and individual burials. All types appeared in the Qishle. Burial grounds were exposed under two open yards (Figure 3.14). Concentrations of disarticulated bones were reached under late nineteenth-century buildings (Arbel 2009a; Arbel and Talmi 2009; Edrey and Gross forthcoming). The cemetery included mostly individual cist graves. One family sepulcher, known in Arabic as *fustuqqieh*, and one cairn grave were also exposed in the excavations. The burial field originally covered a large part of the compound, but numerous graves were disturbed as the buildings were being erected, with the bones reburied en masse next to the foundations. The burial field should be dated between the second half of the eighteenth century and the mid-nineteenth century.

Two masses of disarticulated bones appear to belong to the earlier phase. They were discovered within a chamber under the early nineteenth-century bastion (Arbel 2009a) and next to a late eighteenth-century fortification wall found at the northern end of Ruslan St. (Arbel et al. 2012). The remains may be of victims of the warring episodes between the Abū Dahab siege of 1775 and the skirmishes following Napoleon's retreat in the first decade of the nineteenth century (Tolkowsky 1924:142–154), or originate in graves disturbed during the construction of the renovated ramparts in the early nineteenth century. As the bones were not made available for research, they could not be examined for telltale signs of trauma.

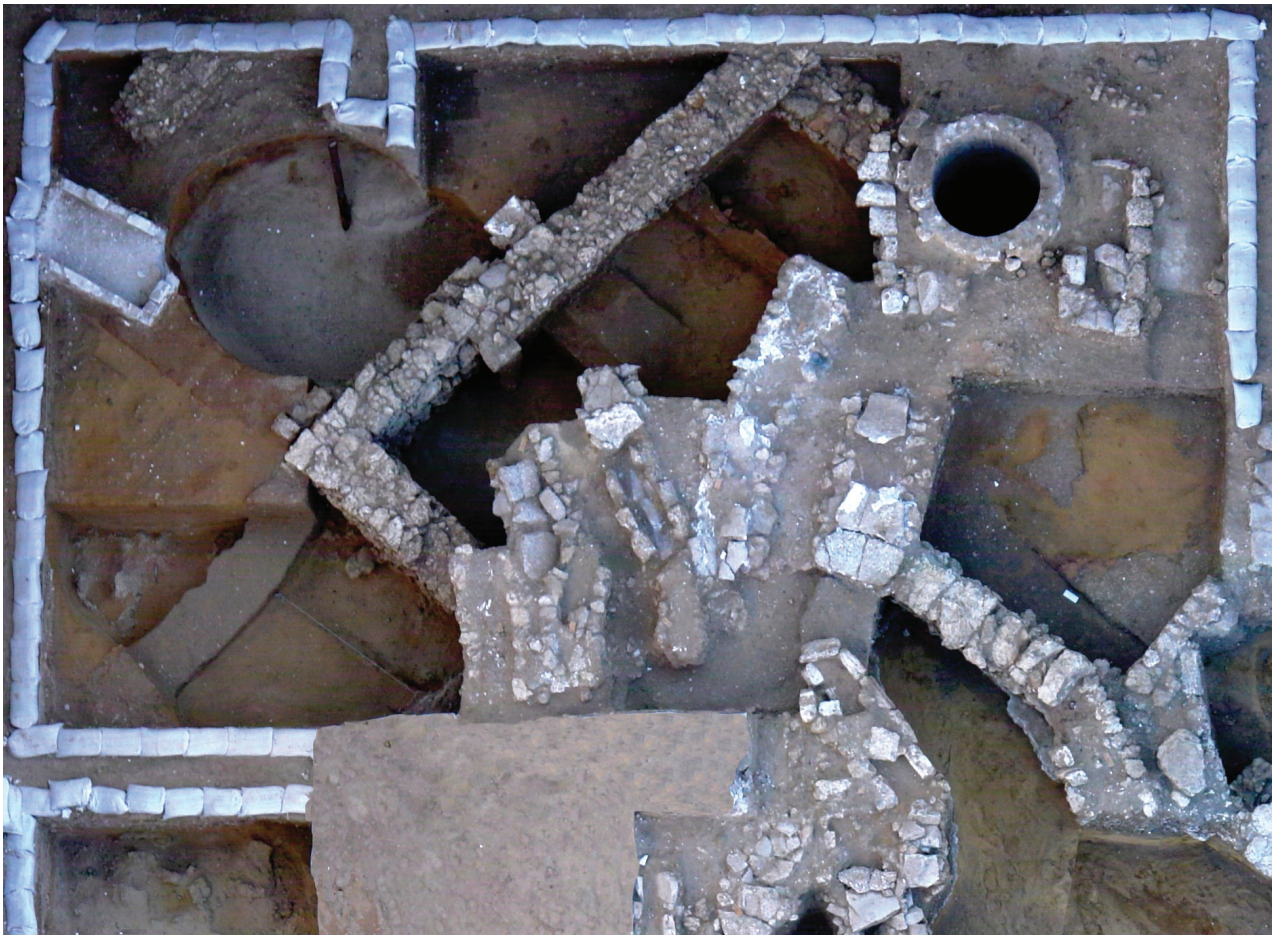

Figure 3.14. Mid-nineteenth-century graves over Crusader walls in the Qishle. *Photograph by Skyview*.

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The Periphery

Western visitors to Jaffa during the eighteenth and the nineteenth centuries described its formidable orchards in vivid detail. The dismantling of the ramparts boosted modern urbanization east, south, and north of the mound and the groves are all but gone, yet excavations in virtually all sites on the periphery met associated field buildings, irrigation channels, and wells—Jaffa's only source of water until the first half of the twentieth century.

Over 20 wells were discovered in recent excavations (Table 3.2). Numerous others remain exposed in open yards or incorporated into standing buildings. Some were dug close to the shore and were only a few meters deep. Others are in higher grounds to the south and much deeper. A well found at the French School, near the junction between Yefet and Pasteur St., reached over 20 m into the water table. Builders typically coated the inner shafts with hewn stones. Water was pumped from wells by means of *antiliya*—waterwheel system—powered by camels and other large domestic beasts. Engines gradually replaced animal power during the late nineteenth century (Ayalon et al. 2000:216–220; Kark 1990:239–245, 1995:534–535).

Many wells were part of well house complexes, or *bāyarāt* houses,[15] comprising the well and a courtyard or chamber for its pumping mechanism, reservoirs, plastered conduits, and various related structures (Figure 3.15; see Chapter 11). Parts of well house complexes were excavated at Ganor (Rauchberger 2012; Gorzalczany 2008), the Postal Compound, the Magen Avraham Compound, and the Flea Market's Rabbi Hanina St. A late Ottoman complex comprising a well, a reservoir, and several structures sealed under the French School may represent a fifth well house complex.

Water was pumped from the wells into reservoirs and distributed between irrigation ditches along the agricultural plots by means of channels. The channels, ca. 40 cm in width and depth, were built of stones consolidated with clay and plastered inside. Intersections along their routes allowed control over water distribution. Segments of such conduits were found under various streets of the Flea Market (Peilstöcker et al. 2006; Dagot 2008; Arbel 2008) and of the Greek Market, the Ganor Compound (Peilstöcker and Burke 2011:181), Ha-Yamit St. (Arbel 2012), Me-Raguza St. (Arbel and Rauchberger 2015b), and the Magen Avraham Compound. In Jaffa, such conduits are discovered in short stretches, mostly across the later streets that replaced the orchards during the process of urbanization. Yet the modest appearance is deceiving, and such systems could reach considerable lengths. Examples traced through open fields near Ness Ziona, ca. 20 km southeast of Jaffa, stretched as long as 80 m (Golan 2015).

Numerous buildings erected in late Ottoman times in Jaffa's former periphery still stand, while others were demolished to make way to later structures. Remains of buildings that were dismantled prior to the paving of modern roads were exposed in the Greek Market and at Koifmann St., at the northern end of Jerusalem Blvd. (Arbel 2016a; Buchennino 2010; Jakoel and Marcus 2011). These structures were served by meticulously planned drain systems equipped with vaulted underground cesspools. Such systems were discovered at Jerusalem Blvd. and Razi'el St. (Jakoel 2011b; Jakoel and Marcus 2011, 2013).

Graves from the Ottoman period were discovered in various spots in Jaffa's periphery, comprising cemeteries, single sepulchers, groups of graves, and mass burials. Distribution spans between the Elisabeth Bergner Compound (Rauchberger, IAA Lic. No. A-7666/2016), Marzuk, and 'Azar, Razi'el, and Ratosh St. in the north (Kletter 2001; Sion and Rapuano forthcoming) to Rabbi Pinhas St. in the Flea Market to the south (Arbel 2008) and from the Clock Tower Square in the west (Peilstöcker et al. 2006; Talmi 2010) to the eastern extension of Ha-Yamit St., near Jerusalem Blvd. (Arbel 2012; Haddad 2013a). The northern burials, certainly those at Ratosh St. and probably also many of the later Clock Tower Square burials, were part of the vast Muslim cemetery known from numerous sources to have existed north of Jaffa from the late eighteenth to the early twentieth centuries. Most of these graves could not be excavated, and thus no pathological data were derived from the bones and no datable related finds were collected. Their stratigraphic position varies. Some of the burials were situated directly below the foundation bed of the street; others were located in thin soil accumulations over Crusader floors and most of them in intermediate layers. Burials near the street level were usually in poor condition and often disarticulated, probably due to later disturbance. Deeper graves were in a better state, many of which were preserved under the original capping stones. Mass burials may be the outcome of grave removal during construction and the reburial of the bones. The east-west orientation of preserved single graves suggests, although it does not prove, adherence to Muslim funerary customs.

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Table 3.2. Wells identified in Jaffa.

Sphere	Location	Details	Reference
Mound margins	Qishle	Three wells found at the compound's backyard. Concrete facing indicates that two of them dug or renovated during the British Mandate. The third well was stone lined and likely to date to the late Ottoman period. Remains of an iron ladder were found lying against the inner face.	Arbel 2009a
	Abulafia Restaurant, Yefet St. 2–4	One well discovered during the renovation of the building. It is part of a late nineteenth-century complex replacing the fortification line in that area.	Vunsh et al. 2014
	French Hospital perimeter	Two wells. Pumping mechanism and pool next to one of the wells. They probably served the original hospital, until modern water pipes were installed.	Re'em 2010
Periphery	Ha-Yamit St. (northwest)	Nine wells near the harbor's southern end. Possibly part of a building complex removed during the paving of the street in the 1930s. Five wells were dug into the dunes. Four others were cut into the rock bed.	Haddad 2011; Arbel 2015
	Ha-Yamit St. (center)	One stone-lined well, consolidated with reddish-brown mortar and built into sandy *hamra* soil. Some of the stones are in secondary use, having been removed from the ruins of houses, as evident from blue plaster that survived on their faces. Two narrow horizontal grooves were identified between the stone courses at a depth of ca. 1.5 m and 3 m, extending along the full circumference of the well's wall.	Haddad 2013a
	Pinhas and Ben Ya'ir St., Greek Market (north)	Two wells. One stone-lined well blocked at the turn of the twentieth century during the construction of the commercial complex. An additional well was identified within a building at the southern end of the street.	Arbel, IAA Lic. No. A-6772/2013
	Abutbul Blvd., Magen Avraham Compound	One well. Part of a well house, several structures of which were also exposed. Sealed with refuse during the British Mandate period, including the nearly intact octagonal basin of a concrete water fountain.	Arbel and Rauchberger 2015
	Postal Compound	Two wells. One well found within the well house, of which several buildings were also found. Remains may indicate an *antiliya* installation. Second well was found to the north of the well house. It was covered at a later stage with a frame with a square opening. Inserted iron pipes is evidence of draining in secondary use.	Rauchberger 2015
	Hanina St., Flea Market (south)	One large stone-lined well. Indication for *antiliya* installation.	Arbel 2008
	Ganor Compound	One well. Part of a well house noted on Sandel's map of 1878–1879. Continued in use into British Mandate times. Includes *antiliya* installation, later engine operated. The only well house complex in Jaffa to have been restored and exhibited to the public.	Gorzalczany 2008; Rauchberger 2012
	Hanina St., Flea Market (south)	One well. Probably provided water to irrigation conduits discovered nearby.	Peilstöcker et al. 2006
	Flea Market, between Yohanan and Me-Raguza St.	One well. A significant quantity of human bones in the fill within the well, along with cannonballs. Associated by the excavators with numerous episodes of warfare between the late eighteenth and early nineteenth centuries.	Peilstöcker et al. 2006
	Yefet St. 27	One well. The French School was built in the 1880s. The well was discovered under the floor of a classroom. Several late Ottoman structures and reservoirs also found under the school may have been part of a well house destroyed during the construction of the school.	Arbel and Talmi, IAA Lic. No. A-5744/2009
	Giv'at Aliya, 5 Yanush Korchak St.	The well (3 m in diameter, 35 m deep) was documented, without excavations, within a later structure. It was built of kurkar masonry, reinforced with plaster. An iron ladder and an iron pipe were attached to it, reaching the bottom. Cement mixed with shell castings on the mouth attests to British additions. Mechanized pumping.	Rauchberger 2008

Conclusion

Salvage excavations over the past two decades offer innovative information on Jaffa and its changing fortunes through history, reflecting patterns of expansion and withdrawal from areas surrounding Tel Yafo. We can now argue that Jaffa of the Middle and Late Bronze Ages does not seem to have exceeded the mound's boundaries and that the lower grounds served mostly for farming and burial. Jaffa's expansion eastward dates no earlier than the latest phases of the Iron Age and the Persian period, when first signs of industry appear to the east of the mound. The south remained in use exclusively for burial until late Ottoman times.

Jaffa shared the literally groundbreaking growth that altered numerous towns during the Hellenistic period (third-second centuries BCE). Still, the standard pattern of development was later reversed here in ways seldom seen elsewhere. In former Helleno-Roman cities such as Akko, Caesarea Maritima, Apollonia, Ashkelon, Shechem-Neapolis (Nablus), and Bet-She'an, Roman public and residential buildings soon dominated the newly occupied

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Figure 3.15. Building in late Ottoman well house complex, Magen Avraham Compound. *Photograph by Yoav Arbel.* Photo B347674. *Courtesy of the Israel Antiquities Authority.*

landscape. Roman Jaffa, conversely, withdrew back into the mound. The reasons remain unclear. Renewed extra-mound domestic and industrial settlement during the Byzantine, Early Islamic, and Crusader periods could not compete with the uninterrupted development in the other urban centers.

Post-Crusader Jaffa, as other coastal towns, did not exist as an urban settlement. Attempts at recovery soon withered under enduring political and military pressure. The cemetery discovered in the Flea Market grounds and the commemorative fifteenth-century inscription only emphasize the desolation, evidenced by both historical and archaeological data. Resettlement during the seventeenth century and fast subsequent development are reflected in the archaeological scene. Much of nineteenth-century Jaffa remains standing, and we have a wide array of historical documentation from that time.

While gaps and inconsistencies in our information on Jaffa persist, archaeology helps fill and clarify some of them. The study of material remains also refines and tangibly illustrates original written, illustrated, photographic, and cartographic testimony. Decades of new excavations at the lower city thus complement the information derived from earlier decades of excavations on the mound. With archaeological work still in progress at both upper and lower cities of Jaffa, new discoveries will no doubt further enrich the picture outlined here.

Notes

1. Excavations took place in streets, housing apartments, shops, workshops, offices, galleries, and restaurants. Thus, arrangements for pedestrian flow and vehicle access had to be ensured prior to each phase of these excavations. Other limitations were imposed by the modern infrastructure under the streets, with the safety of passers-by an ever-present consideration (Ajami 2011:34–36).

2. The harbor's complex history demands a different perspective from that of other extra-mound grounds. Furthermore, the harbor, similarly to the mound, has already been the subject of comprehensive studies (see Mirkin, this volume; Haddad 2013a).

3. The Israel Antiquities Authority (IAA) is the institution that carried out most of those excavations and continues to do so up to the present.

4. At the time of writing, excavations with forthcoming final reports include the Qishle (Y. Arbel) and the Sea Promenade (M. Peilstöcker). Other final reports in advanced editorial stage include the French Hospital (A. Re'em), Ha-Tsorfim St. (Y. Arbel), the Postal Compound (L. Rauchberger), Ha-Yamit St. (E. Haddad and L. Rauchberger), the French School (Y. Arbel), and Razi'el St. (O. Sion).

5. Excavations in preparation for publication by Meir Edrey.

6. The Abu Kabir site, where numerous burial caves and gravestones bearing Jewish names were discovered, falls outside the scope of this survey.

7. For a summary of all archeological evidence for Jaffa's Jewish community during the Roman period, see Arbel (2016b).

8. For numerous sources describing the phase of destruction between the early fourteenth century and the mid-seventeenth century CE and accompanying analysis, see Haddad (2013b:53ff). For a summary of the archaeological evidence, see Arbel (2013).

9. The *sabīl* is called after Sultan Mahmud II (1808–1839). It is popularly known as Sabīl Suleiman, ostensibly after the pasha of Akko and the superior of Jaffa's governor Mahmud Agha Abū Nabūt during that time.

10. The installation was first discovered by this author in 2006, yet its major parts were exposed and its plan determined during O. Segal's excavation in 2008. The dating to the Byzantine period is suggested by the author, based on pottery found in a layer that penetrated under the basins. Segal dates it to the Crusader period, relying on pottery found in the basins.

11. Glick et al. (2014:114) date the inscription to 1651. The date seems surprisingly early, as there are witness testimonies of Jaffa still in ruins several years later (Haddad 2013b:80–81). It is possible that the inscription relates to an inauguration and that

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actual construction or its completion took place later. The Armenian Convent itself is one of the few buildings with seventeenth-century origins still standing in Jaffa. Others include the Sea Mosque and the Franciscan Convent, both of which flank the Armenian Compound.

12. It should be noted that some early twentieth-century artillery shells were filled with metal balls the size of musket ammunition, aimed at maximizing collateral impact at explosion. The distinction between the two types is difficult but as no battles took place in Jaffa during World War I, the musket ammunition option is more viable. I am indebted to Alexander Glick for enlightening me on the issue of the artillery shells.

13. A British officer's sword and a bayonet from an unknown source, which was kept for decades in J. Kaplan's finds stores of the Jaffa Museum of Antiquities, are presently at display at the new Visitor's Center at Qedumim Square.

14. I thank Samuel Giler for turning my attention to this cartographic evidence.

15. In her study on the subject, Kashman (2007:273) uses the Arabic term *bayārat* houses, which translates as "well houses," to describe such complexes. Following Kashman, it refers to "both the orange groves and gardens surrounding Jaffa and the built compounds constructed within them, . . . [containing] both residential spaces (mainly functioning as summer houses for the urban rich) and agricultural elements such as wells and pools used to irrigate the orange trees around them."

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Chapter 4

Jaffa's Ancient Inland Harbor:

Historical, Cartographic, and Geomorphological Data

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The context created by recent studies of the geomorphology of Levantine harbors and renewed archaeological research in the Late Bronze Age levels of Tel Yafo (Jaffa) by the Jaffa Cultural Heritage Project have led to efforts to identify the location of a possible inland Bronze and Iron Age harbor at Jaffa, Israel. Although several scholars during the twentieth century speculated about the existence and location of an ancient inland harbor, the extent of the proxy data in support of its identification has never been fully assessed. Nonetheless, a range of historical, cartographic, art historical, topographical, and geomorphological data can be summoned that point to the existence of a body of water that lay to the east of the settlement and mound of ancient Jaffa. This feature is likely a vestige of Jaffa's earliest anchorage or harbor and probably went out of use by the start of the Hellenistic period.

As long as biblical scholars, archaeologists, historians, and geographers have concerned themselves with Jaffa, its identity has revolved around its role as the primary port on the central coast of ancient Israel (Figures 4.1 and 4.2). Were it not for its role as a port, all traditional explanations for Jaffa's location would fail to address its raison d'être. It was never regarded as a particularly agriculturally productive region, nor did its immediate environs yield unique natural resources. It did not sit astride an overland route that might explain its near five-millennium-long settlement history, nor do historical sources emphasize Jaffa's independence. Instead, a review of Jaffa's history indicates, to the contrary, that Jaffa's various periods of decline in importance were always directly related to its decline as a port (see historical overviews in Peilstöcker and Burke 2011). Jaffa's eclipse by another port is first attested with the establishment of Caesarea Maritima during the Early Roman period (Notley 2011:103) and later followed by the construction of Tel Aviv harbor in 1938 and then by the harbor of Ashdod in 1965. To the extent that Jaffa's role as a port revived, this appears to have been in direct relationship to increasing traffic due to religious pilgrimage by Christians, Jews, and, to some extent, Muslims, and added to later by Zionists. Despite historical sources that directly attest Jaffa's role as a port from the Classical period onward, geomorphological changes to the coastline of the southern Levant would suggest that Jaffa's

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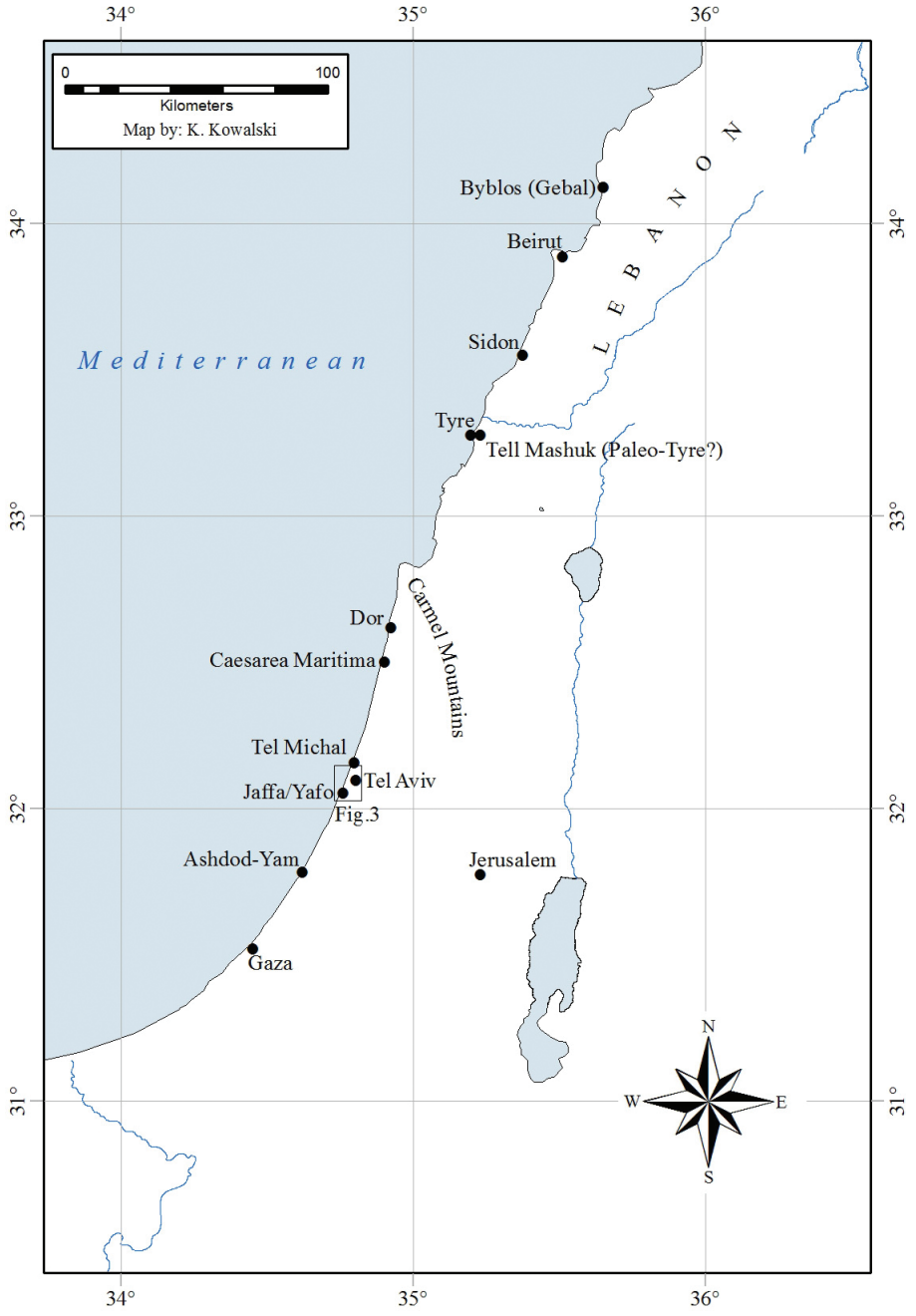

Figure 4.1. Map of the central and southern Levantine coast. *Map by Krister Kowalski.*

ancient harbor, during the Bronze and Iron Ages, was not the same harbor that serves the city today. Processes such as those characteristic of many ancient harbors around the Mediterranean, like Ephesus and Miletus, reveal the gradual silting and relocation of these harbors (Brückner et al. 2005; Kraft et al. 2007; Marriner and Morhange 2007; Stock et al. 2013). Nevertheless, no systematic effort has been undertaken to date to confirm an alternative location for the site's most ancient harbor.[1]

Here we seek to outline the evidence for an internal Bronze and Iron Age harbor long since obscured by various natural and anthropogenic processes. This effort lays the groundwork for a new research initiative by the Jaffa Cultural Heritage Project, in cooperation with the Institute of Nautical Archaeology, named the Ioppa Maritima Project, one of the primary goals of which is locating the ancient harbor. We begin with the modern evidence that contributes to the recognition of the importance of Jaffa's

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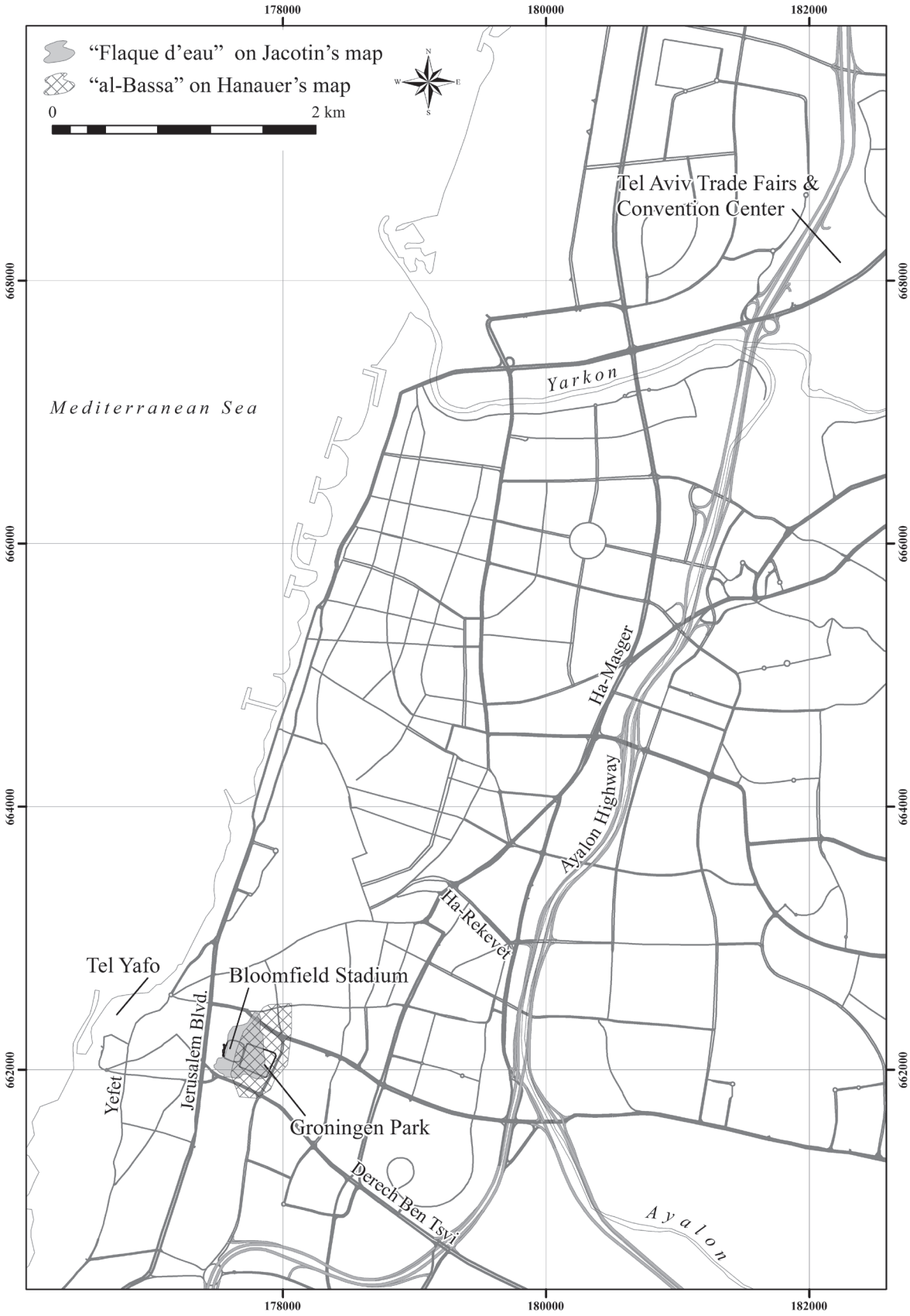

Figure 4.2. Map of streets in Tel Aviv–Jaffa showing location of stadium, park, and location of Ayalon and Yarkon rivers. Israel Transverse Mercator (New Israel Grid) projection. *Map by Krister Kowalski.*

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ancient harbor, despite the absence of direct evidence for it, and review the earliest references to maritime activities in Jaffa as preserved in early sources such as the Hebrew Bible. This is followed by an examination of the lines of evidence, primarily from the nineteenth century CE, for the swamp located on Jaffa's eastern side that is known in Arabic as al-Bassa. In this context, we present the first effort to generate high-resolution topographic models from satellite data to explore the existence of an extensive drainage depression associated with al-Bassa that is no longer visible at ground level. The combination of this evidence supports the hypothesis that al-Bassa constitutes a portion of the original extent of an earlier body of water, an estuary, that may have functioned as an anchorage or harbor for Jaffa during the Bronze and Iron Ages.

The Recent History of Jaffa's Harbor

The economic and political drawbacks associated with the absence of a good harbor at Jaffa were baldly evident during the nineteenth and early twentieth centuries CE (Kark 1990). Recent assessments of the port during this period reveal the limits of Jaffa's harbor facilities (Mirkin and Goren 2012; see Chapter 6, this volume). Echoing the statements of many visitors to the Holy Land, Baedeker's guidebook, for example, notes that Jaffa features "no good harbor" (Baedeker 1876:6). This statement was intended to reflect a situation whereby large ships were required to anchor west of a chain of rocks that formed a shallow anchorage, and goods and passengers were ferried in lighters through the rocks to the quayside in the harbor on Jaffa's western and northern sides, which lay exposed to the open sea.

G. A. Barton (1904:92) described the unchanged situation by the early twentieth century during his passage from Beirut in 1902:

> The harbor at Jaffa is very bad. A half-submerged reef runs along the shore. Ships must cast anchor outside of this, and passengers must go ashore in small boats. This is the system in all of these Eastern harbors, but at Jaffa it is particularly bad, for the unbroken swells of the Mediterranean beat in here, and it is often dangerous to pass the sunken reef under such circumstances.

This situation was aptly captured in the Orientalist painting of Gustav Bauernfeind (see Figure 6.29, this volume; Vosseler 2013:47, fig. 2). Despite the fact that the harbor is depicted in at least one famous nineteenth-century painting to have featured a stone-built quay on its western and northwestern sides (Figure 4.3), a limited part of it appears to have been useful for loading and unloading cargo from ships, with the stone wall serving primarily as a breakwater protecting the buildings behind it. Elements of this quay were exposed by Jacob Kaplan during his Jaffa harbor (Namal Yafo) excavations carried out in 1978 (Ritter-Kaplan 1978), and the same features were reexposed in 2007 during salvage excavations by the Israel Antiquities Authority conducted for infrastructure upgrades (Haddad 2009).

Despite such facilities, inclement weather and even modest surf wreaked havoc on the small craft ferrying persons and goods from ships offshore that were either too large for the harbor or uncertain of the approach. George Smith states that the reefs at Jaffa "are more dangerous in foul weather than they are useful in fair" (Smith 1932:130–31). During winter, the majority of the boats moored within the mouth of the Yarkon River, and smaller boats were simply beached (Hanauer 1903a:261; Avitsur 1965:30). The same situation is also documented from at least the Crusader period when the pilgrim Saewulf states that more than 1,000 people were killed trying to approach Jaffa, and this may have contributed to prominence of the harbor of Akko over that of Jaffa during the Crusader period (see Boas 2011:122). Hanauer (1903a:261) noted that artificial rock cuttings in the offshore rocks at Jaffa indicated earlier attempts to use the rocks to create a better harbor, but these cannot be reliably dated. Various schemes during the twentieth century were also proposed to dredge the harbor to accommodate larger steamships, build breakwaters (Shacham 2011:fig. 13.10), and connect the quay via tracks to railroads, including plans from an Italian syndicate to fund an operation not to exceed $7,000,000 to improve the harbor (Anonymous 1922).[2] As early as the 1830s, questions even lingered about the possible construction of an inland harbor using the "Jaffa marsh" (Avitsur 1965:32).

Jaffa's Harbor from the Middle Bronze Age to the Roman Period

Jaffa's significance became inextricably bound to its identity as a port on the southern Levantine coast from at least the beginning of the Middle Bronze Age (MB IIA, ca. 2000–1800 BCE) and continuing through the Persian period. This is borne out by the substantial quantities of imported wares from across the Mediterranean during these

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Figure 4.3. *Turkish Recruits Taken to the Ship*, Gustav Bauernfeind (1888) (oil painting, 1.52 × 2.8 m, Dahesh Museum, New York).

periods recovered by excavations both by Jacob Kaplan and the Jaffa Cultural Heritage Project under the direction of Aaron Burke and Martin Peilstöcker (e.g., Epstein 1966:14; Peilstöcker 2011), which are typical of the character and quantity of those recovered from excavated ports along the Levantine coast such as Ashkelon and Akko. Before the Middle Bronze Age, there is limited evidence for Early Bronze (EB) I occupation on the mound of Tel Yafo (Gophna 2002:419) followed by an interlude during the third millennium before settlement resumed in the Middle Bronze IIA (from no later than ca. 1800 BCE). This occupational gap is characteristic of coastal settlements and the issue of EB II–III ports is a highly problematic one along the coast of the southern Levant (see Faust and Ashkenazy 2007, 2009). The limited evidence for other contemporaneous Middle Bronze Age settlements along this central stretch of coast that could have functioned as harbors provides an even stronger argument that Jaffa functioned as the main harbor in this region and served the hinterland to the east, including the hill country (see Burke 2011:64, fig. 6.1). Something about Jaffa, ancient Yapu as it was known, evoked beauty, goodness, or a fair quality. If this was not a reference to the region's or site's appearance (Burke 2011:66), it may actually reflect a characterization of the quality of Jaffa's harbor or anchorage.

Although the existence of a harbor in Jaffa during the Late Bronze Age is hardly in doubt, it receives no mention in Egyptian sources during the New Kingdom, ca. 1550–1075 BCE. Ample Mycenaean, Cypriot, and Egyptian imported wares suggest the port's role in this commerce during this period. Indeed, the port also likely functioned as a strategic supply point for Egyptian forces campaigning in the southern Levant (Burke 2011:68), as well as a point for the disembarking of troops when necessary. Beginning in year 31 of Thutmose III, his annals refer to the annual inspection and stocking of Levantine harbors in support of his military expeditions (Säve-Söderbergh 1946:33–36; Wachsmann 1998:10). It is generally accepted that Jaffa played a role in such a staging effort (see Morris 2005:138–139, n. 90). The site's strategic importance to the Egyptians is revealed in the *Tale of the Capture of Jaffa* in which the Egyptian commander was forced to recapture the fortress from insurgent Canaanites through a ruse (Allen 2001). Jaffa's possible identification as an *ḥtm*-fortress in Egyptian, first suggested by Ellen Morris (2005:158-159), may have permitted it to block access to routes and to limit access to the central coast by maritime traffic. This would be particularly true if the harbor was situated in an estuary with a narrow connection to the sea to the north of the tell.

It is during the Iron Age that biblical sources suggest Jaffa's role in connection with the transport of Phoenician timber for the construction of the First Temple and palaces in Jerusalem, revealing its role as an Iron Age port of call for the southern Levantine hinterland, including Jerusalem

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and the hill country. In this context, it is important to note that, despite this role, there is no archaeological or textual evidence for an Israelite or Judean presence in Jaffa during the Iron Age. Likewise, the question of a Sea Peoples or Philistine presence at the site remains open, despite the presence of Philistine ceramics (Burke 2011:70–71, fig. 6.5).

The biblical text provides the first indications of Jaffa's maritime activity during the Iron Age, in connection with joint ventures between the Phoenician king, Hiram of Tyre, and the Israelite king, Solomon, originating with the latter's request for both laborers (1 Kings 5:1–10) and cedars from Lebanon (1 Kings 5:6). Solomon wrote,

> Therefore command that cedars from the Lebanon be cut for me. My servants will join your servants, and I will give you whatever wages you set for your servants; for you know that there is no one among us who knows how to cut timber like the Sidonians [1 Kings 5:6, NRSV].

The tradition also preserves Hiram's reply:

> Hiram sent word to Solomon, "I have heard the message that you have sent to me; I will fulfill all your needs in the matter of cedar and cypress timber. My servants shall bring it down to the sea from the Lebanon; I will make it into rafts to go by sea to the place you indicate. I will have them broken up there for you to take away. And you shall meet my needs by providing food for my household" [1 Kings 5:8, NRSV].

In addition to the timber and laborers, the context for these interactions, according to the biblical account, would also likely have included the passage of craftsmen such as the Gebalites (Byblites), who were sent to Jerusalem for stone cutting (1 Kings 5:18). Jaffa is, however, never mentioned explicitly in the account in Kings but is instead read into the text on the basis of the Persian period retelling of the tradition in Chronicles, discussed below. A scene from Sargon II's reliefs at Khorsabad in which Phoenicians are shown towing logs behind ships, most likely on the Mediterranean Sea, is evocative, however, of the maritime activity related in the passage in 1 Kings (Botta and Flandin 1849–1850 (I):pl. 33; Basch 1987:306–307, figs. 650–651).

Jaffa is explicitly mentioned by name in connection with the transport of timber for the first time only in the Persian period biblical text of Chronicles:

> We will cut whatever timber you need from Lebanon, and bring it to you as rafts by sea to *Jaffa*; you will take it up to Jerusalem [2 Chronicles 2:16, NRSV].

Likewise, in the roughly contemporaneous account of Ezra concerning the rebuilding of the temple in Jerusalem during the late sixth century BCE, Jaffa is once again explicitly mentioned.

> So they gave money to the masons and the carpenters, and food, drink, and oil to the Sidonians and the Tyrians to bring cedar trees from Lebanon to the sea, to *Jaffa*, according to the grant that they had from King Cyrus of Persia [Ezra 3:7, NRSV].

Despite that the direct reference to Jaffa originates in biblical traditions authored during the Persian period, there is no real reason not to accept that Jaffa was meant to be identified with the place Solomon requested the timbers to be sent, if one accepts the importation of at least cedar through Jaffa during the Iron Age. The recovery by the Jaffa Cultural Heritage Project's excavation of more than two dozen cedar beams from the Egyptian New Kingdom Ramesside gate complex (LB IIB) in Jaffa in 2013 lends credibility to Jaffa's potential role in such a trade corridor dating no later than the Late Bronze Age (before ca. 1100 BCE).

It is also from Jaffa that Jonah, the Bible recalls, embarked on a ship heading to Tarshish, basically the contemporaneous equivalent of fleeing to "the end of the earth":

> But Jonah set out to flee to Tarshish from the presence of the Lord. He went down to Joppa and found a ship going to Tarshish; so he paid his fare and went on board, to go with them to Tarshish, away from the presence of the Lord [Jonah 1:3, NRSV].

The embedded reality in this passage is that Jaffa's harbor was recognized for its ability to handle some of the largest seagoing ships of the day, which were used on the run to Tarshish and are referenced elsewhere in the Bible (I Kings 22:47; 2 Chronicles 9:21; Wachsmann 1990:78, 80; 1998:159, 299). Jaffa, therefore, at the time of the writing of the Book of Jonah was recognized to be an important harbor from which one could embark by ship to distant shores.

While these texts evoke Jaffa's importance as a seaport to the Israelite hinterland, they provide clues neither as to the precise location of Jaffa's early harbor or anchorages nor its geography. The most direct discussion of Jaffa's harbor is only to be found in the Early Roman period in the work of Josephus, whose statements about the location of the port during the first century CE provide the earliest description of the quality of the facilities at the time, which was likely a major factor in the selection of Caesarea Maritima as a replacement during Herod's reign. His comments reveal the absence of any inland harbor at Jaffa by at least the Roman

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period. Josephus describes the seaside rocky enclosure located west of Tel Yafo:

> Now Joppa is not naturally a haven (lit. *harborless*; Gk. ἀλίμενος), for it ends in a rough shore, where all the rest of it is straight, but the two ends bend towards each other, where there are deep precipices and great stones that jut out into the sea, and where the chains wherewith Andromeda was bound have left their footsteps, which attest to the antiquity of that fable; but the north wind opposes and beats upon the shore, and dashes mighty waves against the rocks which receive them [Josephus, *B.J.* 3.9.3].

This text indicates the poor quality of Jaffa's Roman period harbor, describing it as harborless (Greek: ἀλίμενος). This casts serious doubt on its also serving as the location of the earliest harbor since if it had always been without a natural harbor, other locations, such as the Yarkon River, would more likely have served as the functional port for this stretch of coast.

Based on other examples along the Levantine coast, it seems likely that Jaffa had previously exploited the estuary created behind the outflow of the Yarkon River, if not also the Ayalon River as originally suggested by J. E. Hanauer (1903a) and followed later by A. Raban (1985:27). Dredging of the modern harbor during S. Wachsmann's tenure as the Inspector of Underwater Antiquities in the Israel Department of Antiquities and Museums removed sand that was virtually sterile. Wachsmann suspects that the dearth of artifacts resulted from massive dredging during the British Mandatory period. The earliest remains originating from efforts to explore the harbor in modern times included a fourth-century BCE Persian period basket handle from a jar, which was found south of the modern harbor with some later finds dated to the Roman and Byzantine periods (Sharvit and Galili 2002; Foran 2011:112).[3]

Factors Affecting the Identification of Jaffa's Ancient Harbor

A number of factors have limited the prior identification of Jaffa's and other early harbors along the Levantine coast. As Avner Raban noted, the main hindrance for harbors on the Mediterranean coast south of Carmel is the shallow water and shifting sands along the sea floor (Raban 1985:11). Coastal evolution associated with relative sea-level change and an abundance of Nilotic sand that is carried north (Stanley 1989) have resulted in a barrier accretion plain that obscures former marine embayments and potential ancient harbors. As G. A. Smith wrote, "While the cruelty of many another wild coast is known by the wrecks of ships, the Syrian shore south of Carmel is strewn with the fiercer wreckage of harbors" (Smith 1932:131).

In recent years, extensive investigations have been undertaken to locate a number of ancient harbors along the Levantine coasts of Syria, Lebanon, and the Gaza Strip. Among the ports studied to date are Ras Ibn Hani (Marriner et al. 2012), Beirut (Marriner, Morhange, and Saghieh-Beydoun 2008), Tyre and Sidon (Marriner and Morhange 2005; Marriner, Morhange, and Carayon 2008; Marriner et al. 2006), and Gaza (Morhange et al. 2005). Marriner and Morhange present a typology of "wrecked" harbors in the Mediterranean basin based on earth science methods accounting for distance to the modern coastline, position relative to modern sea level, geomorphology, and taphonomy, or "how these ancient ports came to be fossilized in the sedimentary record" (Marriner and Morhange 2007:146–162). Relevant for this study are buried urban, landlocked, and lagoonal (properly estuarine) harbors (Marriner and Morhange 2007). In general, reduction in the rate of sea-level rise coupled with high natural sediment supply (fluvial and/or runoff origin), occasionally intensified by anthropogenic modification of watersheds (i.e., deforestation and agriculture), led to accelerated coastal progradation and the burial of harbors (landlocked and urban).

Urban harbors like Beirut still have an active port, but the ancient harbor is beneath a modern city (Marriner and Morhange 2007). Bronze Age Beirut had the same type of pocket beach and protected embayment as Tyre and Sidon, which were favored by Bronze Age mariners (Marriner, Morhange, and Saghieh-Beydoun 2008:2507). As seafarers sailed between larger commercial polities, natural anchorages would have been favored; thus, settlements near such proto-harbors like Tyre, Sidon, Beirut, and probably Jaffa flourished. In addition to the aforementioned ports, the preeminent Phoenician cities of Tyre and Sidon also feature buried harbors with basins still in modern use. Estuarine harbors offer natural protection as safe havens for ships. However, such low-energy embayments gradually fill with sediment deposited by natural and anthropogenic processes, making them unserviceable to even vessels of shallow draft.

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The Swamp of al-Bassa and the Course of the Ayalon River

Despite the foregoing circumstantial data suggestive of Jaffa's clear importance as a Bronze Age port, the precise location of its harbor during the Bronze and Iron Ages remains unknown. The realization, as observed from Josephus, that perhaps by the start of the Hellenistic period the port of Jaffa was restricted to the western, sea, side of Jaffa—effectively the harbor's location since then—taken together with more recent observations about how the effects of silting up affected early harbors suggests that Jaffa's ancient harbor may now lie buried in a low-lying, terrestrial environ east of Jaffa. Geomorphological changes in the vicinity of Jaffa resulted primarily from the fact that the *kurkar* (calcareous aeolian sandstone) ridge approaching Jaffa from the south did not permit drainage to the west. Various maps, illustrations, and accounts beginning with Jacotin's map in 1799 until the foundation of Tel Aviv in 1909 reveal the existence of a body of water to the east of Jaffa known in Arabic as al-Bassa, which is usually translated as "swamp" and means "depression" in Arabic. Since the early twentieth century, this swamp has been tentatively identified as the remnant of an ancient body of water that once served as Jaffa's so-called Solomonic harbor during the Iron Age (Hanauer 1903a, 1903b) and presumably functioning since the Bronze Age.

Among the most important sources indicating the existence of al-Bassa to the east of Jaffa are historical maps of the site and its environs produced during the nineteenth century CE. Maps made by P. Jacotin and A. J. Denain, Napoleon's cartographers, recording his siege of Jaffa in 1799 serve as an important first datum point for the location and prior size of al-Bassa at the beginning of the nineteenth century CE. In these maps, this body of water is identified as the *flaque d'eau* (pool of water) and the *etang* (pond) (Figure 4.4 and Figure 4.5; Shacham 2011:137–138, figs. 13.2, 13.4–13.8). Both French labels suggest that al-Bassa was a very shallow body of water at the time.

Figure 4.4. Map of coast of Palestine north and south of Jaffa by Jacotin, 1799. Jerusalem and Jaffa sheet.
Courtesy of Eran Laor Cartographic Collection, National Library of Israel.

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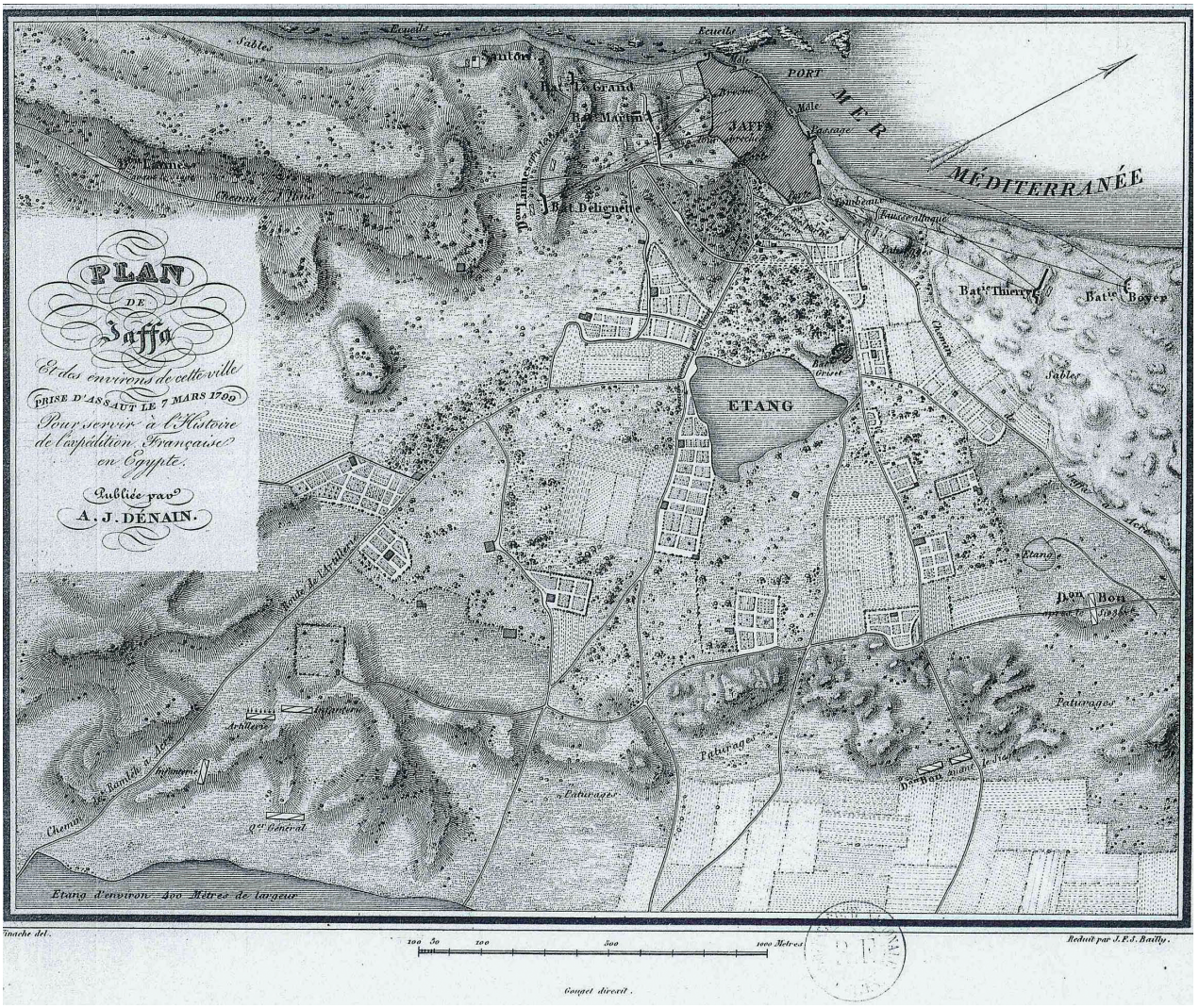

Figure 4.5. Map of Jaffa by Denain & Delamare, 1830–1831. *Bibliothèque nationale de France: fonds géographique, Res. Ge. FF. 6421.*

J. E. Hanauer, a biblical scholar, also made a number of observations during his visits to Jaffa in the early twentieth century CE about the location of the ancient harbor. Hanauer personally observed that the area called al-Bassa was "covered by a shallow lake or swamp after heavy rains, and local tradition asserts that it marks the location of the ancient harbor of the time of Solomon" (Hanauer 1903a:258). This body of water was first labeled al-Bassa (No. 37) in a series of maps produced by Theodor Sandel beginning in 1875 for the Baedeker guidebooks (Shacham 2011:fig. 13.19). The swamp's bed according to Hanauer (1903a:260) was only 2.6 m above sea level. He observed that in the winter of 1892–1893, a lake appeared in this location following heavy rains, and after an outbreak of malaria the following summer, a "ditch was dug to drain it off" (Hanauer 1903a:259).

To this, Hanauer (1903a:260) adds that "a great many years ago people related that they had heard of boat anchors having been dug up in the 'Baasah', as the lowest part of the hollow is called" and that shafts sunk to 11 m for wells suggested the presence of a "massive sea wall." Tolkowsky (1924:27) indicates that these "anchors" were made of metal: if correct, this suggests that if they were anchors at all, they were of a rather late date since Levantine Bronze and Iron Age anchors were made of stone (Wachsmann 1998:255–293). Tolkowsky's observations draw on awareness of the finds stemming from George Barton's excavations in 1902 to the northeast of Tel Yafo. Barton claimed that the "existence of an ancient inner harbor at Jaffa, used in the Maccabean period and in the time of Saladin, and possibly also in the time of Solomon, was rendered probable" by his excavations (Moore and Barton 1903:41). While

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Tolkowsky may have been mistaken regarding the period during which the inner harbor functioned, Barton appears to have listed those periods in his report and in his letter to Hanauer, based on what he encountered and the local tradition linking the inland depression with the Solomonic harbor (Hanauer 1903a, 1903b). Nevertheless, Barton later concluded that the elements he encountered during his excavations between April 20 and completed May 12, 1903, were not, in fact, the remains of an ancient harbor. These excavations were carried out near land belonging to a Mr. Murad in the vicinity of al-Bassa in an effort to identify an ancient anchorage (Barton 1903:185). He encountered a wall buried only half a meter down, which he suggested was of relatively late in date and was determined to be 4.5 m above modern sea level (Barton 1903:186). Excavations also produced cannonball fragments and a nineteenth-century coin (Barton 1903:186, n. 16).

David Roberts's 1839 painting of Jaffa from the northeast, created only 40 years after Napoleon's map, depicts a wide and flat expanse that appears to be the western part of a dry alluvial plain to the east of Tel Yafo (Figure 4.6). Although it appears as little more than a flat and undeveloped area behind the low-lying ridge, its connection to the sea through the ridge suggests the location of an ancient drainage basin that once connected a former river mouth or an estuary at al-Bassa to the sea. This gap in the ridge is not visible in David Roberts's painting but does appear on Jacotin's map as one of the locations where Napoleon's forces were stationed and where they met resistance (Figure 4.5; Shacham 2011:fig. 13.5). The geological map of the area (Figure 4.7A, marked in blue) shows the same gap between the *kurkar* ridge forming Tel Yafo and the lower lying rocky element north of the tell. Today in the field, abundant artificial fill hides most original topography and underlying geologic units, but limited exposures to the north reveal coarse-grained, shell-rich sandstone that represents a facies variation of the *kurkar*. The topographic break and change in lithology may have resulted from tectonic activity and subsequent erosion (note the most southern fault in Figure 4.7B). At this point along the coast, a ravine still exists

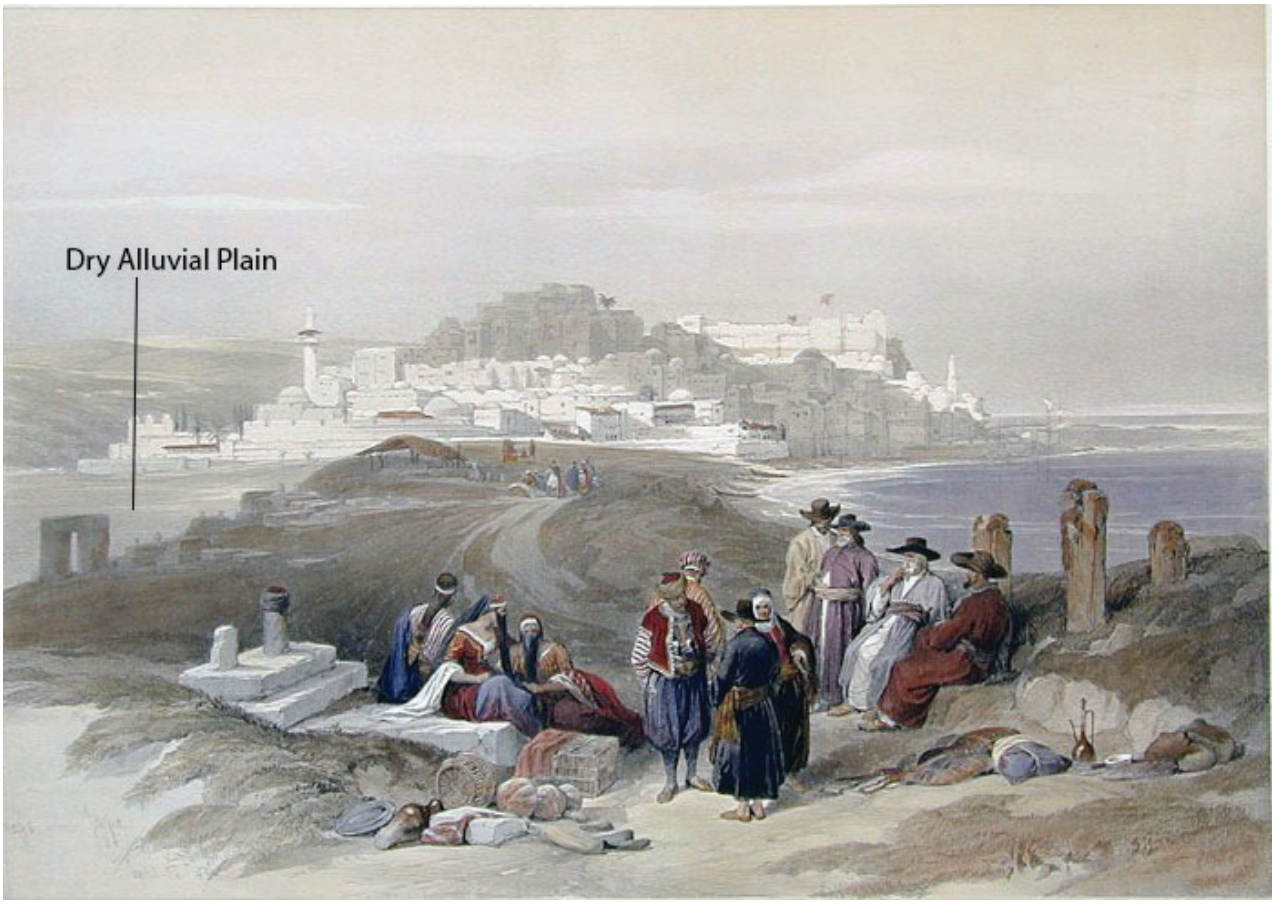

Figure 4.6. Jaffa as portrayed in one of David Roberts's paintings, 1839. Note the flat area (dry alluvial plain?) to the left of both Tel Yafo, which lies on the *kurkar* ridge, and the continuation of the ridge in the foreground. View northeast.

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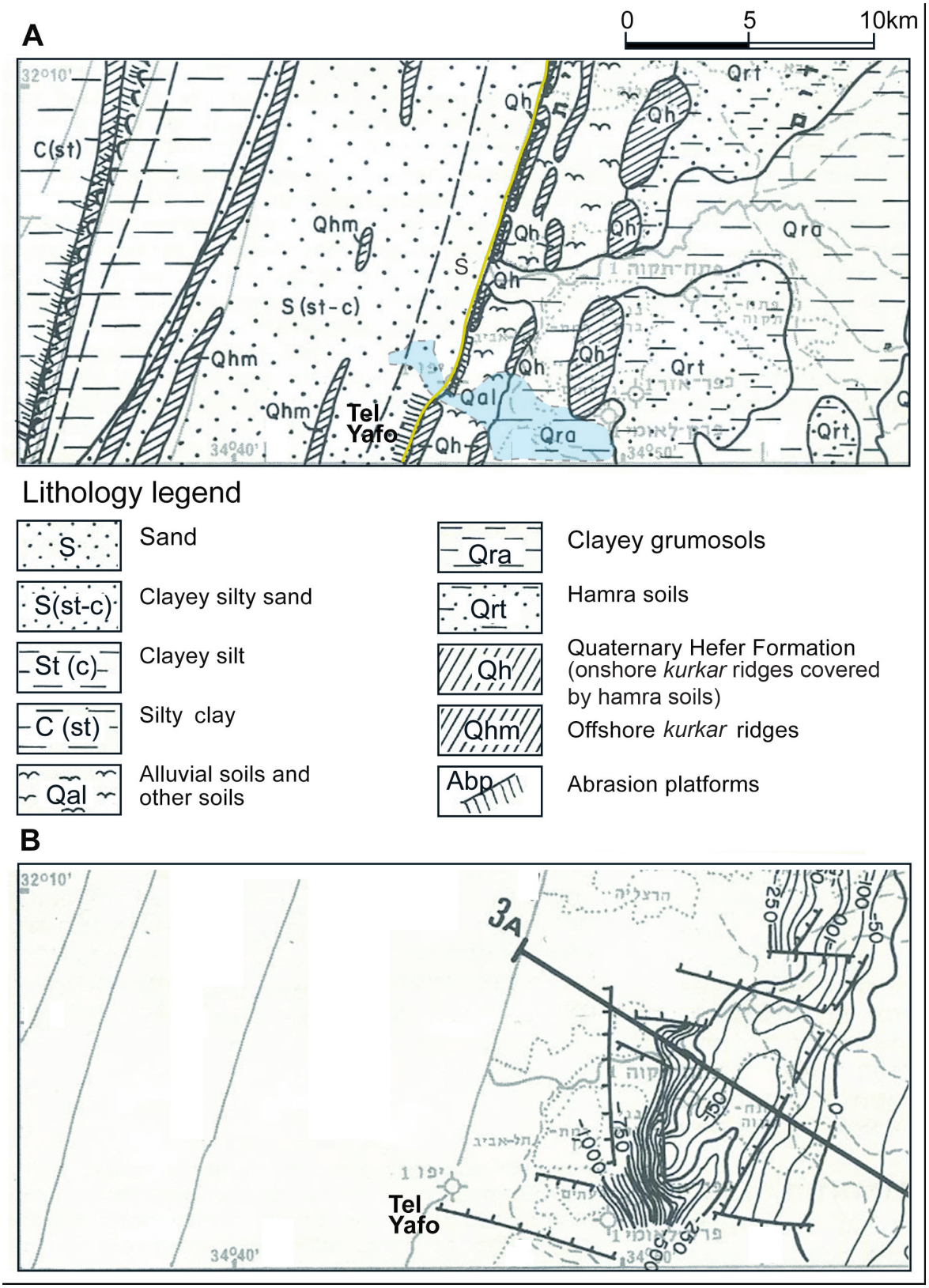

Figure 4.7. (A) Geological map of the southern Sharon and the continental shelf, including the study area. Note the yellow line representing the present coastline and the area marked with blue representing the gap between the *kurkar* ridge forming Tel Yafo and the lower lying rocky element north of the tell, which presumably allowed drainage of the former Ayalon River and connected the depression east of Tel Yafo to the sea. (B) Structural map of the southern Sharon and the continental shelf. Faults are shown as solid lines with tick marks indicating the down-thrown [down-faulted] side. Note that al-Bassa and the proposed path of the Ayalon River are situated in a structural graben, or a down-dropped basin (figure after Gvirtzman 1990:20, 46).

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(possibly the "Ditch" on Hanauer's map), spanned by a bridge, which appears to drain storm runoff from the part of the city built up and around Groningen Park, which lies in the center of the al-Bassa feature. Additionally, a *kurkar* ridge outcrop in the surf immediately north of the ravine mouth limits the northern extension and overall width of the topographic break. This geomorphological evidence further supports the hypothesis that the body of water to the east of Jaffa, the vestiges of which are presumably just out of view on the left in Roberts's scene, may have been quite sizable in antiquity and could certainly have provided a sheltered anchorage behind the linear lower lying rocky elements that form the shoreline to the northeast of Tel Yafo. Such was Avner Raban's (1985:27) suggestion concerning the original course of the Ayalon River in antiquity.

The question of the gradual disappearance of the al-Bassa swamp is then directly related to the loss of its water source, as well as local sedimentary processes. For some time, it has been assumed that its source was a channel of the Ayalon River (Raban 1985:27), which would have flowed westward forming an estuary that connected to the Mediterranean north of Tel Yafo. It was only later then that the course of the Ayalon River was diverted to follow the eastern side of a ridge extending from immediately north of Highway 44 (Derech Ben Tsvi) and west of the Ayalon Highway (Highway 20) to a point north of Ha-Rakevet St. and west of Ha-Masger St. (Figure 4.2). Rainey and Notley (2006:37) state that the Nahal Ayalon formerly emptied into the sea near Jaffa, but "prior to human habitation it was deflected northward by the intrusion of sand and had to flow behind a sandstone ridge until it joined the Nahr el-'Auja" [Yarkon River]. According to Raban (1985:27), a layer of river pebbles found in a core drilled off Jaffa's headland, which was not dated, "proves the theory of the existence of an ancient outlet of the N. Ayalon at this part of the shore." We have not been able to confirm this observation, but Raban (1990–1993:100) suggested the possibility that the change in the wadi's course was "an artificial enterprise" and posited that it may have occurred in the second millennium BCE as a way to improve the estuarine harbor at Jaffa, citing engineering parallels in the Nile Valley and Minoan Crete. By using the natural depression east of Tel Yafo, including the former river mouth or estuary of the Ayalon that was undoubtedly deepened by an ingression of the sea, such efforts would have yielded an inland harbor east of Tel Yafo with an area of approximately 30 to 40 ha. The date and feasibility of this proposed harbor, in addition to other harbor locations and migrations, are discussed below.

In conjunction with the drainage systems of seasonal wadis and the stable output of the Yarkon River, marshes and wetlands were probably prominent characteristics of the landscape of the coastal plain, similar to the landscape that prevailed northward on the Carmel coastal plain. Discontinuous longitudinal north-south *kurkar* ridges (onshore and offshore) parallel to the coastline and separated by longitudinal troughs characterize the southeastern Mediterranean coast (Figure 4.7A; Sade et al. 2006). Until two to three thousand years ago, most of the coastline of Israel that is now covered with sand consisted of wetland sediments accumulated in the coastal and eastern bedrock troughs (Sivan et al. 2004:1046; Sivan et al. 2011 and references therein). Coring along the Carmel coast (e.g., near Tel Dor), approximately 60 km north of Jaffa, showed that the coastal marshes created by these features dried up prior to the beginning of the Pre-Pottery Neolithic (ca. 8100 BP), yet marshes east of the coast (in the eastern troughs) survived into historical periods (Sivan et al. 2004:1046; Cohen-Seffer et al. 2005:117–118). During the early Holocene, rising sea level associated with wetter hydro-climatological conditions led to higher groundwater levels and to increased sediment transportation by longshore currents, resulting in accumulation of sandbars blocking the paleo-river mouths. These are the main processes explaining the origin of these wetlands, whereas their disappearance is not clear (Sivan et al. 2011:89–90). While swamps in the area to the east of Tel Michal, slightly over 10 km north of Jaffa, were drained in the Byzantine period, the valley bottoms along the coast were below the water table and were swampy as late as the early twentieth century (Karmon 1959; Grossmann 2001:13). Geomorphological studies indicate the existence of swampy ground east of the Exhibition Grounds site in Tel Aviv (to the north of Jaffa) (Golan 2009). Kaplan (Anonymous 1971:26) noted marshy soil with meager Early Bronze Age sherds overlying the Chalcolithic remains at the site. Tolkowsky (1924:2) even speculated that prior to the introduction of orange groves, marshes in the area east of Jaffa, such as al-Bassa, would have served as a natural barrier against approaching enemies. However, around Jaffa, the drainage of swamps was associated with efforts to enable settlement and agricultural production during the late nineteenth century (Kark 1990:9, 43, 46, 207).

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Efforts to Identify Jaffa's Inland Harbor

The cartographic, art historical, and historical evidence compiled above constitute proxy data revealing a need for further efforts to explore the potential existence of an inland harbor or anchorage to the east of Tel Yafo that would have served the settlement during the Bronze and Iron Ages. Additional data, however, supply further support in favor of the existence of an estuarine harbor or anchorage in the vicinity of the al-Bassa depression. These data stem from the georectification of Jacotin's map, analyses of digital elevation models for the area, and coring efforts in the vicinity of al-Bassa during the twentieth century.

As groundwork for the identification of Jaffa's ancient harbor, Jacotin's map from 1799 (i.e., Shacham 2011:fig. 13.4) was georectified. This process was intended to permit a ground-truthing of the al-Bassa depression. It revealed that the body of water labeled *Flaque d'eau* and *Etang* on Jacotin's maps does, in fact, correlate with the location of what is identified on later maps as al-Bassa, discussed above (Figure 4.8). While the process of georectification of early maps such as these involves inaccuracies, the result is sufficiently accurate to indicate the general location of this body of water given its size. A number of specific inaccuracies, however, should be noted. First, there is the question of the accuracy of the original 1799 map. Jacotin, for example, traveled with the French army during their campaign in Palestine. Jacotin states that he had to work under very difficult conditions while the army was either on the march or involved in heavy combat with Ottoman forces. The army also experienced a shortage of food and spreading diseases (Jacotin 1826:88). Because of marauding Arabs, he could not wander freely and had to stay near roads (Jacotin 1826:88). This means that areas further away from roads are mapped far less accurately than those adjacent to them. Fortunately, the area for our interests is situated between two roads. Taking into account the difficulties under which Jacotin worked and the methods he employed, such as measuring distances by time, a multitude

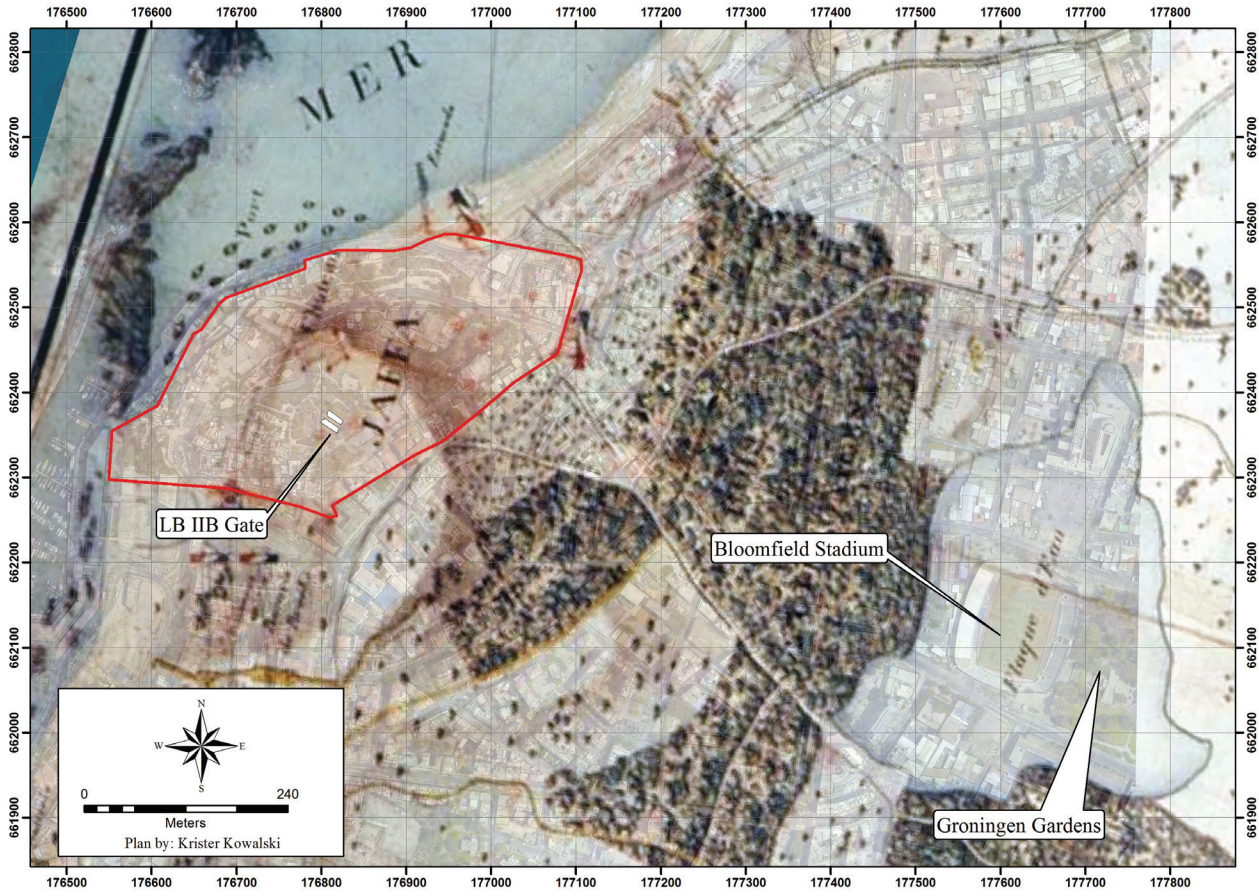

Figure 4.8. Georectified version of one of Jacotin's maps (see Shacham 2011) overlaid on an orthophoto of modern Jaffa and showing the location and orientation of the LB IIB Ramesside gateway (twelfth century BCE) excavated by the Jaffa Cultural Heritage Project; Israel Transverse Mercator (New Israel Grid) projection. Outline of the fortified city of Jaffa in Jacotin's map is highlighted in red. *Map by Krister Kowalski.*

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of errors in his maps are to be expected. Nevertheless, Jacotin completed the first trigonometric surveying of Palestine (Karmon 1960:153). Contrary to other maps of the same age, everything visible on these maps was, in fact, surveyed by Jacotin and, therefore, not copied from earlier maps as later became the case for many maps of Jaffa. The second source of inaccuracies originates with the georeferencing process itself. As is often the case when georeferencing very old maps, there are very few common control points that can be used. This is because, first, the landscape underwent substantial modifications over the more than 200 years since the mapping was done, and Jaffa is today part of the large metropolitan area of Tel Aviv. The countryside outside of Jaffa's walls, as seen in the old maps, is, therefore, now completely built over. Also, the old city of Jaffa itself changed considerably, and there are no remnants of the old city wall on the surface, which served as a distinct border between the "outside" and the "inside" and provided Jaffa with definitive boundaries. Second, Jacotin could only map rough outlines of the city itself or buildings in the surroundings. This leads to the problem that only corners of the city wall can be used as common control points. Although the city wall is no longer visible, its layout can still be estimated by the course of modern streets. Yefet St., for example, follows the course of the old moat (Figure 4.2; Pierce 2011:57). Unfortunately, there are no control points in the area outside the city itself. Despite these caveats, it appears that the body of water on the 1799 map was centered approximately 600 m to the east of Tel Yafo, in the general area today occupied by Bloomfield Stadium and the Groningen Park, east of Jerusalem Blvd. A geographical depression remains visible in this area today, where the streets slope toward the center of the body of water as it appears on Jacotin's map.

The use of hydrological geographic information system (GIS) tools enables the possibility to identify stream networks that could have fed this inland basin or estuary. This analysis employs a digital elevation model (DEM) obtained from the Shuttle Radar Topography Mission (SRTM) and the Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) data. The SRTM DEM features a 90-m contour resolution outside the United States, while ASTER data offer a 30-m resolution.[4] It is important to note that the error in the vertical and horizontal data of both DEMs can be substantial, especially in urban areas (Hirt et al. 2010). Nonetheless, the results reveal the underlying contours of the terrain for which the data are not otherwise readily accessible (Figure 4.8).

Both DEMs were run through the ArcGIS Hydrological Toolbox to determine drainage networks (Figure 4.9). Drainage Network Analysis indicates that the main stream and its feeders drained into a depression (marked by a dotted white line), which includes the original location of al-Bassa swamp (Figure 4.10 and Figure 4.11). A triangulated

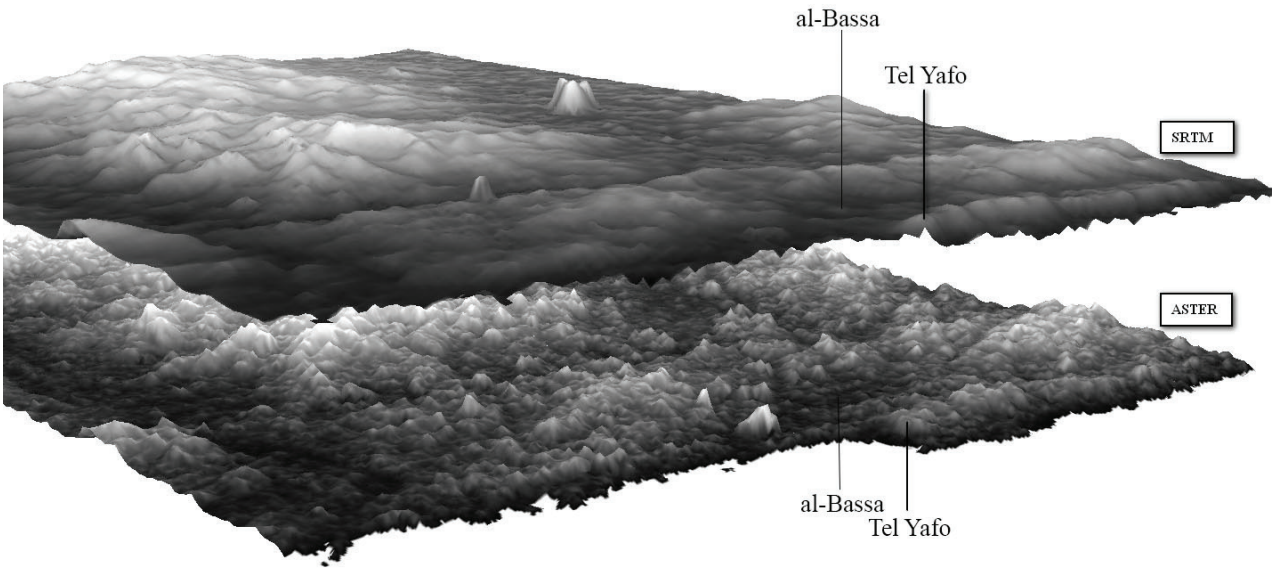

Figure 4.9. Visual comparison of SRTM and ASTER data created with ArcScene. While SRTM's resolution produces a more generalized terrain surface, ASTER depicts every large building as a vertically exaggerated anomaly. The al-Bassa depression to the left of Tel Yafo is visible in both layers. *Map by Krister Kowalski.*

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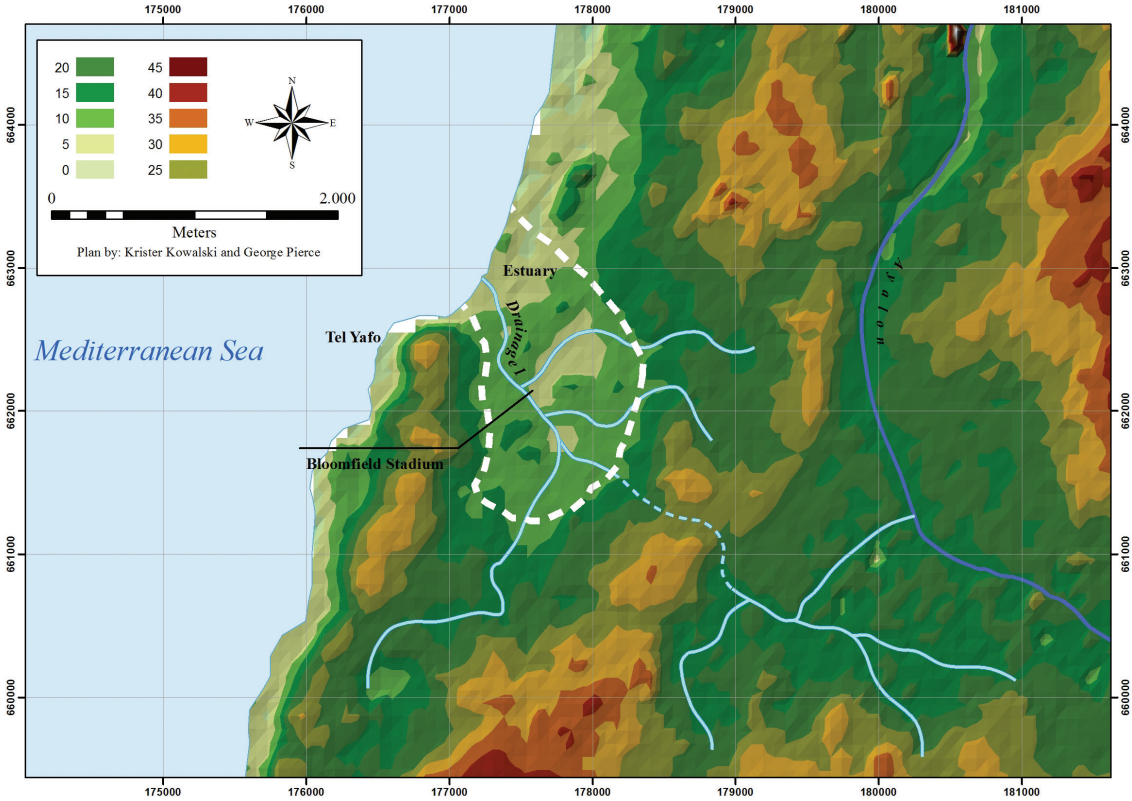

Figure 4.10. Drainage Network Analysis created with the ArcGIS Hydrology Toolbox using SRTM data (Drainage 1); Israel Transverse Mercator (New Israel Grid) projection. *Map by Krister Kowalski and George A. Pierce.*

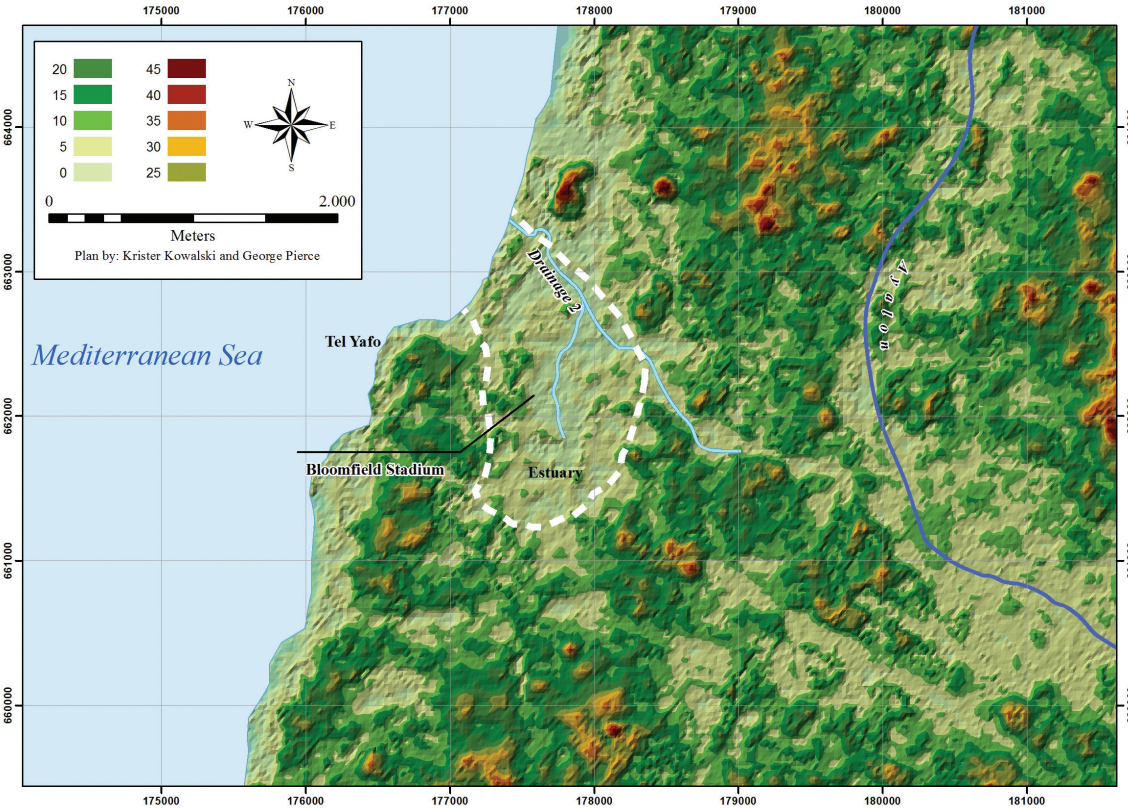

Figure 4.11. Drainage Network Analysis created with the ArcGIS Hydrology Toolbox using ASTER data (Drainage 2); Israel Transverse Mercator (New Israel Grid) projection. *Map by Krister Kowalski and George A. Pierce.*

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irregular network (TIN) for each DEM was generated to locate the drainages that combined to form the main outlet drainage of the estuary to the west. The SRTM data located the drainage about 350 m to the north of the tell (Drainage 1 in Figure 4.10), while the ASTER data placed the drainage's outflow roughly 800 m north of the tell (Drainage 2 in Figure 4.11). The slight differences between the results are likely a product of the errors in the DEM elevation data, since SRTM data tend to exaggerate elevation differences more than the ASTER data. The SRTM results (Drainage 1), however, correlate most closely with a drainage system still visible at the beach north of Jaffa.

In addition to some degree of error in the DEM data, other issues in these reconstructions merit discussion. For example, the Drainage Network Analysis shows only possible drainages based on the elevation data employed. They do not necessarily reveal the actual location of ancient streams or wadis. They also do not indicate the amount of water these drainage systems transported. The size of the estuary is, therefore, only an estimate based on the location of the drainages and indications of the size of the depression. Also, no connection to a water system to the east was identified in this analysis, which is complicated by the fact that the drainages around Jaffa are isolated from the ancient drainage system.

Despite these caveats, the DEM data permit a fairly reliable reconstruction of the paleo-topography of Jaffa's environs. While the SRTM data generate a situation closer to that presently attested, the combined results from these drainage models, shown as the dotted lines around the estuary and its mouth in Figures 4.10 and 4.11, suggest the situation in antiquity. The significance of this is that the estuary could have featured a substantially wide mouth with a sufficiently deep center able to accommodate the passage of Bronze and Iron Age ships. In a W-E profile generated from these data, the al-Bassa depression is easily identified just to the east of modern Bloomfield Stadium (Figure 4.12 and Figure 4.13), which also makes clear the heights of the *kurkar* ridge on which Jaffa was established (now Tel Yafo) and that of the underlying ridge to the east. These ridges were responsible for limiting drainage of this area and, consequently, would have had significant control on estuary morphology.

In addition to the topographic data, five cores taken in 1933 and in 1964 reveal the underlying sedimentary sequence (Table 4.1; Figure 4.14 and Figure 4.15). The bedrock in the vicinity of al-Bassa consists of calcareous sandstone overlain by light brownish to ochre clayey-silty sand (loam), both of which are best understood as part of the upper Hefer Formation of the Pleistocene Kurkar Group, distributed in the coastal plain and the continental shelf of Israel (e.g., Gvirtzman et al. 1997; Avnaim-Katav et al. 2012:676–677). In well logs, the uppermost sedimentary unit has been described as dark gray to black sandy, silty, clayey sediments, which we interpret as having been deposited in a low-energy environment that could include a fluvial valley mouth/estuary, a lagoon, or coastal wetlands.

Tell Mashuk, a potential candidate for Paleo-Tyre on the littoral opposite Tyre in Lebanon, may serve as an

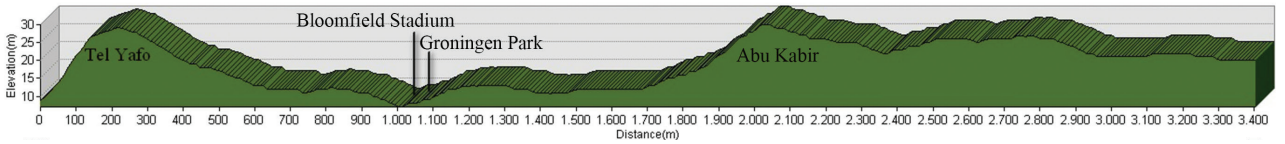

Figure 4.12. West to east elevation profile of ridges and depressions based on DEM data. See Figure 4.13 for location. *Map by Krister Kowalski.*

Table 4.1. Locations of five cores made in 1933 and 1964 in the vicinity of al-Bassa.

JCHP Designation	GSI No.	Source	Location (English)	Date	Core Length (m)	Elev. (m, rel. SL)	North	East
1933-001	3728	Yafo Municipality	Yafo (al-Bassa)	1933	53	6.2	162.2	127.4
1933-002	3729	Yafo Municipality	Yafo-Migdal Hamayim	1933	30.6	3.5	162.2	127.4
1933-003	3730	Yafo Municipality	Yafo	1933	49.3	8.2	162.22	127.52
1964-002	3731	Mekorot (Israel national water company)	Makhsom Dan 3	1964	115.3	7.4	162.13	127.9
1964-001	3725	Mekorot (Israel national water company)	Makhsom Dan 4	1964	118.5	7.5	161.916	127.719

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Figure 4.13. Location of west-to-east profile (see Figure 4.12) from the top of Tel Yafo on the west through the depression (i.e., al-Bassa) at Bloomfield Stadium to the east of Abu Kabir. *Map by Krister Kowalski.*

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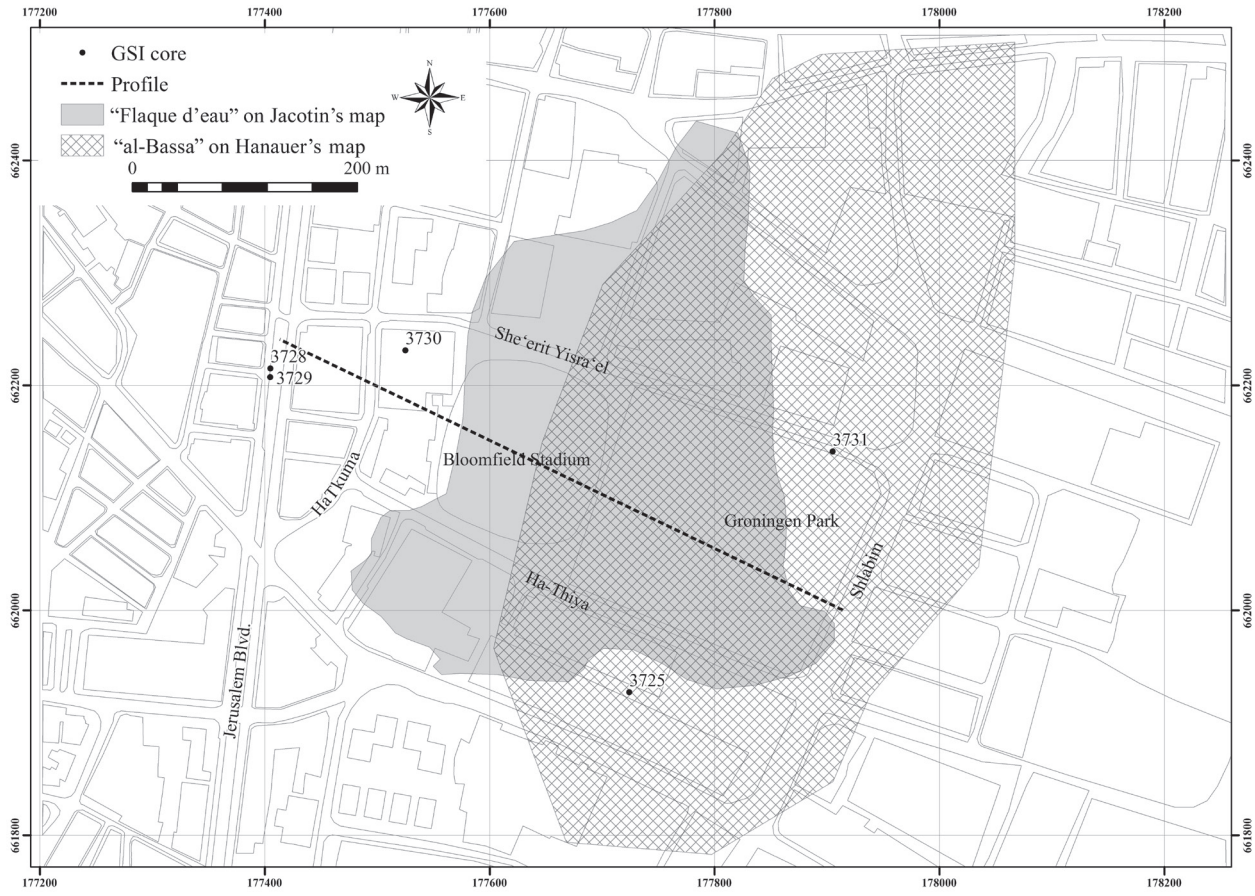

Figure 4.14. Locations of cores taken in 1933 and 1964 within the al-Bassa depression; Israel Transverse Mercator (New Israel Grid) projection. *Map by Krister Kowalski.*

analogy for the environs of Jaffa, if Jacotin's *Flaque d'eau* was a remnant of an estuarine harbor, as suggested by the preceding analysis (Marriner, Morhange, and Carayon 2008:1305–1306). Geoarchaeological studies of the sediments near Tell Mashuk indicate that the coastal environment was flooded 6,000 years ago, and an estuary with communication to the sea subsequently would have served as the likely Bronze to Iron Age anchorage. Concerning the silting and eventual blockage or infilling of Jaffa's probable estuary, it is likely that "in the absence of a fluvial flushing system, any inlet would gradually have been blocked by beach ridge accumulation" (Marriner, Morhange, and Carayon 2008:1305–1306). At Tell Mashuk, for example, once the bar had formed and had cut the estuary off from the open sea, the area became marshland and remained so until the nineteenth century.

A parallel course of natural events should be considered for Jaffa in which the basin adjacent to the city was an estuary that functioned as a harbor during the Bronze and Iron Ages with the eventual formation of a beach accretion ridge that formed the lagoon, cut off from the sea during the late Persian or Hellenistic periods. The estuary formed by the previous outflow of the Ayalon River may have been protected from open marine waves and currents, as well as associated sediment influx, by offshore bedrock ridges or reefs, much like the northern harbor of Tyre in antiquity (Marriner et al. 2005:1319) or by a baymouth bar or barrier-spit complex. Over time, the body of water was filled with sediment deposited as, but not necessarily limited to, fluvial gravel-sand-silt, shoaling lagoon sand-silt, marine storm washover, paludal mud, wind-blown silt, the fine material from decomposition of mudbrick constructions, and the refuse generated by use of the harbor as a dump as evidenced by the wood, leather, ceramics, and macrofauna recovered from cores of Tyre's northern harbor (Marriner et al. 2005:1324). With regard to terrestrial-derived sediment, Sandler and Herut (2000) have shown that sediment supplied to the Israeli coast and shelf has a significant component of stream-derived clay along with a minor windblown component.

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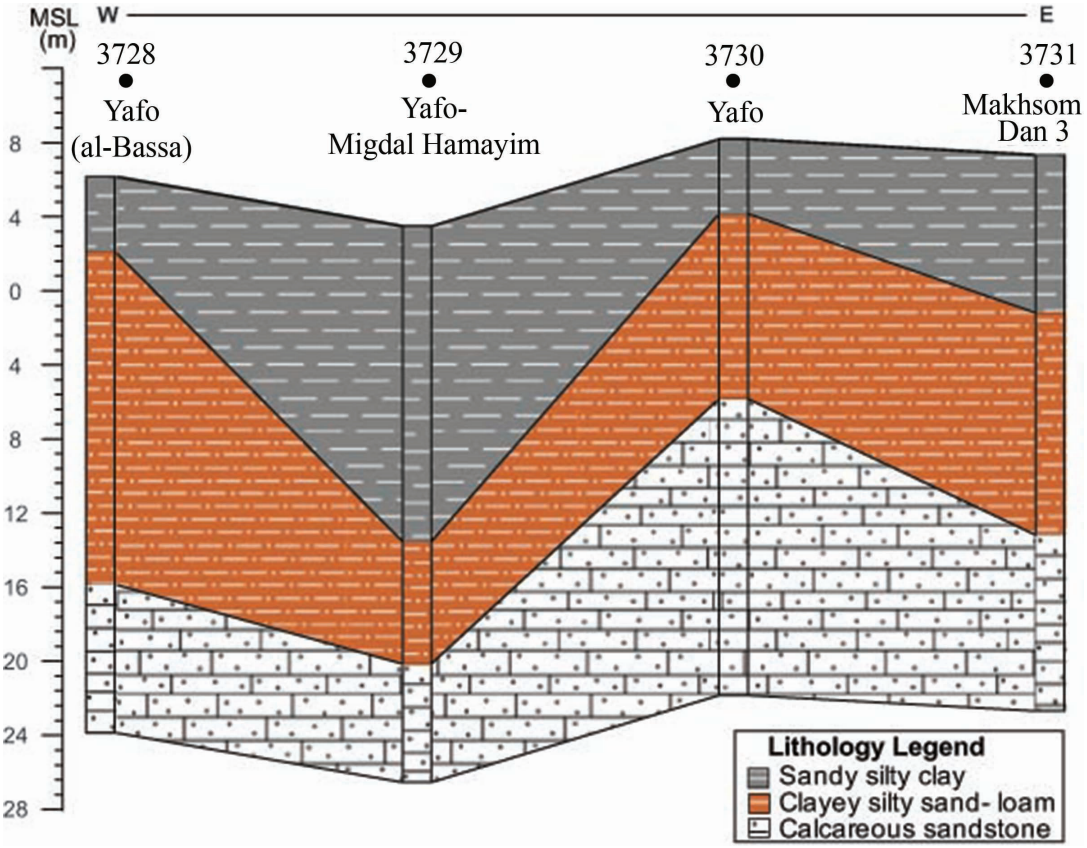

Figure 4.15. West to east cross section of sedimentary units based on four cores completed in 1933 and 1964; elevation of core top as reported but not verified.

Remnants of the al-Bassa swamp reappeared almost annually following winter rains until the early part of the twentieth century. The remains of the depression appear to be indicative of the center and deepest parts of the original stream bed and estuary. The Ramesside gate of the Late Bronze Age (twelfth century BCE) excavated by the Jaffa Cultural Heritage Project since 2011 is revealed to align approximately with this depression and may likewise suggest the direction of the harbor's landing, tracing an east-southeast line from the southeastern side of the tell (Figures 4.8 and 4.13). Although it cannot be used to pinpoint the missing features with accuracy, this analysis is useful in defining the location of the center of the estuary and potential anchorage located to the east. The line of the gate appears, therefore, to reflect a compromise in the gate's orientation by serving both the harbor to its east and the road leading away from the site, which would have circumscribed the southern end of the harbor to connect with routes toward the south, east, and north.

Conclusion

A review of the available evidence for Jaffa's harbor prior to the Classical period supports the suggestion that an ancient harbor or anchorage was located to the east of Tel Yafo, in the area east of Jerusalem Blvd. surrounding the area now occupied by Bloomfield Stadium and Groningen Park. If this hypothesis is correct, then this harbor appears to have gone out of use prior to the First Jewish Revolt (ca. 70 CE) and perhaps some centuries earlier, and for this reason, Josephus characterized Jaffa's harbor as inadequate. Historical maps and illustrations reveal that al-Bassa is likely to have been a late-surviving remnant of a body of water that served in ancient times as a sheltered harbor or anchorage. This harbor was likely an estuary or lagoon formed by the debouchment of the original course of the Ayalon River to the north of Tel Yafo. The site itself may have comprised two urban nuclei with a citadel or upper city on the present mound and a lower city near the harbor, as at Sidon and Beirut, and this possibility should also be explored further.

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Notes

1. Throughout this chapter, we employ the terms *harbor* and *port* to distinguish between the role that Jaffa played as a place from which ships went to and fro (a *port*) and reference to a specific physical, manmade, or natural location or installation around Jaffa (its *harbor[s]*) in which ships could be sheltered. The distinction is clarified by the recognition that a port can exist without a proper harbor per se. Ships could, for example, anchor offshore while employing smaller craft to bring goods ashore despite the nature of the coastline. It is also possible that a single port (i.e., a city functioning as a port) may feature multiple, contemporaneously functioning harbors or, as we would argue here, a port might witness substantial modifications, either natural or anthropogenic, such that the location of its harbors shifted over time.

2. According to a brief column in *Steam Shovel and Dredge*, "commensurate with harbor improvement, the city of Jaffa itself is making plans to come out of its lethargy and reap rich rewards," which included proposed waterfront construction of warehouses, restaurants, hotels, and private residences (Anonymous 1922). Only, however, since the late 1990s have such plans actually gained steam and various such constructions have been undertaken, albeit largely through the revitalization of older structures.

3. The authors do note, however, that in various places, the accumulated sand was as much as 3.5 m thick (Sharvit and Galili 2002:54*).

4. The SRTM data were obtained through the "DEM Explorer" website created by the Center for Spatial Information and Science and Systems of the George Mason University. ASTER data were downloaded directly from the website of the Japanese Ministry of Economy, Trade and Industry, NASA's partner of the ASTER program. The raster files were cut out to the area around Tel Aviv.

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PART II

Historical and Archaeological Studies of Medieval and Ottoman Jaffa

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Chapter 5

The Stone Door of a Jewish Burial Cave from Jaffa

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A stone door from a Jewish burial cave was discovered in 2006 during salvage excavations in Jaffa's Flea Market. Embedded in a Crusader wall and out of its original context, it probably originated in one of Jaffa's two known Jewish cemeteries from the Roman and Byzantine periods. The stone door sheds additional light on the local Jewish community, of which there are rich textual testimonies, yet so far relatively scant material evidence.

A stone door from an unidentified Jewish burial cave was discovered during salvage excavations in 2006 at Tanhum St., in Jaffa's Flea Market.[1] The door was incorporated in secondary use in the foundation course of a Crusader period dwelling.

The Stone Door

The roughly square door (56 × 61 × 10 cm) was carved out of a local *kurkar* sandstone block (Figure 5.3). It has a 2-cm-wide recessed frame, apparently made for better accommodation into the burial cave's entrance. A circular hinge (9 cm in diameter), of which the bottom part is missing, was vertically fashioned along its right frame. A narrow rectangular groove (4 × 10 cm) was drilled through the middle of the opposite frame to adjust a locking mechanism. Two diagonal lines 0.70 m long each were incised across the stone face, forming an inverted triangle at the upper half and an upright triangle at the lower. The bottom triangle was subdivided by a vertical line incised across its center. A schematic five-branch candelabrum (menorah) was etched within the upper triangle (Figure 5.4). The candelabrum stands on three legs 6 cm long, resembling a reversed trident, with 2-cm-long feet protruding outward. The upper and lower branch pairs (17 cm and 30 cm in diameter, respectively) attest to the carelessness of the engraver, as the branches are of different lengths compared with their opposite numbers.

Archaeological and Historical Context

The present door joins several other artifacts with Jewish associations to have surfaced in decades of extensive archaeological work in Jaffa (Arbel 2016). Other Jewish-related artifacts comprise the well-known inscription mentioning a certain Judah, who was employed as market inspector (*agoranomos*) during the rule of Nerva and Trajan (Kaplan and Ritter-Kaplan 1993:659), several ossuaries (Chapter 15, this volume), and fragments of chalkstone vessels. Knife-pared lamps that are far more common in Jewish sites than in pagan settlements also feature in Jaffa's ceramic assemblages, and a hoard of Hasmonean coins was discovered on the mound.[2] To date, no structures of unequivocal Jewish identification

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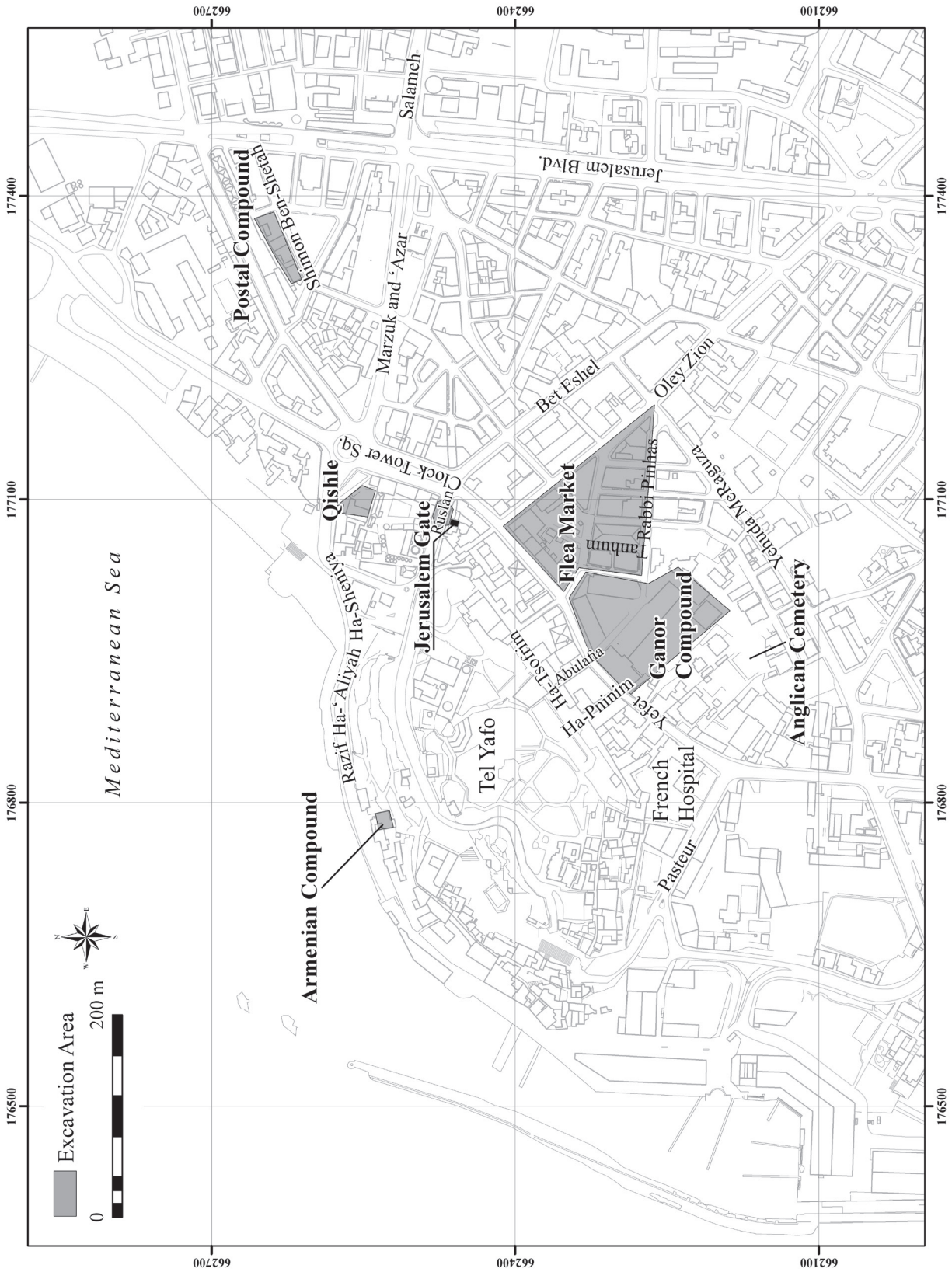

Figure 5.1. Map of Jaffa showing Flea Market and location of Tanhum St. *Map by Krister Kowalski.*

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Figure 5.2. The tombstone at discovery embedded in a Medieval wall. *Photograph by Lior Rauchberger.* Photo B71587. *Courtesy of the Israel Antiquities Authority.*

Figure 5.3. The tombstone. *Photograph by Amir Gorzalczany.*

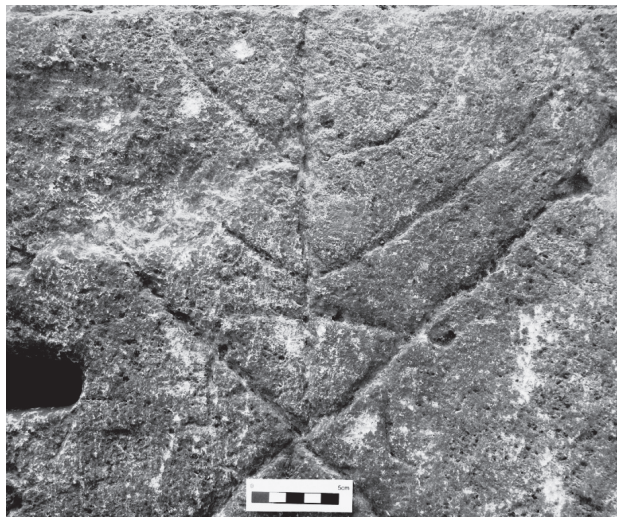

Figure 5.4. Detail of the incised menorah. *Photograph by Amir Gorzalczany.*

such as synagogues or ritual baths have been identified.[3]

Yet historical records attest to the existence of a thriving Jewish community in Jaffa at least since Hellenistic times (Notley 2011). The massacre of its members by their pagan neighbors gave the early Hasmoneans a pretext for conquering the town, which then became an important harbor for their emerging kingdom (2 Macc. 12.3–7; 1 Macc. 10:75–76, 12.33–34, 13:11, 14:34). Jaffa took an active and tragic role in the First Jewish Revolt against Rome (J. *BJ* 2.507–508, 3.419–427). A swift recovery led to a long and peaceful period spanning through late Roman and Byzantine times, when the city, renamed Flavia Ioppe, grew and prospered. As indicated by the above-mentioned *agoranomos* inscription, the Abu Kabir gravestones (see below), and numerous rabbinical passages, a large Jewish community resided there along with the pagan and Christian populations.[4] As a symbolic reminder of the Temple service, the menorah was among the most frequently depicted religious-artistic images in Jewish material contexts and can be found on coins, walls, lamps, glass vessels, furniture, synagogues, and commonly in funerary contexts (Tsafrir 1988:30–31, 147, 289, 298–299, 374, 399–400, 421–422). The menorah engraving therefore leaves little doubt that the people interred in the cave to which the stone door belonged had been members of that community. The pattern of cross-diagonal lines against which the menorah was etched is also familiar from Jewish funerary material culture, as it appears in painted or engraved forms on numerous Jewish ossuaries from the Early Roman period (e.g., Rahmani 1994: Pl. 41, No. 290, Pl. 71, No. 478 L, 480, Pl. 88, No. 608 R, B, Pl. 92, No. 634 F, B, Pl.113,

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No. 784, B, R). Another example from the same period is a graffito on a vestibule wall of the monument known as Jason's Tomb in West Jerusalem, where a menorah stands on a platform decorated with the pattern (Rahmani 1994:68, figure No. 51). That pattern may be intended to evoke a wooden lattice door to a courtyard, as is also known from Roman wall paintings of the time (Rahmani 1994:30–31).

The Stone Door's Original Setting

The Jewish custom of burial in caves has its origins in First Temple days and remained standard practice among those who could afford it from the Hasmonean to the Byzantine periods. Burial caves with Jewish affiliation that were sealed with swiveling stone doors are known from numerous sites.[5] The examples from Beth She'arim, Kafr Yasif, and Ibellin, like the one from Jaffa, are decorated with the menorah image; in Cave 13 at Beth She'arim, the menorah is incised in the lintel above the door. Despite variations in scale and architectural layouts, these caves shared basic characteristics. Stone-cut staircases led down to the entrances where the pivoting doors were positioned and the inner arrangement comprised one or more halls with burial niches or troughs hewn into the surrounding walls. Swiveling doors were also used in Jewish mausolea (see below). The cave to which the Jaffa door belonged probably corresponded to one of these two general types.

The question of the original location of the Tanhum St. stone door remains open, yet in all likelihood, it belonged to one of the two Jewish burial grounds discovered in Jaffa and nearby: the Abu Kabir necropolis and the recently discovered cemetery at Shimon Ben Shetah St. The latter site is covered in detail in Jakoel's contribution to this volume (see Chapter 15). A brief outline of the Abu Kabir option suffices for the purpose of this chapter.[6]

The expansive Jewish cemetery of Abu Kabir, covering approximately 10 ha, is located between Tel Aviv's present-day streets of Herzl and Kibbutz Galuyot, approximately 1 km east of Tel Yafo. The cemetery contains dozens of burial caves dated to the Late Roman and Byzantine periods, mostly third to sixth centuries CE (Price 2003:14; Veronese 2009; Ecker 2010; Jakoel 2013). More than 80 grave markers known to have originated from this necropolis (Price 2003:2–3; Veronese 2009) bear incised Hebrew, Aramaic, and Greek inscriptions featuring typical Jewish names and religious symbols (Figure 5.5).[7]

During the nineteenth and early twentieth centuries, the cemetery was considerably compromised by locals quarrying it for building stones. The extensive damage was first discussed by Charles Clermont-Ganneau in 1874, who reported tombs being "exposed every day to the light by the *fellahin*" (Clermont-Ganneau 1874:3, 5). These *fellahin*, residents of the adjacent village of Abu Kabir, also removed any objects of interest they found in the process, including dozens of inscriptions. The German architect and archaeologist Conrad Schick, visiting the site a few years later, describes similar activities and comments that "wherever [the *fellahin*] dig they find rock-cut tombs" (Schick 1893:287). The devastation of the site proceeded well into the twentieth century. Samuel Tolkowsky (1924:168–169) laments that "the whole village of Abu Kabir and many houses in Jaffa itself are built of stones of this origin, and until the present day, tombs are being destroyed year after year for the same purpose." While destruction has stopped in recent decades, religious and political objections prevented a systematic archaeological investigation of the site. Sporadic salvage excavations prior to construction projects did take place, with over 50 caves investigated (Kaplan 1966; Bar-Nathan 2002:107; Levy 1988–1989, 1993; Ajami 2006; see also Price 2003:n. 8 for more references).

Figure 5.5. Inscribed gravestone from the Abu Kabir necropolis. *Photograph by author, courtesy Y. Levy, Israel Antiquities Authority.*

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The grave markers' inscriptions reveal that while some of the deceased were locals, others originated from as far as Alexandria, Cappadocia, Cyrenaica, and Tarsus. Some of the names mentioned on the stones, such as Ada, Nachman, Tanhum, and Pinhas, match those of scholars known from the rabbinic literature (Kaplan 1972:92, some examples: Meg. 16b; Ta'an. 16b, Lev. R. 6:5, Lev. R. 20:10), although the association is not secure. Several markers were adorned with the menorah motif (Clermont-Ganneau 1874:3, 5; Tolkowsky 1924:172; Lifshitz 1974:29; Klein 1971:38, 49; Price 2003:3). The distance of the cemetery from Jaffa itself finds explanation in rabbinical regulations addressing precisely this point. Following Avni et al. (2008), the "common range for medium-sized towns and villages was ca. 1 km," which is the distance between Jaffa proper and Abu Kabir (2008:207–208 and references therein). Hygienic reasons were reinforced with a ritual aspect, as corpses are considered impure in Jewish tradition (Robinson 1992:124).

Conclusion

The unfortunate looting of the Abu Kabir necropolis in the late nineteenth and early twentieth centuries illustrates its attraction as a quarry for building materials. The site may have undergone similar exploitation during the Crusader period. Transporting a stone over the short distance between Abu Kabir and Jaffa would have been simple for anyone using an ox or horse cart. Yet why would the Crusader builders invest that effort merely to incorporate the stone within a wall of a dwelling, when building materials could have been obtained from closer sources?

While the same question may be posed when suggesting the Shimon Ben Shetah St. cemetery as the source of the stone, this cemetery is located approximately 450 m from Tanhum St. where the stone door was discovered—less than half the distance to Abu Kabir. Even though the Ben Shetah tombs were not cut into the rock, the excavator (Jakoel 2013:106) still suggests that site as the source of the Tanhum stone door, pointing out the use of swiveling stone doors in Jewish mausolea in Tiberias (Vitto 2008:10–11). The prevalence of cross-diagonal decoration on contemporaneous Jewish ossuaries strongly supports her proposal. If so, the menorah illustration on the stone door from Tanhum St., albeit schematic, may be added to a very small assemblage of known representations of this significant ritual item from the Second Temple period (Hachlili 1988:251). Lacking further evidence to support either option, the question of the origins of the stone door remains unsolved.

Notes

1. This salvage project preceded extensive renovations of the Flea Market's infrastructure initiated by the Tel Aviv–Jaffa municipality (Peilstöcker et al. 2006; Arbel 2008; Arbel and Peilstöcker 2009). Excavations at R. Tanhum St. were directed by the author. Field staff included L. Rauchberger, M. Cohen, R. Haim, O. Ashkenazi, and R. Assis.

2. For a full survey of archaeological evidence of the Jewish community in Jaffa in the Roman period and relevant references, see Arbel (2016). Also see Arbel, this volume, Chapter 3, location 12 in Figure 3.1.

3. A public building adorned with mosaic floors carrying exclusively geometrical designs discovered at the Ganor Compound by Yefet St. is described by the excavators as a church, based on the eastern orientation of the apse and the historical information on a large Christian community residing in Jaffa during that period (Peilstöcker and Burke 2011). Yet a synagogue in Jaffa would have been similarly adorned and oriented. The functional purpose of the building thus remains unclear.

4. Chalk vessels are mentioned in rabbinical regulations and are characteristic of late Second Temple Jewish contexts (Magen 2002; Gibson 1983; Gal 1991; Cahill 1992). Knife-pared oil lamps were widely used by Jews during the first century CE (e.g., Barag and Hershkovitz 1994:43–58; Hershkovitz 1987; Syon and Yavor 2001:23) but were also found in much smaller numbers in contemporaneous Helleno-Roman urban centers (Hadad 2002:13–15; Sussman 1996:351; Smith and McNicoll 1992:127, pl. 87.4; Harding 1946:60, pl.20:2).

5. Examples include Caves I.12 and I.33 at Beth Guvrin (Avni et al. 2008:14–19, 45–48) and Caves 2 and 3 at Akeldama, Jerusalem (Avni and Greenhut 1996:26), Tiberias (Oliphant 1886:79–80; Avissar 1973:48; Hirschfeld and Reich 1988:117; Stepansky 1999:76*, fig. 6; Vitto 2008:10–12), Bethlehem (Macalister 1902), Haifa (Schumacher 1891:177, pl.III; Yanklevitz 2008:2), Rama (Eisenberg 2000:10), Dabburiyya (Zori 1977:108, no. 160, pl. 24:2), Ben Shemen (Reich 1982:pl. 3:1), Gush Halav (Vitto 1993), Beth She'arim (Avigad 1972:18–125; Tsafrir 1988:152), Kafr Yasif (Goodenough 1953–1968, 3:fig. 44), and Ibellin (Sapir 1953).

6. Until the discovery of the Postal Compound burial ground, the only indication of a burial cave or mausoleum near Tel Yafo consisted of the fragmentary stone door spotted out of context at Manshiyeh, a neighborhood that existed prior to 1948 on Jaffa's northern boundaries (Pinkerfeld 1955). The door is dated to the second to mid-third centuries CE, and the human faces with which it is adorned suggest a pagan association, although it should be noted that pagan motifs also appear in the Jewish cemetery from the Roman period at Beth She'arim. A fragment of another stone door showing the corner of an engraved lintel was recently found during archaeological inspection work at a site near Jaffa's harbor, probably having reached the place from un unknown origin as building material (L. Rauchberger and Y. Marmelstein, personal communication).

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Cemeteries containing probably pagan cist graves from the Persian-Hellenistic period and additional cist graves and sarcophagi of unclear ethnic affiliation have been found in recent excavations in Jaffa (Avner-Levy 1996; Arbel 2008; Arbel and Rauchberger 2015; Peilstöcker and Burke 2011:180; Jakoel 2013; Haddad 2011).

7. Gravestones from Abu Kabir, most of which were removed from their original locations in circumstances other than controlled excavations, were dispersed in various European museums and institutions. The most substantial collection, amassed by the Baron Plato von Ustinoff, is presently in the University Museum of Cultural Heritage at the University of Oslo. Seven of the gravestones were returned to Jaffa and were displayed at the local museum of antiquities (Ilan 1981; Price 2003:1–2 and references therein).

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CHAPTER 6

THE OTTOMAN PORT OF JAFFA:

A PORT WITHOUT A HARBOR[1]

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Despite its historic importance, the Ottoman port and its harbor facilities in Jaffa have received relatively little study prior to the author's recent investigations. Nonetheless, a variety of media, including wood-cut prints, paintings, maps, and historical documents such as correspondence, reports, and plans, permit an extensive description of it and its function from the late Medieval through Ottoman periods. The picture is one of a port that functioned despite the fact that its harbor facilities were less than ideal to serve the increasingly large ships that frequented Jaffa over the course of the Ottoman period.

The port of Jaffa is well known from biblical and classical traditions (see Chapter 4, this volume). Indirect reference to the existence of a harbor in Jaffa finds early mention in the Bible when Hiram of Tyre wrote to Solomon, "We will cut whatever timber you need from Lebanon, and bring it to you as rafts by sea to *Jaffa*; you will take it up to Jerusalem" (2 Chr 2:16). It is also from here that the prophet Jonah began his famous voyage that ended in the belly of a whale and where Andromeda was chained to the rock at the entrance to the so-called port. Nevertheless, from the Roman period, we are aware that pilgrims disembarked from ships into small boats, a few cable lengths offshore,[2] making a perilous transition across the surf to reach the city, only to encounter the first of many hurdles that faced them. Indeed, Josephus first described the dangers encountered by seamen trying to enter the anchorage (see J. *BJ* 3.9.3 cited in Chapter 4, this volume).

The present study attempts to describe a number of aspects of the operation of the port during the Ottoman period, based on various documents, iconography, plans, drawings, stories, and anecdotes. We will seek to understand the relevance of the term *port* in connection with Jaffa since it served as the gateway to the Holy Land and its main destination for exports, and yet its harbor since at least the Classical period has not been much more than a small, unsheltered anchorage or mooring basin. It clearly never afforded ships the necessary protection from the dangers of the Mediterranean, requiring them instead to anchor in deep water to the west side of a series of reefs and rocky *kurkar* limestone outcrops that offered only poor shelter, as it was not until the 1930s that the British Mandate authorities constructed a breakwater.

While many books and articles have referenced the harbor (e.g., Kark 1990; Raban 1994, 1998; Tolkowsky 1926), only one book is dedicated solely to Jaffa's harbor (Avitsur 1972). Although some works reference Jaffa as the commercial port of Syria (e.g., Panzac 1996), most refer to Jaffa as a transit station, en route to Ramla or Jerusalem. Some professional manuals describe the anchorage and its approaches, such as *Sailing Directions*

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(Purdy 1826). However, a great deal can also be learned from drawings and etchings, as well as from photographs taken by the American Colony photographers.[3] Stories by pilgrims and travelers as well as commercial records and statistics also contribute some information concerning the port's activities. Data concerning commerce are, however, scarce since there were substantial periods when the Turkish authorities forbade the export of goods from Palestine, and the trade that took place involved the authorities looking the other way (Zeevi 1996:162). A real treasure trove of information and excellent drawings was discovered by the author at the Centre des Archives du Monde du Travail (CAMT) in Roubaix, France,[4] some of which do not appear to have been previously published.

Jaffa in the Ottoman Period

The Ottoman period in Palestine has been divided by some authorities into four periods (e.g., Khatib 2003:29–31).[5] The first is the so-called Golden Age during the rule of Süleiman the Magnificent, between the years 1520 and 1566, when he refurbished the Dome of the Rock and built the present walls surrounding the Old City of Jerusalem. The central authority was powerful; taxes were collected and so forth. The disintegration of the Ottoman Empire embraced the second period, from Süleiman's demise until the end of the seventeenth century. The central authority lost control, and military menaces by European powers, mainly Russia, led to economic difficulties and devaluation of the Turkish currency. The central authority, which had to devote more energy to the consolidation of its position in Europe (Cohen 1990:99), started losing its grip on Palestine and the surrounding areas, where some local families had begun to accumulate power.

During the eighteenth century, the third period, the Ottoman Empire sustained substantial military losses, mainly to the Austrians and the Russians. Parts of the empire were now being ruled locally, and the Egyptian ruler, 'Alī Bey, dared to oppose orders given by the sultan ('Alī Bey 1816). Local pashas strengthened their rule and Akko (Acre) ('Akka in Arabic) became an important harbor. The fourth period commenced with Napoleon's invasion of Palestine in 1799 and terminated with its occupation by British forces in 1917. This period also saw the "rediscovery" of the Holy Land by European powers (Kushnir 1990:13). Many countries established local consulates, and in 1838, the Ottoman government allowed the establishment of a British consulate in Jerusalem, whereas prior to this date, consular delegations, usually represented by a local resident, had existed only in Akko, Jaffa, Ramla, and Haifa (Ben-Arieh 1979:112).

During the mid-nineteenth century, various maritime companies began to feature voyages to Palestine, and this period also saw the beginning of the Zionist returns. The opening of the Suez Canal (1869) contributed a serious economic boost to the area, and Jaffa's port started gaining momentum because of its relative proximity to Jerusalem, as opposed to the ports of Gaza and Akko, which suffered from the opening of the port of Beirut. This period also saw intensive mapmaking by cartographers, including Napoleon's cartographer and engineer Pierre Jacotin (1765–1827), who prepared 26 maps, of which six depict the coast of Palestine, as well as British cartographers who mapped western Palestine at the request of the Palestine Exploration Fund (est. 1865; Goren 2000:112) and many other archaeologists and cartographers who were active in the area during this period (Goren 2005).

The Ottoman Harbor

The harbor from the Ottoman period until the present was roughly triangular, with the apex pointing south, and was approximately 400 yards (ca. 366 m) long, according to a map prepared by Maj. Frederick H. Robe (see discussion by Shacham 2011:138 and 152, fig. 13.12). It accompanies a written report made by Lt. Col. Ralph C. Alderson dated June 10, 1841 (Alderson and Skyring 1841). A more precise bathymetric chart from 1865 shows the port to be approximately 450 m long and about 80 m wide at the base of the triangle (see Figure 6.1). This map is a copy of the British bathymetric chart by Lt. F. D. G. Bedford in 1863 made under the supervision of Capt. A. L. Mansell (Rosen 1992:64; see Figure 9.8). The most significant change, however, is that of the port's longitude, which rather than 34°44'E on the British map is misplaced at 32°36'E on the French map, approximately two full degrees to the west of its actual location.[6] The difference probably resulted from the fact that the French chart was made before the French had accepted Greenwich as the location of the Prime Meridian (1914), while earlier, the Meridian 0° was located in Paris. The pencil markings on this chart are a preliminary drawing for a nineteenth-century project by the French to rebuild Jaffa's harbor, discussed below.

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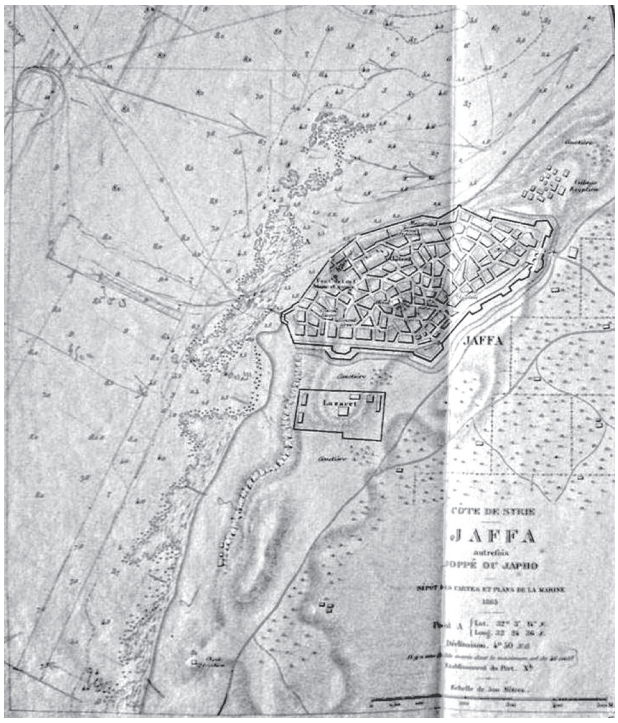

Figure 6.1. French marine chart, 1865 (copy of the Bedford chart). Chest 89, AQ 1690, Dossier 1. *Centre des Archives du Monde de Travail.*

The western side of the modern harbor was somewhat protected by reefs and a series of rocky outcrops. The rocks, so it seems, became an iconic feature of the harbor, as seen for example in the drawing made by Angelicus Maria Myller (Figure 6.2). The depth of the water in the area serving for mooring was between 1.8 and 3 m, as can be seen in the chart (Figure 6.1), or between four and six French pieds, as appears in the insert to the drawing prepared for Napoleon's siege of Jaffa (see Shacham 2011:137–138 and 150–151, figs. 13.9–13.10). A note written on this map identifies it as "Sonde du port de Jaffa dans la plus basse mer qui se trouve à 6 heures du soir. La plus haute mer est à 2 pieds au dessus du niveau de la plus basse."

The usual span between high and low tide, in this part of the world, is between 15 and 30 cm.[7] A difference of two pieds[8] would happen rarely and only during the Proxigean Spring Tide, an extreme phenomenon that occurs once every 18 months when the moon, either full or new, is at the point of its elliptical orbit closest to the Earth. Thus, if the French officer who prepared the note was not mistaken and recorded the tide level at six o'clock in the evening, this means that he had a very precise idea of the military requirements of the port at a certain time of the day on a certain date.

Figure 6.2. Woodcut of Jaffa by Angelicus Maria Myller, 1732. Engraving, 140 × 170 mm.

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The entrance to the port was both difficult and dangerous, especially during stormy weather, and probably took place through what is known today as the "western passage" (*boğaz*, Turkish for mouth or opening), between Andromeda's Rock and the rock now covered by the tip of the breakwater (see Figure 6.3, green arrow). The other entrance, the northern one (see Figure 6.3, blue arrow), was called *doubla* in Arabic (Avitsur 1972:114). Some researchers, such as Eli Haddad of the IAA (personal communication, 2012), believe that there may have also been a third entrance, a southern one, from the area known as the "Valley of the Moon" (see Figure 6.3, red arrow), although the evidence for this remains wanting.

The landward side of the harbor was mainly enclosed by the seawall, built by the Turks in 1804 after they reconquered the city. The wall extended for approximately 500 m (Sapir 1981:71), was about 2 m thick and 4 m high, and was fortified by seven small bastions or protrusions (Figures 6.4 and 6.5). The Ottoman customs house (Figure 6.6) was located on the end of the wall, and north of it there existed a narrow pier, the remnants of which can still be seen today (Figures 6.7–6.9). The pier, to the south of the customs house, was improved, probably by the British during the Mandate, as can be seen in the photograph of the landing of High Commissioner Herbert Samuel in 1920 (Figure 6.10).

The port afforded little protection, and ships could not enter it. An open harbor with shallow depths can provide only limited protection to small craft, so during winter, some of the boats were apparently relocated to the Yarkon River (Avitsur 1972:89). Regular, full-size ships, whether sail or steam, could never enter the port and had to drop anchor between .5 and 1 mile offshore (Figures 6.11 and 6.12). This applied to fifteenth-century galleys as well as to

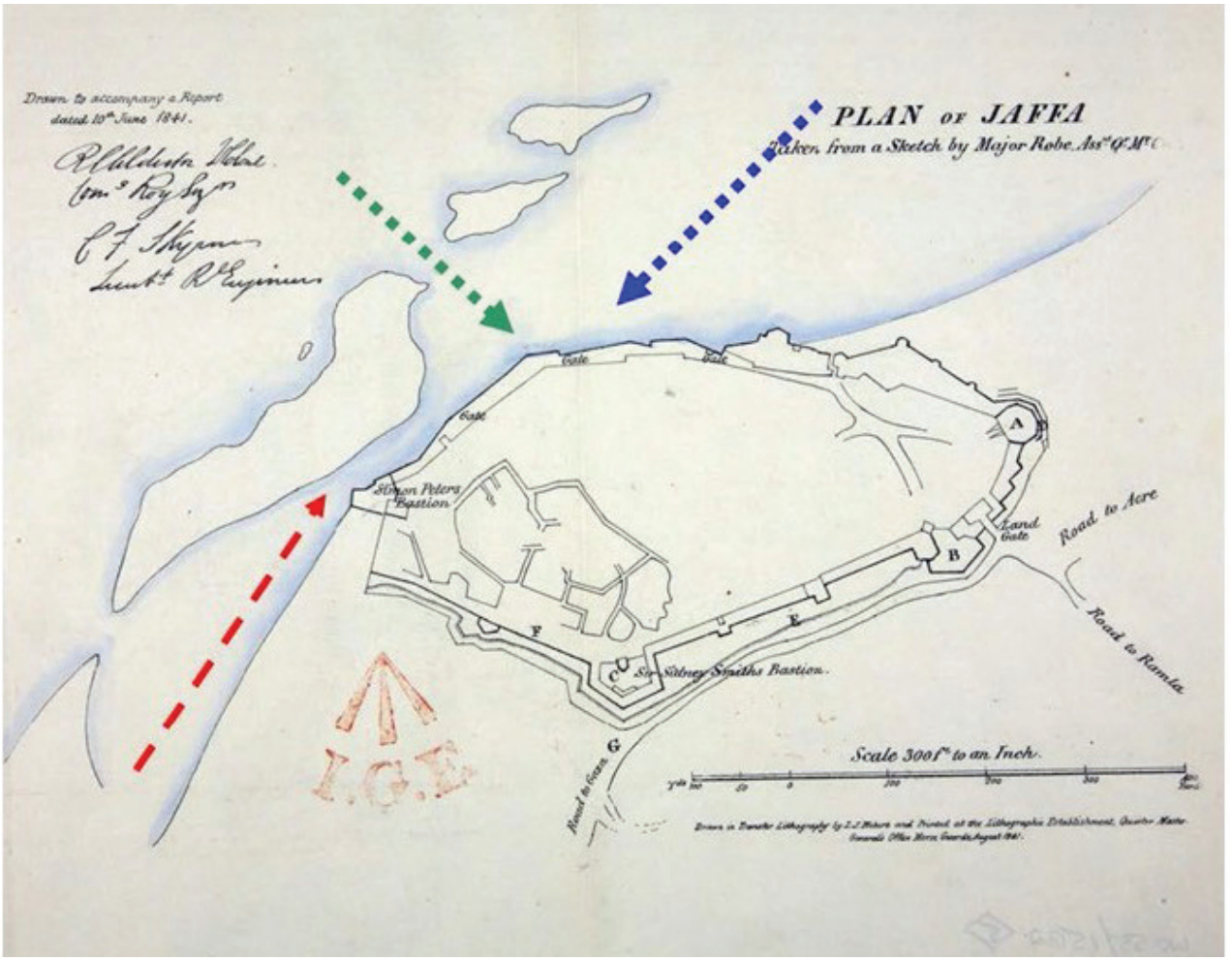

Figure 6.3. Map annotated by author to show possible entrances to the port by one of three options: (1) the "western passage," called "Boğaz" in Turkish (green arrow); (2) the northern entrance, referred to as the *"doubla"* (blue arrow); and (3) the southern route, called the "Valley of the Moon" (red arrow). The map accompanied a report about Jaffa by Col. Ralph Carr Alderson of June 10, 1841. *Courtesy of the National Archives, Kew, Richmond, Surrey, WO 55-1562-2.*

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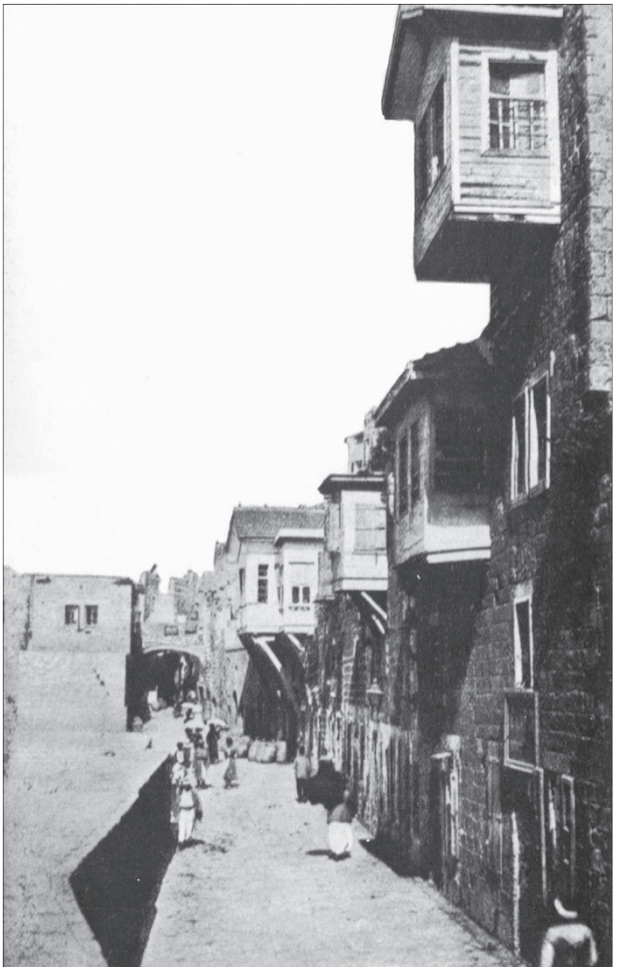

Figure 6.4. American Colony photo of the seawall during the late nineteenth century. View north. *Courtesy of Eitan Eden.*

Figure 6.5. The Ottoman seawall as it appeared during the late nineteenth century north of the port. View west. *Courtesy of the American Colony.*

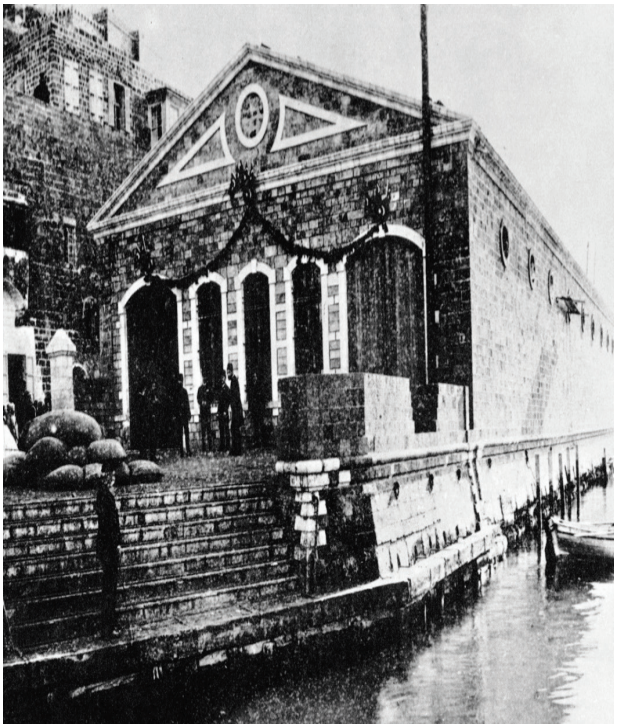

Figure 6.6. Ottoman customs house, 1887. View south. *Courtesy of the American Colony.*

Figure 6.7. The remnants of the Ottoman seawall below the British customs house, the location of the former Ottoman customs house. View north. *Photograph by Dan Mirkin, 2010.*

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Figure 6.8. Photograph of the remnants of the Ottoman seawall below the concrete superstructure of the British customs house (the former location of the Ottoman customs house). View east. *Photograph by Dan Mirkin, 2010.*

Figure 6.9. Aerial photograph of British customs house and adjacent street with remnants of Ottoman seawall and steps on quay below, in 2007. View southwest. *Photograph by Sky View, courtesy of the Israel Antiquities Authority.*

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Figure 6.10. Landing of the British High Commissioner Sir Herbert Samuel in 1920. Ottoman customs house and quay seen to the north.
Matson collection, U.S. Library of Congress.

Figure 6.11. Barrier rocks and ships in deep water. View west. Date uncertain.
Courtesy of the American Colony.

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Figure 6.12. Quay, barrier rocks, and American ship in deep water. View west. *Reprinted from Fortune Magazine*, 1937.

modern twentieth-century vessels. It is interesting to note the instructions in the U.S. *Sailing Directions*, which read as follows: "Off Jaffa there is anchorage in a depth of about 10 fathoms with the French Convent bearing 168° distant 1⅓ miles. The best berth is in depth of 7 to 8 fathoms with the French Convent bearing 116°, distant 1,200 yards" (U.S. Hydrographic Office 1951:235).[9]

Various writers described Jaffa's harbor as poor, noting that ships had to anchor outside and leave the area immediately even if the weather turned only slightly bad (Hasselquist 1766:115). In Napoleon Bonaparte's memoirs, he says about Jaffa's harbor, "Il y a un port en mauvais état pour les petits bâtiments, et une rade foraine passable" (Bonaparte 1830:139). Purdy (1826) provides the following description:

> YAFFA or JAFFA, the ancient Joppa, the Phoenician Japho, and port-town of Jerusalem, is 16 miles S.S . . . from Arsouf, and stands in latitude 32° 3' 25", and longitude 34° 45' 55". This is a small, fortified town, and its port is merely a long, narrow, shallow basin, enclosed by rocks, and the roadstead is unsafe in winter even for the boats of the country. . . . There is plenty of water here, but that within the walls is very bad. Within Yaffa, upon a black hill, stand two flat towers, by which it may be known. A ledge of rocks extends from the southern side of the port to the northward, and right before the town, forming the basin above mentioned. Ships may lie without this ledge, in 10 or 12 fathoms, good ground, with the two towers S.E. [S.E. by S.] This is the best road; farther to the southward the ground is not so good. To the southward of Yaffa the coast is foul, and affords no shelter for ships which may drive from their anchors in Yaffa Road: but to the northward, at about half a league, it is fair sandy ground; and thence northward, the shore is foul and steep, and the water very deep; so that, at a musket-shot off, you will find from 30 to 40 fathoms, as far as Mount Carmel, and the ground is so soft, that it will not adhere to the lead [Purdy 1826:317].

The American missionary, William McClure Thomson, wrote about his arrival in Jaffa:

> I have been in imminent danger myself, with all my family in the boat, and never look without a shudder at this treacherous port, with its noisy surf tumbling over the rocks, as if on purpose to swallow up unfortunate boats. This is the true monster which has devoured many an Andromeda, for whose deliverance no gallant Perseus was at hand [Thomson 1861:515–516].

Not only was the port dangerous during bad weather, but its position on a lee-shore (to which the wind blows) made it more dangerous still. It is of interest to read the report of British Vice-Admiral William Henry Smyth (1788–1865) about various harbors located in the Eastern Mediterranean:

> The most frequented ports and trading places are the unhealthy and dilapidated Iskanderun; Swaidiyah on the Nahr-el-'Asi (Orontes); Lataki (Laodicea ad Mare); the fair town of Tarabulus (Tripolis), or Tripoli, in the East; Beirut (Berytus); Saida (Sidon); Sur (Tyr); Akka or Acre (Ptolemais); Kaipha, under Mount Carmel; Kaissariyah (Caesaria), a tolerable anchorage under a heap of ruins; Jaffa (Joppa), the port of the Western pilgrims of the Holy Land; Scalona (Ascalon); and Ghazza (Gaza), which is backed by very fertile grounds. These places are resorted to by small craft only, in the fine season, for the whole is a dreaded lee-shore in Westerly gales [Smyth 1854:82].

To understand the danger faced by a ship on a "lee-shore," two facts are of paramount importance. First, sailing ships cannot sail directly into the wind. Commercial sailing ships, if well handled, can sail at about 60 degrees to the wind but, nonetheless, will also travel sideways or make leeway. Extremely good racing yachts could sail around 40 degrees to the wind with minimal leeway. A ship anchored off Jaffa, with an onshore wind, would therefore have great difficulties clawing off the shore. Second, one should keep in mind that the prevailing storms along these coasts are

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southwesterly (i.e., blowing from the southwest), turning west as they progress and so blowing onshore.

Sailing vessels were not the only ships to experience difficulties. Although a motor vessel with a diesel engine can start its engines and sail off at a very short notice, a steamship has to build up steam or maintain a head of steam if it wants to be ready to sail away at a moment's notice (see Figures 6.11 and 6.12, which show ships having to anchor far out in the open sea). These difficulties are reflected in a report made to the Société de géographie commerciale de Paris in 1880:

> Cependant, la rade de Jaffa est toujours dangereuse dans la mauvaise saison. L'embarquement et le débarquement des passagers et des marchandises n'a lieu qu'a des prix exorbitants. Dans la crainte d'être surpris par les vents mauvais ou de ne pouvoir s'éloigner assez à temps en cas de tempête, les navires à voiles sont obligés d'ancrer à d'énormes distances de la côte; et les bateaux à vapeur des diverses compagnies se trouvent dans la nécessité de rester continuellement sous vapeur afin de se tenir prêt à toute éventualité.[10]

Even Mark Twain (1835–1910) described the narrow and dangerous entrance to the port in his own special style:

> It was from Jaffa that Jonah sailed when he was told to go and prophesy against Nineveh, and no doubt it was not far from the town that the whale threw him up when he discovered that he had no ticket. Jonah was disobedient, and of a fault-finding, complaining disposition, and deserves to be lightly spoken of, almost. The timbers used in the construction of Solomon's Temple were floated to Jaffa in rafts, and the narrow opening in the reef through which they passed to the shore is not an inch wider or a shade less dangerous to navigate than it was then. Such is the sleepy nature of the population Palestine's only good seaport has now and always had. Jaffa has a history and a stirring one. It will not be discovered any where in this book. If the reader will call at the circulating library and mention my name, he will be furnished with books which will afford him the fullest information concerning Jaffa [Twain 1976:361].

There are many other similar descriptions, such as the report by Selah Merrill (1837–1909),[11] who described the port by saying, "The fact is that Jaffa has no harbor; there is a bit of water protected by a reef of rocks where small boats can be sheltered if they succeed in shooting themselves into it before a storm overtakes them" (Merrill 1893:289).

To sum it all up, it is clear that the port could only be operated through an intermediary: small boats which, propelled by oars and sometimes by sail, could cross the line of reefs and breakers and offload their goods and passengers from ships anchored outside. This obviously varied according to weather and season. The port and the city underwent changes during the Ottoman period. From a small ruined village at the end of the Mamluk period (Cohen 1985:55), Jaffa became a fortified town and, already at the beginning of the eighteenth century, a senior military officer was dispatched from Istanbul to command the fortress that was built on the hilltop in Jaffa (Cohen 1985:62). The

Figure 6.13. Illustration of Jaffa attributed to Bernhard von Breidenbach (1483).

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city and its port also developed as a commercial center (discussed below). The following is an attempt to describe the appearance of Jaffa's port as depicted by various travelers and reflected in the many images of the city and its harbor.

Illustrations of Jaffa's Harbor

Fifteenth and Sixteenth Centuries

The earliest illustration of Jaffa identified to date is attributed to Bernhard von Breidenbach (1440–1497) and dated 1483 (Figure 6.13; see also Mozer 2013). In it, a big oared galley with a large Latin sail is moored from the north with its bow on the quay. The drawing shows all of the elements that will become standard among fifteenth- and sixteenth-century illustrations of Jaffa and its harbor (compare the *Die Staten des Heiligen Landest* tapestry discussed below made in the Medieval "simultaneous" style.) (Tishbi 2001:82). In addition to the harbor itself, these include pilgrims, vaulted ruins, and the citadel (al-Qal'ah) on the mound. These motifs made their appearance throughout the sixteenth and seventeenth centuries as iconic elements of Jaffa's urban and port landscape.

The series of rocks bordering the anchorage on its west was not, however, depicted in any regular manner until the mid-sixteenth century. These rocks were significant not only because they provided a modicum of protection, but in a way they also became iconic of Jaffa. The earliest known representations of the rocky barrier appears in a tapestry woven for the German Prince Otto Heinrich probably around the year 1541, approximately 20 years after the prince had departed on a pilgrimage to the Holy Land (Goren 2007:499). The tapestry (Figure 6.14), *Die Stäten des Heiligen Landes*, is not limited to a depiction of the port but, in Goren's opinion, constitutes a "realistic" cartographic map of the Holy Land (Goren 2007:513). Although it depicts various places

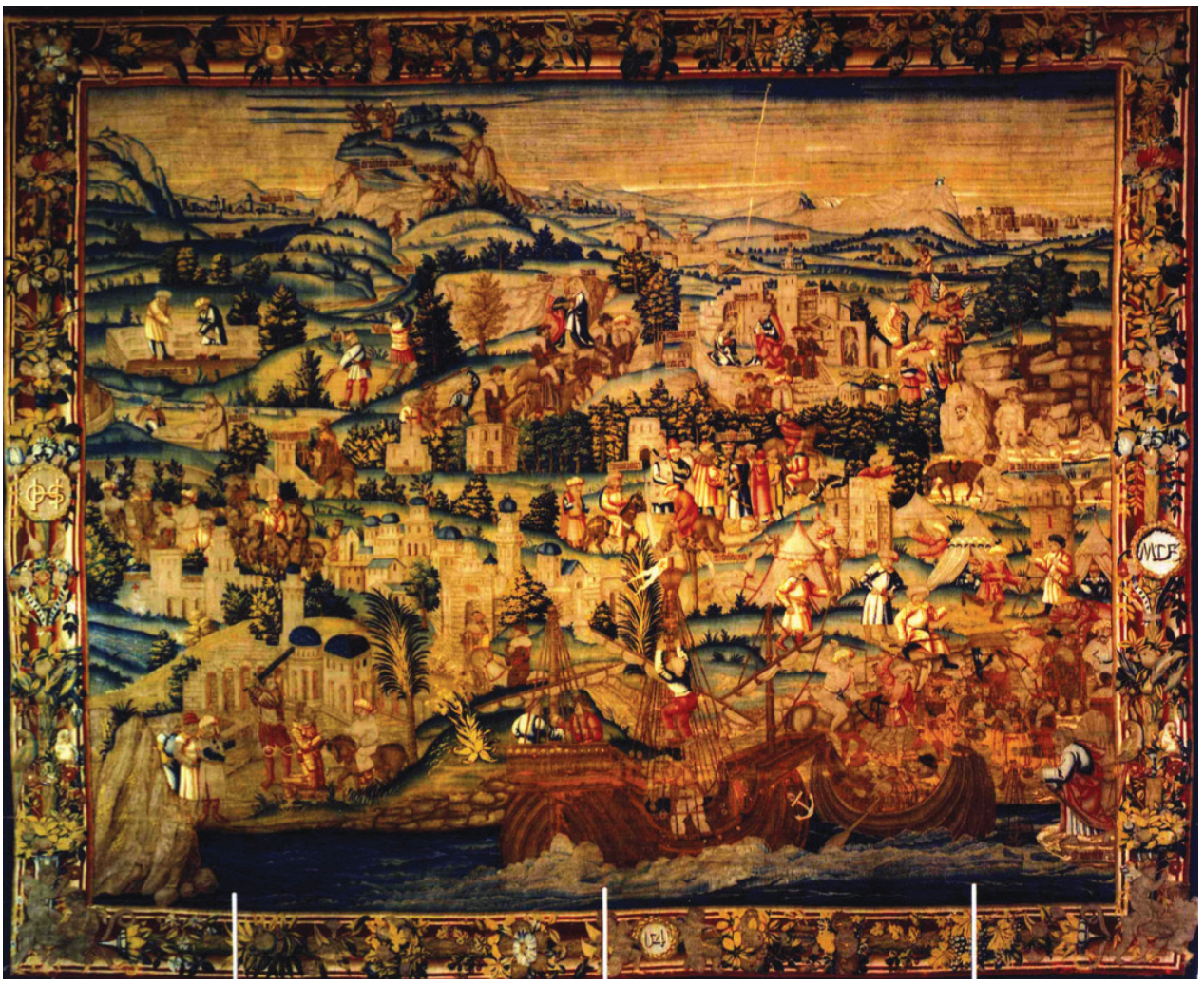

Figure 6.14. *Die Stäten des Heiligen Landes* tapestry, ca. 1541 (Goren 2007:513).

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and features about 35 inscriptions, the dominant element is that of the rocks shown on the starboard (right) side of the ships moored in the harbor and, also, the large solitary rock on the left side of the picture (Andromeda's Rock?).

What is the importance of an icon? Before the use of GPS, when seeking to locate their port of destination, seamen would try to identify some distant landmark, denoting the entrance to the harbor (see illustration at the top of Bedford map in Figure 9.8). This could be a cloud on a hilltop, a tower, ships' masts, or any other landmark. What the mariner initially saw when approaching Jaffa was the mound (Tel Yafo) and, later, the citadel atop it; upon approaching, the series of rocks would appear together with the surf breaking at the entrance. It is thus of little wonder that the phrase "Go to Jaffa!" and, in Dutch, "No Jaffa Gaan" (Yovel 2004:36) became a kind of curse, equivalent to "Go to hell!" It is also of little wonder that the series of rocks figures in the oldest depictions of Jaffa.

Figure 6.15, dated to 1587, is the frontispiece of a travelogue to the Holy Land by the Belgian pilgrim Jean Zuallaert (1541–1634) and has four features, which would constantly appear in many drawings. These include (1) the rocks, (2) a procession walking along the waterfront (pilgrims?), (3) the ruins, and (4) the citadel on the hilltop. The big ships appearing in the drawing were obviously born in the painter's imagination. Such big ships could never have entered the small anchorage.[12] Additionally, the ships depicted moored inside the harbor under normal conditions should be pointing their bows into the wind, and indeed if they have dropped an anchor, they would not be pointing in different directions. The ship out of the harbor is shown with sails already furled. Since it is not tied to any post nor is it at anchor, it would be bound to hit the rocks sooner or later. However, nothing in this depiction seems to be impossible since the flags on both the masts of this ship are blowing in opposite directions: one shows the wind blowing from the south and the other from the north.

All of these misrepresentations lead us to the conclusion that the artist was not aware of the implications of such details. Rather, the main elements appear to have been prerequisites for any illustration of Jaffa. A depiction of the "Port of Jerusalem" should contain pilgrims, ships, and Jaffa in ruins, with a small citadel on the hilltop. One should also note that in this drawing, north is indicated to the left (on the compass rose, bottom left), whereas the arrow pointing upward (usually signifying north in modern charts and maps) is surmounted by a cross since it points east to Jerusalem and other holy sites.

Figure 6.15. *Iaffa* (engraving, 89 × 122 mm) illustration on the frontispiece of a travelogue of the Belgian pilgrim Jean Zuallaert (1587:107). *Courtesy of the National Library of Israel.*

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Quite similar scenes appear in later illustrations by Henri de Beauveau (1615; Figure 6.16) and Aquilante Rocchetta (1630/1996; Figure 6.17). These are obviously copies or adaptations of the drawing in Figure 6.15 and contain the same four elements identified above. Such copies were quite common during that period (Rubin 1987:18–20). The drawing by Beauveau (Figure 6.16) is slightly different: there are no ships in the harbor, and the big ship is firing a cannon, whether as a salute to or protection against the small boat sailing toward it with a well-inflated Latin sail (Yovel

Figure 6.16. *Iaffa*, engraving by Henri de Beauveau, 1615. *Courtesy of the National Library of Israel.*

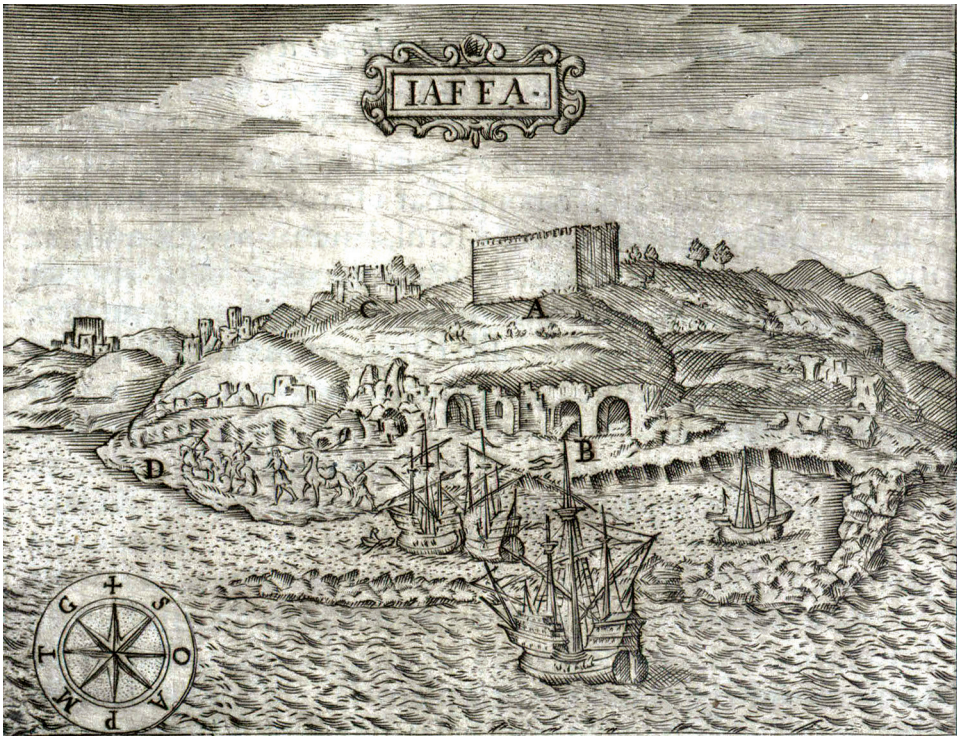

Figure 6.17. *Iaffa*, engraving by Aquilante Rocchetta, 1630. *Courtesy of the National Library of Israel.*

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2004:36). The drawing in Figure 6.17, in contrast, contains an additional important element: letters denoting various places: (A) the defensive tower of the Turks, (B) the abandoned "house of San Peter," (C) the ruins, and (D) the road to Ramla traveled by pilgrims (Reiner 1990:78). These labels suggest that the drawing was meant to be a guidebook of sorts since it was part of Rocchetta's book, *Peregrinatione di Terra Santa e d'altre provincie* (Rochetta 1630/1996). Although clearly influenced by the previous depictions of Jaffa, Electus Zwinner's depiction (Figure 6.18) is slightly different, since the view is from within the harbor and the rocks only appear on the right and not in the foreground. Zwinner (1661) was a German pilgrim who visited the Holy Land three times (Rubin 1987:56). Crescents atop the roofs of Jaffa's buildings were employed to denote city's Islamic affiliations. A more detailed presentation is contained in the depiction by Antonius Gonzales, a Belgian priest who visited Palestine as a pilgrim (Rubin 1987:102), and is dated to 1665 (Figure 6.19). The rocks are the dominant feature of the harbor, while several houses were added to the front plane, some of which have been suggested to be identified as buildings existing until the present (Schiller 1981:19). Again, although the compass rose is absent, it is clear that the north is not at the top of the drawing but rather at the left side of the illustration. The ship with its large fully inflated sail and with the wind astern (as shown by its flag) would appear to be in danger of wrecking on the wall. Although the vaulted ruins do not appear in the tapestry or the drawing by Gonzales (Figure 6.19), they constitute an important part of the iconization of the port, as discussed below and demonstrated by the complaints of pilgrims. Despite these issues, the common denominator in all these drawings is their perspective, drawn looking east from the sea with Jerusalem sometimes depicted (Figure 6.14) but more frequently omitted (Figures 6.15–6.18) or merely suggested (see "H" in Figure 6.19). All or most of the previous drawings, discussed above, some of which are a cross between a drawing and a map (as appears from the compass rose), depict the main attributes of maritime Jaffa: the harbor, the barrier rocks, pilgrims in transit, Jaffa's ruins, and the citadel fortress (al-Qal'ah) atop the mound.

Figure 6.18. *Iaffa*, engraving by Electus Zwinner, 1661. *Courtesy of the National Library of Israel.*

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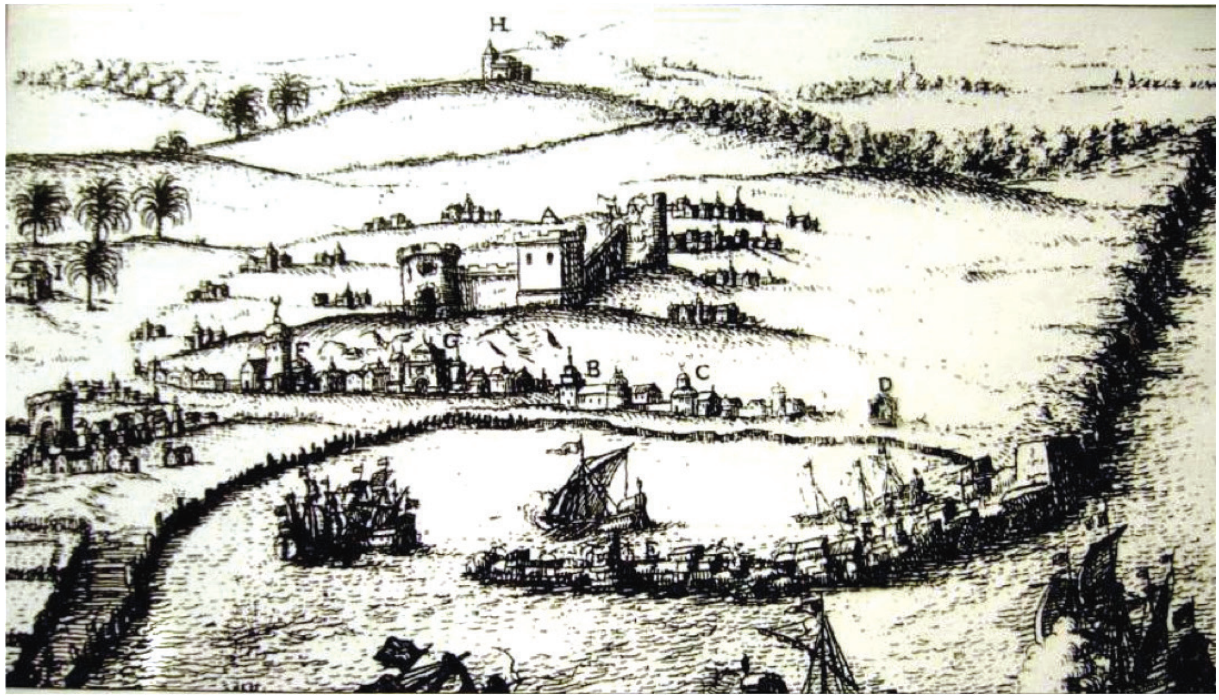

Figure 6.19. *Jaffa vel Ioppen* (engraving) by Antonius Gonzales from *Hierusalernse Reyse,* Antwerp, 1665. *Courtesy of the National Library of Israel.*

Seventeenth and Eighteenth Centuries

The Dutch artist and traveler Cornelis de Bruyn (1652–1726) states in his book that the drawing (Figure 6.20) is exact and was made by him from a ship's deck (de Bruyn 1725:142). The painter had clearly been looking over the reefs, which constitute the western "breakwater," but one can still distinguish the spot where the rocks are close to the shore, where some relatively rather large vessels are moored. The perspective in this drawing, as well as in the next one (Figure 6.21) in which the painter was looking at the harbor from the north, also shows the end of the reef. The vessels moored in the center of the basin (Figure 6.20) face the wind, while the boat sailing to the right, with the wind astern, cautiously uses only its foresail (as opposed to the mainsail), which it can easily release and "let fly" in order to lose way. The kinds of vessels depicted seem to be of ca. 1.0 to 1.5 m draft, and could have entered the harbor. The flag on the vessel in Figure 6.21 flutters toward the sea, and the shadows point west. This indicates that the drawing was made in the early morning when the sun rises, and the last of the easterly night breeze is still blowing. The drawing in Figure 6.21 shows a wide sandy area between the port's buildings and the water, somewhat like in Bauernfeind's 1888 painting of this location (Figure 6.22), but does not show a seawall. Does this mean the seawall was built later than 1698?

The next drawing was allegedly drawn in 1668 (Figure 6.23) and depicts a very imaginary and European Jaffa. It was produced by Olfert Dapper (1636–1689), a Dutch doctor who had never visited the Holy Land and based his description on stories heard from others (Dapper 1712:164–165). This drawing has been reproduced many times, in spite of its inaccuracies, depicting Jaffa as a bustling harbor.

The scientist and monk Augustin Calmet (1672–1757) is the author of the drawing in Figure 6.24 (Calmet 1730:846–847). This drawing incorporates all the iconic prerequisites, huge rocks, a ship approaching, and the citadel, smoke rising from its chimney, on the hilltop. According to the flags atop the masts of the ship entering the port, the wind is northerly. The sails on the vessel are inflated by the wind, somewhat contradicting the vessel's alleged progress: with the sails inflated as they are, the ship would sail backward. All of this constitutes an additional proof of the fact that Jaffa was sufficiently strong as an idea, capable of inspiring imaginary and entirely unrealistic depictions, largely magnifying its iconic characteristics. Each of these attributes nonetheless has its own meaning, directly connected with the port. The rocks signify the danger to life in approaching the anchorage; the caves and the rubble represent the extreme lack of comfort encountered by the pilgrims and the fact that the town is in a rather ruined

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Figure 6.20. *Ioppe* (engraving, 197 × 365 mm) by Cornelis de Bruyn from *Voyage au Levant*, Tome Second, Rouen (1725:243). *Courtesy of the National Library of Israel.*

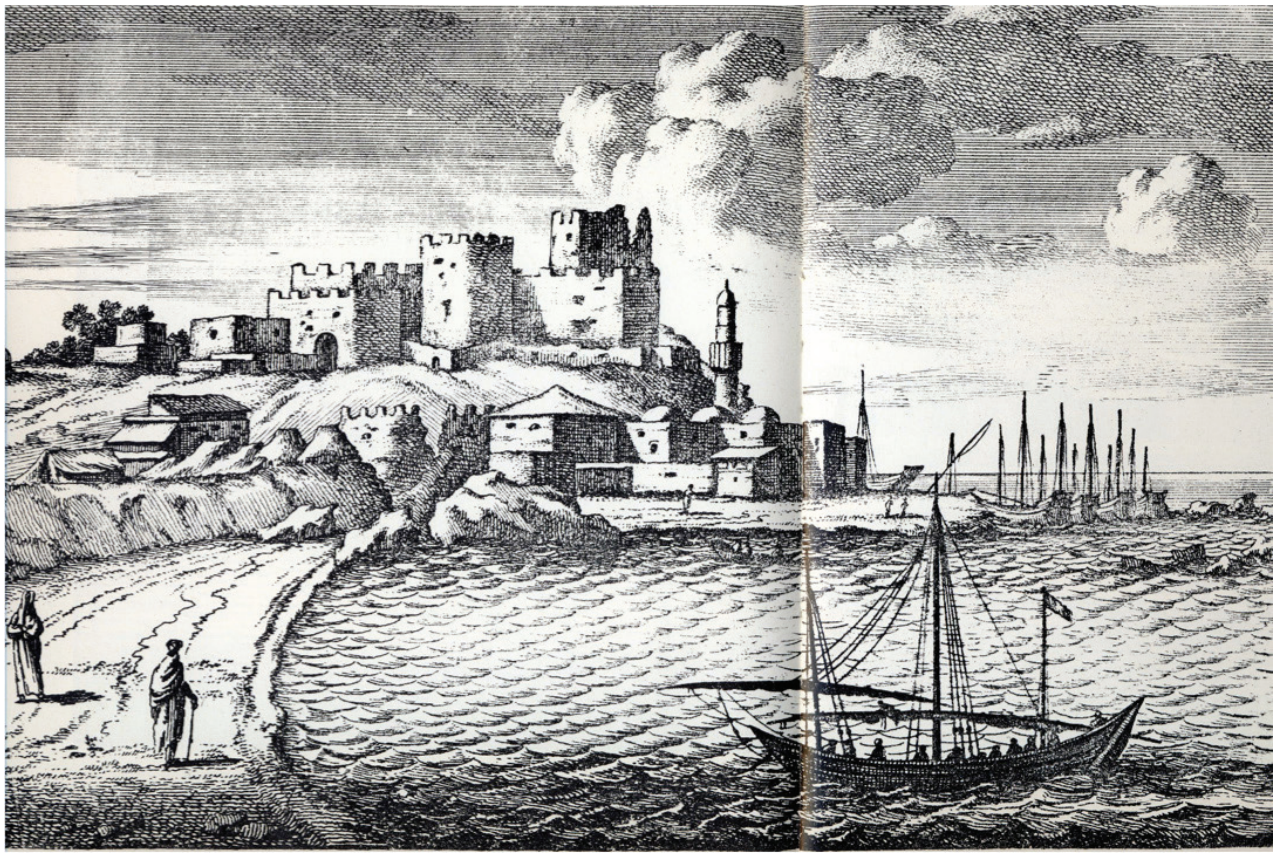

Figure 6.21. Illustration of Jaffa and its harbor from the north by Cornelis de Bruyn, 1698 (see de Bruyn 1725).

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Figure 6.22. *Turkish Recruits Taken to the Ship*, Gustav Bauernfeind (1888) (oil painting, 1.52 × 2.8 m, Dahesh Museum, New York).

Figure 6.23. *Jaffa* by Olfert Dapper (engraving, 290 × 352 mm) in *Delitiae Orientales*, pp. 164–165. Practically identical to the engraving (200 × 322 mm) in François Halma (1717). *Courtesy of the National Library of Israel.*

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Figure 6.24. *Port de Joppe.* Engraving, 295 × 431 mm, by Augustin Calmet (1730:399). *Courtesy of the National Library of Israel.*

state. The citadel proves that the port, although neglected, was guarded, and the smoke rising out of the chimney shows that it was manned.

Numerous photographs were taken during the late nineteenth century (Figures 6.25–6.28), again mainly concentrating on the rocks, probably attempting to represent the sense of danger that accompanied arrival in the harbor. These photographs were taken mostly by members of the American Colony,[13] and many are part of the G. Eric and Edith Matson Photograph Collection at the Library of Congress.[14] Eric Matson (1888–1977) came to Palestine from Sweden with his parents. They joined the group later known as the American Colony, and young Eric became a leading photographer. Figure 6.27, for example, shows the difficult conditions of the anchorage during a storm. Figure 6.28 is probably a close-up of the (Andromeda's?) rock.

A watercolor produced by Gustav Bauernfeind (1848–1904) provides a roughly contemporaneous watercolor illustration of these dangerous conditions (Figure 6.29). Bauernfeind was a German painter who worked in Palestine and is buried in Jerusalem (see Vosseler 2013). His large oil painting (Figure 6.22) is exhibited in the Dahesh Museum in New York and is one of the only graphic representations of the seawall or quay and the adjoining strip of beach. The painting shows the conscripts to the Ottoman army being ferried by boats to an Ottoman navy ship waiting on the horizon, far beyond the series of rocks, while their mothers wade behind the boats waist deep in the water bidding them a final farewell. The painting also shows a large Turkish boat (a *Markab*)[15] moored against the seawall, suggesting that the depth of the water at that particular point should be at least 1.5 to 2 m.

Among the many drawings, paintings, and photographs from the fifteenth to the eighteenth centuries, the rocks and seawall or quay were clearly regarded as the most significant features of Jaffa's harbor, however inaccurate their depictions. The rocks clearly could be both friend and foe. On one hand, they offered a modicum of protection to ships once within the anchorage, except in stormy conditions. On the other hand, passage into the anchorage through the rocks was clearly treacherous.

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Figure 6.25. Boat going between the rocks, Jaffa. Matpc 11617. *Courtesy of the G. Eric and Edith Matson Photograph Collection, U.S. Library of Congress.*

Figure 6.26. Passage through the rocks (two masts, Latin rig), Jaffa. Matpc 06518. *Courtesy of the G. Eric and Edith Matson Photograph Collection, U.S. Library of Congress.*

Figure 6.27. Jaffa and environs. Rough sea at Jaffa. Matpc 00699. *Courtesy of the G. Eric and Edith Matson Photograph Collection, U.S. Library of Congres.*

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Figure 6.28. Andromeda's Rock. *Courtesy of the G. Eric and Edith Matson Photograph Collection, U.S. Library of Congress.*

Weather Conditions Typical to the Harbor

It is an axiom that winter storms are more severe than summer winds, and in this area, they generally start in the southwest and then veer west before turning north and abating. However, even in summertime, the sea in the eastern Mediterranean can be difficult and dangerous. There is usually a slight offshore breeze from the east during the night, and then during the day, the breeze will shift, first turning south, then west, and then north, often resulting in short, choppy seas. The northern entrance to the port is shallow, and to enter through the main entrance (i.e., the western one), the navigator must align two minarets, one close to the port that is known as the Sea (al-Bahr) Mosque and the one further east (Mahmudiyya Mosque). This would give a "traverse" that needed to be carefully followed.[16] Only then could one pass through an opening about 8 m wide known as the "Boğaz," between the breakwater (built in the 1930s and still there today) and Andromeda's Rock. (Before the breakwater was built, this passage was between the chain of reefs and the rock.) This needed to be done carefully, even in a boat equipped with an engine, and was certainly much more difficult in engine-less boats, which relied on skilled oarsmanship (see Figure 6.29).

Various statistics and measurements concerning sea conditions in Jaffa and in Haifa exist to supplement our understanding of the harbor's conditions. Some of these are more recent, while others are from the second half of the

Figure 6.29. *Landing in Jaffa*. Watercolor, by Gustav Bauernfeind (1881).

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nineteenth century, reported by French entrepreneurs and still others from before World War I when, again, French businesspeople prepared various projects for rebuilding the port in Jaffa. All of the observations are very similar, amazingly, given how much observation and measuring techniques have changed since then. Figure 6.30 and Figure 6.31 show the breakdown of wind conditions in measurements taken in Haifa over a period of 10 years (Purdy 1826:243). Except for some local winds blowing through Wadi Rushmiya into Haifa Bay, the overall picture differs little from that of Jaffa.

Wind conditions in Jaffa are also well recorded between 1908 and 1910, according to data provided to French entrepreneurs by a certain Mr. Pavie, the chief of operations of the Jaffa-Jerusalem railroad.[17] These conditions were part of a report dated "le 16/29 Avril 1326/1911," prepared for the entrepreneurs of the Jaffa Port Project by Louis Godard, Détaché au Gouvernement Ottoman dans les fonctions d'Inspecteur Général des Travaux Hydrauliques. Godard was the Ingénieur en Chef au Corps National des Ponts et Chaussées de France and was engaged by the French entrepreneurs to supervise the project of building a new port in Jaffa.

STATION—HAIFA.—*Position, latitude 32°48′ N., longitude 34°59′ E. Altitude, 52 feet*

Month	Air temperature °F. Mean Monthly	Mean Maximum	Mean Minimum	Extreme Maximum	Extreme Minimum	Relative humidity (percent) [1]	Rainfall Average amount (inches)	Number of rainy days [2]	Maximum in 24 hours (inches) [3]	Wind [4] Percentage of observations from— North	Northeast	East	Southeast	South	Southwest	West	Northwest	Calm	Cloud amount (0–10) [1]
January	57	65	49	79	38	72	7.1	14	3.4	2	4	14	20	20	14	4	2	20	5.2
February	58	66	50	87	37	71	5.7	13	2.2	2	3	12	17	19	18	8	7	14	4.6
March	62	72	52	104	36	69	.9	5	1.0	3	6	13	17	14	14	5	9	19	4.7
April	67	76	58	108	44	69	.7	4	1.0	6	3	7	9	13	16	12	12	22	3.7
May	74	83	65	108	53	70	.1	1	.4	8	6	7	8	9	10	9	15	28	3.0
June	78	86	70	107	58	72	0	0	.2	6	3	4	4	16	19	11	13	24	2.5
July	82	88	75	96	67	71	0	0	.3	3	1	2	3	16	27	17	9	22	2.6
August	83	90	76	99	69	68	0	0	.1	2	4	2	2	15	23	17	9	26	2.5
September	81	88	74	107	64	67	0	0	.1	6	6	5	4	12	18	12	12	25	2.1
October	76	85	68	100	57	66	.5	2	1.9	5	4	10	10	11	12	7	10	31	2.6
November	69	79	60	97	48	69	2.7	6	2.6	3	5	18	17	15	14	5	7	16	4.2
December	60	68	52	83	38	72	6.7	11	7.2	2	4	14	23	24	15	3	2	13	5.1
Mean	71	79	62			69				4	4	9	11	15	17	9	9	22	3.6
Total							24.4	56											
Extreme				108	36				7.2										
Number of years	14					9	14			10									9

[1] Mean of observations at 7 h., 14 h., and 22 h.
[2] Days with trace or more rain.
[3] Maximum fall during the 24 hours from one morning observation to the next.
[4] Observations at 8 h. and 14 h.

Authorities: MS. data supplied by Phys. Dept., Cairo, Met. Zs. 23. British Mediterranean Pilot, Vol. V, Third Edition, 1937.

Figure 6.30. Weather measurements for Haifa (U.S. Hydrographic Office 1951:243).

Wind [4]

Percentage of observations from—

	North	Northeast	East	Southeast	South	Southwest	West	Northwest	Calm
January	2	4	14	20	20	14	4	2	20
February	2	3	12	17	19	18	8	7	14
March	3	6	13	17	14	14	5	9	19
April	6	3	7	9	13	16	12	12	22
May	8	6	7	8	9	10	9	15	28
June	6	3	4	4	16	19	11	13	24
July	3	1	2	3	16	27	17	9	22
August	2	4	2	2	15	23	17	9	26
September	6	6	5	4	12	18	12	12	25
October	5	4	10	10	11	12	7	10	31
November	3	5	18	17	15	14	5	7	16
December	2	4	14	23	24	15	3	2	13
Mean	4	4	9	11	15	17	9	9	22
Total									
Extreme									

Figure 6.31. Table summarizing air temperature, rainfall, and wind velocity at Haifa Station from *Sailing Directions* (U.S. Hydrographic Office 1951:243).

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The report, which was written in Constantinople between April 16 and 29, 1911, states, inter alia, the following:

> Difficultés du Port de Jaffa. Les conditions nautiques du Port de Jaffa sont particulièrement mauvaises. La mer y est souvent agitée et les opérations d'embarquement et de déchargement y sont difficiles et souvent impossibles. Des observations faites de 1909 à 1910 a la direction des chemins de fer de Jaffa a Jérusalem et qui portent sur les mois de Novembre à Avril (voir graphiques annexes au présent rapport) il résulte que pendant cette période de temps, c'est-à-dire pendant 181 jours de l'année, il y en moyenne 17 jours de tempête, 18 jours de grosse mer, 23 jours de forte houle, 35 jours de légère houle et 88 jours de clame.[18]

Diagrams in their documentation show the number of days during which the wind blew from a certain direction.

Referred to by Godard, Figure 6.32 is a graph of the sea conditions during November 1904 to April 1905, where, on the left axis, conditions are characterized as storm, rough sea, strong swell, light swell, or calm. The legend accompanying this chart explains what actions were advisable during these conditions: during a storm, the disembarking of passengers and offloading merchandise is impossible; during rough sea, it is extremely difficult; strong swell, discharge of passengers and merchandise difficult but possible; light swell, discharge of passengers and merchandise "quasi easy"; and calm sea, easy. It is therefore obvious that the data collected during the previous century or centuries do not differ much from current data, and according to Murrey (1987), the winds in our own times are not much different from the winds in ancient times. All this illustrates that operating in Jaffa's Ottoman harbor was difficult and complicated.

From personal experience, having been sailing in these waters for the past 60 years, the author can confirm that strong storms in the region usually make landfall from the southwest. After a day or two, the atmospheric low pressure moves, and the wind turns west and later north and finally abates, leaving a calm sea even during the winter. However, when the storm is strong, the conditions in Jaffa's harbor are bad. The worst such storm experienced by the author took place in 1967. At that time, many boats moored at the port were tossed onto the road adjacent to the harbor, despite the breakwater built by the British that was supposed to provide protection for boats.

Jaffa: Jerusalem's Port

Despite the poor conditions, Jaffa had always been considered the port of Jerusalem. The standard route for pilgrims

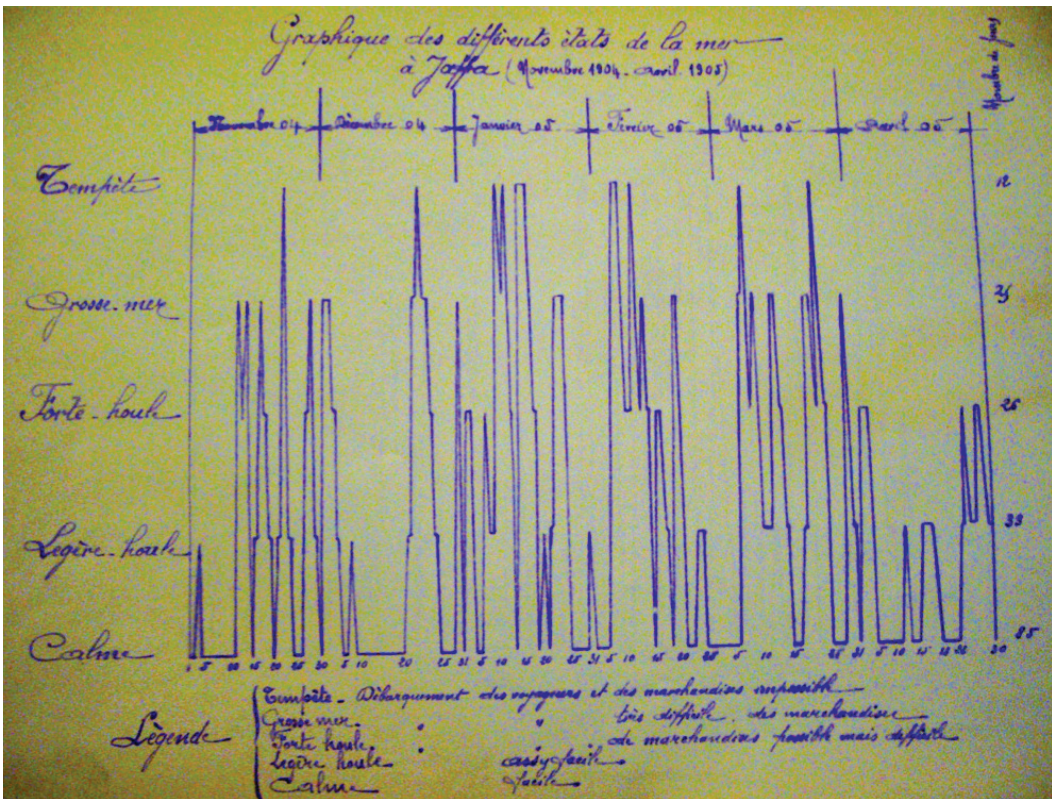

Figure 6.32. Graphic of sea conditions in Jaffa from November 1904 to April 1905. Box 89, AQ 1691, Roubaix.
Courtesy of the Centre des Archives du Monde de Travail, Roubaix, France.

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to the Holy Land was from Venice, via Rhodes to Jaffa (Goren 2007:497). Felix Fabri (1441–1502) explains that the travel fees from Europe to Jaffa often included delivery of a pilgrim to Jerusalem itself as part of the captain's responsibilities (Prescott 1954:107). Captain Agostino Contarini, who operated from Venice around 1480 and later in the fifteenth century (Newett 1907:3), used to enter into a particular contract with his passengers, as described by the pilgrim Pietro Casola (1427–1507):

> On Monday, the 2nd of the month of June, I went with the afore named Don Giovanni to see Don Agostino Contarini, *Patrono* of the pilgrim galley, and, although I had previously arranged to pay him forty-five ducats, I gave up that bargain, and agreed to pay sixty gold ducats of the Mint of Venice. For this he undertook to keep me by sea and by land and take me as far as the River Jordan if I wished to go there, and give me a place at his own table. I paid down, then and there, thirty ducats in advance [Newett 1907:153–154].

Captain Gravier d'Ortierès, probably on a spying mission for Louis XIV in the Middle East, writes in his logbook, "Jaffa is the Port of Rama (Ramle–D.M.) and of Jerusalem" (d'Ortierès 1687:241). The nineteenth-century Italian traveler Alessandro Bassi describes his trip from Jerusalem to Jaffa, which is the port of Jerusalem: "Essendo Giaffa il porto viciniore di Gerusalemme" (Bassi 1856:248).

Many others mention Jaffa as the port of Jerusalem, including the American priest William McClure Thomson (1806–1882), who calls Jaffa a "natural landing place" for pilgrims visiting Jerusalem, whether Jewish or Christian (Thomson 1861:515). Another American, Louis Klopsch (1832–1910), who led a group of a few hundred people on a spiritual trip to the Holy Land, wrote, "Jaffa-Joppa is the port of entry to Jerusalem" (Klopsch 1904:144). Even Purdy refers to Jaffa as the "Port town of Jerusalem" (Purdy 1826:317). It was not uncommon that a Mediterranean port was located at some distance from the city it served as, for instance, Fiumicino, the ancient port of Rome, or Piraeus, the port of Athens. However, those harbors were not so far away from their settlements, whereas Jerusalem is approximately 60 km (40 miles) from Jaffa and is located on a hilltop.

Passengers' Descriptions of the Port

Since most ships could not enter the anchorage, passengers disembarked in small rowboats. However, even once in the harbor, these boats often could not reach the shore, and the passengers had to be carried on the backs of Arab porters (Hasselquist 1766:115). An amusing episode is told by the famous French writer François René de Chateaubriand (1768–1848), who was on the ship's deck awaiting the boat:

> I finally saw a boat where I have managed to distinguish my Greek servant . . . I descended into the boat and we have entered the port through a narrow entrance between the rocks that would have endangered even a caique. The Arabs on shore approached the boat in water up to their waists in order to carry us on their shoulders, and then a rather funny scene took place: my servant wore a white garment; and the white color denotes importance. They thought that my servant is a sheik carried him ashore with triumphal shouts, while I, thanks to my blue garment, was carried ashore on the shoulders of a miserable bum clad in rags [de Chateaubriand 1811:244].

The mere fact that passengers could not alight from the ship directly onto the quay, but had to be transported in small boats, made it difficult in addition to being dangerous. Passengers' luggage was often unceremoniously dropped from the ship's deck into the boat, as described by the French traveler Victor Guérin (1827–1880) and illustrated in his book (Figure 6.33; Guérin 1884:203). One of the most precise and colorful descriptions is that by the French doctor, Charles Lortet (1836–1909):

> L'embarquement sont rendus difficiles par les vents d'ouest qui soulèvent des vagues énormes; en été, ce sont ceux du nord qui soufflent presque constamment dans cette région de la Méditerranée. Les vagues se brisent alors contre les rochers et nécessitent les plus grands efforts pour ceux qui conduisent les barques et les chalands. Heureusement que ces chaloupes, larges et très solides, sont manœuvrées par des marins arabes d'une habilite remarquable: aussi les accidents sont-ils rares, malgré la violence du vent et la hauteur des lames, qui effrayent beaucoup les étrangers [Lortet 1884:364].[19]

An American journalist from the second half of the nineteenth century described his visit to Jaffa in the following lines, which are not devoid of humor:

> Since Jonas made his short and ignominious voyage along the Syrian coast, mariners have had the same difficulty in getting ashore that the sailors experienced who attempted to land the prophet; his tedious though safe method of disembarking was not followed by later navigators and the landing in Jaffa remained a vexatious and half the time an impossible achievement [Warner 1876:1].

Another description, by Merrill, reads as follows:

> Delicate women and dignified clergymen who have been tossed from the steamer's ladder into the great bare arms of a stalwart Arab boatman standing in a boat below, while

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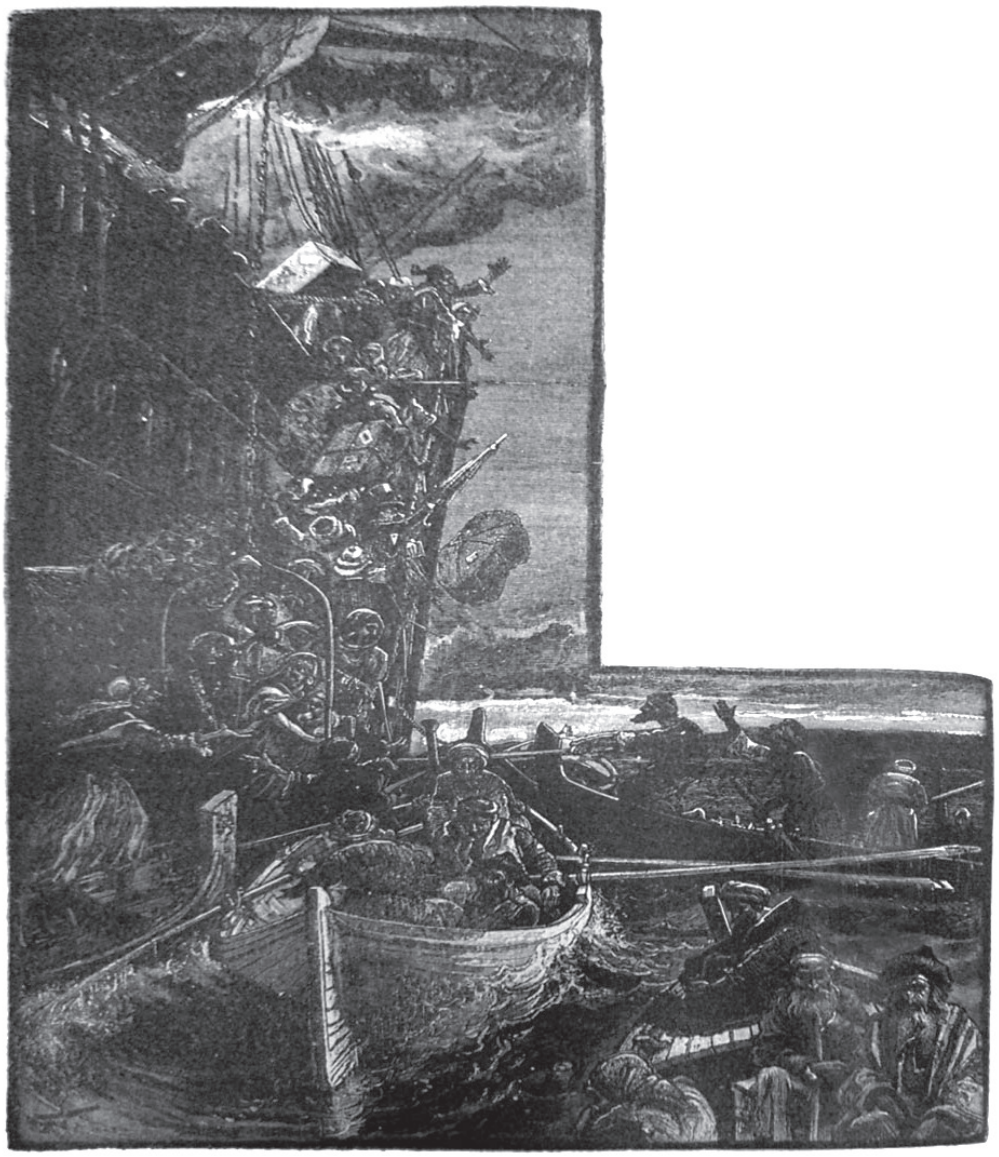

Figure 6.33. Landing in Jaffa and unloading baggage (Guérin 1884).

> steamer and boat and sea were dancing like captive rubber balls in a gale of wind, think nothing could exceed the discomfort which they experienced; how, then, would they estimate the task of the railroad company, who had to get from ship to shore, in spite of rough seas, all the rails, ties, iron bridges, cars, engines, colossal water-tanks, and everything else that was required of the road? The task, however, after much serious risk to life, many mishaps, and some discouraging and costly accidents, was accomplished; but the difficulties overcome only emphasize the great need which Jaffa has for a suitable harbor and landing-place [Merrill 1893:2].

The photographs taken by American Colony photographers and now part of the Matson Collection reveal how difficult it was to enter the harbor through the rocks, especially so during a storm (Figures 6.25, 6.26, and 6.28).

The trip to Jaffa was not simple, nor was the arrival. As a great number of the pilgrims visiting the Holy Land started their trip in Venice, the Venetian authorities enacted many laws designed to safeguard the voyagers. Among others, four rules of 1392 were established (Newett 1907:41–42). These included that (1) anyone who desired to transport passengers must be registered with a special authority and have his ship examined; (2) the scribes (each ship had to carry two) were to register the contract between the captain and the passenger in the ship's book, including the precise date of departure; (3) the captain was not allowed to demand the passenger's agreement to alter the contract after the voyage has started; and (4) the ship would not spend more than six days in any port en route for purposes of

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loading cargo. The same rules also specify which arms have to be carried by each sailor, the quantity of personal belongings allowed to each passenger, and the amount of water and space that was to be allocated passengers. Perhaps most important, a cross was drawn as a reference mark located on the ship's hull to indicate the maximum depth to which the vessel could be safely immersed. This was done about 500 years before the British politician Plimsoll invented the famous "Plimsoll Mark" to avoid the overloading of vessels by greedy ship owners.

As previously noted, one of the most famous captains who operated during the mid-fifteenth century, Agostino Contarini, used to convey pilgrims to the Holy Land in his ship, *Contarina* (Verdon 1998:106). The Dominican priest, Felix Fabri, tells that in exchange for 55 ducats, the passenger would receive a bit of deck, one-and-a-half-feet wide, "slightly below the cattle and above the bilge," in a terrible stench, and if the passenger would light a candle, he was in danger of having it extinguished, because another passenger might empty his chamber pot on it (Prescott 1954:59). Similar stories are repeated by the travelers Meshulam of Volterra (Eisenstein 1926:97), Moshe Poriat of Prague (Yaari 1945–1946:274), and even Nachman of Breslov (Yaari 1945–1946:487), who could not disembark in Jaffa because of the waves and had to continue his trip and get off the ship in Haifa instead. In addition to all the other difficulties, the Jewish travelers had to take extra precautions to disguise their true religion from Ottoman bureaucrats in Jaffa.

After arriving ashore, pilgrims were also detained in extremely poor conditions until released to go to their destination, the holy sites. One of the best descriptions is given by Fabri:

> We came close to these rocks, and as we passed between them through the waves which beat upon them, we were splashed with water and wetted, howbeit we escaped dashing our little bark against the reefs, which was what we feared, and arrived at the shore and landed. . . . When we had finished our thanksgiving we went up from the bed of the sea to the higher ground, up the steep rocks with which the sea there is girded and its shore beset. . . . Now, as soon as the name of each pilgrim and that of his father had been written down, there were appointed certain Saracens who straightway seized him and dragged him to the entrance of a darksome and decayed dwelling beneath a ruinous vault, wherein they thrust him even as men are wont to thrust a sheep into a stable to be milked. . . . O Lord Jesu, with what strange courtesy dost Thou receive Thy pilgrims, Thy guests in Thy holy land. . . . Hast Thou no bed for us save the dunghill? [Fabri 1896, chap. IV:7].

The difficulties created by Ottoman officials and the poor lodgings were repeatedly described by many travelers over the centuries, including Laurence Aldersley, who arrived in 1581 (Schur 1992:60), and de Bruyn (1725:142), who says that nothing of consequence remained of the city that had once been "reasonable." Indeed, many Jewish travelers complained of the extra harsh treatment reserved for non-Muslims, such as Binyamin Ben Eliyahou, who arrived in 1785 (Yaari 1945–1946:459). Even Rachel Yanait Ben-Zvi, the woman who was to become the wife of the second president of Israel, who arrived in 1905, complained about the noise, the pushing, the quarrels among the boatmen, the bad smell and the filth, and the weighty bureaucracy (Yanait Ben-Zvi 1964:5).

Commercial Activity at Jaffa Port

Jaffa was not only a port for passengers coming to or leaving the Holy Land. During the sixteenth century, the main export from Palestine to Europe was of wheat and other cereals. The seventeenth century saw the beginnings of the export of cotton and ash, designated for the manufacture of soap. Jaffa was a small neglected village, and the main port of Palestine was Akko, which competed with Sidon (Saida), located to its north. Jaffa also suffered not only from neglect and lack of facilities but also from attacks by pirates, both Muslim and Christian. Whereas the Ottoman navy was active mainly in summer (Zeevi 1996:161–163), the pirates, whether Maltese or Italian, were active all year round and much more agile than the Ottoman navy (Cohen 1985:58).

During the eighteenth century, the port became much more active. Frederick Hasselquist, who visited Palestine in 1715, writes that every year in Jaffa, approximately 4,000 travelers arrive, and the same number of Jews (Hasselquist 1766:115). James Bell, who describes the coast of "Maritime Palestine," writes,

> Jaffa, no other place of importance occurs on the coast till we arrive at Jaffa, the ancient Joppa, and the port of Jerusalem. It is a very ancient town, 40 miles W. of Jerusalem. It has obtained celebrity in modern times, by its siege, capture, and the massacre of its garrison by Bonaparte. The place at present contains 5000 souls, 600 of whom are Christians. Its commerce chiefly consists in grain, particularly rice from Egypt, and in the exportation of soap and cotton. The former is made of olive-oil and ashes [Bell 1836:204].

Bell omitted to mention the export of the famous Jaffa oranges (Figure 6.34), but the export of soap was, indeed, one of the main products that passed through the port. This was predominantly soap manufactured in Nablus

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(Doumani 1995:217), while cotton was transported in small boats mainly to Akko and from there shipped in bigger vessels to Europe.

Jaffa also apparently served to some extent as a banking center, as can be learned from a letter written by the French consul, advising that he had drawn money on a bill of exchange.[20] Commerce became substantial toward the second half of the nineteenth century, with exports totaling 247,000 pounds sterling in 1873 and imports of 137,000 pounds sterling during same year (see Avitsur 1972:tab. 9).

Much information can be obtained from statistics collected by the French company that received a *firman* or an authorization to construct a railway to Jerusalem and a port in Jaffa. Statistics regarding the number of sailing ships and steamships that passed through Jaffa, as well as the numbers of passengers who arrived in Jaffa and left Jaffa for Jerusalem on horseback or by other means, and cost calculations were included. All this demonstrates that Jaffa had become a bustling commercial city, and the harbor was kept busy exporting produce. In a single year (1872), 52 ships from France arrived at Jaffa, 53 from the Austrian Lloyd, 52 from Russia, 10 ships belonging to an Egyptian company, and 3 "other." The number of people arriving in Palestine during that year was over 40,000, although many disembarked in Beirut and continued overland so as to avoid the difficulties encountered in Jaffa (Wassiff 1872:3).

The port of Jaffa also served additional functions. With the development of traffic through this port, a certain Reverend Connoy could now maintain written communications and export holy scriptures from Malta to Jerusalem via Jaffa instead of through Cyprus and Syria. He wrote,

Figure 6.34. Boats loading oranges. Matpc 96516. *Courtesy of the G. Eric and Edith Matson Photograph Collection, U.S. Library of Congress.*

> Channel for scriptures between Malta and Jerusalem, Opened- I had been obliged, hitherto, in Syria, to refer our Consuls and other to Signor Vondiziano, our Consul in Cyprus, on account of the frequent and easy communication between their posts and his: but I found it otherwise in Jaffa; and was happy in being able to open, at last, a correspondence between Palestine and Malta, through Alexandria. Vessels from Egypt are continually arriving at the port of Jaffa and vessels from Malta in that of Alexandria; so that the communication between Malta and Jerusalem may be carried on briskly and easily [Connoy 1820:385].

Jaffa also became the "avant post" for Napoleon Bonaparte's attempt to conquer Akko. An anonymous writer, probably a military commentator, wrote that "Jaffa proves a situation of the highest importance to the army, it became the port and the entrepot, of everything that was to come from Damietta and Alexandria" (Anonymous 1801:25). Another historian explains how one of Napoleon's admirals, Joseph Ganteaume (1755–1818), instructed Vice Admiral Jean-Baptiste Perrée to transfer urgently from Alexandria to Jaffa cannons and ammunition required for Napoleon's attack on Akko:

> The great need of the supreme commander in siege cannons for the conquest of Acre [Akko] requires that you take all necessary steps to beach in Jaffa not only cannons 24 that you have embarked in Alexandria, as well as four cannons 18. You can moor if the weather is good, or remain under sails near the town in case of bad weather. We expect you to overcome any difficulties, as harsh as they may be [Jonquière 1899–1907:346].[21]

It is not clear whether all the cannons were indeed unloaded (Cvikel and Goren 2008:135), but it is obvious that Jaffa was, indeed, an important and central hub.

Port Installations

The first stone quay was probably built by an Armenian citizen from Constantinople in 1740 (Tolkowsky 1926:115). Hasselquist describes this stone quay as "unique" in the entire Levant (Hasselquist 1766:115). However, even then boats could not approach the quay because of the shallow depth. It was later replaced by a wooden pier that was too high and then again replaced by a quay of ashlar stones between 1864 and 1865 (Kark 1990:232–233). Only in 1898 was a new stone quay built. It measured 6 × 75 m, and its construction was supervised by a German engineer and a Turkish officer (Avitsur 1972:108). The lighthouse of Jaffa was built concurrently with the opening of the Suez Canal in 1869, followed by the construction of the Ottoman

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customs house in the 1870s, which was renovated in 1888 (Avitsur 1972:114; see Figure 6.35) and destroyed by the British during the Mandate period, after which it was replaced with a concrete structure (Figure 6.36). A kerosene fuel storage facility ("Jazz Hanna") was built outside the port at the end of the nineteenth century, as well as a new disinfection station for passengers (Kark 1990:233).

The major event in the life of Jaffa was, clearly, the inauguration of the railroad to Jerusalem, a project that was tightly connected to the project of building a new port in Jaffa. The railroad was finally constructed by the French company, La Compagnie des travaux Publics et Constructions de Paris (Glass 1992:87). Some researchers consider the project to have been financed by Johannes Frutiger (1836–1899), a Swiss banker who operated in Jerusalem, and that he assisted Joseph Navon (1858–1934), a Jerusalemite, who may have received a license to build the railway but did not manage to raise the necessary funds. This may have been the reason why these two individuals were allowed to accompany the Ottoman pasha on the train's inaugural trip to Jerusalem (Carmel 1978:70).

The poor facilities afforded by the port created extreme difficulties in unloading the material necessary for the railway project, as described by Merrill:

> The reef just referred to, with its bit of sheltered water, is directly in front of the middle of the town, . . . but all the materials for the railroad must be got ashore elsewhere. From a safe point on the north side of the town the company built a temporary track of rocks and timber, shored up in the strongest possible manner, so that it might not be swept away by the waves, which ran along in the shallow water under the wall of the town until it reached a certain point in the reef of rocks beyond which the water was deep. Hither from the steamers was brought, on strong lighters, the material for the road, and all seemed to be working well; but one night a terrible storm, such as Josephus relates was long ago named by the Jaffa mariners "The Black Northern" [J. *BJ* 3.9.3]), ruined a large part of the structure; as nothing was to be done but to try again, at great cost of time and money it was rebuilt, and finally served the purpose desired. Certain things, as, for instance, the boilers of the engines, were dumped into the sea, and, like great captive monsters, were easily towed to land. Everything that could be constructed thus was made in sections, and engineering skill contrived to handle these so that at last the materials were all landed without serious injury [Merrill 1893:2].

Figure 6.35. Customs house and narrow-gauge railway. *Postcard, Eliyahu Brothers, probably dated around 1920.*

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Figure 6.36. British Mandate customs house as seen from harbor in August 2012. View northeast. *Photograph by Aaron A. Burke.*

In addition to the main railway to Jerusalem, starting at the station some distance away from the port, there existed a narrow-gauge railway between the station and the port itself, which was built by the British after the conquest of Palestine, in World War I (Avitsur 1972:104). Later the British built an even narrower railway between the port and Lod (Lydda; Avitsur 1972:136). The port amenities were, indeed, meager, to put it mildly, and the two iron davits at the end of the wooden dock (Figure 6.37) seem to be representative of the technology prevailing at the time.

Projects for Building a New Port

A centrally located port with an extremely limited capacity in every aspect obviously constituted an attractive project for various planners and promoters. Most of them approached the project as a new port coupled with a railway, principally to Jerusalem. One of them, Charles F. Zimpel (1801–1880), proposed rebuilding the port in conjunction with establishing a railway network. His project proposed to include the reefs in an area enclosed by a semicircular breakwater, opening to the north (Kark 1990:235). This suggests that Zimpel had studied the local conditions since even today, all the harbors along Israel's coast (except for Tel Aviv) are open to the north.

The Ottoman governor of Palestine, Ibrahim Pasha, proposed to build a port in the round plain among the hills of Jaffa and connect it to the sea by a canal (Lynch 1849:309). The area suggested by him probably corresponds to the place known today as "al-Bassa," where the Bloomfield Stadium is located. In 1882, an Austrian port engineer, Friedrich Boemches (1829–1898), proposed a plan based on reclaiming land and building a railway station and warehouses, and he suggested that the basin itself be located to the south of the present harbor. In addition, a French company prepared detailed plans for the construction of a port in Jaffa, but "their details are not known" (Avitsur 1972:104).

The French Plan 1878–1880

The French plans of 1878 consisted of detailed architectural plans, drawn in watercolor, the size of which reached nearly 2 m across (Figure 6.38 and Figure 6.39).[22] They were drawn up for the Compagnie du Chemin de Fer de Jérusalem

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Figure 6.37. Wooden pier, Jaffa port. Matoc 04696. *Courtesy of the G. Eric and Edith Matson Photograph Collection, U.S. Library of Congress.*

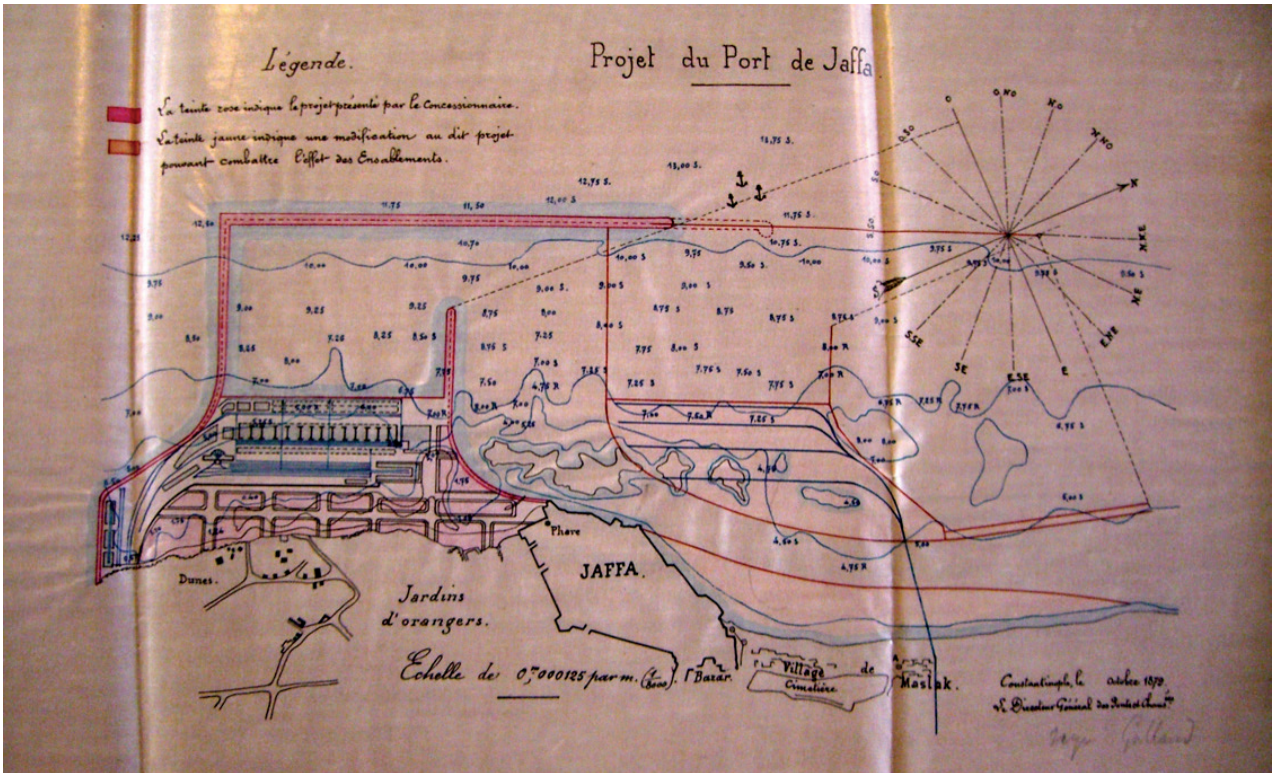

Figure 6.38. French project for Jaffa's harbor, 1878. Box 89, AQ 1691, Roubaix. *Courtesy of the Centre des Archives du Monde de Travail, Roubaix, France.*

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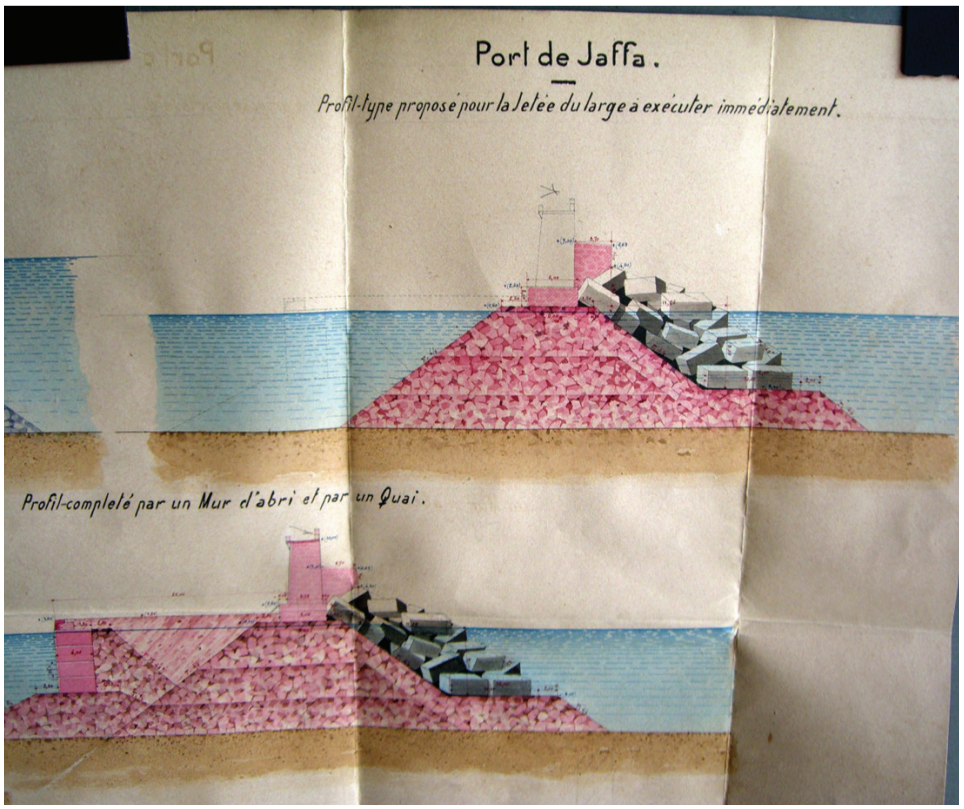

Figure 6.39. Drawing of proposed breakwaters, 1878. The top—for "immediate execution." Box 89, AQ 1691, Roubaix. *Courtesy of the Centre des Archives du Monde de Travail, Roubaix, France.*

et du Port de Jaffa. The Roubaix archive also contained very detailed calculations as to the economics of the port, statistics of numbers of passengers, quantities of cargo, and answers to the Turkish authorities responding to technical and other questions, such as how the promoters intended to cope with the silting of the port by sand.

The plan itself was initially sketched by pencil on a French copy of the British "Bedford" map. It shows that the people who made the design were familiar with the local conditions and were aware of the fact that the local storms were predominantly from the southwest. The proposed breakwater was to enclose a vast area of water to the south of the natural harbor, and the main breakwater, which lies in a south-north position, is about 1 km long and continues far beyond the short vertical northern breakwater, which extends from the shore toward the west. This was intended to afford protection from a beam sea in the delicate maneuvering that a ship has to perform when entering the port. It is the critical point, beyond the tip of the breakwater, at which a vessel sails toward the harbor, with its stern to the waves, and has to make a right turn and expose its flank to the seas. The long overlap by the long breakwater facilitates this maneuver.

The breakwater's structure was designed by the same French engineers who had designed the breakwaters of the port of Marseille (Figure 6.40). However, the Turkish authorities were apparently not satisfied with the replies given to their questions or perhaps refused to approve the plan for their own, different reasons. The entrepreneurs requested a further extension of time, which was denied, and the program was never executed.

The French Plans of 1912

An additional attempt was made by a French consortium, which consisted of three companies: Schneider & Cie, Société de Construction des Batignolles, and the partnership J. & G. Hersent. In 1911, Schneider & Cie approached the Ottoman minister of public works and the Ottoman minister of the marine, requesting a concession to build various ports in the Ottoman Empire. This apparently followed an extensive economic study evaluating possible costs and profits, which resulted in a forecast of 1,200,000 francs net profit for 1911 from the port of Jaffa alone. A different plan was proposed for building the port (Figure 6.41). A tentative "convention" was established between the promoters and the Turkish authorities, detailing the precise

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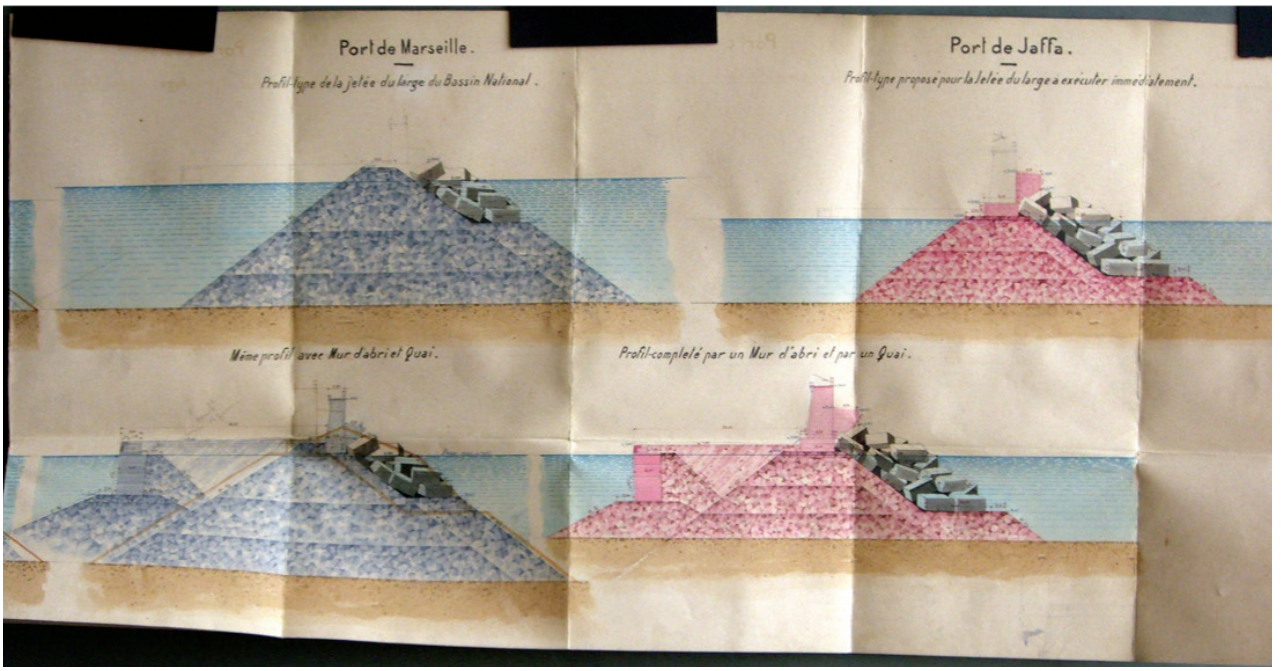

Figure 6.40. Comparison of breakwaters of the port of Marseille and the one proposed for Jaffa, 1878. Box 89, AQ 1691, Roubaix. *Courtesy of the Centre des Archives du Monde de Travail, Roubaix, France.*

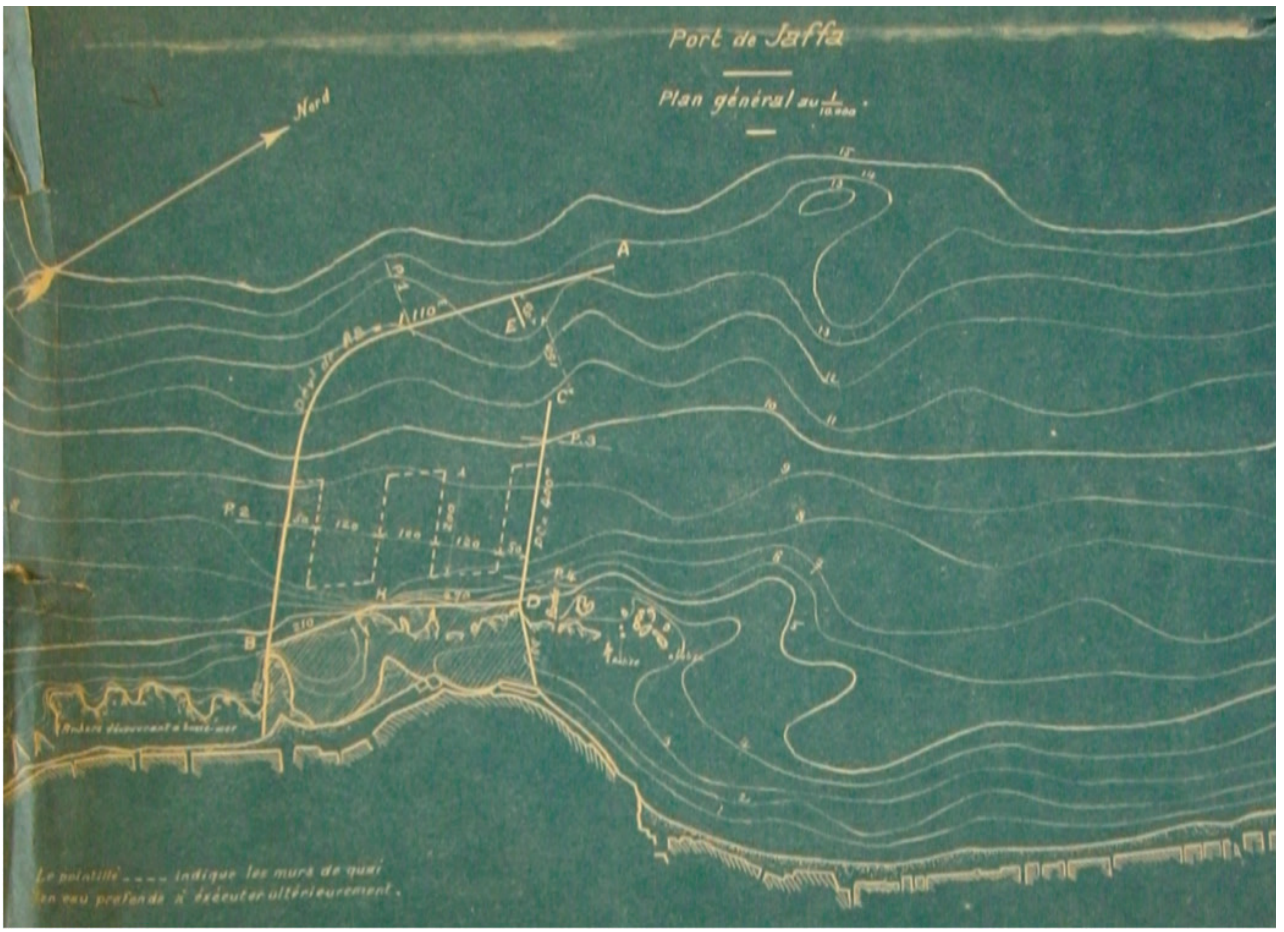

Figure 6.41. French second project for proposed harbor beginning of the twentieth century. *Courtesy of the Centre des Archives du Monde de Travail, Roubaix, France.*

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rights and obligations of the entrepreneurs, down to the resolution of how much they were entitled to charge their customers, for example, for handling a coop of chickens or offloading a cow from a ship. However, this was not to be following the outbreak of World War I. The investors lost their investment, and as far as we know, their dramatic plea to the French prime minister on February 21, 1921, did not help.

Conclusion

Since at least the Iron Age, Jaffa has served as the port of Jerusalem. Why, therefore, did the Ottomans not allow or seek to build a proper harbor there since they knew how to build ports and to cooperate with foreign experts? Dussaud Frères, for example, built a huge port in Izmir in 1880, which included a seawall 4 km long and 15 m high (Frangakis-Syrett 2001:24). One may thus assume that the Ottoman rulers did not attach to Jaffa the same importance as that of a major coastal city like Izmir, in the very heart of the Turkish Aegean coast. Jaffa was a distant town, near the eastern edge of the Ottoman Empire, often ruled by local governors whose relations with the central imperial authority were seldom more than lukewarm. Or, perhaps, as suggested by Guérin, in the Orient, it was simply the case that even a basic improvement could take a long time to plan and execute. Whatever the case may be, for centuries, Jaffa's limited harbor facilities served their purpose as an entrepôt to and port for Jerusalem. Today, however, it is primarily a mooring basin for yachts and fishing boats (Figure 6.42). While it is no longer an unprotected stretch of water surrounded by rocks, the physical improvement of its harbor, ironically, has not succeeded to elevate its status as a port.

Acknowledgments

All items listed as *Courtesy of the National Library of Israel*, Hebrew University of Jerusalem, were downloaded from http://historic-cities.huji.ac.il.

Figure 6.42. Aerial view of Jaffa and its harbor today. View southwest.
Photograph by Sky View, courtesy of the Israel Antiquities Authority.

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Notes

1. Based on author's master's thesis (see Mirkin 2010).

2. One cable equals one tenth of a nautical mile or approximately 182 m.

3. www.loc.gov/pictures/collection/matpc/colony.html

4. Referred to in the accompanying photographs and drawings as "Roubaix." All documents were viewed at the Archives nationales du monde du travail, Ministère de la culture, direction des archives de France, 78, boulveard du Général Leclerc, BP 405, 59057 Roubaix Cedex 1, France.

5. For a discussion of the Ottoman period in Jaffa, see Kark (1990, 2011).

6. The French copy of the chart identified as "Jaffa, autrefois Joppé ou Japho" introduced some slight changes to the original. The scale was changed from yards to meters. However, the latitude remained the same as in the British chart (32°02'N).

7. See the website of the Israel Oceanographic and Limnological Research Institute for tables: http://www.ocean.org.il/MainPageEng.asp.

8. One French pied is 0.305 m or, effectively, the British foot (0.3048 m).

9. Both the U.S. publication *Sailing Directions* and the British Admiralty's *Mediterranean Pilot* series are mariners' "bibles" and widely used by many countries, except by the French, who had their own publication series (see Anonymous 1937).

10. *English translation*: "However, the anchorage near Jaffa is always dangerous in the bad season. The embarkation and disembarkation of passengers and cargo is carried out only at an exorbitant price. Afraid of being surprised by bad winds and not being able to sail off shore in good time in case of a storm, sailing vessels have to anchor at enormous distances offshore, while steamships of the various companies are obliged to constantly maintain a head of steam in order to be ready to meet any eventuality."

11. Merrill served several terms as the U.S. consul to Jerusalem, until 1907, and as the archaeologist of the American Palestine Exploration Society.

12. Depictions of the ships in these illustrations were also clearly influenced by naval architecture in these periods. The ship in the tapestry (Figure 4.14) is typical, while those in the more recent drawings are of a slightly more advanced construction. All of the drawings feature ships with stern castles. It would be interesting to compare the drawing of the three-masted ship in Gonzales (Figure 4.19), drawn in 1665, with the *Mayflower*, built in 1620. The precise dimensions of the *Mayflower* are not known but are probably 26 m long, with a 7-m beam and 4-m draft (Franzén 1962:9); such a ship could never have entered the Jaffa port.

13. Not to be confused with the members of the Church of the Messiah from Jonesport, Maine, led by A. Adams, who settled in Jaffa in 1865 (see Holmes 1981).

14. In the mid-twentieth century, the Matson family donated the negatives to the Library of Congress. http://www.loc.gov/pictures/collection/matpc/.

15. While the generic Arabic word for a ship is *markab*, it is usually used for a small trading vessel or a larger fishing boat.

16. *Editor's note:* A similar phenomenon is often noted for the role of Ugarit's temples in assisting ships to enter the Bronze Age harbor at Ras Ibn Hani. However, since the Mahmudiyya Mosque was built in 1730 and the Sea (al-Bahr) Mosque was built in 1675, then, obviously, before these dates, the seamen entering the port had to find other means to locate the Boğaz.

17. Different French firms and consortiums undertook two rounds of attempts to build a harbor in Jaffa. The first one took place around 1878 and the second one on the eve of World War I. It is described in more detail below.

18. The translation from French by the author: "The conditions in Jaffa port are especially difficult. The sea is often rough, charging and discharging is often impossible. The observations prove that during 181 days out of the year there is an average of 17 days of storm, 18 days of rough sea, 23 days of a strong swell, 35 days of light swell and 88 days of a calm sea." The documents were found in Box 89 AQ 1691 in CAMT, Roubaix, referred to below as "Roubaix."

19. English translation by author: "The embarkation is difficult because of the western winds, which raise enormous seas, whereas during summer time it is the northern wind that is nearly constant in this region of the Mediterranean. The waves break against the rocks and require the greatest efforts to be exerted by those who work sailboats and barges. Luckily, these boats are large and very solid, and manned by extremely able Arab seamen. Accidents are therefore infrequent, in spite of the violence of the wind and the height of the waves, which the newcomers find very frightening."

20. From the Archives of the Chamber of Commerce, Marseille.

21. "Le grand besoin que le général en chef a de l'artillerie de siège pour la prise de Saint-Jean-d'Acre exige que vous preniez toutes les précautions pour mettre a terre a Jaffa, soit en mouillant si le temps est beau, ou en restant sous voiles auprès de la ville, non seulement les pièces de 24 que vous avez du embarquer a Alexandrie mais encore quatre pièces de 18. . . . Nous attendons donc que, quelles que soient les difficultés qui se présenteront, vous les surmonterez toutes pour opérer . . . ce débarquement" (Jonquière 1899–1907:346).

22. The plans and a copy of the *firman* are stored in Box No. 89 AQ 1960 in the Centre des archives du monde de travail, in Roubaix, France.

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CHAPTER 7

A Panoramic View of Late Ottoman Jaffa from November 1860 by Louis Vignes

TZVI SHACHAM
Eretz Israel Museum, Tel Aviv

A series of three photographs of Jaffa's eastern wall and Jerusalem Gate were recently identified, providing the most extensive photographic documentation of Jaffa's eastern defenses during the nineteenth century. These photos were taken by the French photographer Louis Vignes in November 1860. They reveal the fosse or ditch along the city's eastern side, the fortifications behind this fosse, and the Jerusalem Gate (Abū Nabūt Gate) that gave access to Jaffa on its northeastern corner.

Louis Vignes (1831–1896) dedicated his entire adult life to service as an officer in the French navy, where he ultimately achieved the rank of admiral (Aubenas and Roubert 2010:312; also see Foliot 1990:233–250; Paviot 1980; Perez 1988:229; Taillemite 1982). As part of his duties, which included organizing and managing the port of Beirut in 1860, he traveled to photograph various countries around the Mediterranean. Although his career as a photographer was short, his photographs include those of various Mediterranean cities between 1859 and 1862. In 1864, the Duke of Luynes invited him to serve as the photographer of an expedition to the Dead Sea and its surroundings (Duc de Luynes 1874). That collection, which does not include any photos of Jaffa, is his most famous work.

In November 1860, however, Vignes took three photos of Jaffa that provide an unparalleled view of Jaffa's late Ottoman defenses and the city, its defensive ditch, and wall along Jaffa's eastern side (Figure 7.1). They were unknown until recently,[1] when one of Vignes's photos was published in the catalog of an exhibition held at the Bibliothèque nationale.[2] These photographs are now archived at the Bibliothèque nationale de France (BnF) collection of photographs. Others were uploaded to the library's digital website Gallica on April 12, 2010 (see references below).

The photographs (Figure 7.2 to Figure 7.4) that are described as a "vue panoramique de Jaffa (Porte de Jérusalem)" appear in the BnF collection in two forms: calotype negatives (26.5 × 20.5 cm)[3] and positive prints (29.2 × 22.5 cm), which were made by the photographer himself.[4] As it turns out, the three photographs can be joined, as the author did, to reveal the earliest known panoramic photo of Jaffa from the northeast (Figure 7.5). This view also corresponds with the appearance of Jaffa in British maps, notably from 1842 (Figure 7.6; see Shacham 2011:fig. 13.13) from the Jerusalem Gate (Abū Nabūt Gate) on the north looking southwest toward the southern or so-called Sydney Smith Bastion, on which the French Hospital in Jaffa was built in 1882. Although it seems likely that a fourth photo was taken that included the northern bastion (on which the Qishle was built

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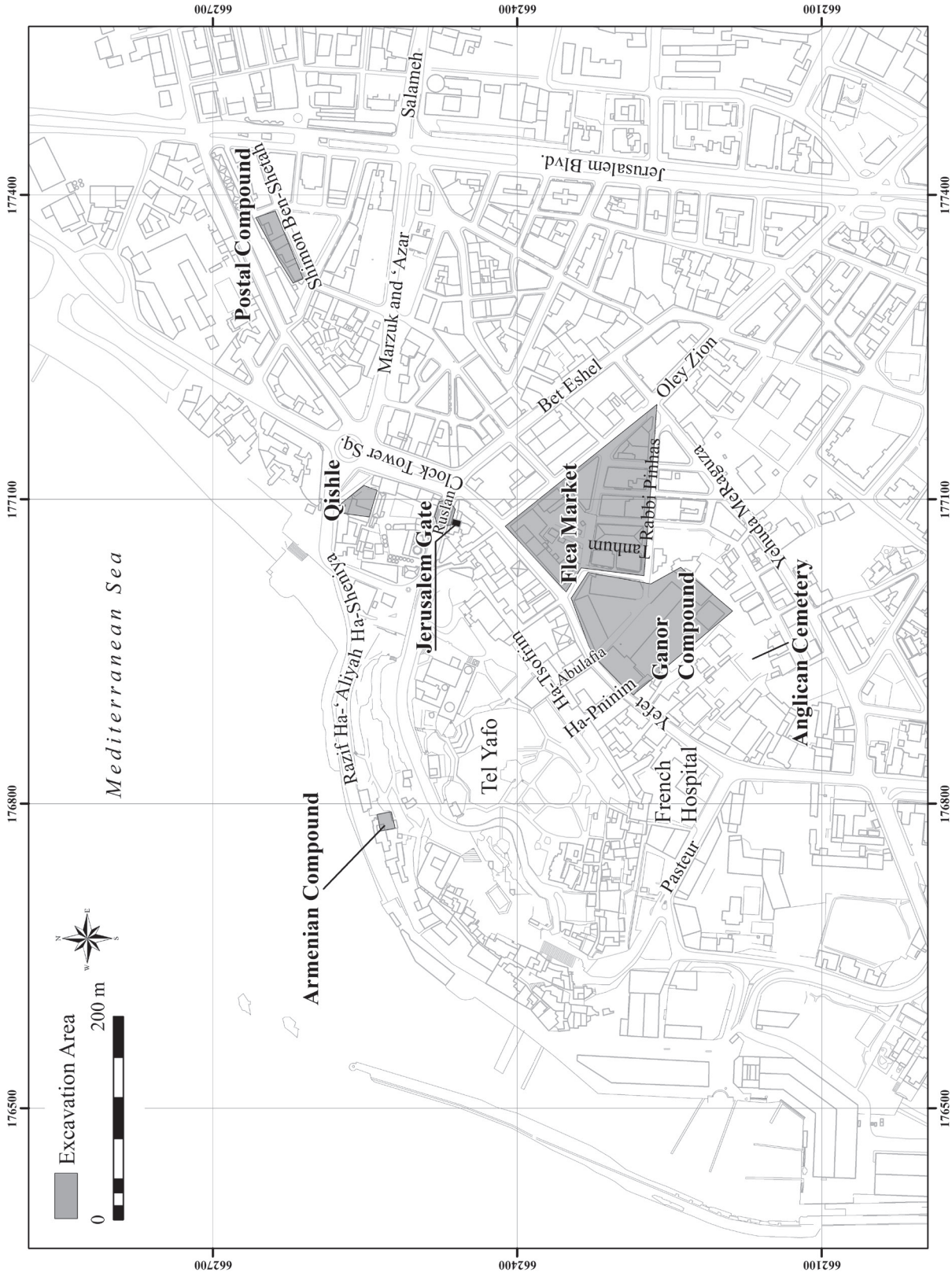

Figure 7.1. Map of Jaffa showing location of Yefet St., which traces the location of the eastern wall and defensive ditch during the nineteenth century.

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Figure 7.2. Photograph by Louis Vignes along Jaffa's eastern wall and defensive ditch, 1860. View southwest. BnF collection number: Reserve EI-68-Boite Fol B, No. 34 or Vignes 34. *Courtesy of the Département des Estampes et de la photographie (Photographie du XIXe siècle), Bibliothèque nationale de France. Paris.*

Figure 7.3. Photograph by Louis Vignes of the southern half of Jerusalem Gate along the eastern fortifications of Jaffa, 1860. View west-southwest. BnF collection number: Reserve EI-68-Boite Fol B, No. 35 or Vignes 35. C*ourtesy of the Département des Estampes et de la photographie (Photographie du XIXe siècle), Bibliothèque nationale de France. Paris.*

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Figure 7.4. Photograph by Louis Vignes of the northern half of Jaffa's Jerusalem Gate. View west. BnF collection number: Reserve EI-68-Boite Fol B, No. 36 or Vignes 36. *Courtesy of the Département des Estampes et de la photographie (Photographie du XIXe siècle), Bibliothèque nationale de France. Paris.*

Figure 7.5. Panoramic view of Jaffa in November 1860 from the northeast, created by author from Louis Vignes photo sequence (see Figure 7.2 to Figure 7.4).

in 1886–1887, which later served as the mandatory police station), it is neither included in Vignes's list nor preserved in the collection.[5]

Two later photos by Félix Bonfils in the collection of the New York Public Library[6] complement Vigne's photos. These show the encampments and market outside the Jaffa Gate (dated ca. 1867–1871; see Arbel and Rauchberger 2011)[7] and a cemetery of Jaffa in the vicinity of the southern bastion, looking north. In the latter picture, the fausebray and ditch in the southern bastion (dated ca. 1867–1871) can be seen.[8] The importance of this panoramic view by Vignes is that for the first time, the photographer has provided precise information concerning the date for such a view of Jaffa. This is not the case, for example, with photographs by Bonfils, which are variously but usually only generally dated by the different archives that hold copies of them.

Vignes's photos also provide a unique view of the eastern side of Jaffa's city walls, which are rarely shown (except the northern bastion). Details include the fausebray and ditch, which also appear on the map by Lt. Skyring from 1842 (Figure 7.7) and the British naval map by Lt. Bedford from 1863 (see Figure 9.8).[9] In fact, a number of comparisons can be made between the British Engineering Corps map by Lt. Skyring from 1842 and the photographs by Vignes. The following observations correspond to numbered items in the map (Figure 7.6), which can also be seen in Vignes's photograph (Figure 7.5). In each of these depictions, the ditch (No. 1), fausebray (No. 2), and the Jerusalem Gate (No. 3) are all represented. The tower (No. 4) attached to the southern side of the Jerusalem Gate has four round and domed turrets (see Figure 7.3). The bottom portions of two of these towers and the ridge in the center of this tower's walls

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Figure 7.6. Close-up of map by Lt. G. F. Skyring, 1842 (British Library: MSS No. P.P. 40501.i. vol. 6. Folio: p. 24).

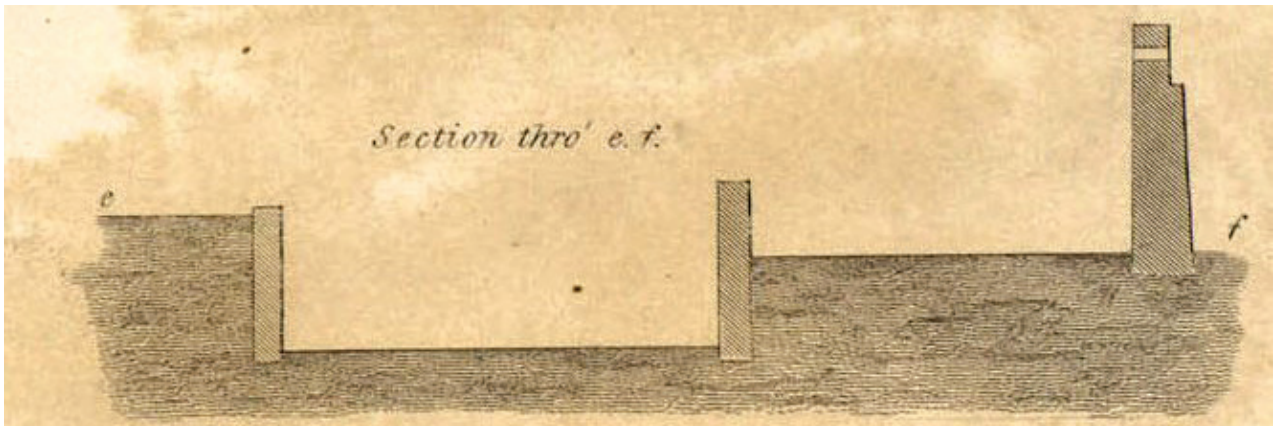

Figure 7.7. Section view of the fausebray and ditch illustrated in map by Lt. G. F. Skyring, 1842 (British Library MSS no P.P. 40501.i. vol. 6. Folio: p. 24). For full map, see Shacham (2011:153, fig. 13.13).

can still be seen today (see Figure 8.5 and Figure 8.6; also Arbel 2013:138, fig. 9). In the photograph, the Abū Nabūt or Mahmudiyya Mosque and its minaret (No. 5), which is not as tall as the one that exists today, can be seen to the north of the gate's entrance. The Sarāya (Sarāya al-'Atiqa; 'No. 6), which has been the Jaffa Museum of Antiquities since 1961, can also be seen. A bridge (No. 7) over the ditch can be seen in the British naval map of 1863. Remains of this bridge were discovered recently in excavations at the site (see Chapter 8; also Arbel 2013:139, fig. 11).[10] The inner wall (No. 8) of the gate through which the Jerusalem Gate gives entrance to the city as it turns to the left is evident in both.

Based on the vantage point, it is likely that the photograph was taken from the roof of the Khān that was located opposite the Jerusalem Gate. It is depicted in the Skyring map of 1842. A larger version of the Khān appears in the Bedford map of 1863, which was probably the result of its expansion or refurbishment in 1848 (see Lynch 1849:445). It is the only structure or place high enough to provide the perspective preserved in these photographs.

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Notes

1. See Paviot (1980) and Foliot (1990).

2. Vignes 34, Exhibition BnF 2010-11; Aubenas and Roubert (2010:254–255, Nos. 201, 202).

3. BnF collection number: Reserve EI-68-Boite Fol B, Nos. 34 to 36 (including the original list of photos). See permalinks http://gallica.bnf.fr/ark:/12148/btv1b69399470, http://gallica.bnf.fr/ark:/12148/btv1b8458208x, and http://gallica.bnf.fr/ark:/12148/btv1b6939949t, respectively. Uploaded April 12, 2010.

4. BnF collection number: EO-483 (2)-Pet Fol, Nos. 34 to 36.

5. Courtesy of Thomas Cazentre, Photography Curator of the Nineteenth Century at the French National Library, personal communication 2011.

6. The New York Public Library, Digital Gallery (NYPL).

7. NYPL collection number 82653. http://digitalcollections.nypl.org/items/510d47d9-6425-a3d9-e040-e00a18064a99.

8. NYPL collection number 82654. http://digitalcollections.nypl.org/items/510d47d9-6426-a3d9-e040-e00a18064a99. See also the Matson Collection, Library of Congress, Washington (LC-USZ62-106226), where it is dated 1870 to 1880 and is described as a view to the east.

9. Note that the schematic section e–f in the Skyring map from 1842 is that of the southern wall; a section for the eastern wall was not drawn.

10. Excavations directed by Dr. Yoav Arbel of the IAA from April to May 2011 (see Arbel 2013).

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Chapter 8

The Jerusalem Gate of Late Ottoman Jaffa:

An Updated Survey

Yoav Arbel and Lior Rauchberger
Israel Antiquities Authority

The Jerusalem or Abū Nabūt Gate was one of the most iconic elements of Jaffa's fortifications during the late Ottoman period. Israel Antiquities Authority salvage excavations exposed important elements relating to the gate in 2011. Taken together with cartographic, historical, art historical, and photographic records, the gate can be thoroughly described for the first time.

The substantial efforts invested in the archaeological investigation of Jaffa until the 1990s focused almost without exception on the ancient mound and its immediate surroundings (Chapter 3, this volume; Kaplan 1962, 1964a, 1964b, 1970, 1972; Bowman et al. 1955; Peilstöcker 2011). It fell to extensive salvage work by the Israel Antiquities Authority to expose the extent of Jaffa's expansion during several periods in its history (Figure 8.1).[1] In a series of excavations conducted east, northeast, and southeast of the mound, substantial evidence was uncovered for the existence of a lower city during the Hellenistic, Byzantine, Early Islamic, and Crusader periods (Arbel 2008, 2009a, 2009b, 2010; Peilstöcker 2011; Peilstöcker and Burke 2011; Re'em 2010; Kletter 2004). Late Ottoman remains emerged in the upper layer of practically all of those excavations. Contrary to the approach of many Holy Land researchers, late Ottoman remains were not dismissed as "modern" and thus of no archaeological value but treated as archaeological layers in their own right, part of what can be regarded as the "archaeology of the recent past."[2] The experience of the past two decades of salvage work proved the contribution of archaeology to the investigation of Jaffa in the second half of the Ottoman period, a time of dramatic changes in the political, economic, and social conditions in the city, which are well attested in its material remains.

Jaffa's Nineteenth-Century Fortifications

One of the contributions of archaeology to the investigation of late Ottoman Jaffa relates to the fortifications constructed in the city in the early nineteenth century. The old eighteenth-century fortifications, compared by de Volney (1788:136) to a "garden-wall," probably somewhat unjustly,[3] sustained damage during Napoleon's conquest of Jaffa on March 6, 1799, and in a series of sieges in the turbulent period following his retreat.[4] The reconstruction of Jaffa's fortifications began with British support and possibly their initiative and was completed by Jaffa's iron-fisted governor,

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Figure 8.1. Map of Jaffa indicating area of Jerusalem Gate excavations. *Map by Krister Kowalski.*

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Muḥammad Agha Abū Nabūt (ruled 1803–1819), as part of his extensive construction efforts. The latter included now-defunct landmarks such as markets (Kark 1990:20, 49) and extant ones such as the Mahmudiyya Mosque, also referred to as the Mosque of Abū Nabūt (Kana'an 2001b).

The new fortifications had a relatively short life. They were intentionally dismantled approximately seven decades after their construction, as Jaffa expanded and modern warfare deemed fortifications obsolete. The fortifications are depicted in various artistic representations, of which a drawing by Louis Nicolas Philippe Auguste de Forbin from 1817 is the earliest known. Several nineteenth-century maps also describe the battlements, in varying degrees of resolution and accuracy. The most detailed map, which also includes important cross sections, was prepared by Lt. C. F. Skyring of the British Engineering Corps in 1842 (Shacham 2011:fig. 13.13). Recently discovered photographs taken in 1860 by the French photographer Louis Vignes depict the fortifications with impressive clarity (Chapter 7, this volume). These materials show that the defenses consisted of a moat, a parapet-topped retaining wall built against its inner face and protruding ca. 2 m over the surface, an exposed firing zone, and an inner line of fortifications. This planning aligns with the defensive military construction of the period. Tall free-standing walls would crumble against artillery, but fortifications such as Jaffa's could stall infantry and cavalry advances.

One prominent part of the fortifications retained the traditional character: the single major land gate of its city, located at the eastern wall. The gate, known as the Jerusalem Gate or the Abū Nabūt Gate, served as one of the most prominent areas of urban activity in peace times, along with its defensive role in case of attacks against the city.[5] Main roads led from the gate to Akko in the north, Jerusalem to the east, and Gaza and Egypt to the south. The gate's prominence in a city that was one of the most used entrances into the Holy Land spurred Abū Nabūt into significant investment in both military planning and outward appearance. While we have no information on the plan of the eighteenth-century gate that stood in the same general location, there are clear indications that the nineteenth-century structure was at the very least significantly altered and possibly represents an entirely new complex.[6]

Skyring's 1842 map offers a fairly accurate representation of the gate. Entrants would cross a bridge over a moat, enter a closed yard guarded by sentinels stationed in controlling positions, and turn left to enter the city itself through an arched entry in a towering gatehouse with buttresses at each corner. The tall structure was aimed to provide control over the accesses to the gate as well as the yard.[7] The plan aimed to force prospective attackers into a confined space and stall their charge by compelling them to turn 90 degrees before breaking into the entrance, while under heavy fire from troops in controlling positions.[8] Prior to recent research, information about the nineteenth-century gate stemmed from textual descriptions, artistic representations, maps, and existing elements. Recently, two invaluable direct sources were added: archaeological remains and historical photographs. The contribution of each of these sources is delineated in the following sections.

The Jerusalem (Abū Nabūt) Gate

Textual Descriptions

Nineteenth-century travelers often described the city, but descriptions of the gate are surprisingly rare. John Murray's travel handbook, for example, tells its readers that "on the land side there is but one gate, and is always so crowded with donkeys, camels and lazy Arabs that one has difficulty in forcing his way through. Just within it is a fountain adorned with a profusion of carving and Arabic inscriptions" (1868:272 [Kark 1990:66]). The fountain, to which this and other nineteenth-century sources referred, should be more accurately termed a *sabīl* (Kana'an 2001a).[9] It was also the element that impressed William H. Dixon (1865:16) most, although he does discuss other key elements:

> "This gate, the Jerusalem Gate—has a weird and magic beauty, borrowed in spirit from the Nile: a lofty arch, a noble tower, well flanked by the city walls: a Saracenic fountain, with jets of water flowing into marble troughs, over which a pious verse from the Qur'an is printed in golden type."

Dixon (1865:18–19) later commented that the Jerusalem Gate "admits a camel with a load of maze on its hunch." Two other authors referred to the judicial activities taking place within the gate complex. Once remarking about the crowds gathering by the gate, William M. Thomson (1882:522) reports having seen "both the governor and the kady (*sic*), with their suites, sitting there, decreeing and executing judgment precisely as such things are spoken of in the Bible." Several decades earlier, William R. Wilde (1844:92) describes the gate as a "remarkably handsome" structure, distinguished by "a noble Turkish fountain, formed of various colored marbles, pouring forth jets of the purest water." To his view, Jaffa's land gate exemplifies

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a gate of an eastern town, also since it houses "the seat of judgment, as well as the receipt of custom." These are, to our knowledge, the most detailed textual descriptions of the gate presently known.

Artistic Representations

Since most of the nineteenth-century drawings of Jaffa are panoramic, and many of them were drawn from the sea, few of them show the gate, which would be best represented from an eastern perspective. In the illustrations that do depict the gate, such as in the drawings of Forbin (1817) David Roberts (1838), and Emma R. Pitman (1881), its only indication is the prominent buttressed gatehouse protruding from the outline of the city limits (Figure 8.2).[10] A far more representative drawing of the gate by P. Chardin from 1879 was made from the inside, depicting the inner face of the gatehouse (Figure 8.3), along with market stalls operating next to the entrance (see Yinnon 2001:45–49). This is the most detailed artistic representation of the gate known to survive from the nineteenth century. The yard and much of the gate as it appears in the drawing can still be seen today.

Maps

The best cartographic representation of the Jerusalem Gate reached us in a map by Lt. C. F. Skyring of the British Engineering Corps (Alderson 1843; see Shacham 2011:153, fig. 13.13). The map shows the gate complex in detail, including the access bridge over the moat, the enclosed inner yard, and the buttressed gatehouse under which was the actual passage. A military British map from 1863, by Lt. F. D. G. Bedford, also shows the city gate but in more schematic form (see Figure 9.8). As a bathymetric map, the planners were interested mostly in the naval perspectives and paid less attention to the land-oriented details of Jaffa (Shacham 2011:139, fig. 13.15). The city gate is also marked on the 1878 map by the German engineer and architect Theodor Sandel, but with the fortifications mostly dismantled or built over, the gate complex appears merely as a cluster of alleys (Shacham 2011:139–140, figs. 13.18–13.19).

Existing Parts

These remains include the arched entrance of the gatehouse, parts of three of the gatehouse's buttresses, and the *sabīl* of Abū Nabūt. The arched entrance survives intact, to a

Figure 8.2. Illustration of Jaffa in the second half of the nineteenth century by Emma R. Pitman (1881). The gatehouse of the Jerusalem gate with its buttresses appears on the left side.

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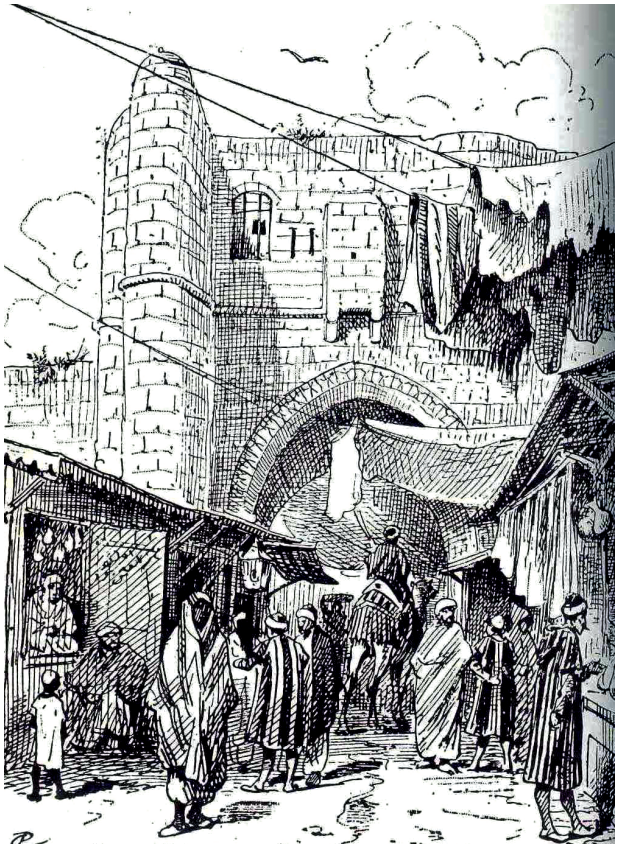

Figure 8.3. Drawing of the city gate from inside by P. Chardin, 1879 (de Vaux 1883).

Figure 8.4. Present condition of the exterior of the Jerusalem Gate. View south. *Photograph by Yoav Arbel.*

maximal height of 4.20 m. While it is partly obscured at the front by a clutter of later structures and improvised modern additions, the maximal width of the gate reached 5.50 m (Figure 8.4). One of the decorative features characteristic of the period, a cylindrical frieze, can be seen on both outer and inner faces of the gate structure. Historical photographs show an identical frieze adorning the outer city battlements over the moat and a fort in the harbor (see Haddad 2009:fig. 8). A similar element is found on the Jaazār walls of Akko.

The *sabīl* (maximal *w.* 7.80 m) is fully preserved and remains one of Jaffa's landmarks (see Arbel and Edrei 2011:fig. 20.2). It was built by Abū Nabūt as part of the religious endowment (*waqf*) that he established (Kana'an 2001a:190) and was the element that left the strongest impression in the records of European visitors. That impression was not always as positive as that of Dixon, which was quoted above. Buckingham (1822:146), for example, describes it as "gaudy."

The northeastern, southeastern, and southwestern buttresses of the gatehouse partly survive. The northeastern buttress is incorporated in a shop and survives to an impressive height. The southeastern buttress is now part of the western wall of the Abulafia restaurant. The southwestern buttress is situated in the gate's inner yard (Figures 8.5–8.7). Of the northwestern buttress nothing can be seen, although there is a possibility that its remains are embedded in later structures. Like the cylindrical frieze, the buttresses are a decorative element, which can also be found in other structures built by Abū Nabūt, such as the Mahmudiyya Mosque, the two *asbila* (fountains), and the Suq al-Faraj (Kana'an 2001b:125).

Archaeological Discoveries Related to the Gate

A salvage excavation at the gate area and its adjacent sites added meaningful information about the complex and the aftermath of its dismantling.[11] In spring of 2011, actual remains of the complex were exposed, confirming some of the information from textual and cartographic sources and adding details and resolution that could not be derived from these sources (Arbel et al. 2012). Excavations at Ha-Tsorfim St. and the Clock Tower Square

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Figure 8.5. The northeastern buttress of the Jerusalem Gate. View southwest. *Photograph by Lior Rauchberger.*

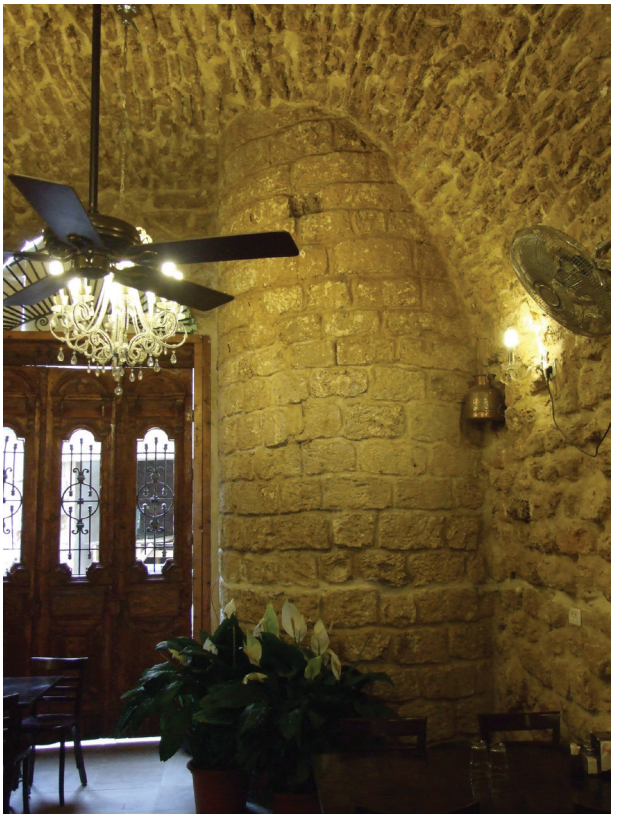

Figure 8.6. The southeastern buttress of the Jerusalem Gate, as seen from inside Abulafia restaurant. View west. *Photograph by Yoav Arbel.*

Figure 8.7. The southwestern buttress of the Jerusalem Gate. View northwest. *Photograph by Yoav Arbel.*

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contributed information about the surroundings of the gate and processes that these environs underwent during the gate's existence and after its destruction (Arbel 2010; Peilstöcker 2009).

The gate complex was located at the southwestern corner of the present-day Clock Tower Square, Jaffa's government center of the late nineteenth and early twentieth centuries (Figure 8.8). While, as mentioned above, the gate itself survives fairly intact, as do the ornate *sabīl* and parts of the gatehouse, excavations exposed for the first time four important elements that remained buried since the dismantling of the gate over a century ago. These elements include the stone-arched bridge built over the moat, the back wall of the gate yard, the channel that drained the *sabīl*, and some of the foundations of the northern of two frontal bastions that guarded the gate (Figure 8.9).

Very little was known of the bridge built across the moat during the renovation of Jaffa's fortifications in the early nineteenth century. Skyring's map shows it as a road leading into the gate yard by two uneven outposts or bastions, as does the 1863 Bedford map, although more schematically (see Figure 9.8). By 1878–1879, when the Sandel map was drawn, the moat was already in advanced stages of being filled in (Shacham 2011:fig. 13.19). The excavations revealed the surprising fact that the bridge survived fairly intact under the modern road and showed no signs of structural damage for over two centuries despite the heavy traffic it sustained since Mandatory days, particularly during the past decades.

The bridge leading to the inner yard, as revealed in the excavations, was a solid stone structure resting over two broad arches that linked the 8-m space between the eastern and western edges of the moat (Figure 8.10). Of the width of the bridge, 3.80 m were exposed, but its full span is still unclear as its southern face remains buried under the modern sidewalks and buildings. It is possible that the moat was wider here than in other parts to offer better protection to the gate, known to be a chronic point of weakness in traditional fortifications. Most of the stones used were made of local *kurkar* (a variety of porous sandstone) and of limestone. Other than the architectural stability of the arch, builders used compact mortar for the consolidation of the building stones. The bridge's surface

Figure 8.8. The location of the Jerusalem Gate complex on the left, looking west along Ruslan St. The Mahmudiyya Mosque and the *sabīl* are located on the right. The location of the Ottoman bridge can be seen marked by brickwork in the street on the opposite side of the crosswalk. *Photograph by Yoav Arbel.*

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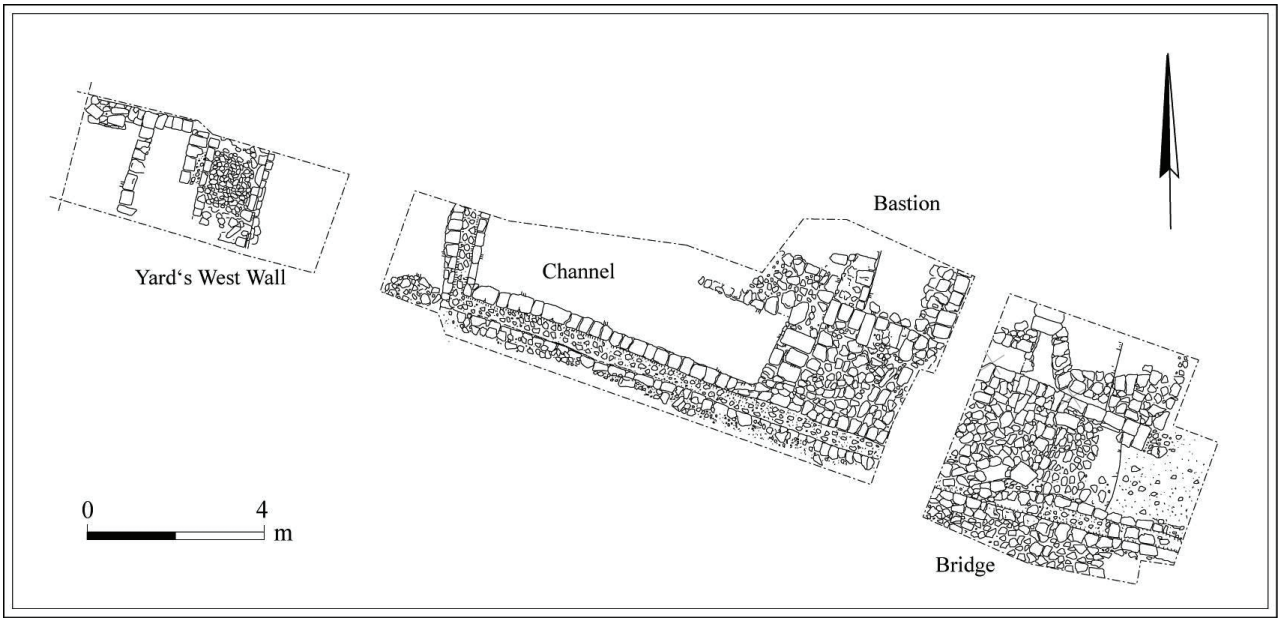

Figure 8.9. Plan of the Jerusalem Gate complex archaeological remains excavated on Ruslan St. west of its intersection with Yefet St. *Map by Avi Hajian, Israel Antiquities Authority.*

Figure 8.10. Part of the western supporting arch of the bridge over the moat. The wall to the right is part of the northern bastion protecting the Jerusalem Gate complex. View southeast. *Photograph by Yoav Arbel.* Photo B253179. *Courtesy of the Israel Antiquities Authority.*

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was stone paved in a similar way as were the streets of Jaffa in the latter part of the nineteenth century, particularly since the establishment of the Jaffa municipality in 1871 (Kark 1990:204). Few of the paving stones were left in place and exposed in the excavations, mostly in the northwestern corner. It is possible and even likely that the stones were dismantled for reuse in the paving of Jaffa's streets, as the two developments, the dismantling of the gate complex and the paving of the streets, took place in roughly the same period.

The existence of a moat as part of Jaffa's nineteenth-century fortifications is known from various sources. Recent excavations at the Ottoman Qishle (Arbel 2009b) and at the French Hospital (Re'em 2010) helped delineate with higher precision the exact course of the moat, also through the use of digital technology with the help of historical maps, aerial photographs, and archaeological data (Pierce 2011). With the discovery of the bridge, the gate complex excavations provided for the first time a positive identification of the moat and a reasonable estimate of its dimensions. The discovery proved that the present-day Yefet St. does not seal the moat but is paved over the historical Jaffa-Gaza Rd. The moat itself is buried under the row of buildings by the street's western side, most of which were built in the late nineteenth or early twentieth century. The moat under the bridge was discovered to be filled with debris and soil rich in organic matter, coins, and pottery of nineteenth century date. The pottery included large fragments of Gaza Ware vessels (Figure 8.11); glazed bowls produced at the Anatolian coastal town of Çanakkale, on the Asian side of the Dardanelles (Figure 8.12; Hayes 1992:268–270); and an Agra Pattern bowl (Figures 8.13 and 8.14) carrying the characteristic lush scenery and the stamp of its Scottish producers, John and Matthew Preston Bell (Cruickshank 2005:29; Kelly 2006:7).[12] With the cleaning and studying of these materials, it will be possible to narrow down the period of its existence and propose a more precise date for its dismantling.

The high wall that blocked the inner gate yard to the west did not receive detailed attention in either written narratives or in the artistic representations. On the other hand, it is clearly shown in Skyring's map stretching between the Mahmudiyya Mosque and the gatehouse, and it can also be found in the two historical photographs showing the gate (see below). In both photographs, its height slightly exceeded that of the cylindrical frieze across the gate, indicating approximately 4.50 m. Prior to the excavations, the wall's width had to be calculated from the Skyring map, where the gate is just a detail in the map of the city and the wall appears in general outline. The excavations revealed 2.50 m of the length of the wall's actual foundations (Figure 8.15). The remains measured 1.40 m in width. Since in most Ottoman structures of the period, the foundations represented the width of the superstructure, this is likely to have also been the width of the wall. The foundations stood on sturdy arches sunk into the ground, also in concurrence with typical construction methods for late Ottoman walls of Jaffa's larger nineteenth-century structures. A salient detail clarified with the discovery of the bridge and wall was the size of the gate's yard. Along with the extant ornate *sabīl* and the gate, it can be now calculated to have measured 12.70 × 18.30 m.

The *sabīl* that so impressed nineteenth-century visitors and that, as mentioned earlier, still stands fairly intact was served by an underground system that drained the water from its trough. Part of the system was discovered in the excavation. It consists of a 0.90 m-wide channel with an inner conduit up to 0.50 m in width (Figure 8.16) paved and lined with stones consolidated with rough plaster and roofed with sandstone slabs. The drain channel is identical in style and reminiscent in dimensions to the channels of similar function found under adjacent streets, although the latter are nearly a century later in date. The channel started at a point roughly at the center of the trough's base, ran 7.10 m southward under the gate yard, and turned eastward in a straight angle, leading toward the bridge over the moat and presumably pouring the water somewhere outside the city or, quite possibly, redirected to the ducts used in the irrigation of the gardens and orchards east of the city. Another 17.60 m of the channel were exposed in that direction. At some stage, the eastern extension of the channel was blocked and the wastewater was redirected toward the moat. This may have happened with the urban development of the area outside the gate.

The northern of the two bastions flanking the bridge was narrowly exposed to a length of 2.40 m of its eastern face. It is a robust structure that survived to a height of 2.20 m and was constructed of cut stones consolidated with white plaster, both elements clearly discernable in the remaining wall. The bastion seems to have been constructed along with the arches supporting the bridge, as derived from the fact that these elements intertwine in construction.

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Figure 8.11. Local Gaza Ware jug from the fill in the moat under the bridge. *Photograph by A. Gorzalczany.*

Figure 8.13. British Agra Pattern bowl from the fill in the moat under the bridge. *Photograph by A. Gorzalczany.*

Figure 8.12. Çanakkale Ware bowl from the fill in the moat under the bridge. *Photograph by A. Gorzalczany.*

Figure 8.14. Producer mark of J & M. P. Bell from the British Agra Pattern bowl from the fill in the moat under the bridge. *Photograph by A. Gorzalczany.*

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The Photographs

Two previously unpublished photographs from historical archives showing Jaffa's land gate were recently posted online. The earlier, by the French photographer Louis Vignes, dates from 1860 and is part of a panoramic view of Jaffa's eastern fortifications (see Chapter 7, this volume; see Figures 7.2–7.4). This photograph, along with two others, is part of the same scene (see Figure 7.5). The later photograph (Figure 8.17), dated to the 1870s, is the work of the well-known French photographer Félix Bonfils, who created an extensive stock of photographs showing scenes of Egypt, Syria, Greece, and the Holy Land (Perez 1988:141). A description and background of the picture has been published by the authors (Arbel and Rauchberger 2011).

The photographer Félix Bonfils first arrived in the Holy Land in 1860 with a French expeditionary force (Carney and Brown-Rosovsky 1985:107–108). Following that visit, he closed his photography business in France, came to Beirut with his family, and opened there a new studio in 1867. The photograph of Jaffa's gate was made during that period. Its importance lies in the rare objective perspective it affords, with neither the schematic constraints of cartography nor the subjective impressions of art. Other than the gate itself, Bonfils's photograph provides testimony to several other important buildings of Jaffa at that time.

Bonfils took the photograph from an elevated point opposite the gate, looking northwest (Figure 8.17). The two bastions can be seen at the front of the gate, flanking the bridge crossing the moat. White-painted or plastered parapets and narrow vertical shooting slits appear over the bastions and in their walls. Two sloping platforms lead into each of the bastions, possibly for the conveyance of cannon.[13] A makeshift object of unclear purpose seems to be hanging over the passage between the bridge and the gate yard. The upper courses of the wall that blocked the yard to the west, the foundations of which were discovered in the excavations, can be seen in the photograph behind the northern bastion's parapet. The ornate *sabīl* and the gate entrance are obscure.

Figure 8.15. Foundations of the western perimeter wall of the yard of the Jerusalem Gate. View west. *Photograph by Yoav Arbel.* Photo B253197. *Courtesy of the Israel Antiquities Authority.*

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Figure 8.16. The drain channel of Sabīl Süleiman. View to southeast. *Photograph by Yoav Arbel.* B253203. *Courtesy of the Israel Antiquities Authority.*

The gatehouse, conversely, is one of its most prominent features in the scene, appearing at the left part of the picture, behind the southern bastion, and estimated to reach 5 or 6 m in height. Three of its four domed buttresses appear in the picture: the northeastern (presently in the shop; Figure 8.5), the southeastern (incorporated in the Abulafia restaurant; Figure 8.6), and the northwestern, of which no remains are known to exist. A window with an arched lintel is seen on the upper part of the gatehouse's eastern wall. The cylindrical frieze clearly appears along the breadth of the gatehouse.

At the photograph's forefront appears a lively encampment. Historical sources attest to the existence of a market in that location, which would later become the present-day Clock Tower Square. Theodor Sandel's map from 1878–1879 describes the place as a vegetables and fruit market (Gr. *Gemüse u. Früchte Markt*). The market made much of an impression on some European visitors, fitting into the notions of the "unchanging east" prevalent at the time. Mary Elisa Rogers (1862:24), who traveled through the Holy Land in the 1850s, left a colorful description of that bazaar:

> We soon came to the broad road, just outside the town-gate, where camels and peasants, mules and muleteers, were congregated, and a bustling market of fruit and vegetables was being held. Booths and tents, sheltering turbaned and tarbouched smokers, were pitched under tall trees; and the itinerant vendors of coffee, sherbet, and glowing charcoal ready to light the hundreds of pipes and narghiles around seemed to be in great request.

Dixon (1865:17), who dedicates two pages to a description of the bazaar, its wares, and its characters, also depicts in remarkable detail the improvised structures of the bazaar, closely resembling the scene in Bonfils's photograph:

> [The bazaar] is held on the open and sandy plain, among a scatter of booths and sheds, some of them raised on poles and covered in with mats; while others are built of reeds stuck lightly into the soil, laced in and out with twigs, and tiled with boughs and leaves. A house on the left is of planks; one large hut, used for a café and exchange, has a wooden frame; but most of these are made of canvas stretched upon a frame of poles.

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On the right side of the picture appear the white-plastered dome and the minaret of the Mahmudiyya Mosque. Its origins are in an eighteenth-century family mosque, but massive refurbishment and enlargement under Abū Nabūt turned it into Jaffa's chief Muslim prayer and study center (Kana'an 2001b), and with later additions, it remains so today. The minaret is notably shorter than at present and has a single calling balcony, compared with two in the present-day building. Slightly left of the minaret, at the distant background of the picture and at its highest point appears to be a substantial structure. This appears to have been the building complex that evolved from the guard forts overlooking Jaffa's harbor since the Middle Ages, known as al-Qal'ah. To the left of this building, the houses of Jaffa appear randomly distributed, as described in the numerous textual testimonies of the period. Additional structures and elements may be identified upon closer study and, it is hoped, as new materials surface in the future.

Conclusion

On a broad scope, Jaffa's Jerusalem Gate exemplifies the potential of cross-discipline research in the investigation of architectural complexes in historical cities. New information derived from recent developments, such as the digitalization of archives and salvage excavations, was examined next to textual, artistic, and cartographic data available to researchers since the nineteenth century. The end result is a far clearer and more comprehensive picture, placed at the disposal of researchers and anyone interested in the history of Jaffa during the late Ottoman period. It should be stressed that the importance of the Jerusalem Gate extends beyond the actual complex and touches on more general issues of importance in the city, such as the fortifications as a whole, trends of expansion and development, questions of city planning, and the history of architecture. All of those issues are relevant not only to Jaffa but also to other urban centers of the period throughout the region.

Figure 8.17. The Jerusalem Gate complex in the 1870s. *Photograph by Félix Bonfils. Source: The New York Public Library.*

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For better and worse, Jaffa is not an archaeological mound where researchers have the advantage of expanding their excavations at will to achieve a more complete picture of the architectural features they have unearthed.No archaeological work is expected to take place in the immediate vicinity of the site of the gate in the foreseeable future because the area is an inhabited urban environment. However, additional discoveries related to the gate are likely to be made as more materials are made public by libraries and archives through the Internet. Thus, it is hoped that the last word on Jaffa's Jerusalem Gate has not yet been written.

Notes

1. Most of the excavations preceded infrastructure renovation and were financed by the Tel Aviv–Jaffa municipality. Private developers planning to construct residential buildings and hotels sponsored several large-scale projects such as the Police Compound, the French Hospital, and the Ganor Compound.

2. Referred to in American and Australian archaeology as "Historical Archaeology" (Renfrew and Bahn 1996:13), the term is awkward in Near Eastern archaeology due to the much longer history of writing and of historical records in this region. It is distinguished by the abundance of textual, artistic, cartographic, and, in many cases, also photographic records, within which archeological finds are analyzed and used.

3. Remains of that wall were discovered in the excavations of the Police Compound (Arbel 2009a), Ruslan St., and the French Hospital (Re'em 2010). The picture emerging from those excavations, as well as from the possible eighteenth-century remains that can still be seen in the southern boundaries of the mound, is of a solid structure over 1 m thick, built with a dressed-stone façade and a core of soil, fieldstones, and mortar. Yet, as proven during Napoleon's brief siege, such a wall was no match for European artillery, which may be the source of De Volney's impression.

4. Between Napoleon's withdrawal in May 1799 and the stabilization of Jaffa with the takeover of Muḥammad Agha Abū Nabūt in 1803, the city sustained several sieges as various strongmen struggled for its control.

5. At least two other gates are known. One, commonly known as the New Gate, was located at the eastern wall (see Giller, this volume). The Sea Gate, also named Water Gate, admitted approach to and from the harbor. Dixon (1865:18–19) writes that the gate "is no more than a slit or window in the wall, about six feet square, just level with the ground, and about five feet higher than the sea line when the wind is hushed and the water still." There was also an opening, probably little more than a wicket at the southern access to the harbor.

6. Based on Ottoman documents of the period, Kana'an (2001b:200) mentions the dispatch of an architect named Muḥammad 'Arif from Istanbul to construct the fortifications of the city but notes that while he was probably responsible for the restoration of the walls upon Napoleon's departure, it is unclear whether he was also employed in the fortification work done by Abū Nabūt, of which the gate was an integral part.

7. Sapir (1981:69–70) mentions several cannons deployed on the tower, but this information, whose source is unclear, requires caution. The same author describes three domes on the tower's roof. It is difficult to see how the roof of this relatively narrow structure could have included three domes yet sufficient space for the maneuvering of cannons. No sign of cannons can be seen on the roof in either known historical photograph or, for that matter, of domes other than those topping the buttresses. Skyring's map, which marks cannons in other parts of the fortifications, shows none over the tower.

8. This simple but effective defensive principle was used at least from the Iron Age, as can be seen, among other examples, in sites such as Strata IV–II at Lachish (Ussishkin 2004:514–523), Stratum IV at Megiddo (Loud 1948:46–57), Stratum 2 at Tell el-Far'ah (de Vaux 1952:pl. 11), and Stratum III at Timnah (Mazar 1997:113–121). During the Middle Ages, gates were planned so the stalling and turn would be made within the gate structure itself, as shown in Crusader Caesarea's eastern gate (Holum et al. 1988:230). The Ottomans adopted the idea, and the sixteenth-century gates of Jerusalem built by Suleiman the Magnificent also follow it. A later Ottoman example century is Akko's eastern gate, of probable late eighteenth-century origins. Incomers were compelled to approach the gate through a corridor between the ramparts, exposed to the defenders on both sides, and turn right into the gate and left again into the city.

9. Two surprising chance discoveries were made during nonarchaeological operations on and around the *sabīl*. Workmen digging a trench for infrastructure next to the *sabīl* in 2006 exposed two large granite elements that may have been part of the original gate (Arbel and Edrei 2011). In 2013, IAA conservators cleaning the façade of the *sabīl* noticed two parts of a Mamluk founding inscription embedded in it as spolia (Sharon 2017:62).

10. A drawing that ostensibly represents the Jerusalem Gate in Thomson's book (1882) is no more than a generic sketch of a city gate in Muslim lands, inconsistent with all the peculiar details of Jaffa's Jerusalem Gate.

11. The excavations, on behalf of the Israel Antiquities Authority and underwritten by the municipality of Tel Aviv–Jaffa, were directed by Y. Arbel, assisted by M. Hater, S. Yechielov, and L. Rauchberger (area supervisors); R. Abū Halaf, E. Bachar, and Y. Amrani (administration); A. Peretz and C. Amit (photography); M. Kunin, M. Kahan, and A. Hajian (surveying); A. de Vincenz, K.S. Burke, E. Yannai, P. Gendelman, G. Finkielstejn, and N. Amitai-Preiss (ceramic finds); D.T. Ariel and R. Kool (numismatics); M. Sade and I. Ktalav (zooarchaeology); Y. Gorin-Rosen (glass finds); A. Glik (Ottoman weapons); and R. Avidov (field drawing).

12. J & M. P. Bell of Glasgow produced pottery between 1840 or 1841 and 1912. The Agra Pattern dates before 1881. The factory finally closed in 1923.

13. During archaeological inspection in March 2003 at Oley Zion St. No. 1, east of the city gate, one of the authors, Lior Rauchberger, discovered a cannon, the largest to have been found so far in Jaffa. The dimensions of the cannon and its location near the gate raise the possibility that it had been part of the gate's defenses and was discarded where it was unearthed once the structure became obsolete.

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Chapter 9

The New Gate of Jaffa during the Late Ottoman Period

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Historical sources, maps, and photographs permit the identification and description of the New Gate of Ottoman period Jaffa, which was located along its southeastern perimeter wall. While traces of architecture are often mistakenly identified today as elements of the New Gate, the gate was thoroughly destroyed in the late nineteenth century to make way for the expansion of the city.

The short history of the construction and demolition of the New Gate to the Old City of Jaffa gives a good indication of the rapid changes to Jaffa's urban landscape during the second half of the nineteenth century. Because this history is generally unknown, an arched passageway known as Abulafia St., off of Yefet St. (Figure 9.1), is often mistakenly referred to as the New Gate of the late Ottoman City, which was unfortunately destroyed. Close analysis of historical sources, maps, and photographs sheds light on its location and permits a reconstruction of the gate's history.

The Opening of the New Gate

From the beginning of the nineteenth century through the late 1860s, the Old City of Jaffa had a single terrestrial gate referred to today as the Jerusalem Gate (or Abū Nabūt Gate), which was located along its circumference wall (see Chapter 7, this volume). It was built by Muḥammad Agha Abū Nabūt, Jaffa's governor between 1807 and 1818, as a part of the major reconstruction of the city walls (Kark 2011:130). Next to the gate, outside the city walls, Abū Nabūt constructed a monumental drinking fountain referred to as the Sabīl Süleiman. The remains of the gate and the *sabīl* in its original state still exist at the entrance to Ruslan St.,[1] which leads to the Old City from the north.

During the 1860s, following a growth in Jaffa's population, new houses were built on the only remaining vacant space within the city walls, near its eastern section. One unexpected result of this rapid development of the city was a traffic problem, caused by the defensive arrangement of the city's sole gate. Murray's *Handbook for Travellers in Syria and Palestine* briefly describes this troubling situation:

> The town is defended by a wall, on which a few old guns are mounted toward the sea. On the land side there is but one gate, and it is always crowded with donkeys, camels and lazy Arabs, that one has difficulty in forcing his way through [Murray 1868:272].

It seems that this urgent problem was not left unattended by the authorities. In late 1868, William Howard Russell, the renowned Irish journalist, was joining the tour of the Prince of Wales (later to become King George V) to the Orient. On March 9, 1869, they set anchor in Jaffa. According to Russell, who published his travel diary later that year,

> When Murray's Hand-Book was revised last year, there was only one gate to Jaffa. There are two gates now; but surely when the book was issued there were more than 5,000 inhabitants? There are now, according to the census, 15,000, including

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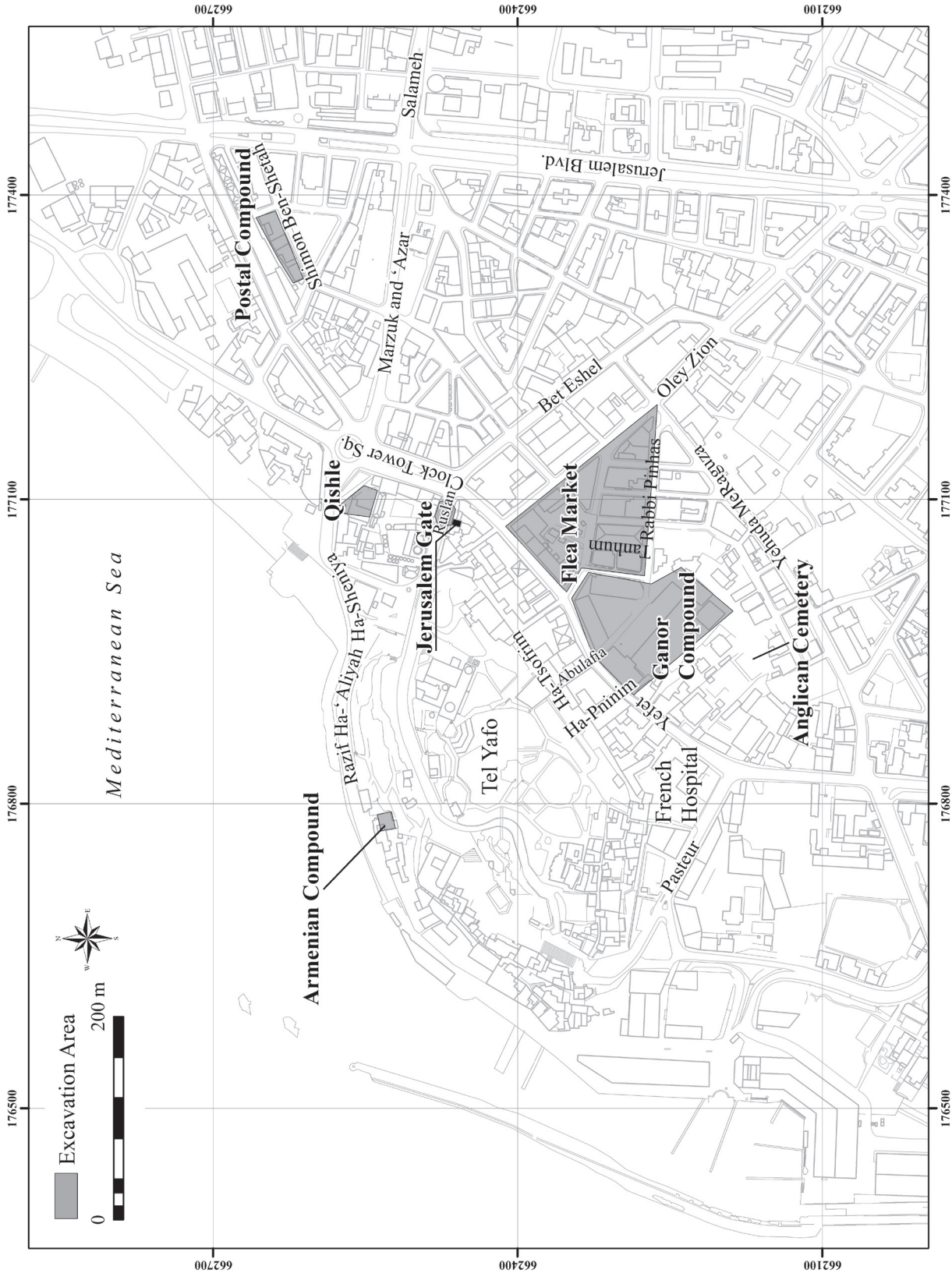

Figure 9.1. Map showing the location of places mentioned in the text and the New Gate, which was at the corner of Ha-Pninim and Ha-Tsorfim streets. *Map by Krister Kowalski.*

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> the population of the bazaar suburb outside the walls [Russell 1869:329–330].

Russell's account appears to be among the earliest to mention a second gate in Jaffa's wall. Keeping in mind Murray's account, it can be argued that the aforementioned traffic problem was the main reason for its opening. At the same time, it seems as if the opening of this second gate had only a limited impact on addressing the traffic problem. In October 1871, the Hebrew newspaper *Havatzelet* informed its readers about a decision to open even a larger gate in the city wall to facilitate the movement on draft animals:

> Last week, all city dignitaries gathered here to consult on many matters concerning the good of the city's inhabitants. All consuls too came to their dignified gathering. They intend to establish a committee (*majlis baladi*) as was established in all big cities, and the first thing to come out from them, is to open another large gate in the city wall, through which donkeys and camels would enter, so they will no more walk through the gate in which people walk [Anonymous 1871:2].

The next known account to indicate the existence of the second gate was an 1880 article on Jaffa by Gottfried Schwarz, who remarked while describing the city walls that "on the eastern side still stands the New Gate *el-bāb el-dschedīd* (pl. 53), which is no longer used, since right beside it a broader exit from the city is opened" (Schwarz 1880:47–48). Relying on Schwarz's account, it can be argued that the second ("new") gate of Jaffa, which was opened before March 1869, served as a passageway for a relatively short time and became redundant when an adjoining wider breach in the wall was realized, sometime after October 1871. The opening of this breach marks the beginning of a deliberate process of the dismantling of Jaffa's walls.

The New Gate's Location

The history and location of Jaffa's New Gate remain obscure. Apart from the above references, there is almost no written evidence for the construction of the New Gate, not to mention its exact location. Today, an arched passage in Abulafia St. (at the corner of 30 Yefet St., Figure 9.2) is commonly referred to by local city guides as the "New Gate." A guidebook to Jaffa, which was published in 1988, describes this passageway in the following way:

> Seen here are the remains of another gateway in the city walls of Jaffa. The New Gateway—*Bab el-Jadida* in Arabic—was opened in 1869 when the Jerusalem Gateway . . . , Jaffa's sole

Figure 9.2. The archway over Abulafia St. View northwest from Rabbi Pinhas St. across Yefet St. *Photograph by Or Aleksandrowicz, 2012.*

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entrance, proved inadequate. The older gateway could not cope with the increased traffic to and from other cities, or even local traffic between the Old City and the new urban development areas outside the city walls, during the latter half of the 19th century.

Nevertheless, a close analysis of historic maps and photographs reveals that this attribution is wrong and that the passageway in Abulafia St. was never used as a city gate. The original New Gate, now replaced by a residential building, was actually situated about 40 m southward, on the corner of Ha-Pninim and Ha-Tsorfim St. (Figure 9.3). Identification of the exact location was made possible by the analysis of two historic maps surveyed by the German architect Theodor Sandel, at that time a member of Jaffa's Templars.

Sandel's most reliable map dates from 1878–1879 (Figure 9.4). It is a remarkable and unprecedented representation of Jaffa, showing superb skill and intimate knowledge of the city. The map was published in 1880 in *Zeitschrift des Deutschen Palästina-Vereins* (Sandel 1880), as an addendum to Schwarz's article on Jaffa. It consists of a detailed map of the city (scale 1:9,100) and a larger map of the city and its environs (scale 1:31,800). In the part dedicated to the city's core, Sandel indicated the location of a "New Gate," which was no longer used (No. 53 on the map is identified as "el-Bāb el-Dschedid, d. Neuthor (eigegangen)." It has a square form and is flanked to its south by an open passage leading into the city, bridging over the city's defensive ditch and connecting to the external main road leading to Gaza (now Yefet St.). Another bridging passage is seen to the north of the gate, but instead of connecting the main road to the inner city, it is blocked by a structure perpendicular to the gate. One can confidently assume that this passage is actually the older one, which led to the New Gate and was in use before the opening of the southern breach of the city wall.

Because of its superb accuracy even by today's standards, Sandel's map can be used for identifying the precise location of the New Gate. Using CAD software, a current vector map of Jaffa was superimposed on a scan of Sandel's detailed map of the city, produced directly from an original copy

Figure 9.3. Residential building at the corner of Ha-Pninim and Ha-Tsorfim St. that now overlies the location of the New Gate. View to northeast. Photograph *by Samuel Giler, 2012.*

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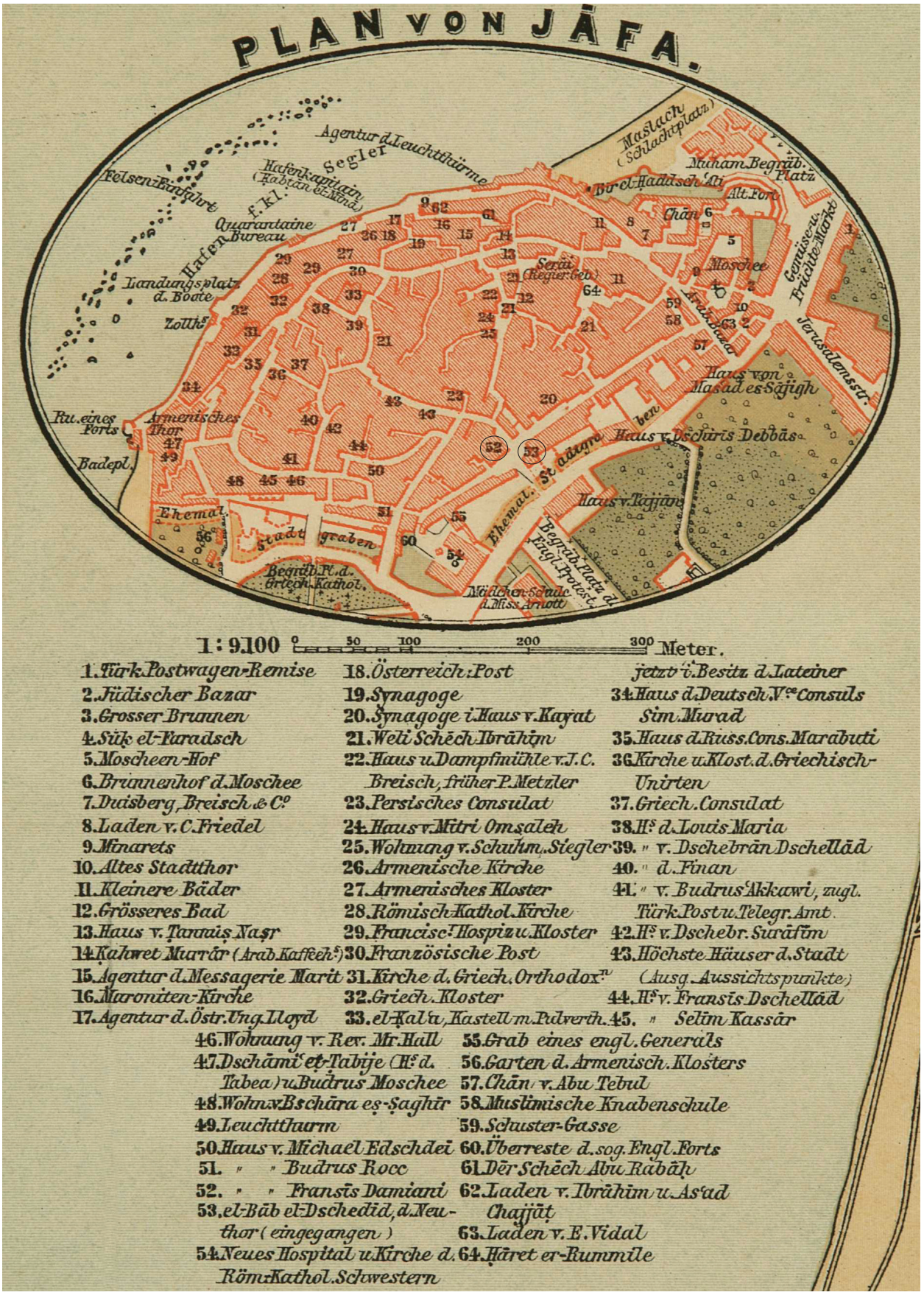

Figure 9.4. Inset of the old city of Jaffa from Theodor Sandel's map of Jaffa, 1878–1879 (from Schwarz 1880).

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of the map. The superposing of the maps shows that the gate's location corresponds to the current location of a more recent two-story building now at 12 Ha-Tsorfim St., whose northwestern part adheres entirely to the gate's original outlines (Figure 9.5). In addition, the superposition clearly shows that most buildings along Abulafia St., which are mistakenly identified today as the New Gate, did not exist when Sandel produced this map. Moreover, according to Sandel's map, Abulafia St. was still a ditch in 1878.

The above analysis is supported by a panoramic photograph of Jaffa from the north taken by the French photographer Félix Bonfils probably around 1870 (Figure 9.6). In its upper left part, one can identify a remarkable edifice standing outside the city walls, the house of Antoine Bishara Tayan (a wealthy Maronite merchant from Lebanon), which was also identified by Sandel's map (*Haus v. Tajjan*, southeast of No. 53). Right next to it, a bridge is leading from the main road to a city gate, whose vaulted entrance is located on the northeastern side of what seems to be a bulky watchtower. The city wall is seen running perpendicular to the bridge, stretching between this watchtower and another one standing to the north. Compared with Sandel's map, it is fairly clear that the southeastern watchtower, with its vaulted entrance, is the one labeled the *Neuthor* (New Gate) by Sandel.

The Watchtowers

Bonfils's photograph captures the city during a transitional phase. Only a few years earlier, Jaffa was still surrounded by an elaborate city wall. The eastern wall, which connected the northern bastion near the Jerusalem Gate to a southern bastion named after the British captain Sidney Smith, consisted of two watchtowers. A fausebray and a ditch separated it from the main road leading from the Jerusalem Gate southward toward Gaza. This arrangement is clearly marked on a military map drawn in 1842 by the British Lt. C. F. Skyring (Figure 9.7). It seems that this part of the walls remained intact at least until the mid-1860s, as can

Figure 9.5. The location of the New Gate seen after superimposing a vector map of Jaffa on Sandel's 1878–1879 map: (A) the location of the New Gate; (B) Tayan House; (C) Abulafia passage. *Map by Or Aleksandrowicz*.

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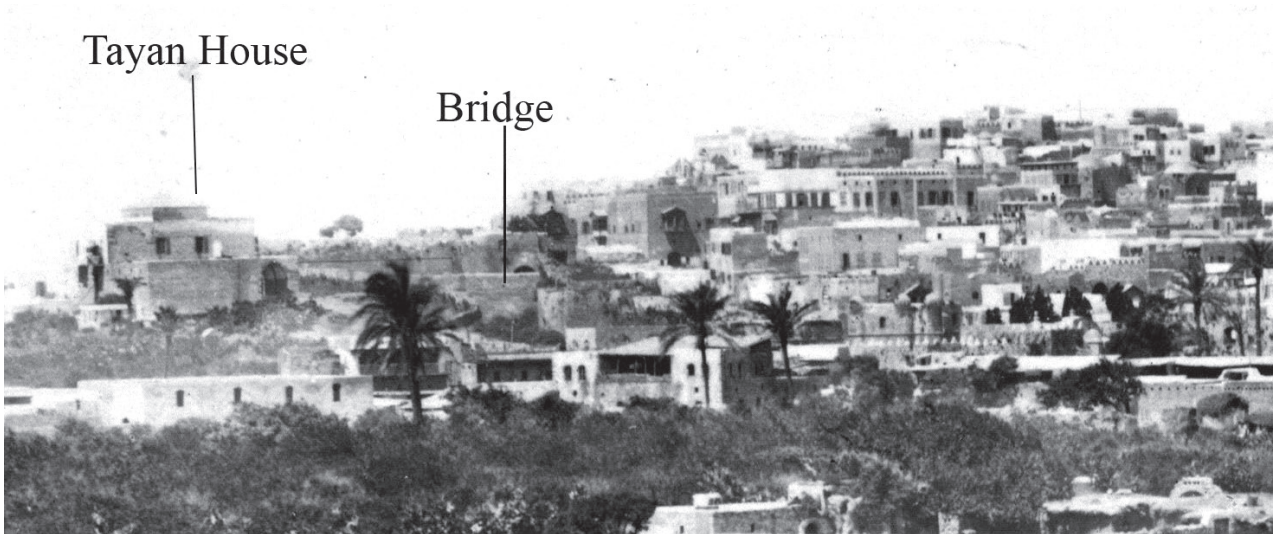

Figure 9.6. Detail of photograph of Jaffa from the northeast by Félix Bonfils, ca. 1870. *Courtesy of the Wahrman Collection, National Library of Israel.*

be seen in a series of three photographs taken by the French photographer Louis Vignes, presumably in 1864 (see Chapter 7, this volume). One of these photos (see Figure 7.2, this volume) shows the two eastern watchtowers with a dilapidated wall running between them. It is evident that at this time, the southeastern watchtower, within which the New Gate was later opened, had no opening in it and that there was no bridge over the ditch. This situation is also supported by an 1863 British military map drawn by Lt. F. G. D. Bedford (Figure 9.8).

An earlier map by Sandel, published in 1876 in a Baedeker guide to Palestine (Socin 1876:129), gives another indication to the opening of the New Gate in the southeastern watchtower. Although less detailed (scale 1:20,000) and clearly less accurate than his later comprehensive maps of 1878–1879, it indicates the location of a "New Gate" (No. 11) at the northern side of the southeastern watchtower (Figure 9.9), just in front of a large single house located outside the city walls, which is unmistakably the house of Tayan. This, in turn, may lead to another conclusion: that the New Gate was actually an older gate that was blocked in earlier times, only to be reopened later. An early map by the French cartographer Pierre Jacotin, dated to 1799, indicates indeed an exit ("sortie") that leads to two separate roads, one toward the north connecting to the main road to Jerusalem and the other southward from what seems to be a southeastern watchtower (see Shacham 2011:149, fig. 13.8). A similar situation is seen in an 1800 British map by George Pink, a surveyor of the British army, which was drawn after the withdrawal of the French army from Palestine (see Shacham 2011:151, fig. 13.11).

Support for the above assumption can be found in the memoirs of the British consul to Jerusalem, James Finn. When describing the city during the mid-1850s, he mentions that Jaffa's inhabitants requested a second gate be opened because of growing traffic. In his words:

> There was still the old vexation unredressed at Jaffa—that of having but one gate to the town. . . . The inhabitants of Jaffa even offered a few years before to collect 150*l*., quite sufficient for the purpose, for having a second gate opened in the wall, or rather to have an old gate reopened in the land side, which would be particularly convenient for the new street of magazines; But no! [Finn and Beaufort 1878:342–343]

Finn concludes his story by adding that both the government and the army were not in favor of the idea, and therefore no second gate was opened during that period.

Conclusion

In December 1879, Conrad Schick, the renowned German architect and archaeologist, sent the following report to *Österreichische Monatsschrift für den Orient*:

> In Jaffa the city wall was demolished, the ditch filled up, and a number of large new houses and stores, even palatial buildings, were erected. Also in the gardens of Jaffa there is a large number of new houses, and to the south and to the north of the city complete Arab quarters were built, most of them by settlers from Egypt. . . . In Jaffa not only were the mosque and the fountain of the city repaired, but also a nice slim *medineh* (a [mosque] tower) was erected anew [Schick 1880:64–66].

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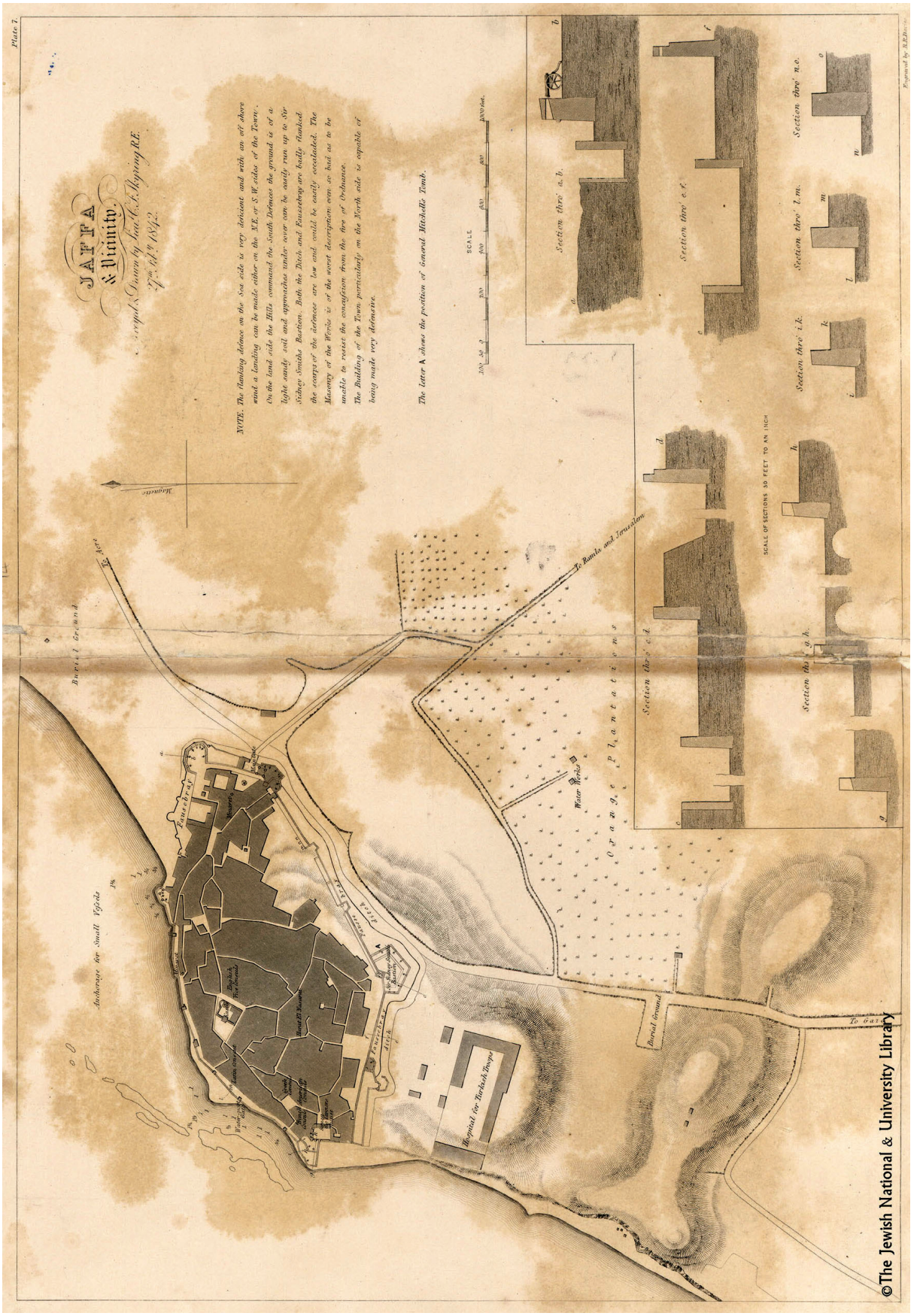

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Figure 9.7. British map by Lt. C. F. Skyring, 1842 (from Alderson 1843; also British Library: MSS No. P.P. 40501.i., vol. 6. Folio: p. 24).

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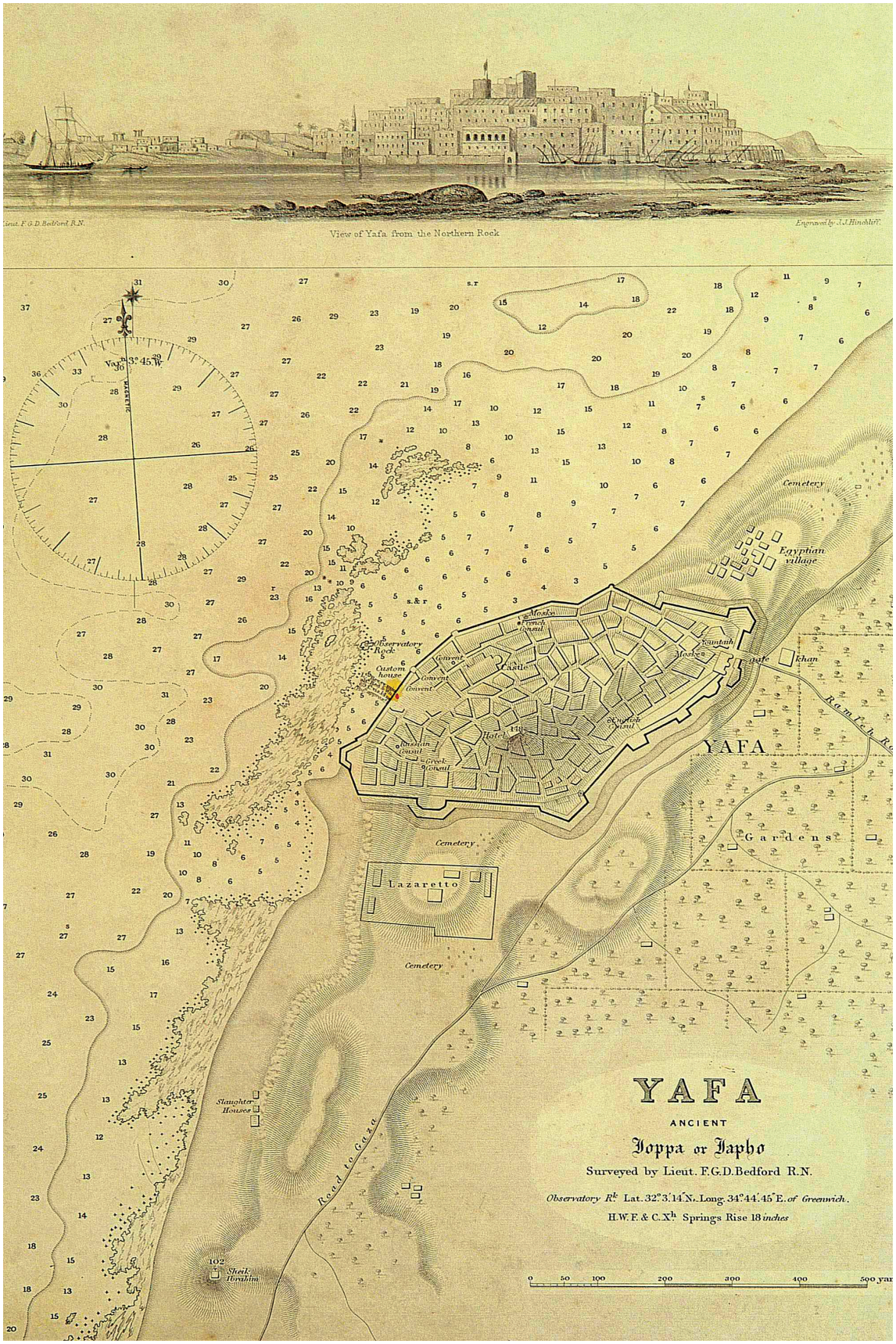

Figure 9.8. Map by Lt. F. G. D. Bedford, 1863. *Courtesy of the Baruch Rosen Collection.*

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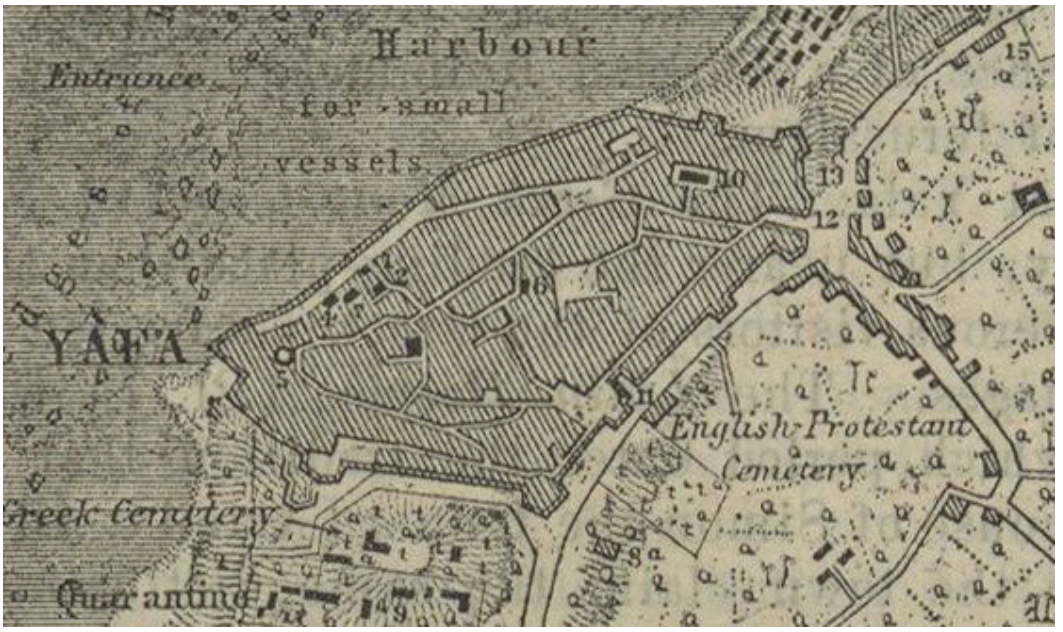

Figure 9.9. Theodor Sandel's map of Jaffa, 1876. The location of the New Gate is marked as No. 11 along Yefet St.
Courtesy of the National Library of Israel.

This construction boom, which now included large areas outside the city walls, made the demolition of the New Gate economically attractive. Land prices were rising, especially next to the main roads outside the Old City and over the former ditch. Although Jaffa's main gate was only partially dismantled, leaving its lower vaulted passage intact while replacing its upper part with new residential apartments, this was mainly because the main gate still functioned as a vital traffic artery. The New Gate, already made redundant by the opening of the adjacent breach, was therefore prone to a somehow harsher treatment and was therefore fully demolished to give way to a residential building, most probably the same one that currently occupies its former location.

At the same time, even the breach next to the structure of the New Gate proved an insufficient solution to the growing traffic, mainly due to a remarkable residential building (the house of Francis Damiani, marked by the No. 52 on Sandel's 1878–1879 map, Figure 9.4) that stood in front of it, forcing a sharp turn when navigating into the main streets of the inner city. With the introduction of carriage transportation by the Templar settlers during the 1870s, this awkward way of entering the city was far from being satisfactory. Thus, a new entrance from the road to Gaza had to be conceived.

It is reasonable to assume that this enduring traffic problem was the reason behind the construction of the arched passageway, which is today's Abulafia St. A part of a commercial and residential complex, it was probably built during the late 1880s, wide enough to enable the parallel and separate movement of carriages and pedestrians through the archway, as can be seen in a photograph from the end of the nineteenth century (Figure 9.10).

According to Yosef Eliyahu Chelouche, a local merchant and building contractor, the lot on which the building complex of the Abulafia St. passageway was constructed was still empty during the beginning of the 1880s. The lot, "where the Land Registry, the Land Court, Banco di Roma and the Ottoman Bank are built today" (Chelouche 1931:70–71), belonged to the father of Avraham Moyal, Chelouche's father in law, and was used by Moyal for storing prefabricated wooden structures before sending them for use in a new Jewish settlement in Ekron.[2] During the 1920s, when Chelouche wrote his book, the Ottoman Bank was located above the Abulafia St. passageway next to Banco di Roma.

The new arched passageway connected the inner city not only to the road to Gaza but also to a new road, which led eastward to the road to Jerusalem (now Rabbi Pinhas St.). In addition to the physical disappearance of the original New Gate, the important role that this traffic artery assumed before the end of the nineteenth century also contributed to its misidentification until the present as Jaffa's original New Gate.

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Figure 9.10. Historic photograph of the Abulafia St. passageway taken from the road that connected it to the main road to Jerusalem. Photographer unknown. *Courtesy of the Shmuel Taggar Collection*.

Acknowledgments

The authors thank Jakob Eisler for initially providing them with a high-resolution scan of Figure 9.6.

Notes

1. *Ruslan* was the name of a Russian ship that brought many high-profile Jews to Jaffa in 1919.

2. In his book, Chelouche actually claims that the wooden structures were sent to the Jewish settlement in Qastina (later to become Be'er Ya'akov). Since Moyal died in 1885 and this settlement was founded only in 1887, it is probable that Chelouche mistakenly attributed the story to Qastina and the settlement to which the structures were sent was actually Ekron, a colony in which Moyal was deeply involved in founding in 1884.

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Chapter 10

The Anglican Cemetery of Jaffa from 1842

Samuel Giler
Independent Scholar

A significant but neglected aspect of Jaffa's modern landscape is the Anglican Cemetery that was established in 1842 and lies off the southeast corner of Jaffa's French Hospital. An examination of the cemetery's history reveals Jaffa's connections with some well-known Europeans during the nineteenth century, a period of intensive transit through Jaffa by Western travelers. Thanks to historical sources and the tombstones themselves, a history of the cemetery can be provided.

At the edge of a sandy alley, between 19 and 21 Yefet St. in Jaffa, across the street from the former French Hospital in a hidden corner next to Tabeetha Scottish School, lies the old Anglican Cemetery of Jaffa (Figure 10.1). The broken marble headstones, which lie among wild shrubs, were restored in 2015 (Figure 10.2). On the corner, a white marble tombstone of the British Brigadier General Edward Thomas Michell was straightened up from its former position leaning on a rusty pole (Figure 10.3). Almost nothing has been written about the history of the cemetery or about the general's life and death, but new documents from the British Archives shed new light on the subject. The documents reveal that the cemetery in Jaffa preceded the Protestant cemetery on Mount Zion in Jerusalem as the first property purchased by the Anglican Church in Palestine.

The activity of the Protestant church in Palestine commenced in January 1842, following the arrival of Bishop Michael Solomon Alexander in Jerusalem. Alexander, the son of a Jewish rabbi, was born in 1799 in the village of Schonlanke, in Prussia. At the age of 16, he was a Talmud teacher, and at age 22 was nominated as the Rabbi of Norwich in England and later of Plymouth. Following a long internal struggle, and despite the resistance of his family, he converted to Christianity in 1825 and became a priest in the Anglican Church. After serving as a missioner in Danzig, he became a professor of Hebrew and Rabbinic literature at King's College in London (Perry 2003).

In June 1841, the king of Prussia, Frederic William IV, obtained permission from the Turkish sultan to establish a Protestant church in Palestine. Alexander was chosen as the first bishop of the United Church of England and Ireland. On January 21, 1842, he entered Jerusalem in a solemn ceremony, accompanied by the British ambassador and a group of missionaries working in the land. The Turkish pasha welcomed him with a gun salute. In his three years of leadership, he was primarily active Among the Jews and sponsored the Christian Missionary Society among the Jews, which had operated since 1833 under the Danish priest John Nicolayson.

The Establishment of the Cemetery in Jaffa

The land for the cemetery was purchased in March 1842, two months after the arrival of Bishop Alexander.[1] In those days, Jaffa was still surrounded by a wall, and on its southeast corner was a bastion named for the British Admiral

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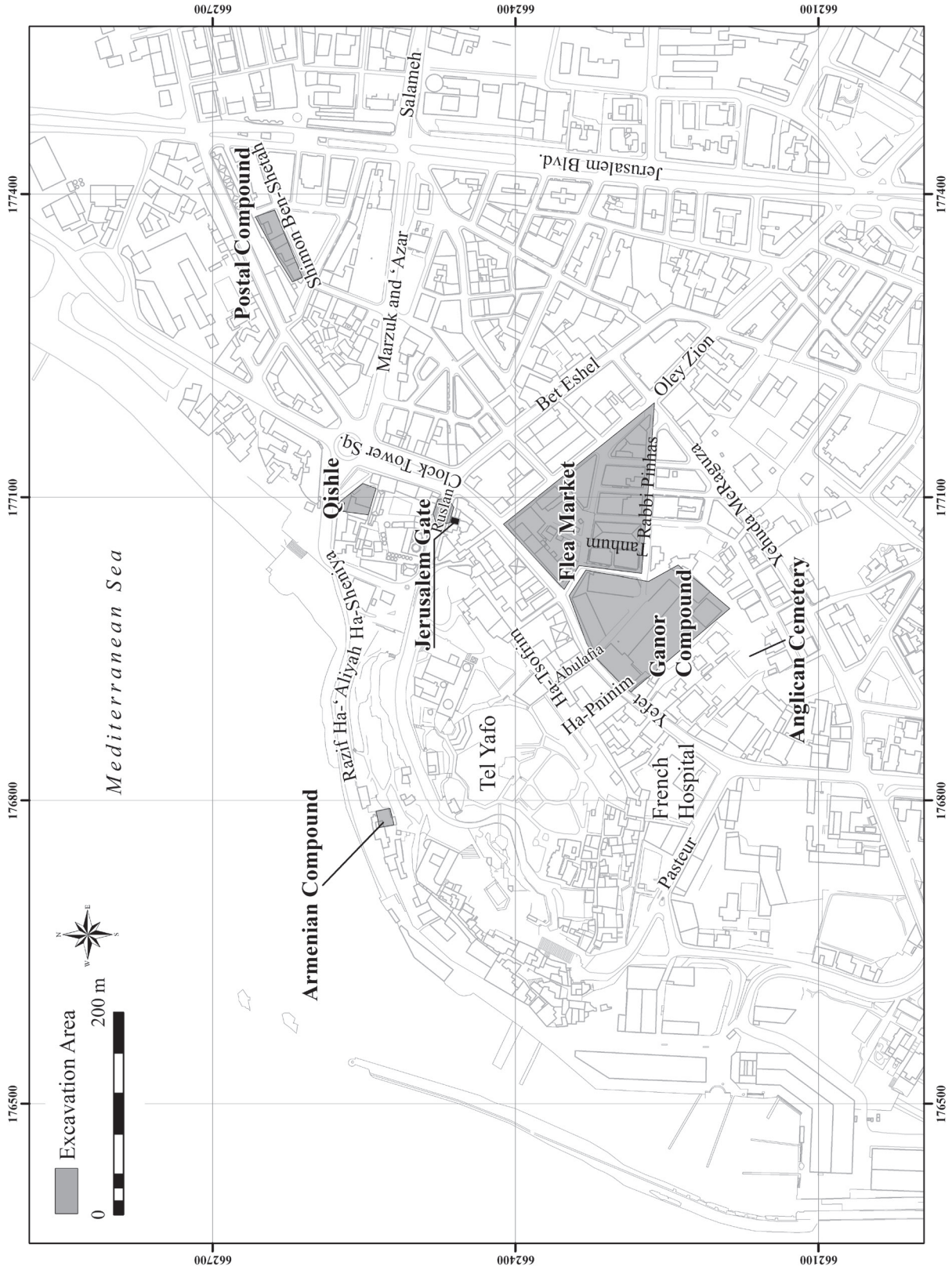

Figure 10.1. Map showing the location of the Anglican Cemetery and places mentioned in the text. *Map by Krister Kowalski.*

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Figure 10.2. The Anglican Cemetery. *Photograph by Samuel Giler.*

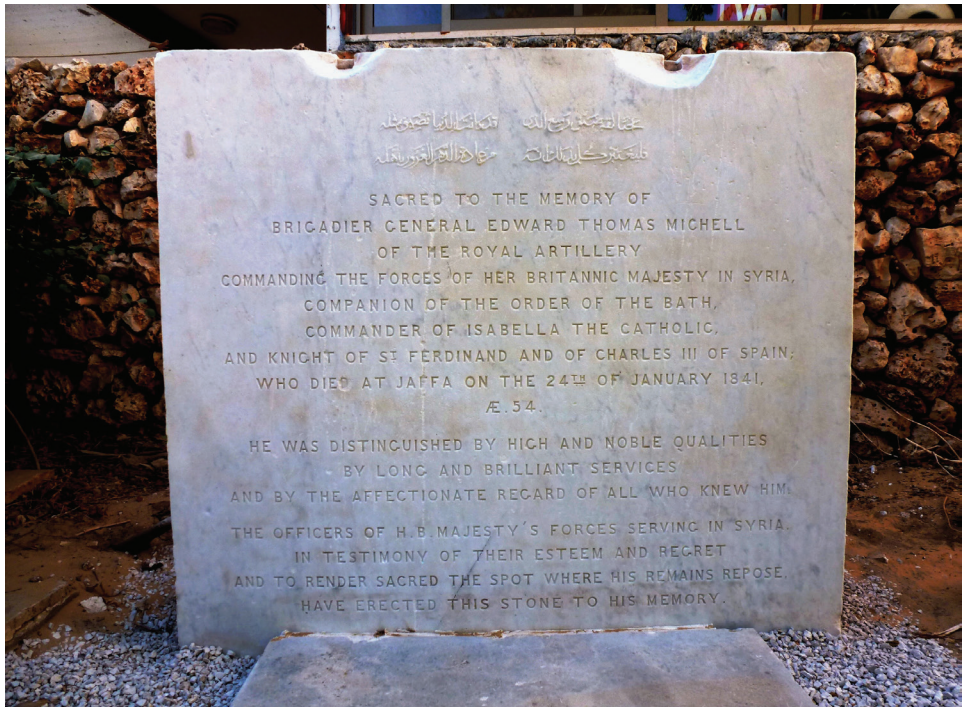

Figure 10.3. The white marble tombstone of the British Brigadier General Edward Thomas Michell. *Photograph by Samuel Giler.*

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Sidney Smith, who assisted the Turks in renovating the walls after Napoleon's conquest. (The French Hospital occupies the site today.) On the east bank of the Gaza Road (modern Yefet St.) and extending along the wall's ditch was a barren hill on which the cemetery was established along with other Christian institutions.

In February 1865, during the term of Bishop Samuel Gobat, a dispute erupted over the ownership of the cemetery. Dr. Assad Jacob Hayat, the British consul in Jaffa, who was initially of Greek Orthodox faith, claimed ownership of the land, arguing he was the one who bought it. He used part of the lot for disposing of animal bones, angering the relatives of those who were buried nearby. A committee was formed to resolve the controversy. Hayat agreed to divide the lot with a partition ditch and allocate part of it for the cemetery on condition that the rest would be registered in his name. One of the committee members, Dukat, opposed the decision, claiming that Bishop Alexander had purchased the ground and that Hayat had no rights to the land. He refused to sign the protocol, claiming he had witnessed the transaction in 1842. According to him, Hayat had arrived in Jaffa in 1847 and thus could not have been engaged in the purchase.

Dukat sent a complaint to Joseph Barklay, who later succeeded Gobat as bishop, asking him to look into the church records. Barklay investigated the case by reading the diary of John Nicolayson, Alexander's assistant at the time. Nicolayson described the circumstances that brought about the purchase of the cemetery plot in 1842.

According to Nicolayson's diary, he was informed on March 9, 1842, of a tragic incident in Jaffa. A British ship was swept away in a storm, and seven sailors fell into the raging sea, including the first officer, Ariston, and a Greek navigator. The Ottoman city governor placed soldiers on shore to look for the bodies. While waiting for the bodies to be washed ashore, the church leaders were looking for a proper burial place. They decided to bury the dead in Sidney Smith's bastion, where Brigadier General Thomas Michell had been buried in 1841. The governor approved the decision but then changed his mind, claiming that it was not customary to carry the dead through the city gate. He offered to sell a lot next to the wall for the purpose of a Protestant cemetery. The price was 2,000 piasters, and on March 11, Nicolayson arrived at Jaffa with Dr. Edward Macgowan to check the site and finalize the purchase contract. A few days later, Bishop Alexander arrived in Jaffa to dedicate the cemetery and bury the dead, who had been swept ashore. The regional pasha later scolded Jaffa's *qadi* for approving the land transaction.

The first officer and the sailors were the first to be buried in the cemetery, on March 17, 1842. Over the years, members of the Protestant and Anglican community were also buried there, including the famous Dr. Thomas Hodgkin in April 1866. He accompanied Sir Moses Montefiore on his tour to Palestine and died of dysentery. The following October, George Clark and his two young children were buried at the site. They had arrived just three weeks earlier, with George Adams and members of the American Colony, and died shortly after. Also buried there are other famous figures linked to the history of Jaffa: Jane Walker Arnott, who founded the Tabeetha Girls' School in 1863 and passed away in 1911; Mary Briscoe Baldwin, who established the boys' school in 1870 and died in 1877; and Beatrice (Bessie) Mangan, who founded the English Hospital in 1878 and died in 1885. Toward the late 1870s, the grave of Brigadier-General Thomas Michell was moved from the bastion, when the site was sold to the French nuns of the Order of Saint Joseph. The story of the general, whose death preceded the cemetery's establishment, was forgotten thereafter.

Brig. Gen. Edward Thomas Michell (1782–1841)

Edward Thomas Michell was born in 1782. In 1802, he was admitted as a cadet to the Royal Military Academy at Woolwich, and in 1803, he became an officer of the Royal Artillery. In 1810, he was transferred to Spain, where he commanded a company in the Battle of Sierra de Honda. In 1811, he commanded the British artillery force that conquered Tarrifa, and during the conquest of Barrosa, he was wounded in the shoulder. A year later, he took part in the Battle of Salamanca and was decorated for his service.[2]

In later years, he commanded troops in Holland and Belgium and was seriously wounded in the Battle of Bergen-op-Zoom. In 1838, he was elevated to the rank of lieutenant colonel, and from 1839 to 1840, he commanded the British forces that assisted King Carlos V in his fight against the Republicans. As a token for his service, he received the Spanish decorations of Knight of Ferdinand, Charles III, and Isabella the Catholic. Michell was elevated to the rank of brigadier general and was nominated to command the British artillery force that joined Admiral Stratford's fleet, sent to Syria to assist the Ottomans in their battle against the invading Egyptian troops of Ibrahim

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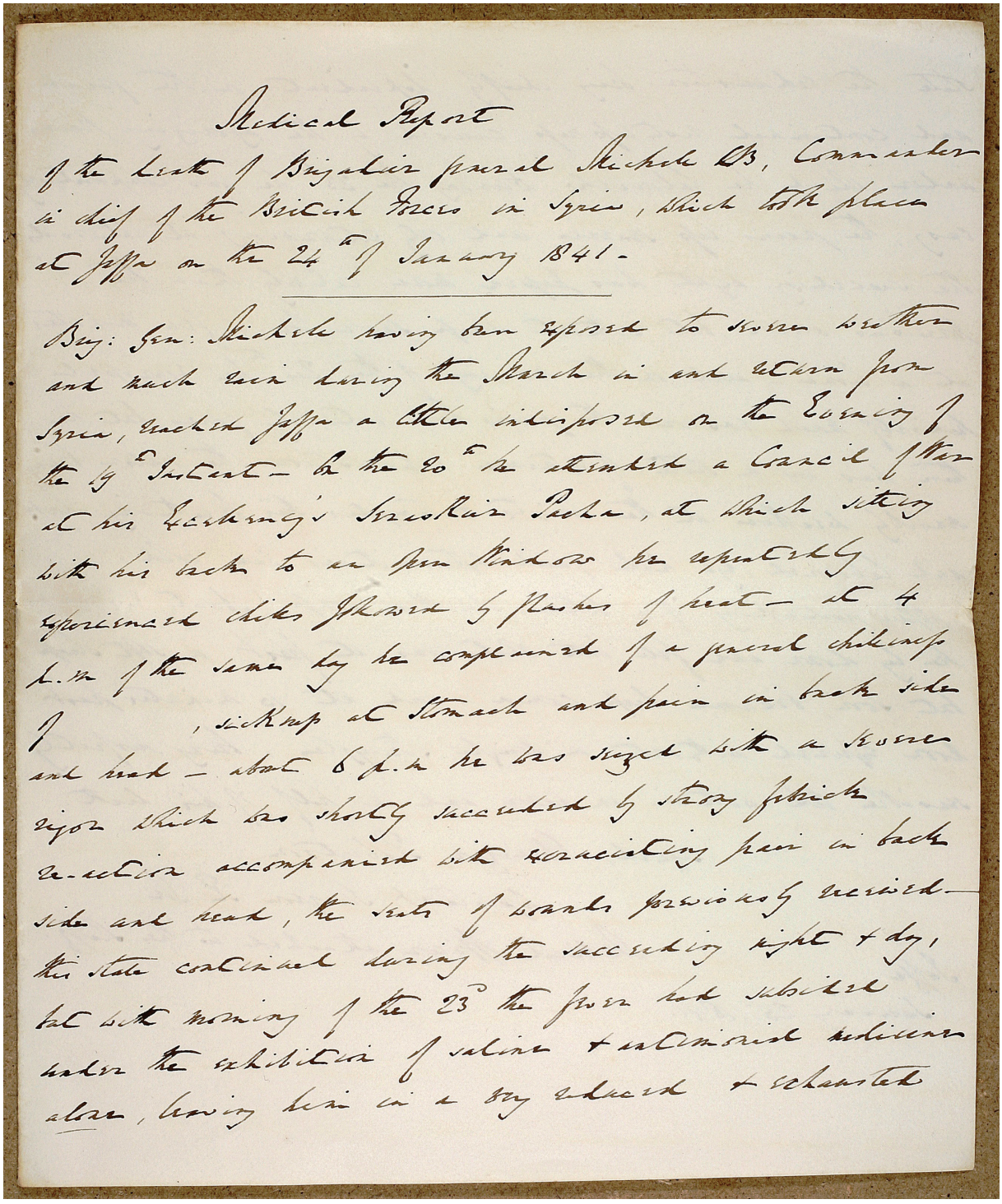
Pasha, Muḥammad Ali's stepson. On January 15, 1841, Michell took part in the Battle of Majdal, which forced the Egyptians to retreat. Two days later, the war ended.

Michell died on January 24, 1841, at the age of 54. The circumstances of his death are described in a medical report issued by the military physician who treated him (Figure 10.4). A few days earlier, he had returned to Jaffa after marching with his troops in rainy and stormy weather. The following day, he attended a meeting with the Ottoman command and sat in front of an open window. The next morning he suffered a high fever and weakness, and four days later, he was in a coma. He passed away at 20:10.[3]



Medical Report
of the Late Brigadier General Michell CB, Commander
in chief of the British Forces in Syria, which took place
at Jaffa on the 24th of January 1841.

Brig: Gen: Michell having been exposed to severe weather
and much rain during the March in and return from
Syria, reached Jaffa a little indisposed on the Evening of
the 19th Instant — On the 20th he attended a Council held
at his Excellency's Serasker Pasha, at which sitting
with his back to an open Window he repeatedly
experienced chilly sensations & flashes of heat — at 4
A.M. of the same day he complained of a general chilliness
of , sickness at Stomach and pain in back side
and head — about 6 A.M. he was seized with a severe
rigor which was shortly succeeded by strong febrile
re-action accompanied with excruciating pain in back
side and head, the state of boards previously received —
this state continued during the succeeding night & day,
but with morning of the 23d the pain had subsided
under the exhibition of saline & antimonial medicines
alone, having been in a day edward & chamber

Figure 10.4. The medical report for Edward Thomas Michell. *Courtesy of the British National Archives. Photograph by Samuel Giler.*

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The general was buried under a fig tree, in the north corner of Sidney Smith's bastion. Since Jaffa was under Ottoman rule, diplomatic activity in the sultan's court was needed to receive a permit for placing the headstone. Sir Stratford Kening, the British ambassador to Istanbul, managed to get the permit in 1844, and Michell's fellow officers erected the white marble headstone (Figure 10.3), engraved in English with the following text:

> Sacred to the memory of Brigadier General Edward Thomas Michell of the Royal Artillery, commanding the forces of her Brittanic Majesty in Syria, companion of the Order of Bath, commander of Isabella the Catholic and Knight of St. Ferdinand and of Charles III of Spain, who died at Jaffa on the 24th of January 1841 at age 54. He was distinguished by high and noble qualities, by long and brilliant services, and by the affectionate regard of all who knew him. The officers of H.B. Majesty's forces serving in Syria, in testimony of their esteem and regret, and to render sacred the spot where his remains repose, have erected this stone to his memory.

On top of the stone, they engraved the following in Arabic:

> This narrow grave contains one whose fame during life was widely extended.
>
> Let all respect it, for he was of those who have rendered their period illustrious.

The headstone was brought from Malta by the navy ship *HMS Tyne*. The captain and his officers carried a message from Assad Pasha, the Ottoman governor of Syria, to the governor of Jaffa, ordering him to assist in erecting the stone. The British ambassador to Jerusalem sent his deputy to assist, and Jaffa's governor assigned a few soldiers for the task. On May 24, 1844, they completed

Figure 10.5. Dr. Thomas Hodgkin's funerary obelisk next to the General Edward Thomas Michell's marble headstone in the Anglican Cemetery. *Photograph by Samuel Giler.*

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their work. The *Royal and Military Gazette* published an article about the event:[4]

> It is not often that the Turks join to do honor to the grave of a Christian; but it is due to those of Syria to make known, that the tomb of Major Oldfield, of the Marines, who fell in the defense of Acre [Akko], under Sir Sidney Smith, in 1799, placed in the public thoroughfare of that fortress, was in 1840 to be perfect, and to have suffered no defacement whatever—seeming to prove that in the profession of arms, or the fellowship of those who have fought together, there is something that is capable of mitigating even the intolerance of hostile creeds. Let it be so, and let us hope that the distant and lonely grave of Edward Michell, who was known to many, and loved wherever known, will also be respected.

Following the ceremony, Captain Glascock of *HMB Tyne* wrote to the British ambassador to Beirut, thanking him for his assistance:[5]

> Sir—on the part of the officers of Her Majesty's army, serving under the order of the late Brigadier General Michell of the royal artillery, I beg to return you my grateful acknowledgment for the kind and efficient aid, given by yourself, your officers, and men, in the erection of a monument to the memory of that gallant officer, in the bastion called Sidney Smith's at Jaffa. It was our wish to record, not the merits of the deceased, for they belong to history, but our lasting remembrance of one whose heart was amiable as it was resolute, and whose talent and courage made him conspicuous even among the scientific chivalrous corps to which he belonged. That the last tribute of brother officers' esteem should have been placed over his remains by officers and men of Her Majesty's Navy, is an additional source of honour to his memory, and of consolation to those who cherish it.

Conclusion

Brig. Gen. Michell, who was described as having a bent figure due to his war wounds, remained buried in the Sidney Smith bastion until the late 1870s. When the city wall was dismantled in 1875, the site was sold to the nuns of the Order of Saint Joseph,[6] and the remains of the general were transferred to the Anglican Cemetery across the street. He was buried next to the grave of Dr. Thomas Hodgkin (Figure 10.5). The granite obelisk over Hodgkin's tomb stands next to the marble stone on the general's grave. The tombs of these two distinguished historical figures have been restored: Dr. Hodgkin's grave by a donation of Dr. Amalie Kass, who coauthored a book about his life with her husband, and the general's grave by the Commonwealth War Grave Commission.

Notes

1. British National Archives, Foreign Office FO 226/165.
2. British National Archives, Foreign Office FO 226/165; Somerset Heritage Center Archives, DD/CM 164.
3. Somerset Heritage Center Archives, DD/CM 164.
4. British National Archives, *The Naval and Military Gazette*, September 7, 1844.
5. British National Archives, Foreign Office FO 226/165.
6. This order built the St. Louis Hospital (i.e., the French Hospital) on the site in 1897.

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Chapter 11

The Blessed Bayāra:

A Bayāra and Arabic Inscription from Late Ottoman Jaffa

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Orange orchards, referred to as *bāyarāt* in Arabic (sg. *bayāra*), were a common element of Jaffa's agricultural landscape during the late Ottoman period. To date, these have not been given great attention. However, given the iconic association of Jaffa with oranges (i.e., "Jaffa oranges") that were exported across the Mediterranean and to Europe through the twentieth century, the infrastructure behind this trade is worthy of closer study. This chapter addresses the development, elements, and character of these complexes and examines the context of one Arabic inscription identified in one of Jaffa's *bāyarāt*.

The traditional economy in the southern Levant until the period of the British Mandate, which brought with it extensive industrialization, relied mainly on rain-fed agriculture. Diverse agricultural branches developed during the Ottoman period that necessitated adjacency to the land during periods of agricultural work, as regards both the Arab peasant and the Jewish farmer. The beginning of this attachment to the land was by means of wells that were dug to irrigate the fields and groves, and later the construction of farm buildings and residences for the owners and workers. As the citrus orchards developed in Jaffa, so did the phenomenon of the *bayāra* and the orchard houses. Most of the citrus orchards in Israel were irrigated with well water, and therefore the orchard was called a *bayāra* (pl. *bāyarāt*) in Arabic. Later, the residential homes and estates that developed at the orchards and well houses were also identified by this term.

In recent years, interest in the citrus industry in general, as well as in research into the remains of citrus cultivation as manifested in the *bayāra*, has increased. Avi Sasson has already conducted several studies on *bāyarāt* in Israel (Sasson 2001a, 2004, 2011; Sasson and Katzir 2013a, 2013b, 2013c; Sasson and Ziv 2001, 2007). One of the main foci of this phenomenon are the Jaffa *bāyarāt*. Following a number of studies by Avi Sasson on the subject of the history of water, the water supply of fountains (Ar. *asbila*), and *bāyarāt* in Israel, he has begun to focus his research on Jaffa's *bāyarāt* (Sasson 2001b, 2006, 2011; Sasson and Katzir 2011a, 2011b, 2012, 2013b, 2013c; Sasson and Ziv 2001, 2007, 2008, 2011). This study developed with the encouragement of the Tel Aviv–Jaffa municipality that recently identified the scope of the phenomenon and plans to preserve extensive sections of Jaffa's *bāyarāt* (Sasson and Katzir 2012).

Sources and the History of Research

This interdisciplinary study rests on diverse historical and geographical sources. The subject of the *bāyarāt*, part of daily life in Jaffa and its environs, has attracted neither the attention of researchers in Israel nor travelers during the Ottoman period. As far as they were concerned, this

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was an integral, yet pedestrian, part of the landscape that did not demand academic attention. Their attitude toward the *bāyarāt* was usually in their description as being part of the landscape of Jaffa's citrus orchards. Only a few travelers described in relative detail *bayāra* complexes, their components, and life around them. Over the course of the last generation, we have witnessed the extensive use of historical maps as an important source in historical-geographical research (e.g., Shacham 2011). The study of these maps—including Jacotin's map through maps from the nineteenth century, a map from the British Survey Delegation, and Mandatory topographical maps—reveals very important data but was mainly concerned with geographical and architectural observations (see Shacham 2011).

Because of these limitations, for this study, it was necessary to survey a field of the relics in which Arab and Jewish residents who still lived among the *bāyarāt* could be interviewed and we could document selected sites in Jaffa's agricultural space. The subject has also enjoyed certain rejuvenation in modern research, mainly since the establishment of the State of Israel. Shmuel Avitsur was among the first who voiced his opinion on the matter, mainly in the context of the provision of water and the wells in Jaffa (Avitsur 1988). Ruth Kark was asked about the subject in her studies on the development of Jaffa and also in research connected to land and settlement in the Middle East and in Israel in modern times (Kark 1984). Several research papers have been written in recent years on the *bāyarāt*, the foremost of which is by Iris Kashman, who also refers to aspects of heritage and preservation (Kashman 2007). The most prominent remains in the landscape of these unique sites also resulted in recent years in considerable interest from the public as well as among private developers and inspectors of public enterprises who were interested in the adaptation of these sites.

Jaffa's *bāyarāt* originated with the digging of a well in the citrus orchard. Gradually, additional agricultural roles were introduced to these well houses, which expanded from a building with one open space to a building with several spaces that provided housing for guards (Ar. *bayārjiyy*), for storing work tools and machinery, for stabling animals, and so on. When the buildings were enlarged and functions increased, they often had two stories. The lower story usually supported agricultural labor and included the well, a stable, storerooms, and sharecropper housing, while the upper story would have been the house owner's residential floor.

The complex was defined by a high stone wall that met security concerns, on one hand, and preserved the social context of farming life, on the other. The buildings were built simply and modestly of local soft limestone, almost totally lacking special architectural elements and sometimes even without plastered or painted walls. The internal division of the spaces was also simple. The walls were partially roofed, with preference afforded to the living areas and wings demanding protection from rain, using the simplest of materials. Agricultural areas were covered with wooden panels and layers of mud, while the residential wings were sometimes covered with *dabsh* (i.e., "rubble") domes, made of a mixture of stone, plaster, and mud.

Jaffa's urban development as well as the impact of the West left their marks on the architecture of *bāyarāt* houses. The modest homes built of local stone with a functional division were replaced by large complex buildings of the *līwān* style, familiar in the city. The buildings were admittedly built of soft limestone but were well plastered, often painted, and even decorated with special decorations characteristic of wealthy houses in Eastern cities. From then on, residential wings, and sometimes even part of the agricultural wings of these *bayāra* houses, featured red tile roofs. The style of this stage of *bayāra* construction can thus be characterized as a style with specific urban influences, both architectural and geographical.

Kark notes that much land was concentrated in the hands of a few families during the late Ottoman period. In the mid-nineteenth century, the socioeconomic disparity between Jaffa's populations increased, and this was the source of the growing strength of urban families, a process that was particularly noticeable in both Jerusalem and Jaffa toward the end of the Ottoman period (Kark 1984:24–26). The urban effendis (Tur. *effendiyya*, heads of wealthy families) had administrative power and exploited the weakness of the Turkish rulers, their foreignness, and their lack of knowledge of the local language.

Some Jaffa residents had gardens with summer houses attached to them (Kark 1984:45). The Jaffa citrus orchards contributed to the city's economy, and their residents, who were involved in harvesting and marketing, enjoyed their revenues. The citrus orchards also created many sources of income for gardeners, agricultural workers, well diggers, Christian Arab builders from Jaffa during the Ottoman period, Copts, packers, sailors, and carpenters who were employed in building and mending *sāqiyya* (water wheels). Jaffa's notables and rich included Muslim effendis, clerics,

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and sheikhs from nearby villages, who emigrated from Beirut, among other places. Some of them had villas in Jaffa's gardens in addition to their homes in the Old City.

The process of movement away from ancient cities in the nineteenth century also occurred in Jerusalem, when wealthy individuals purchased fields outside the city, planted vineyards, and built large houses where attention was paid to many architectural details. These houses were built out of a desire to improve living conditions, as well as to demonstrate importance, power, and affluence (Kark and Landman 1980). This seems to be, therefore, one of the reasons for the architectural development of the *bayāra* houses of Jaffa discussed in this study.

Development and Dating of the Site

The site of the *bayāra* at the center of this study developed close to the main roads from Jaffa to Jerusalem (see Chapter 12) and Gaza, at the edge of the municipal boundary of historic Jaffa (Figure 11.1). Located southeast of Jaffa's Old City, the site is now the residence of several families, although according to the Tel Aviv–Jaffa municipal plan, it is slated for preservation while remaining designated as residential. In oral heritage, the *bayāra* is attributed to the Barakat family, and for this reason, it is identified as the Barakat *bayāra*, but we know nothing about its history or its architect. However, according to inscriptional evidence from the property, discussed below, it appears that the founder and owner was Muslim.

Analysis of the historical and cartographical sources indicates the site dates from the mid-nineteenth century. The *bayāra* first appears on Theodor Sandel's map of 1878 (near No. 26 on the larger map; see Shacham 2011:fig. 13.19), so it can be dated to the second half of the nineteenth century like other *bāyarāt* in the Jaffa area. It appears in at least two other later maps (Figure 11.2 and Figure 11.3) and even one aerial photograph (Figure 11.4).

Elements of the bayāra

As we have shown previously, the *bayāra* or orchard house included several components that met residential and agricultural needs. Below we will describe the main components of the Barakat *bayāra*, which include the well, storage pool, water transportation system, farm buildings, storerooms, residence, and perimeter wall. Out of respect for the privacy of its current residents, we can only offer a limited visual documentation of the site.

The Well

The well is, as noted, the foundation of the ground floor of the *bayāra* and the oldest part of the complex. Access to it is blocked, and it is now full of garbage and rubble. Its depth is estimated at about 25 m. Like all Jaffa wells, the pumping method in the beginning employed traditional *sāqiyya* or water wheels (Figure 11.5). From the end of the nineteenth century, with the introduction of machinery, different machines replaced the animals that turned the pumps and the *sāqiyya*. Remains of this included metal parts that survived at the site.

The Storage Pool

In every type of water pumping system, this component was usually adjacent to the well. A stone water channel remained in this *bayāra* through which water flowed from the well to the storage pool. The water was filled using a large stone trough that remained in situ, one of the few *bāyarāt* in Jaffa today. The storage pool is considered among the largest in Jaffa with a volume of about 100 m^3. Apparently, with the increased supply of water because of mechanization, the walls of the storage pool were raised to increase the volume of water therein. At the same time, it was now possible to build a second floor above the pool and to increase the area of the site, as it is today. Indeed, the storage pool of the Barakat *bayāra* is one of the only ones that we located in the survey that was almost entirely covered by later construction (Figures 11.6 and 11.7).

The Water Transportation System

With respect to water transportation, it is also possible to discern stages connected with technological changes. In the first stage, stone channels covered with hydraulic plaster were built, of which we found remains between the well and the storage pool. The width of the channel and the thickness of the wall was of the standard customary at that time in Jaffa (about 25 cm). With the introduction of mechanization, some of the channels were later replaced by stone and metal pipes, remains of which were found at the site.

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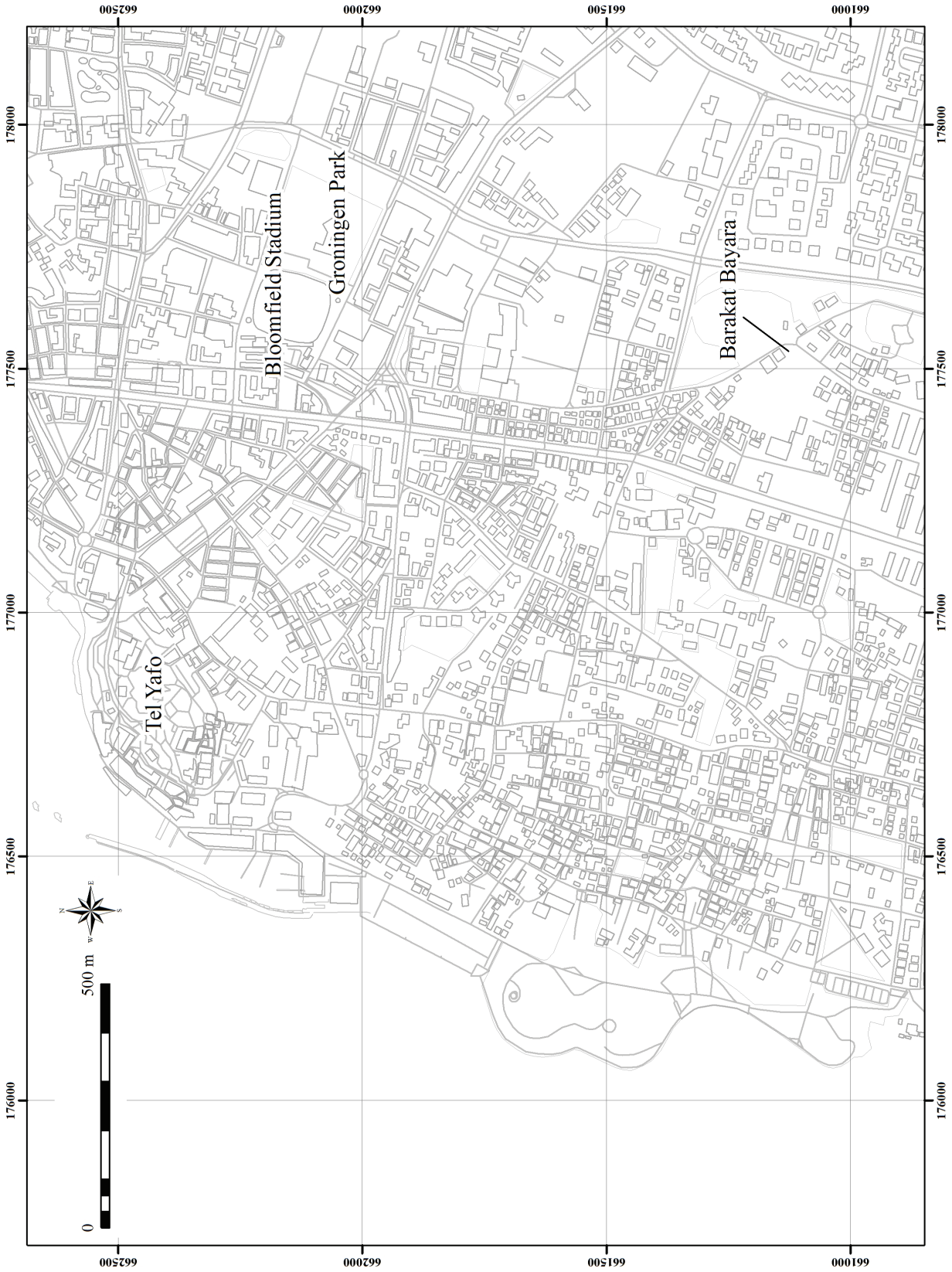

Figure 11.1. Map of greater Jaffa showing the location of the Barakat *bayāra*. *Plan by Krister Kowalski.*

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Figure 11.2. The Barakat *bayāra* on a British map, 1918.

Figure 11.3. The Barakat *bayāra* on a later British map, 1938.

Figure 11.4. The Barakat *bayāra* in an aerial photograph, 1949.

Figure 11.5. Links of the *sāqiyya* chain, of secondary use to strengthen a wall at the Barakat *bayāra*. *Photograph by Avi Sasson.*

Farm Buildings and Storerooms

Farm structures and storage spaces were first built adjacent to the well house on these properties. We located several such large spaces on the ground floor of the Barakat *bayāra*, between the well and the storage pool. These spaces were built with large, high intersecting arches that were plastered. It would seem that even if these were originally farm buildings (storerooms, stables), according to the style of building and the plaster, they might also have served as quarters for the workers and others. At the head of the arch, we located rings for hanging oil lamps or "Lux lamps" for lighting (Figures 11.8 and 11.9).

The Residence

The residential component was usually built in the inner part of the courtyard complex and contained several rooms according to the function of the *bayāra* and its inhabitants. From the outset, one story was built, and over the years, a second story was added, so that a separation between the social classes—the tenant farmers/workers and the owners—working in the complex was created. The residential buildings, like all the other components in the complex, were built of local soft limestone and were plastered outside and inside.

With the development of the city and its expansion toward agricultural lands, *bāyarāt* became increasingly residential, and for this reason, its architectural character changed. We attribute the second story, built in a distinct Eastern-urban style, to this stage, as it employs diverse building materials. A staircase leads to the upper story from the center of the inner courtyard, with the handrail made of metal with various ornate decorations.

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Figure 11.6. The storage pool of the Barakat *bayāra*. *Photograph by Avi Sasson.*

Figure 11.7. The water drainpipe in the storage pool of the Barakat *bayāra*. *Photograph by Avi Sasson.*

The second story of the building is built in the *līwān* style, with two rows of living and entertaining spaces on both sides of the corridor that crosses the floor (Figure 11.10). These spaces are very large with high ceilings, rising to more than 3 m often including a metal ring for an oil lamp (e.g., Figure 11.9). Use was made here of precast elements such as banisters, stairs, and neoclassical concrete columns (Figure 11.11 and Figure 11.12). The windows are decorated with stained glass set in latticed wood (Figures 11.13 and 11.14). The ceilings are covered with wooden panels (Figure 11.15), above which are Marseilles tiles, some of which have survived. The floors look like patterned carpets, made of square tiles (Figure 11.16). The height of splendor on this floor is a large room, which we believe served as a *dīwān*, a room for hosting guests, decorated with a splendid inscription at the top of the wall that we will describe below.

Wall

All the elements mentioned above, pertaining to the farm buildings and to the social arrangements, the water system, and the residence, are contained in one large area surrounded by a high stone wall with one gate. This wall had two main functions: the first was to impart a sense of safety, primarily for the agricultural work to secure the equipment and the animals, and thereafter for the security of the residents. The

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Figure 11.8. The farm building of the Barakat *bayāra*. *Photograph by Avi Sasson.*

Figure 11.9. Metal ring at the head of the arch in the farm building of the Barakat *bayāra*. *Photograph by Avi Sasson.*

Figure 11.10. The central corridor of the Barakat *bayāra*. *Photograph by Avi Sasson.*

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Figure 11.11. Typical corner of a room and window of the Barakat *bayāra*. *Photograph by Avi Sasson.*

Figure 11.12. Decorated cornice in a concrete column. *Photograph by Avi Sasson.*

Figure 11.13. Ceiling decorations in the Barakat *bayāra*. *Photograph by Avi Sasson.*

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Figure 11.14. Stained glass window within the Barakat *bayāra*. *Photograph by Avi Sasson.*

second function was influenced by the customs of modesty of the residents who preferred to maintain their seclusion. The main surviving section of the wall is the southern elevation and part of the western elevation, including the remains of an arched gateway (Figure 11.17). All other parts of the wall were dismantled over the years, and the entrance to the complex today is through a modern gate.

Size of the Estate

According to Yitzhak Rokach, the orchards were 0.5 to 2.5 ha in size. Each plot was an independent unit, with its own water well and orchard manager (*bayārjiyy*). Some citrus growers had two or three orchards. Another advantage to the small scale of the orchard, notes Rokach, lay in the ability of the *bayārjiyy* and members of his family to do all of the work. Analysis of cartographic material indicates that the area of the Barakat *bayāra* was, at its peak during the British Mandate, about 2 ha. The area of the building (in general under the roof, without measuring the area of the two stories) was about 300 m, and thus the built area and citrus orchard of this *bayāra* were among the largest around Jaffa. The orchard apparently continued to produce and flourish at the time of the establishment of the State of Israel, since the aerial photograph from 1949 shows trees that still seem to be close together and healthy. From an examination of all of the evidence, we identify three main stages in the development of the Barakat *bayāra*. During the first stage, a well was dug and run using *sāqiyya*. A storage pool was constructed, and

Figure 11.15. A detail from the frame, ceiling decoration. *Photograph by Avi Sasson.*

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Figure 11.16. The decorated floor of the Barakat *bayāra*. *Photograph by Avi Sasson.*

Figure 11.17. The original entrance gate in the northern wall of the Barakat *bayāra*. View northwest. *Photograph by Avi Sasson.*

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Figure 11.18. The Barakat *bayāra*. View from the west. *Photograph by A. Sasson.*

Figure 11.19. The Barakat *bayāra*. View from the east. *Photograph by A. Sasson.*

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Figure 11.20. The Barakat *bayāra*. View from the north. *Photograph by A. Sasson.*

Figure 11.21. The Barakat *bayāra*. View from the south. *Photograph by A. Sasson.*

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a one-story farm building was built. All these were enclosed with a stone wall, creating a type of set-back single-story *bayāra*, according to Sasson's (2009) typology, that is dated to the nineteenth century. With the technological advances in pumping water and the introduction of machinery, during a second stage, it was no longer necessary to leave the roof of the well for the benefit of the *sāqiyya* system. Another story was then added above the well and the storage pool, and the construction above the farm buildings was expanded. A two-story, set-back, *bayāra*-style building resulted, according to Sasson's (2009) typology, which is dated to the end of the nineteenth century and the early twentieth century (Figures 11.18–11.21). In a final stage, building additions were made within the courtyard, and the *bayāra* even may have been shared between two or three families. This stage can be dated to the British Mandate.

The Inscription

As noted earlier, almost all of the second-story rooms were adorned with the decorated frame at the top of the walls, as well as with diverse ceiling decorations. However, the most decorated wall was one located in the southeast corner of the residence (the first room to the right of the entrance). This room also features a special decoration on the lower part of the walls. These are gray marble-like slabs, framed with black lines on an orange-yellow background. However, the most unique and interesting element at the site is the inscription that survived in the *dīwān*. This is an inscription at the top of the room's walls, at the join between the walls and the ceiling, wrapping around the room's four walls. The total height of the inscription is about 30 cm, and it is defined by two wide gray lines. The height of the letters is about 20 cm, and the inscription is some 20 m in total length (Figure 11.22).

Within the gray frame, there is a decoration of vegetation, set at distances of about 6 cm, reminiscent of palm trees, perhaps indicating the "tree of life." The inscription is found along the upper part of the wall in the *dīwān* of the *bayāra* and is confined in its upper part and lower part within a carved wooden frame of a cut band of floral design. The upper part band shares similarities with a carving in an Ottoman house at Akko (Sharif 2008:170–171).

The inscription starts with the *Basmallah*. Before and after the *Basmallah*, a triangle of black curls and wavy lines is found. The vertical side of each triangle looks like the edge of a *tabula ansata*. The continuation of the inscription after the *Basmallah* is verse 255 of Sūrat al-Baqara (Qur'an 2). This verse is called *Ayat al-Kursī*, the "verse of the throne" (Figure 11.23):

ألله لا اله الا هو االحي االقيوم لا تاحذه سنة ولا نوم له ما في السماوات وما في الارض من ذا الذي يشفع عنده الا باذنه يعلم ما بين ايديهم وما خلفهم ولا يحيطون بشيء من علمه الا بما شاء وسع كرسيه االسماوات ولارض ولا يئوده حفظهما وهو العلي العظيم

> Allah, there is no God but he, the living, the Eternal; slumber effects Him not nor sleep; to Him belongs whatever is in the heavens and whatever is in the earth; who is there that will intercede before Him exept by his permission? He knoweth what is before them and what is behind them, and they comprehend not anything of his knowledge but what He willeth; His throne extendeth over the heavens and the earth, to guard them wearieth Him not; He is the Exalted, the Mighty [Bell 1937:36–37].

This verse had early in the Islamic period held an important rank among cited verses. It appears on a gate of the city of Ayla ('Aqaba) and is dated according to paleographical features to the rule of Ahmad ibn Tūlun (254–270/868–884 CE) or that of his son (270–282/884–896 CE; Sharon 1997:96–97). From Caesarea Maritima's excavations, a stone slab carrying the *Ayat al-Kursī* was unearthed. It was found in the northwestern part of the ancient port of Caesarea on a slab in secondary use, possibly within a Christian house. The length of the inscription is 5 m. It was originally situated above a mansion's gate or over the southern gate of the city, near the place it was found (Sharon 1999:280–282). The *Ayat al-Kursī* has a special position among the verses. It is added to the *fard* (obligatory prayer) of Muslims alongside the Sūrat al-Fātiḥa (Qur'an 1). The *Ayat al-Kursī* is seen as a protector from the evil eye for magical purposes and is found written in gilded letters on small plaques hanging in Muslim homes today throughout Palestine.

In late Ottoman Palestine (1856–1917), houses of well-to-do members of the population contained both decorated parts as well as inscriptions. The decorations were made at the top of the walls and include still-life scenes, vegetal motifs, a portrait of the owner of the house, and religious motifs (in Christian houses). The inscriptions were either Muslim or Christian, Ottoman imperial symbols, the flag, or a *ṭughrā* (Abdülhamit II, an Ottoman sultan's sign of signature; Sharif 2008:194, Photo No. 127). The decorations and Arabic inscriptions appeared among mansions and houses mostly in cities

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Figure 11.22. The inscription in the *dīwān* of the Barakat *bayāra*. *Photograph by A. Sasson.*

Figure 11.23. Part of the Barakat *bayāra* inscription showing one of the decorative triangles and the beginning of the *Ayat al-Kursī*. *Photograph by A. Sasson.*

such as Nazareth, Haifa, Akko, Jerusalem, Bethlehem, and Jaffa. Only some of them remain today. Sometimes they are found in village houses. The phenomenon was copied from Istanbul, Damascus, and other large cities within the Ottoman Empire (Günay 1998:319; Sharif 2002, 2011:210–211, 2013).

Short Qur'anic verses are sometimes found on the walls of residences of Ottoman Palestine. Examples include those found in residences in the village of Dīr al-Qāsī (near Akko) (Sharif 2011:182–183), near Bethlehem (Sharif 2011:182), in Gaza (Sharif 2011:181), and in some Christian houses in Nazareth that were previously owned by Muslims (Sharif 2011:180–182). Muslims decorated their walls with citations from the Qur'an with profound belief that Allah would protect them (Sharif 2011:182). No mention of the *Ayat al-Kursī* is found among the inscriptions described in Sharif's work, making the *Ayat al-Kursī* inscription from the Barakat *bayāra* in Jaffa unique.

The Uniqueness of the Inscription in Consideration of the *Bayāra* Phenomenon in Jaffa

As far as we know, research on the phenomenon of *bāyarāt* in Israel in general and in Jaffa in particular makes it a unique example, as revealed in several features: its location, artistic motifs employed within it, and size of the inscription itself, in addition to the identification of its owner. In the Barakat *bayāra*, one can identify developmental processes in their architectural structure as presented above. Among other things, one can identify a process of artistic development that includes the use of diverse decorative elements such as carved and decorated openings, stylized windows decorated with wooden trellises, stylish decorated iron railings, painted floor tiles with a variety of motifs, imported roof tiles, and so on. The artistic development of the *bayāra* seems to have peaked in the painting on the wooden ceilings in some of the living areas and usually within the central space, the *līwān*, or in the

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dīwān, the reception room. These paintings include geometric designs, symbolic decorations, and life-like decorations. Inscriptions were found in a few decorated ceilings intended as brief explanations and clarifications of the drawing or with the artist's signature. The inscription found in this particular *bayāra* is part of the phenomenon of artistic decorations, although no comparable example has been identified.

Alongside the ceiling drawings, paintings also appeared in the houses in Jaffa in general and in the Barakat *bayāra* in particular, on the walls adjoining the ceilings. Although these drawings are familiar from the houses of members of all ethnic groups, in Arab houses, these were relatively simple, geometrical decorations, as were also found in other rooms in this *bayāra*. The inscription we located is in fact in the upper portion of the walls of the house, as part of the decorated cornice. From this perspective, it is a unique inscription. As far as we know, only geometric decorations occur, but sometimes in Jewish and European homes, diverse stencil drawings, including figures, appear (Farkash 2002:16–19; 2006:136–40) but never any ceiling cornice inscriptions.

As noted above, the few inscriptions we identified had but a few words that were intended to complete or to clarify a drawing or a particular scene within the drawing, and therefore these inscriptions were brief and small in height. However, this is an inscription that is mainly intended as decorative, and for this reason, its length and height were of special importance. The content of the inscription is also unique. Inscriptions have been found in Arab houses in Jaffa, at both the entrance to the house and sometimes in inner rooms. Even if these are religious inscriptions, they are short blessings such as, "Allah . . . " or, "There is no God besides Allah. . . ." While one may further assume that not all such inscriptions have yet been identified, these are still isolated inscriptions, and unlike the Barakat *bayāra* inscription, they do not include an entire verse.

Judging from the impression one gets of the house and as part of the phenomenon of the *bāyarāt*, one may aver that the owners, of whom we have no precise knowledge, were among the social and economic elite of the city. However, finding such an inscription also may indicate that the family included members of the religious elite and may have filled some religious position in Jaffa during the late Ottoman period.

Conclusion

The Barakat *bayāra* serves as an important example of the phenomenon of the *bāyarāt* in Jaffa at the end of the Ottoman Empire. Its construction and the stages of its development follow the development of the citrus industry in Israel in general and in Jaffa in particular. It began in the mid-nineteenth century following the Egyptian conquest when this activity started to develop but to a considerable extent due to the Egyptians who returned water pumping methods to the area. A further development was noted with the start of Jaffa's Westernization, in the last quarter of the nineteenth century, at which time agricultural mechanization, brought by the Templars, was introduced also to the orchards owned by Arabs. The areas under citrus cultivation then expanded in every direction, to the east of Jaffa reaching the Ayalon River channel (Wadi Musrara), and to the north and south covering all the sedimentary areas up to sandy areas. This process also affected the construction and beauty of the Barakat *bayāra*, and it became an estate and residence of one of the city's leaders, of whom we know nothing, while the *bayāra* became one of the most magnificent buildings that survived in the city's agricultural region.

The Barakat *bayāra* is unique among the *bāyarāt* in Israel known to date. The verse from the Qur'an that decorated the ceiling of the room for guests indicates the religious leanings of the owners and their social identification with Jaffa's Muslim population. Until now, such discoveries were only known at sites from the early Islamic period in Ayla (ʿAqaa) and in Caesarea Maritima. It would thus seem that we have here evidence of adopting an ancient Muslim custom of writing a verse as a talisman in a private residence. One may assume that such Qur'anic inscriptions were also employed at other sites.

Acknowledgments

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CHAPTER 12

The Jaffa-Jerusalem Road in the Late Ottoman Period:

Aspects of Material Culture along the "Travelers' Way"

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Owing to Jaffa's role as the port of Jerusalem and a transit point for travelers on their way to Jerusalem during the Ottoman period, understanding various aspects of the function of the road connecting these towns is of paramount significance. Historical and archaeological sources enable the identification and description of various physical aspects of this road such as guard stations, customs stations, inns, and water sources, all of which played an integral role for travelers along this road. An improved understanding of this route may shed light on various aspects of Jaffa during this period.

The road between Jaffa and Jerusalem underwent many changes over the course of the Ottoman period. The progressive strengthening of the bond between these two cities, especially during the nineteenth century (beginning with the Egyptian conquest), was matched by a corresponding rise in the standing and importance of this route. Regional and local rulers, as well as private entrepreneurs, each contributed as they saw fit to the development of the road for the benefit of those traveling this route. Although Jerusalem experienced a building boom at the beginning of the Ottoman period, during the time of Süleiman, which included the construction of fortifications and the development of service installations, we hear of no comparable initiative in Jaffa or along the road between the two cities.

Muḥammad Agha, known as Muḥammad Abū Nabūt, who was appointed governor of Jaffa at the beginning of the nineteenth century, was given the task of restoring the city that had been left in ruins by Napoleon's military campaign (Kark 1990:12). As part of his general political and economic strategy, Agha strengthened his ties with major cities such as Jerusalem and Gaza. A number of installations connected with the road system of his time have survived, the most prominent of which are the fountains (Ar. *asbila*) that he constructed at central locations (Table 12.1). Two of these fountains are considered the most magnificent such installations in Israel, one in the central square of Jaffa and the other on the main road from Jaffa to Jerusalem, before the village of Azor (the present-day Yitzhak Ben-Zvi St. in Jaffa). The written sources indicate that before the renovation of the road during the time of Ibrahim Pasha (1831–1840), passage on this route was extremely difficult, even for beasts of burden. It was traversed mainly on foot or, for those of means, in carriages.

Ibrahim Pasha, who initiated activity in various realms to bolster the standing of Jaffa and Jerusalem, such as construction, improving security, augmenting the population of these cities and the surrounding villages, and the granting

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Table 12.1. *Asbila* (fountains) along the Jaffa-Jerusalem road.

City/Region	Road Section	Number of *asbila*	Initiator
Jaffa	Clock Square	2–3	Ruler
Jaffa	Clock Square–Azor	8	Private/ruler
	Azor-Ramla	6	Private
Ramla	Main road	4–5	Ruler/private
	Ramla-Latrun	Not located	
Latrun	Monastery vicinity	2	Private
	Latrun–Sha'ar ha-Gai	Not located	
Sha'ar ha-Gai		1–2	Private
Abu Ghosh	Main road	2–3	Private/ruler
Abu Ghosh–Jerusalem		Not located	
Jerusalem	Jaffa Gate	1	Ruler

of rights to minorities, was the first ruler in the nineteenth century who also took major steps to improve the road connecting these two cities (Kark 1990:14). This improvement in transportation conditions was achieved by means of a number of steps, such as the physical repair of the road, the establishment of guard stations along the route, the cancellation of the tax collection concession that had been granted to the Abu Gosh clan, and other actions. For the first time in the nineteenth century, the Jaffa-Jerusalem road could be traversed in relative comfort and security.

In 1869, paving stones were laid on the road that now became a "highway"—the first such roadway in Palestine—that was also suitable for vehicular traffic such as carriages (Kark 1990:195–196). The development of the route encouraged local rulers and enterprising individuals to contribute, each in their appropriate realm, to promote systems of services for the benefit of travelers. Various relicts are present along the route of the road, but they have never been studied as an aggregate or analyzed in terms of their geographical-historical significance. The current chapter shall examine the stages of the road's development in light of the archaeological finds and the historical sources. Unlike earlier studies that afforded primacy to historical sources, the finds themselves are at the center of this discussion.

History of Research

The way to Jerusalem attracted the attention of many explorers, tourists, and researchers during the course of the Ottoman period, mainly toward its end. The different scholars, mainly from the field of historical geography, who examined the large cities along its route concentrated on the former research (Avitsur 1988; Ben-Arieh 1986:84–97; Kark 1988; Petersen 1995). The comprehensive archaeological study of the road conducted by Fischer, Isaac, and Roll, which focused primarily on earlier periods, along with a short survey of the road during the Ottoman period, is the first archaeological research that also relates to the Ottoman period (Fischer et al. 1996:41–60).

To study the subject in depth, in 2000, we began a site survey along the route of the road, in which we located, mapped, and documented sites and installations related to road services. The survey concentrated on four groups of service installations: guard stations; customs stations; lodgings or *khans* (caravansaries), hostels, and hotels; and public water installations known in Arabic as *asbila* (Heb. *rahatim*). Each of these subjects is deserving of a separate study, as is published elsewhere (Sasson 2001a, 2001b). In this chapter, however, I describe the finds and seek to understand from them the phases of the road's development, therefore treating the subject as a whole.

Methodological Problems

Many travelers, researchers, and tourists depicted the road from Jaffa to Jerusalem—which was the central and most important route in Palestine during the Ottoman period—each in their own way and for their own purposes, which facilitates the present study. Nonetheless, we are faced with a number of methodological problems. First, most of the

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historical and cartographic sources date from the second half of the nineteenth century, and we possess very few relevant testimonies until the Egyptian conquest. Second, the cartographic sources did not usually document the types of sites that are the subject of the current study. Third, the study of the historical geography and material culture of the Ottoman and the modern period has yet to develop tools for the precise dating of artifacts and built remains, although excavations in Jaffa are beginning to correct this (Chapter 20, this volume). In this realm, therefore, despite our attempts to crosscheck information, any dating of the various structures must remain somewhat conjectural.

The Routes

There were three main routes for the journey from Jaffa to Jerusalem:

1. The "travelers' way" from Jaffa, via Ramla, the Ayalon Valley, 'Sha'ar ha-Gai (Bab al-Wad), and Abu Gosh to Jerusalem.
2. The "cargo route," for the transport of heavy loads, began at Jaffa and continued via Lod and Beit Ur (Beth Horon) to Jerusalem.
3. The Wadi Süleiman route, a side route preferred by some, passed to the south of Beit Ur through Wadi Süleiman. This route came together with the "cargo route" at the village of al-Jib, to the north of Jerusalem (Ben-Arieh 1986:82–84).

This chapter will focus exclusively on the "travelers' way." The archaeological research of the routes to Jerusalem, excluding the study by Fischer et al. (1996), generally disregarded remains from the Ottoman period. Lately, the remains from this period have been the subject of increased attention, as a result of both developments in research and construction works along the route. The remains of a number of sections of the route, such as in the Ayalon Valley, close to the Latrun monastery, and at Sha'ar ha-Gai, have been examined, but such examinations usually reveal only the upper level and outer face of the road, without taking cross sections across its width and depth. The finds, however, enable us to conclude that the nature, form, and composition of the road generally resemble those of the early roads and also the British Mandate soling roads. The road was paved over a foundation of undressed stones, over which was a thin stratum of lime and earth. This was covered with a layer of small limestones, with intervening pebbles and dirt. The sides of the road were reinforced and supported by rectangular dressed curbstones.

Guard Stations

The historical and archaeological testimonies concerning the guard stations and fortresses date to the late Ottoman period, mainly from the end of the nineteenth century; there is no evidence of the existence of guard stations from the Ottoman period. The prevalent scholarly view maintains that fortress remains currently visible at a number of sites date to the paving of the road in 1869. It should be noted, however, that during that century, there were a number of phases of guard station construction or of the stationing of garrison troops along the road. At this juncture, we are not able to assign a precise date to these structures. Nonetheless, we propose that at least a certain number of the places where the later guard stations were erected had already served a similar purpose under Egyptian rule. Ibrahim Pasha, who ended the Abu Gosh clan's control of the road, was forced to contend with the tax collectors, on one hand, and providing security for all those using the roads, on the other hand (Ben-Dov 2002:110). He achieved these goals by means of guard posts and a mounted garrison force that patrolled between these positions.

At the end of 1850, the architect Armete Pierotti was asked by the Turkish governor Sureia Pasha to improve the road, and 17 guard stations were built along the route (Avitsur 1988:11). These stations still stood a number of years later, during the visit in 1863 by the French researcher Felician de Saulcy, who marked some of the guard fortresses in his map of the Jaffa-Jerusalem road (de Saulcy 1865:80). A report published at the time in the *Ha-Maggid* newspaper stated that

> the Sultan has granted a concession to the Austrian emperor to pave a road for covered wagons from the city to Jaffa. He built many fortresses along the entire way to the city of Jaffa, at a distance of half an hour one from the other. They number a total of thirty-six. . . . They provide a base for the soldiers who secure the road [*Ha-Maggid*, May 29, 1861, year 5, no. 21:116].

It seems from this report that the process of the road's fortification and the enactment of security measures reached its peak many years before the paving of the road for carriages in 1869. Most scholars have ignored the testimony of this last source regarding the number of guard stations along the road; Ben-Arieh is of the opinion that this

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number is erroneous (Ben-Arieh 1986:88, n. 21). Scholars who maintain that there were only 17 posts reached this figure on the basis of cartographic sources, mainly the late nineteenth-century map of the British *Survey of Western Palestine*, which marks 17 such positions.

We are of the opinion that the testimony to 36 guard posts cannot be disregarded and that this number is to be accepted as realistic, or at least proximate to the reality, which means that the actual number is greater than the 17 of which we know. Archaeological research can aid in resolving this issue. While 17 new guard posts were indeed built during the course of the nineteenth century, the patrol force also used earlier sites that met their location requirements. These included, for example, Crusader sites along the route that, during this period, survived almost in their entirety, such as the sites in Azor, Latrun, Abu Gosh, and others. Ilan reports that a large cache of cannonballs from the Ottoman period was discovered in the Crusader fortress in Azor, thus revealing the presence of a garrison force (Ilan 1975:195; Yariv Shapira, personal communication, 2013).

During the course of the survey to locate the guard posts and their remains, we noted the factors influencing their location:

1. They were constructed on hilltops that controlled the road.
2. They were built at a distance of some 100 m from the roadside.
3. They were established close to sources of water (i.e., springs, wells, and cisterns).
4. They were erected close to archaeological sites and ruins that provided the stone needed for the construction of the fortresses.

The ancient sites that we marked as possible guard posts meet the location requirements of the other guard stations. All that remains now is to resurvey the archaeological sites along the route and to examine the finds from the Ottoman period. Notwithstanding this, the missing stations need not have been constructed on the same architectural plan, a question that also was examined during the course of the survey. The guard post to the east of Azor (post No. 2, currently a garage at the "Meteorological Station Junction") is identical in plan to the guard station at Khirbet Harsis (Sha'ar ha-Gai; Figure 12.1). This is a square structure of ashlar construction measuring 8.5 × 10 m. Opposite the entrance that faces the road is a firing position that is known from structures in the walls of the Ottoman city (Figure 12.2). This building was most likely used as barracks for the guards. A stone railing with embrasures and dentil embellishments is built on the roof (Figure 12.3). A small chamber used as a sentinel's post also is built on the roof.

The improvement in the late nineteenth century in the physical condition of the road, improved security along the route, and more advanced means of transportation shortened the total travel time from Jaffa to Jerusalem, since it was now possible to travel by night, as well as day. The enhanced sense of security, especially during the time of Abdülhamit II, led to a reduction in the number of guard stations and the eventual abandonment of some (Ben-Arieh 1986:92). In summation of this issue, by the middle of the nineteenth century, in the course of improvements made in the road, dozens of guard stations were built along its route; their number then declined as travel conditions improved.

Customs Stations

In addition to the payment of customs upon entry to the Jaffa port, we also possess testimonies to the collection of "tolls" along different roads throughout the land, especially on the Jaffa-Jerusalem road. This was the result of a private initiative by the powerful, or those with "concessions" from the municipal or regional rulers. The first road in Palestine, from Jaffa to Jerusalem, was also a "toll road," in which wagon owners were required to pay the authorities a tax that was usually earmarked for the upkeep of these roads.

The historical sources reveal that three toll collection stations were built by the authorities along the road, at the departure points from Jerusalem and from Jaffa, and at Sha'ar ha-Gai. Various sources also mention a collection post in the village of Saris (Ben-Arieh 1986:85, n. 12). To our knowledge, these stations have not been located or examined by modern researchers. An examination of the sources reveals that the toll or customs houses were situated at check points, where the road is relatively narrow, and where close control can be exerted over traffic. We set out in search of these sites with this understanding in mind.

The Jerusalem customs station has not yet been located, but according to the testimonies, it was "outside the city, at some distance from it . . . at the third kilometer, close to the place where the Diskin Orphanage is now built" (Kahanov 1934:142). This station was apparently between Jaffa Gate and Lifta (Mey-Naftoh), at the top of the descent to Nahal Soreq. The Jaffa customs house is mentioned only a few

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Figure 12.1. Guard station at Khirbet Harsis, Sha'ar ha-Gai (Bab al-Wad). *Photograph by Lior Cohen.*

Figure 12.2. Firing position in the second guard station. *Photograph by Avi Sasson*.

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Figure 12.3. Dentils in roof railing of the second guard station. *Photograph by Avi Sasson*.

times in the historical sources and only in a vague fashion (e.g., Murray and Smith 1892:5) and has not been identified in the field.

Following the testimony of Zalman Ben-Tovim from 1891, we set out to locate the Jaffa custom station. Ben-Tovim portrays the route of his journey from Jaffa:

> We departed in our carriage from Jerusalem Street in Jaffa, we passed the *sabīl* of Siksik and *beit al-karosa* (the customs house) at the end of this street. We stood there and waited a bit until the Jewish wagon driver paid the customs duty for the carriage and received a receipt for this from the office, as was customary [Ben-Tovim 1947:219].

In our survey, we found a structure that was suitable for this function, both geographically and architecturally, at the corner of Bet Eshel and Oley Zion St. Due to restrictions, we have not yet been able to properly document the building. We hope that with goodwill and cooperation from the owner of the building, we will be able to complete the documentation at a later date. This is a long structure built of finely dressed *kurkar* stone, with a number of large stalls and openings for the parking of carriages and the storage of equipment. In the center of the structure is a stylized entrance, narrower than the others, which most likely led to the office of the customs collector. Behind the structure, on the east side, is a large courtyard; its relationship to the structure has not yet been determined.

The question of the custom house's location influences our understanding of the development of the road and the adjoining construction, since they marked the end of the built area outside the city walls, until the beginning of the twentieth century, and were a sort of reference point for the continued construction of the city. The Jaffa customs house graphically illustrates this, since it was established at the first central crossroads beyond the walls, at the junction of the marketplaces (Suq ed-Dir, the Greek Market or Monastery Market; and the Flea Market or Suq Salahi) that were established at the end of the nineteenth century. The area after the customs house, in the direction of the city wall that fell into ever-increasing ruin, was built up toward the end of the Ottoman period.

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Lodgings: Khans, Hostels, and Hotels

As long as city walls bounded settlement and activity in a well-defined area, lodgings developed on a communal and religious basis. Each community took care to lodge its own pilgrims, to this end making use of religious institutions, usually monasteries, such as those in Jaffa, Ramla, and Jerusalem. Muslims were lodged in mosques; it should be noted, however, that the testimonies regarding Arab lodgings are extremely sparse, and the archaeological finds contribute greatly to our knowledge. An outstanding example of this is the Siksik Mosque that was built in 1882 in Jaffa, at the beginning of the road to Jerusalem. Prayers were conducted in its eastern wing, while its western wing was used as a *khan* (Figure 12.4), with the bottom story for livestock and the upper floor for pilgrims. The bottom floor also contained a large *sabīl* (Figure 12.5).

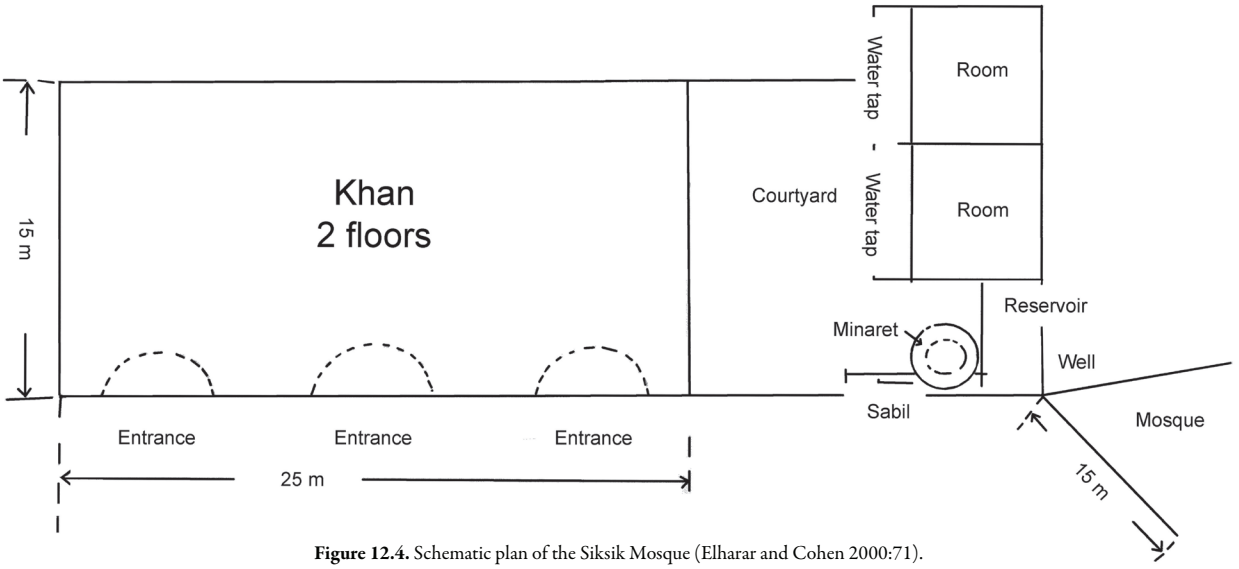

Figure 12.4. Schematic plan of the Siksik Mosque (Elharar and Cohen 2000:71).

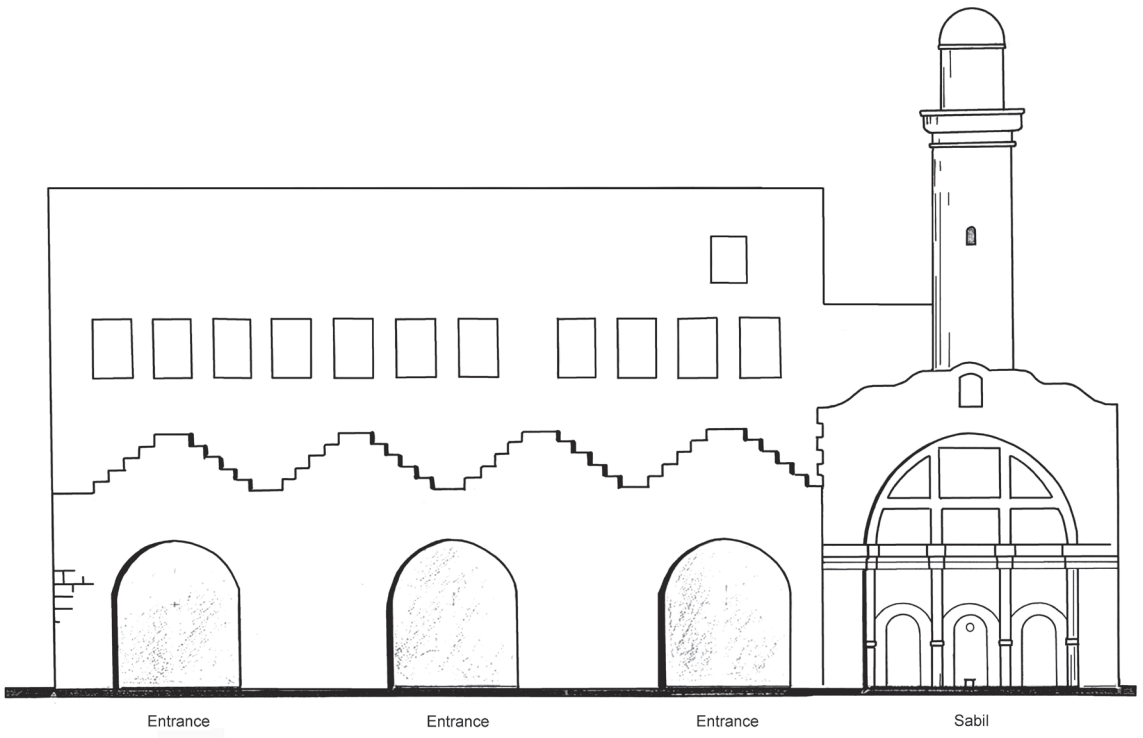

Figure 12.5. Façade, Siksik Mosque. Scale: 1:75 (Elharar and Cohen 2000:72).

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We located a similar, but more modern, structure nearby, on Ben Dosa St., with a bottom story that contains shops and a *sabīl* and an upper story that was used as a hostel (Figure 12.6). In back of the building is a large courtyard that resembles a *khan* courtyard. Another example is in Ramla, where we found in the heart of the Old City (5 Kehillat Detroit St.) a structure built in the layout of a *khan*, including a large courtyard that was encompassed on three sides by rooms. Close to this site we located a large and impressive structure of ashlar construction with a very large stone ring in its façade, for tethering animals, which is known from other *khans*, hostels, and guard stations (external limitations prevented us from properly surveying this site). For these last two buildings, for example, there are no historical testimonies, and the current state of the information that we do possess does not enable us to date the structures or draw other conclusions.

Some pilgrims were lodged in buildings that were purchased by the community especially for this purpose or in rooms so designated in the homes of the community's leaders (Stern 1997:17). The increased traffic on the road and the significant improvement in the perception of security led enterprising individuals to establish hostels and hotels outside the city walls and at different sites along the route, for example, at Latrun and at Sha'ar ha-Gai. Here, as well, the members of the Jewish community were not left behind, and they established hotels at the new sites, which themselves served to accelerate the development of the Jewish communities in Arab cities such as Ramla (Jemo 2014).

An examination of the lodgings in the last quarter of the nineteenth century in Jaffa, in Jerusalem, and along the road between these two cities leads to three main conclusions.

1. The hotel business in the cities greatly increased during this period. This is not necessarily indicative of the state of the road but rather of the standing of the cities: Jaffa, on one hand, as a port city and a commercial center and, on the other, Jerusalem, as a pilgrimage site. It is noteworthy, however, that the hotels were built closely adjoining the road.
2. The impetus for the construction of hostels and hotels came from the Western communities. The Jewish activity in this realm was in response to the needs of the Jewish community, as part of the increased Jewish settlement at these sites.
3. The growth of the economic branch of roadside hotels, in Latrun, Sha'ar ha-Gai, and Motza, corresponded to the development of the branch in the major cities (and for this reason their standing depreciated greatly after the inauguration of the railroad line in 1892).

Our discussion to this point has related to orderly lodgings that were established for this single purpose. The depiction, by William Francis Lynch (1801–1865) who toured Palestine in 1848 (Lynch 1849), of a night's stay in one of the country houses on the way to Jaffa leads us to a renewed discussion of the subject of the *khans* and country houses. Yossi Ben-Artzi, Ruth Kark, and Ran Aaronson examined the role of Arab estate houses as a basis for Jewish settlement, beginning with the First Aliyah. These sites, which were called *khans*, did not function as hostelries, as did the large *khans* along the roads of Israel, but rather were given this appellation because of their shape and architectural style (Ben-Artzi et al. 1988). Although we accept

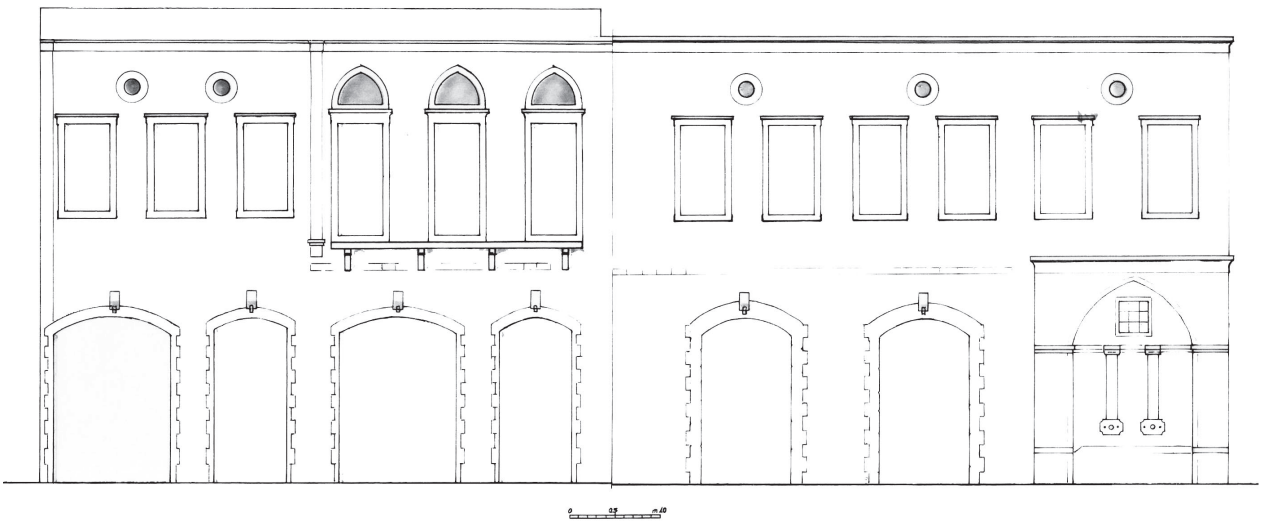

Figure 12.6. Façade of building on Ben Dosa St., Jaffa. In the right-hand corner of the structure is a *sabīl* with two faucets (from Elharar and Cohen 2000:144).

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their conclusion (Sasson 2001b), sites of this type could also serve as a hostel when necessary, based on the Muslim tradition of hospitality. These sites, which were built as a closed complex that included a large courtyard, a roofed building, a source of water, and other installations, were built in the format of a *khan*. They were similar in layout to, for example, the *khan* adjoining the Russian Church in Abu Kabir (Figure 12.7) and the Bāyarāt Enachi *khan* in Azor (Figure 12.8). The householder's nature and good-heartedness determined whether or not the building would

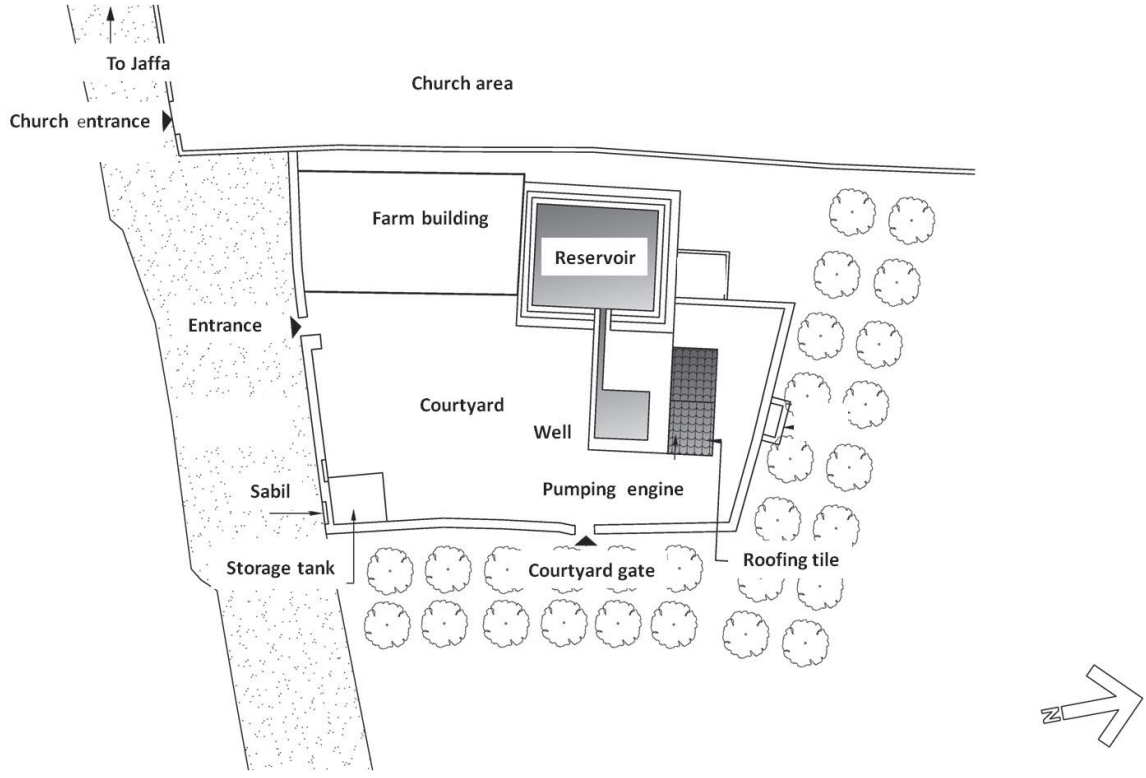

Figure 12.7. Plan of country house, *khān* of the Russian Church, Abu Kabir (Sasson and Katzir 2013:52).

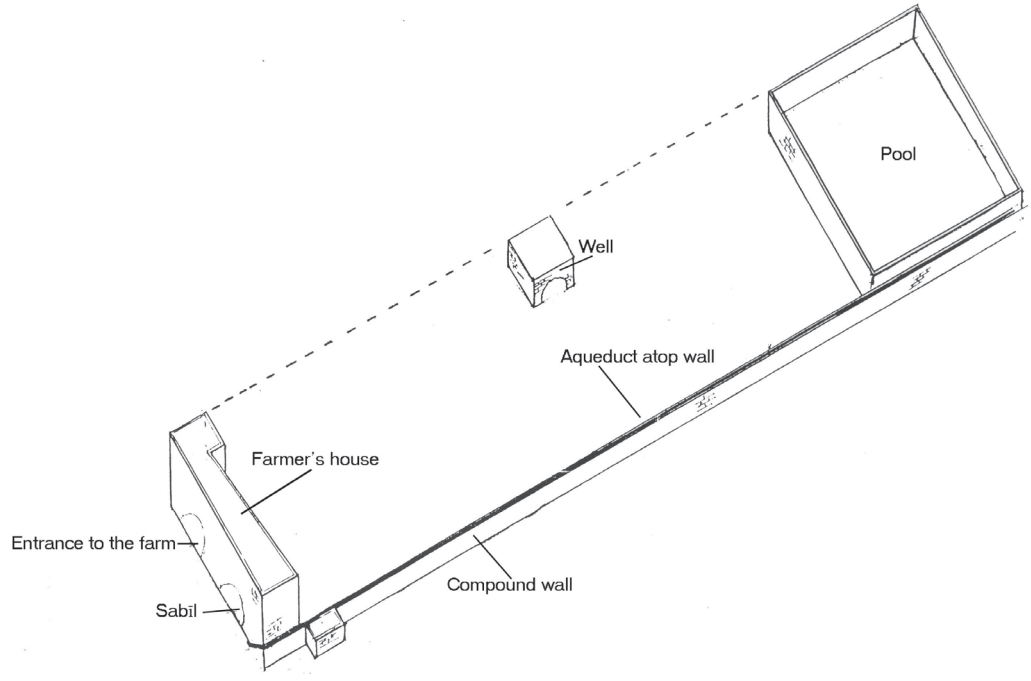

Figure 12.8. General isometric plan of country house at Bāyarāt Enachi, Azor (Sasson 2002:118).

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offer lodgings. In our opinion, the description by Lynch reflects a certain reality that was encountered by travelers in the period preceding the exodus from within the city walls, when hostels and hotels had not yet been built outside the cities. In the absence of testimonies from the second half of the nineteenth century resembling that of Lynch, we assume that sites of the estate house type, especially in the coastal plain where there was a high distribution of such sites, also afforded hospitality. This phenomenon waned as the road and its services developed. Once facilities for hospitality and lodgings were established in the cities and along the road in the second half of the nineteenth century, we no longer hear of lodging in estate houses.

Public Water Installations: *Asbila* Foundations

Supplying water to travelers, whether by the digging of roadside wells and the construction of cisterns and reservoirs, or by water carriers, was a prevalent practice in antiquity (Sasson 2002:113, 2012:44). This concern for the wayfarer continued into the Medieval and Ottoman periods. Beginning in the Medieval period, Muslims architecturally expressed this religious obligation in the establishment of fountains (Ar. *asbila*; Heb. *rahatim*) (Behrens-Abouseif 1995; Haig 1987; Sasson 2012). The Arabic term *sabīl* (pl. *asbila*) is preferred over Hebrew *rahat*, since the latter served both man and beast, while the *sabīl* was primarily for human use, which is at the center of the current discussion. The earliest and most impressive of these installations in Israel are the *asbila* from the Mamluk period and the early Ottoman period in Jerusalem, as well as those from the late eighteenth to early nineteenth centuries in Akko and in Jaffa. These public installations (and especially the most highly stylized and impressive of them) were neither of particular concern to the historians of Israel and its sites nor to other researchers in the field of historical geography. The interest in this realm was marginal and usually focused on individual sites, without considering their importance, characteristics, and significance for historical-geographical research. Even the researchers of the urban and rural historical geography of Israel disregarded this topic. The first to relate to this issue in a comprehensive fashion were Moshe Stavsky, in his work on the Arab village, and Joseph Meyouhas, in his essay on the *falahim* (Stavsky 1946:6; Meyouhas 1937:95), but neither researcher understood the extent or significance of this phenomenon (Sasson 2012).

The Structure of the Sabīl

At times the *sabīl* appears as an independent installation, while in other instances, this facility is appended to a private or public building (see Kana'an 2001). Each type had a number of characteristic elements. The *sabīl* generally had a dome-shaped structure, or one that rested on arches. The lower part of the *sabīl* contained a water faucet (Figure 12.9); many *asbila* had a number of faucets, in accordance with their location, purpose, water source, and the resources of the builder. At the bottom of the *sabīl* was a trough for the drainage of runoff water, which it channeled for another purpose (at times back to the storage tank or for the irrigation of a nearby field) and for the watering of animals (Figure 12.10). The dome occasionally bore an inscription in praise of the builder, with the date of its construction, and often incorporated verses from the Qur'an relating to charity. At the back of the *sabīl*, out of sight of wayfarers, was a small water container that fed the *sabīl* and, in turn, received its water from a nearby well or spring, such as Bi'r al-Hilwa ("the sweet well"; Figure 12.11).

The *asbila* comprise the most significant and richest category of road-related archaeological remains. To the present, however, scholarly research has not examined the urban *asbila* and those built by rulers. During the course of our survey, we located large concentrations of *asbila*,

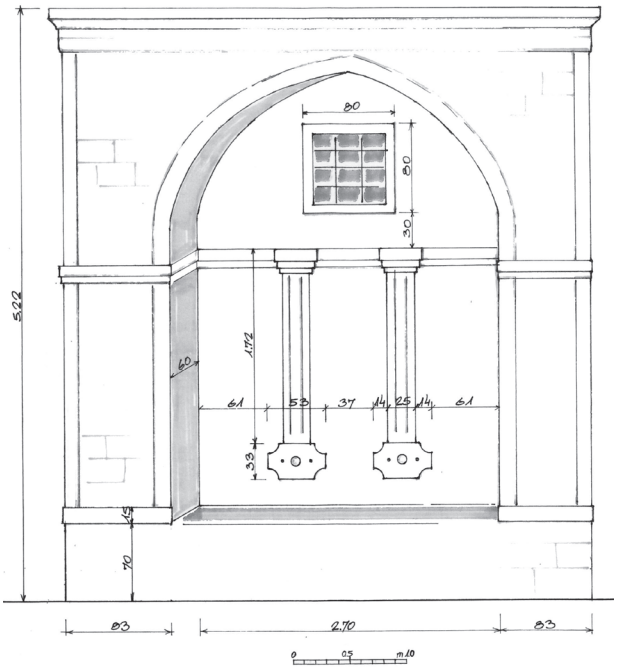

Figure 12.9. Drawing of the façade of the *sabīl* on Ben Dosa St., Jaffa, with two faucets (Elharar and Cohen 2000:155).

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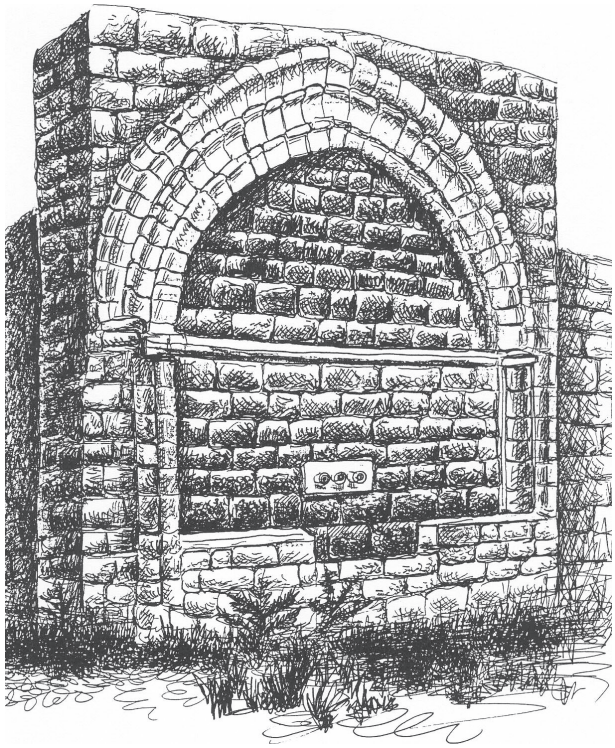

Figure 12.10. Façade of the "Musai Sabīl," Abu Kabir, Jaffa. *Sketch by Shlomo Zabadi.*

and we obtained information regarding *asbila* that are no longer extant (Sasson 2002, 2004).

We located a total of some 25 *asbila* along the route, but we may assume with confidence that many such installations have received no mention in the historical sources or in the cartographic ones. The finds, however, are sufficiently extensive for an analysis from which we can draw historical-geographical conclusions.

1. Most of the *asbila* (approx. 20) were built upon private initiative, in front of a private well or in the façade of a mosque that had been built by a family. Only some six *asbila* were constructed by a public institution or ruler. This proportion highlights the importance of the obligation of charity, performed by providing water for wayfarers. Although these represented private initiative and construction, their builders sought to impart an appearance of governmental installations to these *asbila*; particular care was taken regarding the architectural and formal characteristics of the urban *asbila*.
2. A majority of the *asbila* were built in the façade of a private well that was dug in a field, thus revealing the agricultural nature of the road.
3. Most of the *asbila* are situated in the coastal plain and the Shephelah, and they received their water from a well. Some of the *asbila* in the hill-country adjoin springs (Bi'r al-Hilwa; Figure 12.11). The water supply in this region also relied upon springs without the construction of a nearby *sabīl*.
4. A majority of the *asbila* (excluding three in Jaffa that were dated with certainty to the early nineteenth century) were built at the end of the nineteenth century, during the time of Abdülhamit II. The *asbila* that are dated to the beginning of the nineteenth century were built by rulers; no *asbila* built upon private initiative in this period were located. Excluding a single *sabīl* that was renovated (or built) in the Mandatory period (Bi'r al-Hilwa; Figure

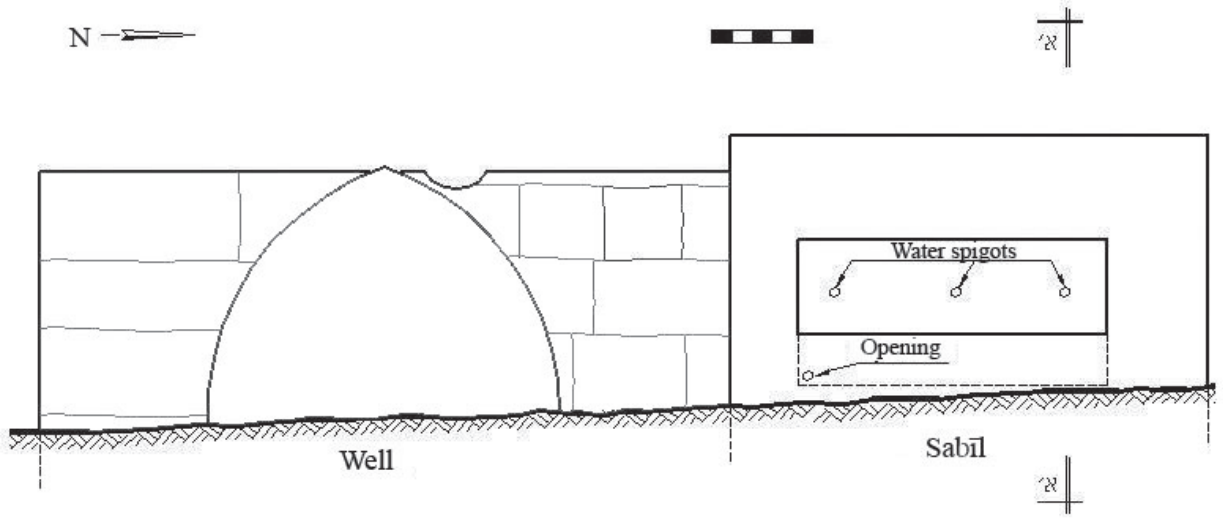

Figure 12.11. Structure of the Bi'r al-Hilwa well structure in Latrun and the Mandatory period *sabīl* in its façade (Sasson 2002:118).

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12.11) and another that was built in the early twentieth century (at Jaffa Gate), we found no other *asbila* that were established during the twentieth century.

5. The attitude of the ruler and his activity on behalf of wayfarers (improvements to the road, improved means of transport, security) is related to the willingness of individuals to contribute their share in the establishment of such fountains for the benefit of the public.
6. All of the sites were constructed by Muslims. One *sabīl* in Latrun might have been established on the initiative of the local nuns (Figure 12.12). We did not find any site built by Jews along this road, although such sites exist in Zichron Yaacov, Petach-Tikva, and elsewhere in Israel (Sasson 2002:117–119).
7. An intriguing phenomenon that came to light during the course of the survey (but does not find expression in the table) is the relatively large number of *asbila* along the secondary roads that joined the main road or ran close to it, such as the "Musai Sabīl" in Abu Kabir (Figure 12.10).

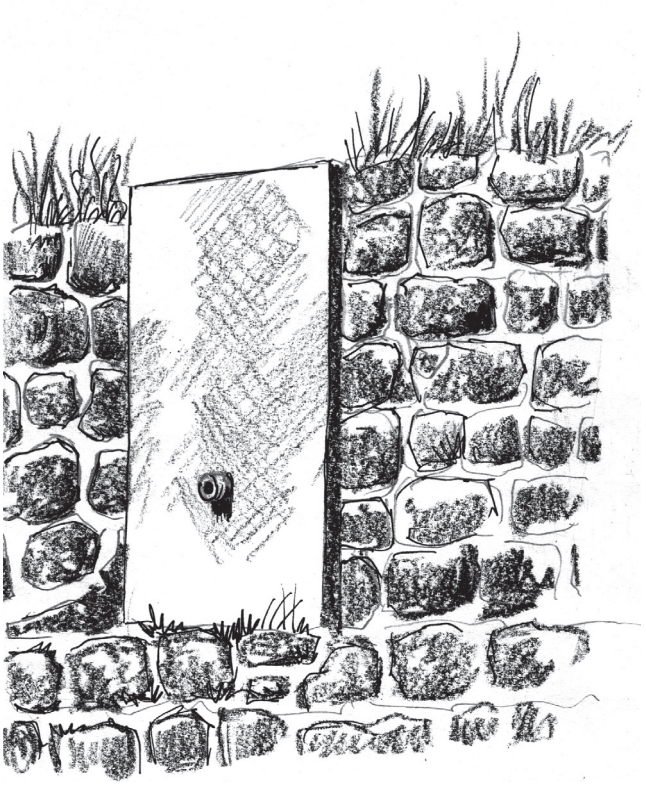

Figure 12.12. *Sabil* in the outer wall of the Latrun monastery. *Sketch by Shlomo Zabadi.*

In summation, the *asbila*, perhaps more than any other element in the material culture of the road, accentuate the relationship between the intent and activity of the ruler and those of the individual, between the economic condition of Israel and the development of the road and its installations, and between the increase in the number of *asbila* and the number of pilgrims. Notwithstanding the importance of the contribution of the individual, it should be stressed that he did not act in a vacuum. The positive social climate created by the government also affected the individual and encouraged him to act, especially since he was accordingly compensated by the authorities, who at times exempted him from the payment of taxes, including real estate taxes (see the recent preliminary results of my survey of *asbila* in Israel: Sasson 2001b, 2002).

The Contribution of the Archaeological Finds

Archaeological research is able to contribute to understanding a number of aspects of the Jaffa-Jerusalem road. Up to the present, historical and historical-geographical research has disregarded the physical conditions and factors affecting the location of these sites. Archaeological surveys cannot avoid addressing these factors, and an awareness of these elements will likely aid in reconstructing the road system in its entirety. Archaeological research contributes to our understanding of the historical sources for the system of roadside services that usually relate to these aspects only in a general fashion. It emphasizes the importance and function of the various services that were provided at these sites, such as the water installations. The archaeological approach focuses the discussion concerning the road system, as well as its improvement and development, upon certain historical periods in which the major developmental steps were taken, the foremost among which were in the time of Muḥammad Agha (the early nineteenth century) and that of Abdülhamit II (at the end of that century).

Archaeological finds add information regarding the defense of the road and the guard stations, in addition to the fortresses that were constructed especially for this end. Various researchers have noted that the route of the main road connecting Jaffa and Jerusalem filled mainly public and economic functions (Kark 1990:196–197). Different public institutions that served pilgrims and merchants were established along Jaffa St. in Jerusalem, from the "Diligence Station" at the Jaffa Gate plaza to the large concentration of hostels and hotels, post offices, and other facilities. This

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subject has been studied in depth, as regards Jerusalem, especially in light of the wealth of historical sources. The study of land uses and public functions at the exit from Jaffa to Jerusalem, however, has relied mainly on historical and cartographic sources (Kark 1988:fig. 28). Despite the reliability of these sources, any research that disregards the archaeological finds is flawed, since the historical and cartographic sources do not always attest to the character and function of the sites.

The present archaeological and architectural survey reveals that in the first section of the road as it leaves Jaffa for Jerusalem, for example, between the Jaffa city wall and the customs house, mostly public structures were built, including hostels, marketplaces, mosques, and *asbila*. These structures were used as private residences and at times as hotels, although only in the second phase, when additional stories were built on these structures. The historical information concerning the construction process is extremely sparse. This conclusion was reached in light of the plans of the buildings along this route that are large structures built in the format of *khans*, including a large courtyard.

Conclusion

The Jaffa-Jerusalem road, as a feature of the landscape, expedited activity from two sectors, those of the central government and of private initiative by those with the financial resources and will to engage in such projects. Both would direct their energy and efforts toward the road and the public benefit, resulting in increased traffic on the road; these travelers would themselves serve as an additional catalyst for activity by these two elements, leading them to construct service installations and sources of livelihood, thus internally reinforcing the system.

Four categories of services offered along the Jaffa-Jerusalem road existed, along with their expressions in the material culture. These included guard stations, customs houses, lodgings (*khans*, hostels, and hotels), and public drinking installations (*asbila*). The archaeological research of these spheres will likely contribute to our understanding of geographical and historical processes in the development of the route.

The archaeological finds teach that the most significant contribution to the development of the road was made during the time of Abdülhamit II, who ruled during the last quarter of the nineteenth century. The number of sites that were constructed during his reign are a consequence of his method of governance, on one hand, and the development of pilgrimage and the Western involvement in the land of Israel, on the other. We found a connection between security and service installations at central passage points and major junctions. Important sites where guard stations had been established and which contained an economic infrastructure of any sort (for the supply of water and food) invited the establishment of additional nearby installations, such as hotels and water facilities. Thus, for example, we see a number of concentrations of service sites along the main thoroughfares leaving the cities of Jaffa and Jerusalem or on the main street that passes through a city (Ramla). Along these routes is a large concentration of hostels and hotels, marketplaces, *asbila*, customs houses, and guard stations. From this aspect, Latrun and Sha'ar ha-Gai, in terms of their concentration of sites, which included a hostel, a guard station or customs house, and *asbila*, functioned as "cities" and transportation centers. The attitude of the authorities to the local population and the geographical region encouraged private initiatives for the establishment of hostels and water facilities. The latter, for example, are a type of site without historical documentation. An archaeological approach to this issue will undoubtedly enrich the geographical-historical study of the Ottoman and modern periods.

Acknowledgments

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CHAPTER 13

METALS FROM THE FLEA MARKET AND GANOR COMPOUND EXCAVATIONS

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Israel Antiquities Authority salvage excavations in both the Flea Market and Ganor Compound from 1995 to 2007 produced a sizable corpus of metal artifacts from the Medieval and Ottoman periods. Limited publications of such finds make this corpus particularly important for the identification of these artifacts but also for understanding their functions. Among the artifacts are various weapon types, cavalry accessories, jewelry, horseshoes, cosmetic utensils, surgery implements, weights, a seal, decorated metal plates, and other miscellaneous items.

A large collection of metal artifacts was recovered during the course of excavations in the Flea Market and Ganor Compound areas during Israel Antiquities Authority salvage excavations directed by Martin Peilstöcker between 1995 and 2007 (for references, see Peilstöcker 2011:tab. 2.9). While these areas produced metals from both the Medieval and Ottoman periods, they do not represent a homogeneous collection (Tables 13.1 and 13.2). The dominant group comprises weapons, which consists of two different groups from two different periods. While the earliest group is represented by a small collection of arrowheads from the Medieval period (twelfth to fourteenth centuries), the later group is represented by a massive iron cannon from the late eighteenth century (Figure 13.1). Horse trappings are also a relatively large group consisting primarily of a collection of horseshoes. The number of finds that can be identified as belonging to the domestic household is unusually small, consisting of a number of knife blades, buckles, and some simple jewelry, but on the whole, the domestic artifacts are surprisingly few. To the domestic finds one may add a small collection of agricultural tools: a hoe, scythe, and sickle. One of the most unusual and impressive finds is that of the bronze seal used by a member of the clergy of Jaffa. It is beautifully preserved and, after being cleaned, looks as though it was last used very recently.

A few words must be said about the metal and the state of preservation. The humidity resulting from proximity to the sea and high rainfall, as well as the exposure to salts, do not create favorable conditions for any type of metal, whether iron or bronze. Most of the artifacts are made of iron, while the minority is bronze. The state of preservation seems to vary, although in general, the iron finds are badly corroded and cracked. The few bronze artifacts found along with the iron object are on the whole better preserved.

All the measurements are in centimeters unless stated otherwise. The following abbreviations are used in this catalog: A. (area), L. (locus), B. (basket), *l.* (length), *w.* (width), *h.* (height), th. (thickness), *dia.* (diameter), and *wt.* (weight).

WEAPONS AND CAVALRY ACCESSORIES

Arrowheads (Nos. 1–37)

Among the earliest of the weapons are over 20 iron arrowheads dating from the twelfth to fourteenth centuries (Table 13.1). The dominant force among the Muslim

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Figure 13.1. Cannon (No. 42) from Jaffa. *Photograph courtesy of the Israel Antiquities Authority.*

Figure 13.2. Comparative assemblage of Medieval iron arrowheads. *Photograph courtesy of the Israel Antiquities Authority.*

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Figure 13.3. Iron arrowhead (No. 26; A-3908/62990). *Photograph courtesy of the Israel Antiquities Authority.*

Figure 13.4. Arrowhead for use against horses (No. 34; A-3740/655). *Photograph courtesy of the Israel Antiquities Authority.*

Figure 13.5. Kite-shaped arrowhead (No. 36; A-3740/1827). *Photograph courtesy of the Israel Antiquities Authority.*

armies in the Middle East during this period was the mounted archer. Although the Crusader armies incorporated archers in their infantry and hired the services of mounted archers, it seems that archers were not ranked as highly as those in Muslim armies. The Frankish archers usually belonged to the lower social classes and could not afford the mount, armor, and weapons that distinguished the knights (Bradbury 1985:2, n.3). As the security of the Crusader kingdom deteriorated toward the end of the twelfth century and defense became a crucial issue, Frankish archers slowly gained importance, especially during the siege of fortresses (Raphael 2001).

1–33. These iron arrowheads are of the same type, and their length ranges from 4 to 6 cm (Figures 13.2 and 13.3). They are fitted to the shaft with a rather long, thin tang that runs deep into the wooden shaft, and their cross section is square or triangular. This type was designed to penetrate helmets, body armor, and shields (Faris and Elmer 1945:107–108). The nature of the design allowed the arrowhead to penetrate armor with relative ease and embed itself deep in the flesh. Pulling it out with haste could end with the shaft breaking off, while the arrowhead remained inside the body.

It is impossible to determine who shot these arrows and quite difficult to decide the type of bow from which they were shot. As they are rather light in weight, they could not have served as crossbow bolts and are generally thought to have been shot with a composite bow, the most common type of Near Eastern bow used among Muslim mounted and infantry archers. There is no evidence to date that the Franks used this bow themselves, although there is no reason for them to have banned it, as its qualities were renowned. It is more than likely that the mercenaries recruited from the local population by the Frankish armies used the composite bows (Harari 1997:75–116). Similar arrowheads have been found on Crusader, Ayyubid, and Mamluk sites dating to the twelfth to thirteenth centuries,

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Figure 13.6. Giant, conical arrowhead (No. 37; A-3740/3787). *Photograph courtesy of the Israel Antiquities Authority.*

such as at Arsuf (Raphael and Tepper 2005:fig. 1), al-Burj al-Ahmar (Pringle 1986:21–22, fig. 57), Atlit (Johns 1936:fig. 15:12), Yoqne'am (Khamis 1996:photo xviii. 4, no. 6), Hama (Ploug et al. 1988:fig. 21:21), and Montfort (Dean 1927:fig. 53:N).

34–36. The origin of the kite-shaped arrowheads is the Eurasian Steppe, where they served for hunting, but were soon found to be a great success against horses in times of war (e.g., Figures 13.4 and 13.5). Horses were large and clear targets on the battlefield, even in a fast gallop, and were still relatively easy for a trained and experienced archer to track. Although this arrow type did not immediately kill the horse, it sufficed to wound the horse and dismount the knight. Similar arrowheads are known from southern Siberia and central Asia (Nicolle 1999:fig. 866k; Swietoslawski 1999:pl. 19, figs. 3–6).

37. It is difficult to determine the exact character of the conical projectile point under consideration (Figure 13.6). The diameter of the socket is 3 cm, tapering gradually toward a thick point. It seems as though only the upper third is hollow while the rest is solid. It is slightly chipped at the sides of the socket, cracked, and heavily corroded. It closely resembles a huge arrowhead that was found at the foot of the fortress gate at Arsuf (Raphael and Tepper 2005:96, figs. 98B, 98C), which is made in the very same manner and was probably used as a bolt for a large crossbow mounted on a wooden frame (Raphael and Tepper 2005:85–100).

Crossbow Bolt or Spearhead(?) (No. 38)

38. L.374, B.6388, Sq. R14. *l.* 15, *dia*. 3.5.

This is a sharp, hollow conical spearhead or large crossbow bolt, with the remains of the wooden handle still visible. A spearhead depicted on the cover of Queen Melisende's Psalter from the early twelfth century appears similar (Nicolle 1988:503, fig. 729a). Similar giant crossbow bolts were found in Hungary (Nicolle 1988:523, fig. 875g).

Dagger Handle (No. 39)

39. L.1096, B.3559/2. *l.* 6.4, *w.* 3, *th.* 0.5.

The handle is all that remains of this iron dagger, which is poorly preserved, being badly corroded. The handle is hollow and the bottom section is partly missing; it features a small, almost symbolic hand guard, which is slightly chipped at both ends. The blade was probably tanged and fitted into a narrow oval hole that can still be seen.

Spur (Nos. 40–41)

40. L.1090, B.3506. *l.* 14.5 (Figure 13.7).

Among the cavalry accessories are two well-preserved iron spurs, made of two arch-shaped arms that fastened the spur to the heel of the rider's boot. Each arm had one or two rings to which the leather strap and buckles were attached (Tarassuk and Blair 1982:448–450). The neck fixed to the center between the arms terminates in a pointed spike that is attached to a flat, round disk. Similar spurs can be seen in various illustrations dating from the thirteenth to fourteenth centuries, such as the effigy of Robert de Ros from the Temple Church in London dated to the early fourteenth century. An illustration in the Westminster Psalter, St. Albans manuscript shows a fully armed knight kneeling with spurs attached to the mail that covers the length of his leg and ends in a sort of shoe. The manuscript is dated to ca. 1225–1250 CE (Nicolle 1988:1:826, fig. 930c, 2:359–360).

An almost identical spur to the one from Jaffa can be seen in an illustration from the "Jesse Window" in St. Mary's Church in Shrewsbury, England, which shows a kneeling

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Figure 13.7. Iron spur (Nos. 40 and 41; A-3740/3559/2 and 3506). Two views. *Photograph courtesy of the Israel Antiquities Authority.*

knight from the early fourteenth century. The armor, according to David Nicolle, is typical of the late thirteenth century (Nicolle 1988:1:836, fig. 983, 2:375). The only other site where a similar spur was found is Yoqne'am (Khamis 1996:218–235, fig. XVIII2:1, photo. XVIII.5:1).

Cannon (No. 42)

Firearms were well established by the eighteenth and nineteenth centuries. They had become an essential part of warfare, were incorporated into both fortresses and town fortifications, and were used in field and siege operations. The effectiveness of cannons depended on various factors: maneuverability, rate of fire, and accuracy. The thickness of the cast determined maneuverability. It was only in the early 1730s that Jean-Florent de Valliére, director general of artillery, decided upon standardization of cannons in France. Five artillery classes of cannons were established: 4-, 8-, 12-, 16-, and 24-pounders (Alder 1997:29). In 1792, Napoleon adapted the Gribeauval System that once again introduced reforms and standardization that improved the quality and effectiveness of firing and mobility. The standard calibers became 12-, 8-, and 4-pounders (Chandler 1993:20–23). The field guns had twin trails that could be hitched to a pair of bogeys (four-wheeled carts) that were drawn by four to six horses (Glover 1980:110, 135).

As mentioned above, the iron cannon (Figure 13.1) and the eight iron cannonballs from Jaffa may be dated to the late eighteenth or the first half of the nineteenth century (the Ottoman period). It is possible that the cannon belonged to Napoleon's attacking force, which besieged the city in early March 1799. It is a somewhat tricky historical problem, as the Ottoman artillery troops in Palestine had been trained by French officers who were helping the Turks reorganize their artillery units. It seems quite possible that the French not only provided the training but also may have supplied the Ottoman troops with the cannons and ammunition. It was only in 1797 that relations between the Ottomans and the French deteriorated to the point that they broke off completely (Gichon 2003:87).

The number of cannons set in the defense of Jaffa by the Ottoman artillery is estimated at 40 to 45. The French artillery included one 8-pounder and three 12-pounders (Gichon 2003:89). The city was attacked and stormed from the south and fell within four days. The cannon was found beneath a load of rubble near Yefet St., which probably marks the line of the Crusader city wall and the later Ottoman wall that was built on the same line. It has also been suggested that the street today runs where the Ottoman moat ran, while the wall lay farther in (see Chapter 7, this volume; also Pierce 2011). In any case, the cannon probably belonged to the attacking force and was not in the defense of the city. The design is very similar to the French Gribeauval cannon, and an almost identical cannon can still be seen in Akko on the northeastern wall. The one in Akko has been dated between 1830 and 1860 by Ytzhaki, however, who states that they are very similar to Napoleon's cannons, which were captured by the British in 1799 before the start of the siege of Akko (Itzhaki 1983:71–73). The other possibility is that the cannon was supplied by the British, who supported the Ottomans as best they could. Further research is required to be able to define the exact make of this cannon.

The cannon from beneath the debris on Yefet St. was found by Lior Rauchberger during construction work near the ruins of a building that has not been satisfactorily identified (Figure 13.1). It is made of iron with four iron reinforcement bands dividing the length of the cannon into four approximately equal parts. Its total length is 2.14 m, and its diameter is between 26 and 41 cm. It may be identified

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as a 120-mm caliber cannon, which had an effective range of 900 m and a maximum range of 1,800 m. The operation of such a cannon on the field required a crew of 15 soldiers and a team of four to six horses (Chandler 1993:22–23). The cast iron cannonballs have a diameter of between 8.4 and 10 cm and weigh 2 to 6 kg.

Cannonballs (Nos. 43–53)

43. L.1597, B.4321. Cannonball, iron. *dia.* 8.5.
44. L.1579, B.4373. *l.* 20, *th.* 6.5. *wt.* 6 kg. Large fragment, iron cannonball. Perfectly round hollow center.
45. L.1639, B.4449. Cannonball, iron. *dia.* 8.4, *wt.* 1.8 kg.
46. L.1639, B.4454. Cannonball, iron. *dia.* 8, *wt.* 2 kg.
47. L.1639, B.4479. Cannonball, iron. *dia.* 8.4, *wt.*1.8 kg.
48. L.1649, B.4483. Cannonball, iron. *dia.* 8. Half.
49. L.1649, B.4490. Cannonball, iron. *dia.* 8.4. Half.
50. L.1649, B.4494. Cannonball, iron. *dia.* 8.5, *wt.* 2 kg.
51. L.1501, B.5010. Cannonball, iron. *dia.* 10, *wt.* 3 kg.
52. L.329, B.6168, Sq. R30. Cannonball, iron. *dia.* 7.5.
53. L.154, B.9081. Cannonball, iron. Found near the Armenian Monastery on the seafront.

Musketball (Nos. 54–57)

A number of lead musket bullets were found during the 2006 excavations. While some have a perfect round shape, others are coarse and feature remnants of the casting processes. Sixteenth- and seventeenth-century weapons were far from having a standard weight, size, or shape. As a result, bullets, too, probably varied a great deal. In the Ottoman Empire until the seventeenth century, the Janissaries used the matchlock musket, even though flintlock muskets had been available from the late sixteenth century. Lighter Ottoman muskets of the late sixteenth century, known from Egypt, Iraq, and the Balkans, fired lead bullets of 12 to 15 g. According to the size of the bullet, the caliber must have been 13 and 14 mm (Ágoston 2005:63, 90). The weight of the bullets found at Jaffa is 12 to 30 g. Ágoston does not mention 30-g lead bullets, but the larger calibers of the late eighteenth-century Janissary trench guns may well have used such weights (see Ágoston 2005:90, tab. 93.10).

54. L.331, B.6147. *dia.* 0.2–1.1; *wt.* 15 g. Round with a short rod left from the casting.
55. L.350, B.6302. *dia.* 1.1; *wt.* 12 g. Round with a short rod left from the casting.
56. L.462, B.6712 (Area B, Sq. Y13). *dia.* 1.5; *wt.* 25 g. Perfectly round. Central casting line can be seen.
57. L.361, B.6482. *dia.* 1.8; *wt.* 30 g. Perfectly round and smooth. Two musket pellets.

Domestic Items

Blades and Scissors (Nos. 58–67)

Here are included a small group of iron blades for domestic use.

58. L.593, B.2003. *l.* 9, *w.* 3.5. Fragment of iron knife. Slightly curved. Badly corroded.
59. L.591, B.2031. *l.* 12. Iron pair of scissors, badly corroded and cracked. Part of the handle is broken. *Parallels*: al-Burj al-Ahmar (Pringle 1986:fig. 58.34) and in Yoqneʿam (Khamis 1996:fig. xviii.10, 12).
60. L.1117, B.3658. *l.* 12, *w.* 2.2, *th.* 0.4. Short iron blade, curved on the upper side; straight on the lower side. Fragment of the tang can still be seen. Heavily corroded.
61. L.1505, B.4025. *l.* 8.2, *w.* 2.2, *th.* 0.5. Fragment of an iron blade, pointed at the end. Heavily corroded.
62. L.1509, B.4087. *l.* 11, *w.* 2, *th.* 0.2. Iron blade, symmetrical leaf shaped.
63. L.1596, B.4314. *l.* 14, *w.* 2.5, *th.* 0.3. Symmetrical leaf-shaped iron blade. Pointed at the end, tang fitting to the handle is missing. Heavily corroded.
64. L.1623, B.4385. *l.* 3, *l.* (of tang) 5, *w.* 3 (Figure 13.8). Full-size iron blade with tang. Slightly curved on the upper side, while the lower side is almost straight. Heavily corroded and the exact structure of the blade is a bit hard to follow.
65. L.1635, B.4419. *l.* 14.8, *w.* 2.5, *th.* 0.3. *l.* of tang 4.5. Full-size iron blade with tang. Curved on the upper side and only slightly curved on the lower side. Sharp and pointed at the end. It seems that the connection between the tang and blade was reinforced by an iron disk. The upper third of the blade is broken.
66. L.353, B.6290. *l.* 10, *w.* 2.3, *th.* 0.4. Iron blade(?)
67. L.535, B.7158, Sq. v13, Area A. *l.* 7, *w.* 2, *th.* 0.4.

Bowl (No. 68)

68. L.632, B.2074. *h.* 6.5, *dia.* 10.5, diameter of base: 3. Fragments of copper bowl. The walls of the bowl rise in a sharp angle to a flat round base.

Fishing Weights (Nos. 69–72)

69. L.39, B.207. l. 4. *w.* 3, *th.* 0.8. Lead oval, bronze ring. May have been used as a fishing weight for a large net. Three rectangular fishing weights, made out of a folded lead plate. *Parallels*: Capernaum (Tzaferis 1989:135, fig. 172:115–116).
70. L.211, B.5583. l. 5.5, *w.* 1.5.
71. L.514, B.7012 (Area A, Sq. v13) l. 3.5, *w.* 1.2.
72. L.6411, B.62054. l. 3.5, *w.* 1, *th.* 0.3.

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Figure13.8. Full-size iron blade with tang (No. 64; A-3740/4385). *Photograph courtesy of the Israel Antiquities Authority.*

Figure 13.9. Sickle (No. 73; A-3740/2675). *Photograph courtesy of the Israel Antiquities Authority.*

Figure 13.10. Scythe (No. 74; A-3740/2781). *Photograph courtesy of the Israel Antiquities Authority.*

Agricultural Implements

The land around Jaffa is rich, fertile, and well watered, conditions that encourage intensive agriculture. Up until the early twentieth century, much of the land was still worked. The agricultural implements cannot be accurately dated since their basic shaped hardly changed.

73. *Sickle*. L.797, B.2675. *l.* 71.5, width of blade 3.5 (Figure 13.9). The blade of the sickle is badly corroded, cracked, and chipped. The design of the handle implies that it originally had a wooden handle (Avitsur 1976:23–25).

74. *Scythe*. L.878, B.2781. *l.* 38, width of blade 3, *th.* of blade 0.3 (Figure 13.10). The scythe is a common tool for both harvesting of cereals and cutting grass for animal fodder. In Arabic, it is commonly known as "hashūsha" (حشوشه), coming from the word for wild grass (Avitsur 1976:24). It is a tool that has changed very little over the centuries. A similar scythe was found in the Templar fortress at Vadum Jacob and dates to the late twelfth century (Boas 1999:fig. 13), but they can also be easily dated to a much later century. Unlike the sickle, the scythe is well preserved. The iron

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Figure 13.11. Spade, recto and verso (No. 75; A-3740/4365). *Photograph courtesy of the Israel Antiquities Authority.*

handle ends with a hook. It is possible that it was not encased in a wooden handle and that, when it was used, a piece of cloth was wrapped around it to protect the palm of the hand (Basing 1990:51–62).

75. *Spade*. L.1612, B.4365. *l.* 30.5, *w.* 19, *dia.* of socket 5, *th.* 1–1.5 (Figure 13.11). Iron spade, long socket to fit the handle. Front edge partly missing and broken. Socket wide and partly missing. The spade and hoe, like the scythe, are hard to date as they hardly changed throughout the centuries. Similar tools dating to the twelfth to thirteenth centuries have been found at ʻAtlit (Johns 1936:20, fig. 15) and Vadum Yacob (Boas 1999:fig. 13).
76. *Hoe*. L.1595, B.4306. *l.* 27, *w.* 24.5, *th.* 1.5. Iron triangular hoe. Square socket to fit the handle.
77. *Wedge* or *axe*. L.148, B.836. *l.* 11.5, *w.* (of blade) 7.5. Iron wedge or axe for woodwork. The blade is slightly curved inward and is badly corroded and cracked.
78. *Hammer*. L.243, B.5795. *l.* 12, *w.* 1.5–2.5. Curved iron hammer rounded at one end.

Horseshoes

The horny casing of a horse's foot is carefully adapted to protect it. Domesticated animals used for riding, carrying heavy loads, and pulling carts over rough terrain and hard road surfaces need, however, additional protection to prevent the breaking and rapid wear of this casing. Horseshoes provide the best protection without interfering with the balance and movement of the horse. Horseshoes have been used since the Roman period when a leather slipper was tied to the hoof. Later a round metal plate was attached to the horse's leg with a leather cord, a contraption known as the hippo-sandal. These were probably used as early as the fifth century CE. It was probably the Celts in northwestern Europe who first used nails to fasten the shoe to the hoof (Sparkes 1998:2–14).

The collection of horseshoes found at Jaffa can be divided into two main types: open shoes and closed shoes. The open horseshoe is a U-shaped piece of iron that fits the front contours of the bottom of the hoof, open at the back, and fixed to it with three to four nails that were set in each branch. The closed horseshoe resembles a round plate that leaves only the center of the hoof exposed. This type of shoe provides ample protection to the hoof and suits horses that are ridden or worked on hard, rocky terrain. A similar type of horseshoe can be seen in fifteenth- and sixteenth-century illustrations from Iran and central Asia (Grube 1968:70; Titley 1977:fig. 30; Welch 1976:163). The use of closed horseshoes is not a shoeing method known in west and central Europe, but it can still be seen in parts of the Middle East today around Petra in southern Jordan (personal observation). Unlike the European horseshoes, this type covers almost the whole of the hoof apart from the frog, which pumps the blood back up the leg of the horse.

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Figure 13.12. Open horseshoe (No. 80; A-3740/3507).
Photograph courtesy of the Israel Antiquities Authority.

Figure 13.13. Open horseshoe (No. 82; A-3740/3844).
Photograph courtesy of the Israel Antiquities Authority.

Figure 13.14. Open horseshoe (No. 86; A-3740/4366).
Photograph courtesy of the Israel Antiquities Authority.

Figure 13.15. Round closed horseshoe (No. 90; A-3740/2636).
Photograph courtesy of the Israel Antiquities Authority.

Parallels: 'Atlit (Johns 1936:fig. 15:13), Hama (Ploug et al. 1988:pl. 23:22), and Belvoir (Ben-Dov 1976:106).

Open Horseshoes (Nos. 79–88)

79. L.5257, B.1736. *l.* 12.5, *w.* 3, *th.* 1. Iron horseshoe.
80. L.1098, B.3507 (Area A, Sq. M28). *l.* 12, *w.* 10, *th.* 1.5 (Figure 13.12). Two-thirds of an open iron horseshoe with fragments of nails still visible.
81. L.1178, B.3817. *l.* 11, *w.* 2.5, *th.* 0.8. Fragment of an iron horseshoe.
82. L.1182, B.3844. *l.* 13, *w.* 1.5–3, *th.* 0.7 (Figure 13.13). Half an iron horseshoe. Heavily corroded. Pointed at the edge. Open type.
83. L.1559, B.4099. *l.* 12, *w.* 2.8, *th.* 0.5. Fragment of an iron horseshoe.
84. L.1596, B.4314. *l.* 11.8, *w.* 2–2.5 cm, 0.5 cm; *l.* 8.5, *w.* 2–2.5, *th.* 0.8. Two iron fragments of horseshoes. Heavily corroded.
85. L.1601, B.4347. *l.* 13, *w.* 3, *th.* 1.3. Half an iron horseshoe.
86. L.1612, B.4366. *l.* 9.8, *w.* 2–3, *th.* 0.5 (Figure 13.14).
87. Half an iron horseshoe, with the visible remains of a nail.
88. L.2009/4, B.6002. Fragment of a donkey shoe. *l.* 7, *w.* 1.5. Half a horseshoe. *l.* 13, *w.* 3. Surface find. *l.* 12.5, *w.* 11.5, *th.* 1.5. Iron horseshoe.
89. L.237, B.5767. *l.* 11, *w.* 1.2–2.2, *th.* 0.4. Fragments of half a horseshoe.

Round Closed Horseshoe (Nos. 90–95)

90. L.84, B.737. *l.* 13, *w.* 8. Inner opening: *l.* 5, *w.* 1.5 (Figure 13.15).
91. L.797, B.2636 *l.* 10.5, *w.* 8.2, *th.* 0.4. Round closed horseshoe. Inner opening: *l.* 2.5, *w.* 1.

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Figure 13.16. Round closed horseshoe (No. 93; A-3740/3876). *Photograph courtesy of the Israel Antiquities Authority.*

Figure 13.17. Round closed horseshoe (No. 95; A-3908/62140). *Photograph courtesy of the Israel Antiquities Authority.*

92. L.772, B.3588 (Sq. GG–4). *l.* 10, *w.* 2–8, *th.* 0.7.
93. L.1191, B.3876. *l.* 13, *w.* 10, *th.* 1 (Figure 13.16). Round closed horseshoe. Slightly curved upward above the front edge of the hoof. Two fragments of nails can still be seen. Cracked, chipped and heavily corroded.
94. L.1720, B.5347. *l.* 10, *w.* 9.5, *th.* 1.5. Inner opening: *l.* 3, *w.* 2.
95. L.6404, B.62140. *l.* 10.5, *w.* 7, *th.* 0.7 (Figure 13.17). Oval horseshoe, without inner opening.

Cosmetic and Surgical Implements

Very few surgical implements were found. These are three probes: short, slender, and simple bronze rods with rounded or slightly pointed ends. They were used for exploring wounds, sinuses, and other cavities. Probes were also used for mixing, stirring, and applying liquids and pastes to various wounds (Guri-Rimon 1996:64).

96. L.48, B.279. *l.* 7, *w.* (of spoon) 0.4. Bronze probe with a spoon at one end and a sharp point at the other.
97. L.99, B.461. *l.* 12.5, *th.* 0.4.
98. L.5215, B.1725. *l.* 11.5, *th.* 0.5.
99. L.797, B.3690, Sq. DD2. *l.* 3.6, *dia.* (of spoon) 0.7. Fragment of a bronze probe.
100. L.6488, B.62961. *l.* 9, *th.* 0.3. Round oval enlargement at both ends.
101. L.6495, B.62715. *l.* 9.5, *th.* 0.4.
102. L.6547, B.63163. *l.* 4.3, *w.* (of spoon) 0.4. Twisted bronze handle with a small spoon at the end. Upper half is missing.

Weights and Scale Pan

Rather surprisingly, the excavation has yielded only two weights to date. Considering that Jaffa was a port with a reasonable number of merchants importing and exporting goods and displaying them in the town's markets, it is hard to explain why so few weights have been recovered. The size and weight of both examples suggests that they were used for a variety of valuable goods purchased in

Figure 13.18. Shallow copper scale pan (No. 104; A-3740/1827A). *Photograph courtesy of the Israel Antiquities Authority.*

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small quantities such as spices, precious and semiprecious stones, precious metals, ointments, and perfume. There is often a difference between the actual weight of the objects themselves and the weights as described in the historical sources. The difference can be due to a loss of mass after cleaning procedures in the lab, the result of corrosion, or attempts to swindle customers by using false weights.

103. L.148, B.207. *dia.* 1.5–2, *h.* 1. Spherical/barrel-shaped weights were dominant throughout the Roman Empire. The shape is also quite common throughout the Medieval period (Balog 1970:pl. 1; Bendall 1996:24). A similar weight was found in Corinth (Davidson 1952:pl. 94:1583).
104. L.581, B.1827. *dia.* 5.2 (Figure 13.18). Shallow copper scale-pan. Similar scale-pans were found in Corinth (Davidson 1952:pl. 98:1675).
105. L.1509, B.4077. Base *dia.* 4.6; upper base *dia.* 3.4 (Figure 13.19), *h.* 3.2, *wt.* 205.87 g. Iron hexagonal weight(?). Hole running from top to bottom.
106. L.6428, B.62299. *h.* 2.1, *dia.* 1.4. A cylinder-shaped bronze weight. Upper half rounded. Grooved in the center.

Bells

While some bells served as jewelry, others were used for playing music during religious rituals and festivals. Bells are a common find in graves dating to the Roman and Byzantine periods; they were believed to ward off the evil eye (Braun 2002:106–107).

Parallels: From a second- to third-century CE grave at Sajur (Braun et al. 1994:fig. 5:5); fourth- to fifth-century CE Sepphoris (Nagy 1996:226, no. 124); Byzantine to Early Islamic Khurvat Hermeshit (Iron-Lubin 1995:105:104); Roman tomb at Tarshiha (Iliffe 1934:pl. 7:13); Roman tomb at El-Jish (Makhouly 1938:pl. 31:14).

107. L.99, B.124. *l.* 2.8, *w.* 2. Spherical bronze bell.
108. L.85, B.465. *dia.* 1.5. Spherical bronze clapper.

Buckles and Clasps

109. L.752, B.3530 (Sq. GG4). *l.* 4.3. Fragment of a bronze rectangular buckle.
110. L.820, B.3756 (Sq. DD2). *l.* 4.2, *w.* 3.2–4.5, *w.* 0.5. Semicircular bronze buckle.
111. L.1694, B.5116. *l.* 5.5, *w.* 6.5 (Figure 13.20). Iron rectangular buckle, badly corroded and cracked.
112. L.225, B.5654. *dia.* 5.5, *th.* (of band) 1. Round iron buckle.
113. L.512, B.7014 (Sq. T13). *dia.* 4.5, *w.* (of band) 0.5. Round bronze buckle.
114. L.3024, B.7094. *l.* 4.5, *w.* 1–2. Fragment of bronze buckle.
115. L.6440, B.62412. *l.* 2, *w.* 1.5. Bronze.
116. L.6562, B.63284. *l.* 2.1, *w.* 1.8. Bronze buckle.
117. L.6585, B.63405. *l.* 4.3, *w.* 3. Oval shaped. Bronze.
118. L.8711, B.86252. *l.* 5.5. Small round bronze buckle attached to a bronze arm. Fragments of a gold coating remain, with an incised wavy pattern. Two tacks to which the leather was attached.

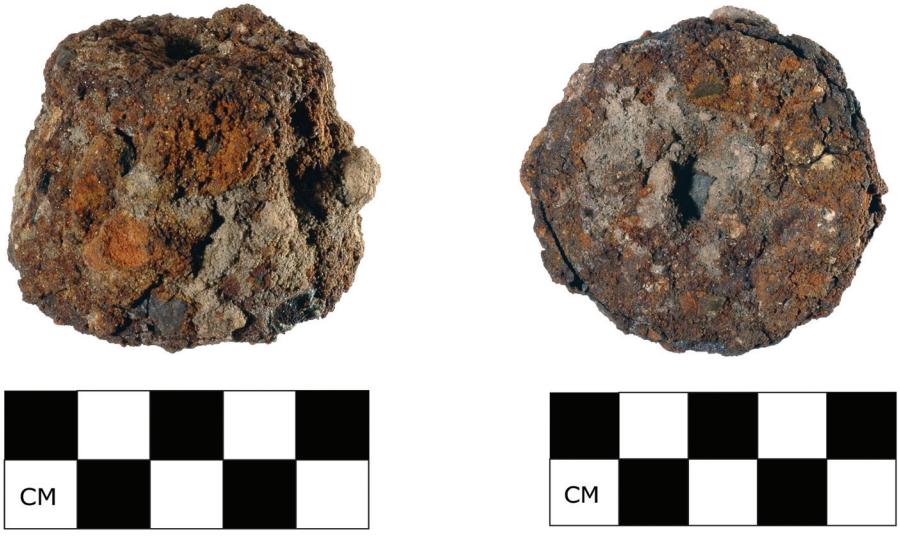

Figure 13.19. Iron hexagonal weight(?) (No. 105; A-3740/4077). *Photograph courtesy of the Israel Antiquities Authority.*

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Figure13.20. Iron rectangular buckle (No. 111; A-3740/5116).
Photograph courtesy of the Israel Antiquities Authority.

119. L.792, B.3613 (Sq. GG4). *l.* 3, *w.* 2.5. U-shaped buckle.
120. L.826, B.3773 (Sq. FF2). *l.* 3, *w.* 2–3.2. U-shaped buckle.
121. L.524, B.7070 (Sq. T13). *l.* 3, *w.* 2.5. U-shaped bronze buckle.
122. L.237, B.5810. *l.* 5.5. Bronze clasp consisting of a ring with two arms.
123. L.1177, B.3828. *l.* 5. Bronze clasp.

Jewelry

The few pieces of jewelry are made of simple, cheap metals. The quality of the work and material implies they belonged to the lower and middle classes who could not afford expensive metals such as silver and gold.

124. Bracelet. L.875, B.2785. *dia.* 5.5, *th.* 0.2. Bronze bracelet made with two twisted wires. Broken but not damaged.
125. Medallion. L.757, B.3668 (Sq. FF2). *l.* 3, *w.* 1.8. Round bronze medallion. May have had a stone set in the center.
126. Medallion. L.1178, B.3873. *l.* 4, *w.* 2, *th.* 0.2. Iron spade-shaped medallion(?).
127. Earring. L.6129, B.61234. *dia.* 3.2, *th.* 0.1. Plain bronze loop-shaped earring.
128. Ring. L.778, B.3590 (Sq. HH4). *dia.* 1.7. Plain bronze ring.
129. Ring. L.9312, B.9209 (Sq. D4) *dia.* 1.7. Bronze, badly corroded. Fragment of a blue stone in the center.

An Ecclesiastical Seal

130. Seal. A-3740/3553. *l.* 3.3 cm, *w.* 2.1 cm, *th.* 0.2 cm (Figure 13.21).

This bronze seal is rather outstanding in comparison to the rest of the finds from the excavations. According to John Cherry (1997:129), the pointed oval shape seems to have often been preferred by noble women and bishops. The back of the seal is plain, with a fine loop protruding 6 mm for suspending a chain. The protruding loop also served as a handle while using the seal. The writing is deeply cut into the bronze surface, neatly and extremely clearly. The inscription runs along the perimeter of the seal between two parallel lines. The space in the center is dominated by a deep incised double-armed cross, the upper arm of which is slightly shorter than the lower. The design of the cross resembles that of the True Cross as known in Byzantine goldsmiths' work and several Crusader seals (Folda 1995:97–98).

This type of seal was frequently used in the Crusader kingdom among the military orders, the nobility, and the clergy (Kool 2000:543–564). The inscription reads:

Figure 13.21. Ecclesiastical seal (No. 130; A-3740/3553).
Photograph courtesy of the Israel Antiquities Authority.

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+ S·BENEDICTA·SOROR SCI SPI, S(igullum) BENEDICTA(e) SOROR(is) Sancti Spiriti, which translates as "This seal belongs to the blessed sister of the order of the Holy Spirit." The inscription provides a fairly clear clue as to the owners' identity, an abbess or prioress of the order of the Hospitalers of the Holy Spirit (Militia Sancti Spiritus; Prawer 1972:277). This order was founded in the twelfth century by Guido, son of William VII, Count of Montpellier, and Mathilda of Burgundy. He devoted himself to the care of orphans, the sick, and the poor. Under Pope Innocent III, a bull was issued that granted full powers to erect oratories, churches, and cemeteries for the members of the order (Dichter 1979:35). The second bull placed the order under the direct protection of the pope, warning those that persecuted the order. In addition, the pope also built a huge hospital in Rome that was named the Hospital of the Holy Spirit. The monks of the order were obliged to take three vows: obedience, poverty, and chastity. They were also obliged to attend to the poor and the sick. In Guido's lifetime, the order numbered nine houses, and the master of the order sat in Rome. The members of the order included nurses and monks, who usually wore a blue habit with a double-armed cross on the right side of the chest (Dichter 1979:35–38).

In 1216, the Bishop of Acre (Akko) approved a confraternity of the Holy Spirit. The find of a seal belonging to the head of a hospital of the order of the Holy Spirit run by nuns may indicate that the order had established a hospital of its own in Jaffa, probably a few years after they received the approval from the Bishop of Acre (Dichter 1979:35–37). According to Prawer (1985:355), they later became a military order and may have been involved in redemption of prisoners. This opinion is also held by Forey (1994a:481), who states that some orders that began as hospitals and charitable foundations were only later militarized. This may have been the case with the order of the Holy Spirit. They possibly were closely linked or related to the order of the Hospitalers, which may explain the choice to display the double-armed cross on their seal and robes.

Similar seals with a double-armed cross are known to have belonged to the order of the Hospitalers and were found in the excavations of Corinth (Davidson 1952:317–318, pl. 128, 2688, fig. 2673). The same cross can also be seen on a seal belonging to the Cannon of the Holy Sepulcher of Jerusalem (Schlumberger 1943:136, pl. 5, 138). It is important to note that the foundations for sisters were few; none of the military orders held more than a handful of convents for women (Forey 1994b:73). The orders that had women serving in their own hospitals were the Hospital of St. John of Jerusalem, the Teutonic order, and the order of St. Lazarus. But on the whole, the opportunities open to women to enter religious life were always limited; there were fewer nunneries than monasteries, and they were often poorer (Nicholson 2001:407).

Fragments of Decorated Bronze Plates

Fine bronze plates incised with floral patterns or shaped in elaborate designs may have been fitted onto furniture, wooden boxes, or fine box hinges.

131. L.6546, B.63292. *l.* 1.2, *w.* 0.7, *th.* 0.1. Fragments of a golden plate decorated with geometrical engraving.
132. L.9559, B.93284 (Area B). *l.* 4, *w.* 4. Square bronze gilded plate incised with floral patterns.
133. L.8392, B.82414 (Area E2). *l.* 5.6. Fragment of a fine bronze hinge(?) with floral design.
134. L.8184, B.81407 (Area E1). *l.* 10.5, *w.* 3. Rectangular bronze plate pierced with five holes. Remains of gold paint. Probably served as a hinge.

Miscellaneous

135. L.1050, B.3704. Bronze key, lower part partly chipped.
136. L.1177, B.3826. *l.* 3.5, *w.* 1.3. Iron peg with a round loop.
137. L.1140, B.3733. *l.* 6.3, *w.* 1.3, *th.* 1. Bronze rectangular plate with two nails at each side. Bent at the center.
138. L.1615, B.4374. *l.* 8. Iron nail with square plate.
139. L.227, B.5661. *l.* 3, *w.* 2.5. Fragment of a lead spoon(?).
140. L.221, B.5653. *h.* 5, *l.* 13.5, *w.* 2–3.2, *th.* 2. Iron trapezoid-shaped object.
141. L.379, B.6469 (Sq. R21). Slag fragment.

Acknowledgments

I thank both Dr. Milka Levi-Rubin from the Department of Middle Eastern Studies at the Hebrew University of Jerusalem and Robert Kool of the Israeli Antiquity Authority for all their help, in particular for calling my attention to details concerning the Bishop of Acre. Lior Rauchberger was also responsible for finding the cannon (No. 42) discussed in this chapter, and I thank him for the opportunity to include it here.

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Table 13.1. Arrowheads from Flea Market and Ganor Compound excavations. Dimensions in cm.

No.	Excavation	Area	Locus	Basket	*l.*	*w.*	*th.*	Description
1.	Flea Market	Oley Zion III	1511	5043	5	1		Tang missing
2.	Flea Market	Oley Zion II	1177	3837	6	1		
3.	Flea Market	Oley Zion II	1117	3673	7	1.5		
4.	Flea Market	Oley Zion II	966	3059	5	1.3		
5.	Flea Market	Oley Zion II	1104	3609	1.5			
6.	Flea Market	Oley Zion II	1107	3637	5			
7.	Flea Market	Oley Zion II	1060	3394	5	1		
8.	Flea Market	Oley Zion II	1177	3852	4			
9.	Flea Market	Oley Zion II	1104	3608	5.3	1.4		
10.	Flea Market	Oley Zion II	1153	3759	4.8	1.8		
11.	Flea Market	Oley Zion II	1177	3851	5.8	1.4		
12.	Flea Market	Oley Zion II	1164	3805	4.8			
13.	Flea Market	Oley Zion II	1107	3607	4.5			
14.	Flea Market	Oley Zion II	1096	3559/1	5.7	1.3		
15.	Flea Market	Oley Zion II	1104	3605	5.5	1.2		
16.	Flea Market	Oley Zion II	1184	3858	6	1		
17.	Flea Market	Oley Zion II	1190	3878	4.5	1		
18.	—	—	1784	5404	4	1		
19.	Flea Market	Amiad	67	641	5	1		
20.	Flea Market	Amiad	52	300	6	1.3		
21.	Flea Market	Amiad	67	687	4.5	2		
22.	Flea Market	Amiad	99	563	5	1.5		
23.	Flea Market	Amiad	99	384	5	1.5		
24.	Flea Market	Amiad	99	720	5	1		
25.	Ganor Compound	H	6478	62634	3	0.8		
26.	Ganor Compound	H	6527	62990	13	2	0.5	Long flat, tanged arrowhead (Figure13.3)
27.	Ganor Compound	H	6537	63014	5	1		
28.	Ganor Compound	H	6546	63268	6.5	1.2		
29.	Ganor Compound	H	6618	63545	4	1		Tip
30.	—	—	6621	6356	6.5	2		
31.	?	?	529, Area A, Square 13	7100	7.5			
32.	?	?	228	5739	4.8			Diamond-shaped section
33.	?	?	532, Area A, Square 13	7146	5.5			Tang missing
34.	Flea Market	Amiad	116	655				Kite shaped, flat (Figure 13.4)
35.	Flea Market	Bet Eshel C	3048	7428	5.4	3	0.4	Kite shaped; tip is missing; means of attachment to the shaft unclear
36.	Flea Market	Oley Zion I	581	1827	13	2.3		Kite shaped; long, flat arrowhead slightly widened at the center; badly corroded and cracked; point missing; exceptionally long tang (Figure 13.5)
37.	Flea Market	Oley Zion II	1152	3787	7.8	d. 1.2–3	0.4	Giant arrowhead, conical (Figure 13.6)

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Table 13.2. Catalog of metal artifacts other than arrowheads, denoting provenance.

Object		Excavation	Area	Basket	Locus	Photo
Weapons and Cavalry Accessories						
38.	Crossbow bolt or spearhead			6388	374	
39.	Dagger handle, iron	Flea Market	Oley Zion II	3559/2	1096	
40.	Spur, iron	Flea Market	Oley Zion II	3506	1090	Figure 13.7
41.	Spur, iron			2892	404	
42.	Cannon	Yefet St.				
43.	Cannonball, iron	Flea Market	Oley Zion III	4321	1597	
44.	Cannonball, iron	Flea Market	Oley Zion III	4373	1579	
45.	Cannonball, iron	Flea Market	Oley Zion III	4449	1639	
46.	Cannonball, iron	Flea Market	Oley Zion III	4454	1639	
47.	Cannonball, iron	Flea Market	Oley Zion III	4479	1649	
48.	Cannonball, iron	Flea Market	Oley Zion III	4483	1649	
49.	Cannonball, iron	Flea Market	Oley Zion III	4490	1649	
50.	Cannonball, iron	Flea Market	Oley Zion III	4494	1649	
51.	Cannonball, iron	Flea Market	Oley Zion III	5010	1501	
52.	Cannonball, iron			6168	329	
53.	Cannonball, iron	Armenian Monastery		9081	154	
54.	Musket ball, iron			6147	331	
55.	Musket ball, iron			6302	350	
56.	Musket ball, iron			6712	462	
57.	Musket ball, iron			6482	361	
Domestic Items						
58.	Knife blade, iron	Flea Market	Oley Zion I	2003	593	
59.	Knife blade, iron	Flea Market	Oley Zion I	2031	591	
60.	Knife blade, iron	Flea Market	Oley Zion II	3658	1117	
61.	Knife blade, iron	Flea Market	Oley Zion III	4025	1505	
62.	Knife blade, iron	Flea Market	Oley Zion III	4087	1509	
63.	Knife blade, iron	Flea Market	Oley Zion III	4314/1	1596	B11007
64.	Knife blade, iron	Flea Market	Oley Zion III	4385	1623	Figure 13.8; B11010
65.	Knife blade, iron	Flea Market	Oley Zion III	4419	1635	
66.	Knife blade, iron			6290	353	
67.	Knife blade, iron			7158	533	
68.	Bowl, copper	Flea Market	Oley Zion I	2074	632	
69.	Fishing weight, lead			207	39	
70.	Fishing weight, rectangular lead			5583	211	
71.	Fishing weight, rectangular lead			7012	514	
72.	Fishing weight, rectangular lead			62054	6411	
Agricultural Implements						
73.	Sickle, iron	Flea Market	Oley Zion II	2675	797	Figure 13.9; B11019
74.	Scythe, iron	Flea Market	Oley Zion II	2781	878	Figure 13.10; B11012
75.	Spade, iron	Flea Market	Oley Zion III	4365	1612	Figure 13.11
76.	Hoe, triangular iron	Flea Market	Oley Zion III	4306	1595	
77.	Wedge or axe, iron	Flea Market	Amiad	836	148	
78.	Hammer, curved iron			5795	243	

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Table 13.2. Catalog of metal artifacts other than arrowheads, denoting provenance. *(Continued)*

Object	Excavation	Area	Basket	Locus	Photo
Horseshoes					
79. Horseshoe, open iron			1736	5257	
80. Horseshoe, open iron	Flea Market	Oley Zion II	3507	1098	Figure 13.12; B11001
81. Horseshoe, open iron	Flea Market	Oley Zion II	3817	1178	
82. Horseshoe, open iron	Flea Market	Oley Zion II	3844	1182	Figure 13.13; B11006
83. Horseshoe, open iron	Flea Market	Oley Zion III	4099	1559	
84. Horseshoe, open iron	Flea Market	Oley Zion III	4314	1596	B11007
85. Horseshoe, open iron	Flea Market	Oley Zion III	4347	1601	B11021
86. Horseshoe, open iron	Flea Market	Oley Zion III	4366	1612	Figure 13.14
87. Horseshoe, open iron			6002	2009/4	
88. Horseshoe, open iron			5767	237	
89. Horseshoe, round closed	Flea Market	Amiad	737	84	
90. Horseshoe, round closed	Flea Market	Oley Zion II	2636	797	Figure 13.15; B11004, B11005
91. Horseshoe, round closed			3588	772	
92. Horseshoe, round closed	Flea Market	Oley Zion II	3876	1191	Figure 13.16; B11002, B11003
93. Horseshoe, round closed	Flea Market	Oley Zion III	5347	1720	
94. Horseshoe, round closed	Ganor Compound	H	62140	6404	Figure 13.17
Cosmetic and Surgical Implements					
95. Probe, bronze	Flea Market	Amiad	279	48	
96. Probe	Flea Market	Amiad	461	99	
97. Probe			1725	5215	
98. Probe, bronze			3690	797	
99. Probe	Ganor Compound	H	62715	6495	
100. Probe	Ganor Compound	H	62961	6488	
101. Probe, bronze	Ganor Compound	H	63163	6547	
Weights and Scale Pan					
102. Weights, barrel-shaped	Flea Market	Amiad	207	148	
103. Scale pan	Flea Market	Oley Zion I	1827	581	
104. Weight(?), iron hexagon	Flea Market	Oley Zion III	4077	1509	Figure 13.19; B11018, B11020
105. Weight, cylindrical-bronze	Ganor Compound	H	62299	6428	
Bells					
106. Bell, spherical bronze	Flea Market	Amiad	124	99	
107. Bell, spherical bronze clapper	Flea Market	Amiad	465	85	
Buckles and Clasps					
108. Buckle, bronze rectangular			3530	752	
109. Buckle, bronze semicircular			3756	820	
110. Buckle, iron rectangular	Flea Market	Oley Zion III	5116	1694	Figure 13.20
111. Buckle, iron round			5654	225	
112. Buckle, bronze round			7014	512	
113. Buckle	Flea Market	Bet Eshel C	7094	3024	
114. Buckle	Ganor Compound	H	62412	6440	
115. Buckle, bronze	Ganor Compound	H	63284	6562	
116. Buckle, bronze oval-shaped	Ganor Compound	H	63405	6585	
117. Buckle, bronze			86252	8711	
118. Buckle, U-shaped			3613	792	
119. Buckle, U-shaped			3772	826	
120. Buckle, U-shaped			7070	524	
121. Clasp, bronze	Flea Market	Oley Zion II	3828	1177	
122. Clasp, bronze with arms			5810	237	

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Table 13.2. Catalog of metal artifacts other than arrowheads, denoting provenance. *(Continued)*

Object	Excavation	Area	Basket	Locus	Photo
Jewelry					
123. Bracelet, bronze	Flea Market	Oley Zion II	2785	0875	
124. Medallion(?), bronze			3668	757	
125. Medallion(?), iron	Flea Market	Oley Zion II	3873	1178	
126. Earring, loop-shaped	Ganor Compound	D	61234	6129	
127. Ring, bronze			3590	778	
128. Ring, bronze			9209	9312	
Ecclesiastical Seal					
129. Seal, bronze	Flea Market	Oley Zion II	3553		Figure 13.21
Decorated Bronze Plates					
130. Plate, golden			63292	6546	
131. Plate, bronze gilded	Ganor Compound	B	93284	9559	
132. Hinge, bronze	Ganor Compound	E2	82414	8392	
133. Plate, bronze rectangular	Ganor Compound	E1	81407	8184	
Miscellaneous					
134. Key, bronze			3704	1050	
135. Peg, iron	Flea Market	Oley Zion II	3826	1177	
136. Plate, rectangular bronze	Flea Market	Oley Zion II	3733	1140	
137. Nail, iron with square plate	Flea Market	Oley Zion III	4374	1615	
138. Spoon(?), lead			5661	227	
139. Trapezoid object, iron			5653	221	
140. Nail, iron	Flea Market	Oley Zion I	2556	0794	
141. Nail, iron with round domed head	Flea Market	Oley Zion II	3755	1148	

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CHAPTER 14

Ottoman Clay Tobacco Pipes from the Seawall Excavations in Jaffa

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Israel Antiquities Authority

Only in the past few decades have scholars begun to publish collections of Ottoman tobacco pipes from Palestine. The collection of 89 pipes presented in this chapter in four groups is the first substantial publication of Ottoman pipes from Jaffa. They originated from a refuse pit excavated during salvage excavations of the seawall on Razif Ha-'Aliyah Ha-Sheniya St. Stylistic analysis, archaeological contexts, and typologies suggest that most of these pipes represent the last phase of use of clay pipes in Palestine before their replacement by cigarettes in the early twentieth century.

One of the consequences of the discovery of the Americas by Columbus in the late fifteenth century was the introduction of tobacco and smoking to the Old World. Smoking tobacco in clay pipes spread to the Ottoman Empire in the early seventeenth century and quickly became common at all social levels. The use of pipes and, in particular, clay pipes came to an end in the early twentieth century as they were replaced by cigarettes. The Ottoman clay tobacco pipe (*chibouk*) was composed of three parts: a bowl usually made of clay, a stem made of wood, and a mouthpiece usually made of amber, although sometimes made of semiprecious stone or coral (Robinson 1985:149–157). The bowls are commonly found during archaeological excavations of Ottoman period sites, and as a result, clay tobacco pipes are a hallmark of Ottoman archaeology (Baram 2009:651). It seems that archaeologists are attracted to clay pipes due to their characteristic shape relative to other ceramic wares, their colorfulness, and their many decorations, as well as their function, history, and social and economic implications for the lives of those who smoked them.

The excavation area is on the northern side of Razif Ha-'Aliya Ha-Sheniya dock, which leads to the harbor's northern gate (Peilstöcker and Priel 2000:40*–41*). In the late Ottoman period, it was a narrow alley bounded by the sea and the seawall and connected between the port and the junction leading to Jerusalem, Gaza, and Nablus (Avitsur 1972:128; Tolkowsky 1924:164). Here the old commercial center of Jaffa with its shops and markets was located (Avitsur 1972:128), along with the Austro-Hungarian travel agency, the Austrian post office, and some religious institutions like the Sea Mosque and the Armenian Convent (see Theodor Sandel's 1878/1879 map in Shacham 2011:fig. 13.19). During World War I, the governor of Jaffa, Hasan Bey, destroyed the old market and widened the street leading to the harbor (Kark 1990:49).

One hundred sixty-six semi-complete and fragmentary clay pipes were found during excavations of Jaffa's seawall (Lic. No. A-2728/1997). All of them were recovered from

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a single locus (L.105), a fill south of a segment of the seawall that, along with the pipes, included stones, roof tiles, plaster fragments, and ceramic sherds (Peilstöcker and Priel 2000). This fill likely represents a refuse pit. The pipes from this context are one of the largest collections derived from recent excavations in Jaffa and comprise one of the largest assemblages from a single find spot in the southern Levant.[1] Eighty-nine of the pipes found in the pit were cataloged in chronological order and organized according to shape and color.[2] A chronological division was made according to the widely accepted typological approach and the find contexts of the pipes within this excavation. The pipes, especially Groups 2 to 4, are divided into groups based on shape and color and according to the chronological points set forth in the pioneering works of St. John Simpson on the assemblages found at Belmont castle (Suba), Tel Jezreel (Zir'in), and Jerusalem (Simpson 2000, 2002, 2008).

The Assemblage

Group 1. Miscellaneous Eighteenth and Nineteenth Century Pipes (Nos. 1–4)

This group of miscellaneous pipes consists of four examples belonging to three different subgroups (Figure 14.1).

No. 1

This pipe features a yellowish-red burnished fabric lacking slip. It has a round ribbed lower bowl and a short shank, with a swollen shank end decorated with a rouletted lattice pattern. A pipe with a shank similar in shape and decoration was attributed by Simpson (2000:155–156, fig. 13.4:73) to Group VB, which dates to the eighteenth or nineteenth century.

No. 2

This pipe has a reddish-brown slipped and burnished bowl; a vertical, deep ribbing; and a rouletted decoration with a lattice pattern at the junction of bowl and rim and bowl and shank. A similar pipe was found at Hama (Poulsen 1957:281, fig. 1076), and additional pipes with deep ribbing were dated in Athens and Yoqne'am to the eighteenth to nineteenth centuries (Robinson 1985:196, pl. 61: A13; Avissar 1996:200–201, Photos XVI.18–19:21; fig. XVI.3:21).

Nos. 3–4

These pipes have a light reddish-brown slip and burnishing. They have round bowls with high straight rims and short stems, ridged at the end with triangular sections. No. 3 has a simple bowl, rouletted below the joint with the rim, and No. 4 has a bowl with deep vertical ribbing with bands of rouletted decoration and diagonal rouletted bands on the rim. Both pipes have a seal impression with dots on the right side of the shank. Pipes of this type are well attested in Israel in Baniyas (Dekkel 2008:122, 140–145, figs 4.8–4.10 No. 41–52, Akko (Edelstein and Avissar 1997:133–134, figs. 132:133a–c; Shapiro 2010:77*–78*, fig. 107; Stern 1997:68, fig. 19:136), Yoqne'am (Avissar 1996:199–200, Photos XVI.10–14:6-13; 2005:83–88, 93, figs. 4.1–4.2), and Jaffa (de Vincenz forthcoming: Type J-18A). They are dated to the second half of the eighteenth century. On one pipe of this type, which was found in the remains of the DW2 wreck in the southern lagoon of Dor, petrographic analysis indicated that the clay must have come from a geographical region between Beirut and Tripoli (Yovel 2004:99–100, figs. 192 and 107).

Group 2. Lily Pipes with Brown or Red Slip and Burnishing from the Second Half of the Nineteenth Century and Early Twentieth Century (Nos. 5–66)

With 62 examples, this is the largest group of pipes. It includes lily-shaped types with narrow bowls that open toward the upper part and pipes that resemble variations of this type, such as vessels with round or carinated lower bowls and flaring rims. In addition to the shape, the lily pipes share similarities in slip, burnish, decorative technique, and decoration. The pipes are decorated in a variety of colors from red to brown and are burnished. The decorative techniques mostly combine incisions, rouletting, and seal stamps. The shanks are decorated by rouletting or are gadrooned, the *terminus technicus* for ornamental notching or carving. The most common decoration is a triangular palmette seal impression, sometimes in two variations on the same pipe. Another decoration type consists of two reverse palmettes, creating a lozenge. Pipes of this type are discussed by St. John Simpson in his research on pipe assemblages from Belmont (2000:157–164, figs. 13.5–13.7:99–161, Group VI), Tel Jezreel (2002:164–165, figs. 1:6–8, 2:9–10, Group III), and Jerusalem (2008: 440–441, fig. 269:43–50, Group V) (Figure 14.2 through Figure 14.5).

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Figure 14.1. Group 1 (Nos. 1 to 4): Miscellaneous eighteenth- and nineteenth-century pipes. *Photograph by Lior Rauchberger.*

No.	Reg. No.	Description
1	1087/49	Shank end, stem, and partial bowl; shank opening 1.0 cm; yellowish-red clay; burnished; vertical mold-formed ribbed lower bowl with rouletted line at junction of bowl to rim; rounded impression(?) on left side of bowl; swollen shank end with rouletted lattice pattern; single rouletted line on shank beneath swollen shank end; notch-rouletted bowl-stem junction
2	1034/40	Bowl; reddish-yellow clay; reddish-brown slip, burnished; plain rim; ribbed lower bowl with deep vertical bands beneath rouletted lattice pattern on bowl-stem junction
3	1029/20	Shank end, stem, and partial bowl; shank opening 1.4 cm; light reddish-gray clay; light reddish-brown slip, burnished; broad rouletted band at the joints of rim to bowl and bowl to shank; seal impression with dots on right side of shank; traces of mold seam
4	1037/39 1037/46	Nearly complete pipe, bowl's rim is fragmentary; shank opening 1.2 cm, light gray clay; pale red slip, burnished; rouletted diagonal bands beneath incised line on rim and deep vertically rouletted bands on bowl; seal impression with dots on right side of shank

No. 5

This pipe has a gadrooned shank and a palm tree seal impression on the keel (Figure 14.2). Similar seal impressions can be seen on pipes from Akko dated to the second half of the eighteenth century (Edelstein and Avissar 1997:133, fig. 132a–b) and from Jaffa dated to the second half of the nineteenth century (Type J-19L).[3]

No. 6

This example features a bowl decorated with seal impressions of palmettes on the upper and lower parts, connected by incised lines (Figure 14.2).

No. 7.

This pipe features a gadrooned bowl with palmette seal impression at its ends.

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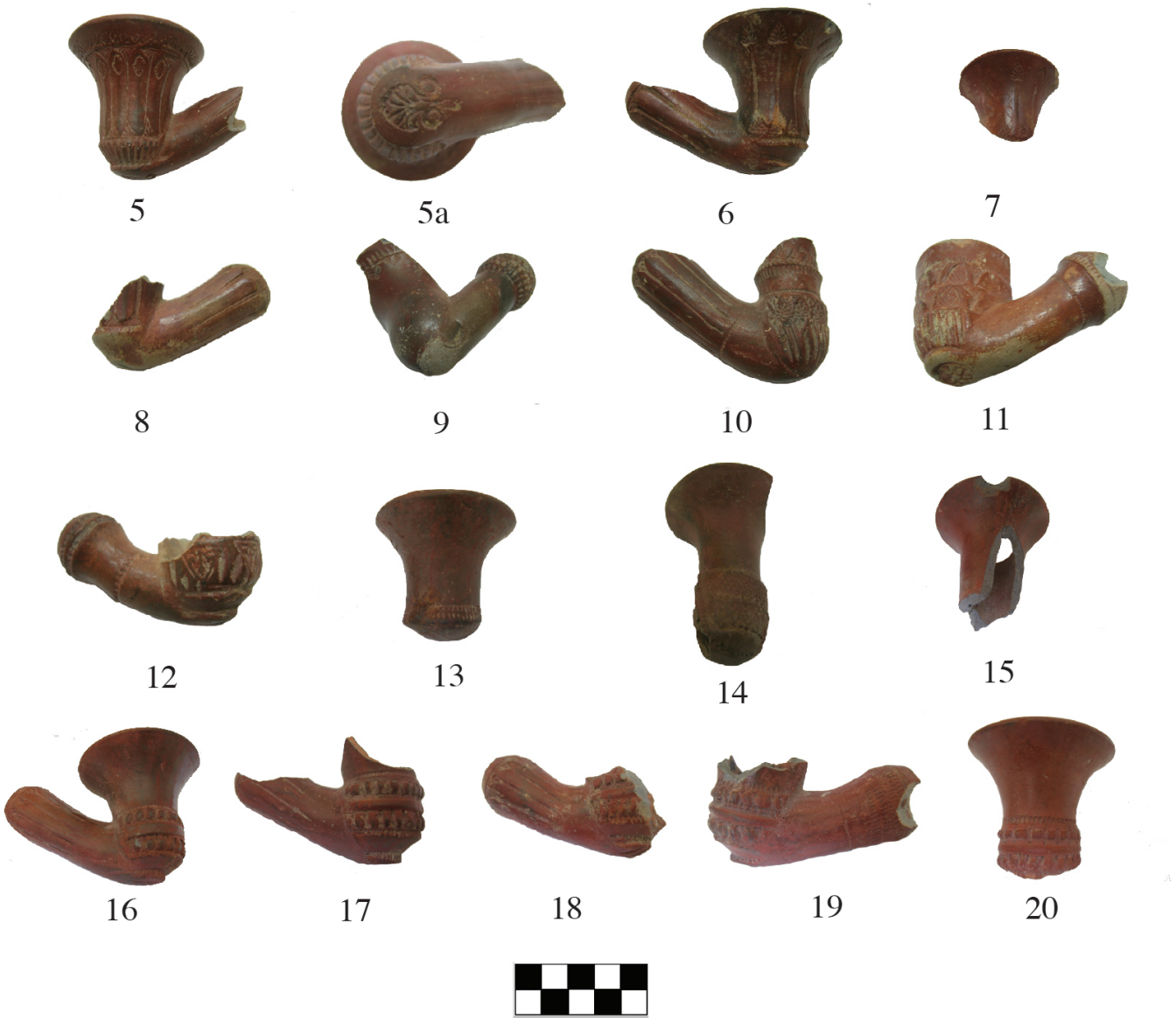

Figure 14.2. Group 2 (Nos. 5 to 20): Lily pipes with brown or red slip and burnishing from the second half of the nineteenth and early twentieth centuries. *Photograph by Lior Rauchberger.*

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No.	Reg. No.	Description
5	1019/17	Nearly complete pipe, fragmentary shank; light gray clay; pale red core, dark red brown slip, burnished; gadrooned bowl with lattice pattern filled with lozenge on rim and palmette seal impression and notched lozenge impressed at top of them; lower part of bowl with rouletted vertical line; shank with double-incised lines; fruit (palmette?) tree seal impression on keel
6	1024/24	Nearly complete pipe; shank opening 1.3 cm; shank end fragmentary; light gray clay; reddish-brown slip, burnished; gadrooned shank with palmette seal impressions above and below a notch-rouletted line; keel with converging double-incised lines
7	1034	Bowl; reddish-gray clay; weak red slip, burnished; gadrooned bowl with palmette seal impression
8	1022/74	Shank end, stem, and fragmentary bowl; shank opening 1.5 cm; reddish-gray clay; weak red slip, burnished; gadrooned bowl and shank with triangle seal (floral motif?) impression at bottom of bowl beneath notch-rouletted line; rounded keel half surrounded by notch-rouletted line with two half-circle depressions on their sides with fingernail-impressed arcs
9	1016/143	Semi-complete pipe; shank opening 1.5 cm; dark gray clay; reddish-brown slip, burnished; fragmentary plain lily-shaped bowl with rim decorated with engraved horizontal line separating sharp vertical engraved lines and triangle seal impressions made of three lozenges filled with four dots; incised line above notch-rouletted, swollen shank end; rounded keel half surrounded by notch-rouletted line with two half-circle depressions on its sides and arcs imitating fingernail impressions
10	1016/149	Semi-complete pipe; shank opening 1.6 cm; dark reddish-gray clay; red slip, burnished; plain band separated between lower part of upper bowl with palmette seal impression above notch-rouletted band and lower part of bowl with palmette seal impression beneath notch-rouletted line and above petal form lines; gadrooned shank with palmette seal impression at bottom of bowl framed by notch-rouletted lines; notch-rouletted bowl-stem junction
11	1047/20	Fragmentary lily-shaped bowl; plain rim; shank opening 1.4 cm; reddish-gray clay; weak red slip, burnished; lower part of upper bowl with palmette seal impression between lozenge seal impression beneath notch-rouletted line; ribbed lower bowl with vertical mold-formed grooves above notch-rouletted line; notch-rouletted, swollen shank end and single notch-rouletted line around the shank; rounded base impressed with floral seal design
12	1007/65	Shank end, stem, and fragmentary bowl; shank opening 1.4 cm; light gray clay; reddish-brown slip, burnished; ribbed lower bowl with notch-rouletted line above triangle seal impression filled with floral motif between deep incisions; two lines of crude rouletting around swollen shank end and one around shank; rounded base with two deep incisions
13	1034/36	Bowl; dark gray clay; reddish-brown slip, burnished; plain lily-shaped bowl with lower part decorated with three notch-rouletted lines; notch-rouletted bowl-stem junction
14	1034/18	Bowl; dark gray clay; reddish-brown slip, burnished; fragmentary plain lily-shaped bowl with lower part decorated with rouletted lattice pattern above rouletted X-shaped pattern; rouletted lattice pattern on bowl-stem junction
15	1022/70 1034/41	Bowl; reddish-gray clay; dark reddish-brown slip, burnished; two joining part of plain lily-shaped bowl
16	1019/22	Nearly complete pipe; shank opening 1.5 cm; bowl and shank end fragmentary; light gray clay; red core, reddish-brown slip, burnished; plain lily-shaped bowl with lower part decorated with two notch-rouletted lines with smooth band between them, beneath lightly impressed rouletted line; gadrooned shank with palmette seal impression below notch-rouletted line; keel surrounded by rouletted line with converging double-incised lines
17	1016/143	Semi-complete pipe, fragmentary upper bowl and half of shank end; reddish-gray clay; red core, reddish-brown slip, burnished; plain lily-shaped bowl with lower part decorated with two notch-rouletted lines with smooth band between them, framed by lightly impressed rouletted line; gadrooned shank with palmette seal impression below notch-rouletted line; keel surrounded by rouletted line with converging double-incised lines
18	1024	Shank end, stem, and fragmentary bowl; shank opening 1.5 cm; reddish-gray clay; yellowish-red slip burnished; lower part of bowl decorated with two notch-rouletted lines with smooth band between them, above lightly impressed rouletted line; gadrooned shank with palmette seal impression below notch-rouletted line; keel surrounded by rouletted line with deep incisions
19	1019/24	Shank end, stem, and fragmentary bowl; gray clay; reddish-brown slip, burnished; plain lily-shaped bowl with lower part decorated with two notch-rouletted lines with smooth band between them, beneath lightly impressed rouletted line; double-incised line above notch-rouletted, swollen shank end; keel surrounded by rouletted line with converging double-incised lines
20	1019/16	Fragmentary bowl; gray clay; reddish-brown slip, burnished; plain lily-shaped bowl with lower part decorated with two notch-rouletted lines with smooth band between them, beneath lightly impressed rouletted line

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No. 8
This pipe has a gadrooned shank and bowl.

No. 9
The rim of the bowl of this pipe is decorated with an engraved horizontal line separating sharp vertical engraved lines and triangle seal impressions consisting of three lozenges filled with four dots.

No. 10
The lower bowl of this pipe is decorated with diagonal lines creating the goblet of a flower (Figure 14.2).

Nos. 11–12
These pipes have rounded bases impressed with floral seal impressions or two deep incisions, respectively.

Nos. 13–15
These pipes have a plain lily-shaped bowl with a lower portion decorated with roulettes except for No. 15, which is missing the lower part of the bowl.

Nos. 16–20
These pipes feature simple rims. Their lower bowls are carinated and decorated with two notched rouletted lines with a smooth band between them (Figure 14.2). Three of them (Nos. 16, 17, and 19) have a keel surrounded by a rouletted line with a converging double-incised line. Another (No. 18) has parallel, deep incised lines. No. 19 has a rouletted shank, in contrast to the gadrooned shank of the others.

Nos. 21–31
The rims of these pipes are decorated with a rouletted lattice pattern beneath a triangle impression filled with lozenges. Eight of them (Nos. 21–28) have a carinated bowl with a rounded base impressed with a floral seal design and a swollen, rouletted shank (Figure 14.3). Baram (2000:150, fig. 5.1c) shows a similar pipe with a carinated bowl and rouletted rim and below the rim a decoration of triangles filled with lozenges, claiming that such pipes were used in the nineteenth century without referring to the origin of the illustrated sample. The bowls of Nos. 30 and 31 are not carinated and have vertical double-incised lines beneath the triangle seal impressions and notch-rouletted bowl/stem junctions (Figure 14.3).

Nos. 32–34
The bowls of this group have rims with rouletted lattice patterns above palmette seal impressions and repeated lozenge seal impressions filled with a pattern of two palmettes facing each other (Figure 14.3). Pipes with similar decoration from Jaffa are included in Vincenz's Type J-19L.[4]

Nos. 35–36, 38–42
These pipes have carinated lower bowls decorated with notch-rouletted bands. The rounded base is decorated with converging double-incised lines except for No. 41, which is decorated with deep incisions, and No. 42, which is decorated with arcs similar to fingernail impressions.

No. 37
The shank of this pipe is decorated with a lattice pattern.

Nos. 43–46
These pipes have simple rims. Their lower bowls are round ribbed with deep notch-rouletted vertical bands (Figure 14.4).

Nos. 47–58
These pipes have simple bowls, and their only decoration consists of two serrated, rouletted lines meeting at the joint between the bowl and shank (Figures 14.4 and 14.5). The shank end is swollen and has a rouletted decoration. No. 49 has a similar decoration (Figure 14.4). However, in contrast to the other pipes, two oval stamps can be observed on the front of the bowl, and the shank is gadrooned. Similar pipes are published from Belmont (Simpson 2000:162, fig. 13.6:122–125) and Jerusalem (Weksler-Bdolah 2006:114*, fig.13:1, 3, 5). Petrographic analyses of similar pipes from the DW2 wreck at Dor indicate an origin for the clay between Beirut and Tripoli (Yovel 2004:98–99, fig. 91, 107).

Nos. 59–60
These pipes are decorated with incised lines with a floral motif (tree or branch?) on the rim (No. 59) or on the lower part of bowl (No. 60).

Nos. 61–63
The main motif on the bowls of this pipes is palmette seal impressions on the lower part (No. 61) or on the rim (Nos. 62–63).

No. 64
The rim of this pipe is decorated with a triangle made of two incised lines and filled with rounded seal impressions containing dots.

Nos. 65–66
These pipes have a swollen, deep gadrooned shank end.

Group 3. Red-Slipped Burnished Pipes with Disk Bases from the Second Half of the Nineteenth Century (Nos. 67–85)

Nineteen pipes belong to this group, which is characterized by disk bases and flaring rims (Figures 14.6 and 14.7).

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The pipes appear in different clay colors, varying from red to brown, and were burnished. The decorations combine incisions, rouletting, and seal impressions. All shanks are gadrooned; only two pipes were rouletted (Nos. 83 and 85). The edge of the disk base is either smooth or serrated. The disk is usually decorated on both sides with fingernail impressions, incised lines, rouletted lines, or a combination of these. The rim of the bowl is simple, decorated with seal impressions of lozenges filled with reversed palmettes, palmettes with triangles between them, or a lozenge seal impression filled with a floral motif. Two pipes (Nos. 75 and 82) have rim decorations of the rouletted-lattice pattern type and beneath this triangle seal impressions filled with lozenges between double-incised lines (Figure 14.7). This decoration also appears on the lily pipe (No. 31; Figure 14.3). Most of the pipes have an undecorated, folded, tongue-shaped keel surrounded by rouletting. Noteworthy is No. 67, with a tongue-shaped keel decorated with fingernail impressions to create a palm tree image (Figure 14.6). The disk-base pipes are similar to the lily type in composition, slip, burnish, flaring rim, decoration of the shank, swollen shank, and overall decoration. Based on the similarities between the two groups, Simpson (2000:165) suggests dating the disk-base pipes to the middle to end of the nineteenth century and suggests that this particular form appears to be a Palestinian type, possibly produced in Jerusalem.

Group 4. Red-Slipped Burnished Pipes with Rouletted Bowls from the Second Half of the Nineteenth Century (Nos. 86–89)

Only four pipes belong to this group (Figure 14.8). Two of them (Nos. 86 and 87) were decorated with horizontal notch-rouletting on the rounded bowl. No. 88 has the same decoration only on the lower part of the bowl. No. 89 differs in having a rouletted lattice-pattern lower bowl. The shank end of three of the pipes (Nos. 86, 88, and 89) has rouletted decoration. Pipes of this type are largely known from Belmont (Simpson 2000:166–167, fig.13.8 Nos. 179–187, Group VIII). Based on the similarities with the lily pipes, Simpson (2000:167) dates these pipes to the second half of the nineteenth century and suggests that they may have been produced at the same center, such as Jerusalem (Simpson 2002:165, 167).

Conclusions

The assemblage introduced in this article is one of the larger assemblages from an important Ottoman city in Palestine. This is one of the first published collections from excavations in Jaffa, and despite the large numbers of archaeological excavations undertaken there, only in the latest reports from the 1990s are finds of the Ottoman period published. A discussion of recent research and publication of Ottoman period remains, in contrast to the focus on earlier periods in archaeological research in Israel, cannot be undertaken here. Nevertheless, the publication of Ottoman remains from the latest and ongoing excavations in Jaffa is forthcoming.[5]

The excavation of the seawall is one of the first in Jaffa in which clay pipes were collected and kept for archaeological research in the same manner as for any other archaeological phase (Arbel 2014:533). Such an omission in the archaeological history of the region was not obvious until the 1990s. These excavations, like the Ganor Compound excavations east of the ancient mound (Peilstöcker and Burke 2011:177–182), therefore herald the beginning of a new era in the archaeological research of Jaffa brought about through salvage excavations around the city in response to public and private development (Peilstöcker 2011:21).

The assemblage published here adds important information about the tobacco pipes from Jaffa and Palestine during the last phase of their use in the second half of the nineteenth century and the beginning of the twentieth century. The excellent state of preservation, in particular of pipes in Groups 2 to 4, enables us to distinguish between different but related decoration types, slips, and burnishes that indicate a common source. The petrographic testing mentioned above indicates that the clay for similar pipes came from an area between Beirut and Tripoli. According to Seetzen (1854:2:22), special clays were brought from Beirut to Jerusalem for pipe production. This report suggests, however, that petrographic analysis does not necessarily indicate the production center of these pipes. Also, considering information from Rogers (1862/1989:8), according to which pipe production of "red clay" took place in the bazaars in Jaffa, it seems quite likely that the pipes in Groups 2 to 4 were produced locally. Additional petrographic analysis of the Jaffa pipe assemblage has to be carried out, however, and the material from further excavations needs to be investigated. It seems possible that these pipes, which were all found in the same spot, came from a refuse pit associated with one of the coffeehouses located in the old market at this entrance of Jaffa, which was dismantled and removed during World War I by Jaffa's governor (Kark 1990:49).[6]

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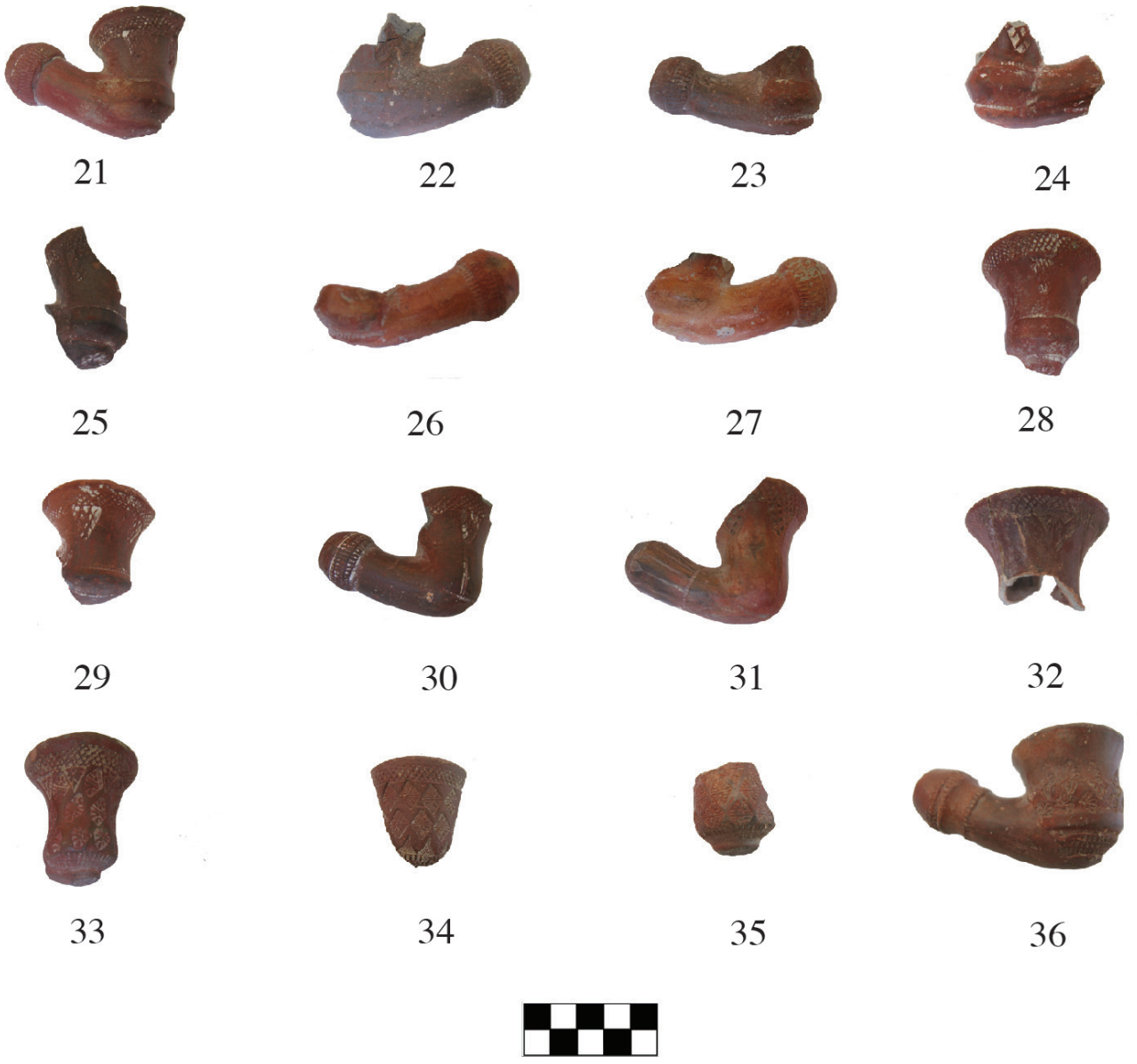

Figure 14.3. Group 2 (Nos. 21 to 36): Lily pipes with brown or red slip and burnishing from the second half of the nineteenth and early twentieth centuries. *Photograph by Lior Rauchberger.*

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No.	Reg. No.	Description
21	1089/9	Nearly complete pipe; shank opening 1.5 cm; dark gray clay; dark reddish-brown slip, burnished; fragmentary lily-shaped bowl; upper bowl with rouletted lattice pattern on rim and triangle seal impression filled with lozenges below; carinated, lower rounded bowl framed by notch-rouletting; incised line above notch-rouletted, swollen shank end; rounded base impressed with floral seal design
22	1017/6	Shank end, stem, and fragmentary bowl; shank opening 1.5 cm; reddish-gray clay; weak red slip, burnished; lower part of upper bowl with seal impression of lattice pattern filled with lozenge; carinated, lower rounded bowl framed by notch-rouletting; double-incised line above notch-rouletted, swollen shank end; rounded base impressed with floral seal design
23	1013/89	Shank end, stem, and fragmentary bowl; shank opening 1.5 cm; dark gray clay; dark reddish-brown slip, burnished; lower part of upper bowl with seal impression of lattice pattern; carinated, lower rounded bowl framed by notch-rouletting; rounded base impressed with floral seal design
24	1034/38	Bowl and lower stem; reddish-gray clay; dark red slip burnished; lower part of upper bowl with seal impression of lattice pattern; carinated, lower rounded bowl framed by notch-rouletting; rounded base impressed with floral seal design
25	1038/29	Bowl; dark gray clay; dark reddish-brown slip, burnished; heavy, thick-walled pipe; lily-shaped bowl; upper bowl with rouletted lattice pattern on rim and triangle seal impression filled with lozenge beneath it; carinated, lower rounded bowl framed by notch-rouletting; rounded base impressed with floral seal design
26	1010/25	Shank end, stem, and fragmentary bowl shank opening 1.6 cm; gray clay; yellowish-red slip, burnished; carinated, lower rounded bowl framed by notch-rouletting; rounded base impressed with floral seal design; double-incised line above notch-rouletted, swollen shank end
27	1017/13	Shank end, stem, and fragmentary bowl; shank opening 1.3 cm; gray clay; yellowish-red slip, burnished; plain lower part of upper bowl; carinated, lower rounded bowl; rounded base impressed with floral seal design; double-incised line above notch-rouletted, swollen shank end
28	1022/64	Bowl; yellowish-red clay; reddish-brown slip, burnished; heavy, thick-walled pipe; lily-shaped bowl; upper bowl with rouletted lattice pattern on rim and triangle seal impression of lattice pattern beneath it; carinated, lower rounded bowl framed by notch-rouletting; rounded base impressed with floral seal design
29	1016/144	Bowl; light red clay; reddish-gray core, red slip, burnished; heavy, thick-walled pipe; lily-shaped bowl; upper bowl with rouletted lattice pattern on rim and triangle seal impression filled with lozenge beneath it and lower part decorated with notch-rouletted line; notch-rouletted bowl-stem junction
30	1034/28	Nearly complete pipe; shank opening 1.4 cm; reddish-gray clay; reddish-brown slip, burnished; upper bowl with rouletted lattice pattern on rim, and triangle seal impression filled with lozenge beneath it and above vertical double-incised line; incised line above notch-rouletted, swollen shank end; notch-rouletted bowl-stem junction
31	1034/19	Nearly complete pipe; shank opening 1.4 cm; light red clay; red slip, burnished; upper bowl with rouletted lattice pattern on rim and triangle seal impression filled with lozenge and surrounded by double-incised line beneath it and above vertical double-incised line; gadrooned shank with palmette seal impression framed by notch-rouletted lines; notch-rouletted bowl-stem junction
32	1004/32 1026/?	Bowl; reddish-gray clay; dark red slip, burnished; upper bowl with rouletted lattice pattern on rim above palmette seal impression between two incised lines and palmette seal impression on the opposite side
33	1007/47	Bowl; gray clay; reddish-brown slip, burnished; upper bowl with rouletted lattice pattern on rim above palmette seal impression and repeating lozenge seal impression filled with pattern of two palmette seal impressions facing each other; lower part of bowl decorated with two notch-rouletted bands; rounded base impressed with lozenge seal impression filled with pattern of two palmette seal impressions facing each other
34	1034/35	Bowl; reddish-gray clay; reddish-brown slip, burnished; broken part of lily-shaped bowl; rouletted lattice pattern on rim above repeating lozenge seal impression filled with pattern of two palmette seal impressions facing each other and triangle seal impression filled with lozenge beneath it and above notch-rouletted line
35	1016/138	Bowl; reddish-gray clay; weak red slip, burnished; broken part of lily-shaped bowl with repeating lozenge seal impression filled with pattern of two palmette seal impressions facing each other; lower part of bowl decorated with two notch-rouletted band; rounded base with converging double-incised lines
36	1022/65	Nearly complete pipe; shank opening 1.4 cm; reddish-gray clay; reddish-brown slip, burnished; upper bowl with two rows of palmette seal impressions; carinated, lower rounded bowl decorated with notch-rouletted band; notch-rouletted, swollen shank end and single notch-rouletted line around the shank; rounded base with converging double-incised lines

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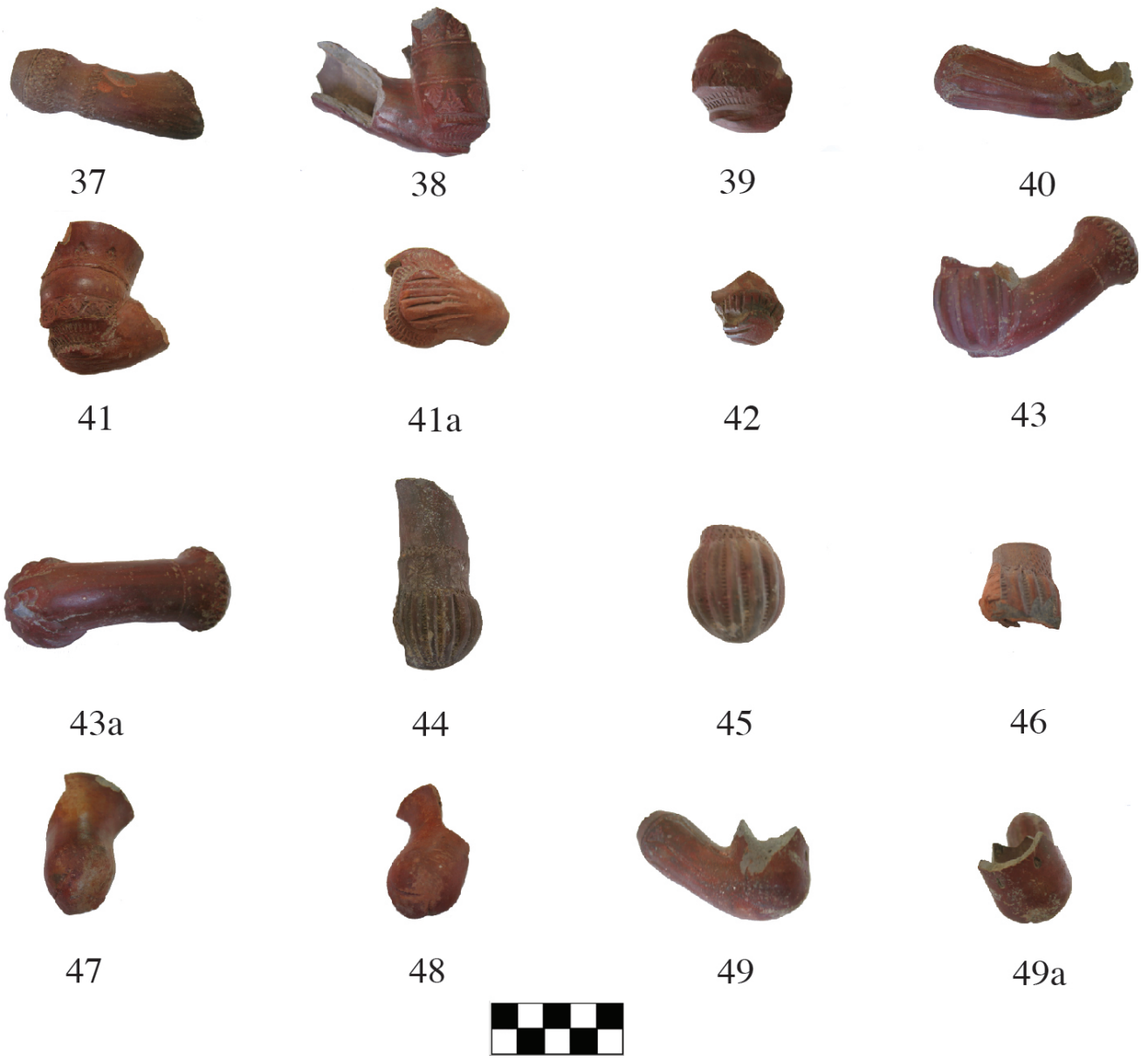

Figure 14.4. Group 2 (Nos. 37 to 49): Lily pipes with brown or red slip and burnishing from the second half of the nineteenth and early twentieth centuries. *Photograph by Lior Rauchberger.*

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No.	Reg. No.	Description
37	1007/57	Shank end and stem broken at the shank-bowl junction; shank opening 1.7 cm; dark reddish-gray clay; dark reddish-brown slip, burnish; double-incised line above lattice pattern swollen shank end; band of lattice pattern on shank; notch-rouletted bowl-stem junction
38	1034/33	Shank end, stem, and fragmentary bowl; shank opening 1.3 cm; reddish-gray clay; dusky red slip, burnished; upper bowl with two rows of palmette seal impressions facing each other and separated by smooth band framed by incised lines; carinated, lower rounded bowl decorated with notch-rouletted bands; gadrooned shank with palmette seal impression at its end below notch-rouletted line; rounded base surrounded by rouletted line with converging double-incised lines
39	1006/111	Bowl; dark reddish-gray clay; weak red slip, burnished, lower part of carinated, rounded bowl decorated with smooth band framed by notch-rouletted line above and two incised lines beneath and above row of reversed palmette seal impressions and above two notch-rouletted bands; rounded base with converging double-incised lines
40	1034/56	Shank end, stem, and fragmentary bowl; shank opening 1.6 cm; light reddish-clay; red slip, burnished; lower part of bowl decorated with two notch-rouletted lines; gadrooned shank with palmette seal impression below notch-rouletted line; keel surrounded by rouletted line with converging double-incised lines
41	1019/15	Bowl and lower stem; reddish-yellow clay; yellowish-red slip, burnished; upper bowl with row of palmette seal impressions; lower part of carinated, rounded bowl decorated with smooth band above row of reversed palmette seal impressions and above two notch-rouletted bands; keel surrounded by rouletted line with deep incisions
42	1007/38	Bowl; reddish-gray clay; weak red slip, burnished; lower part of carinated, rounded bowl decorated with triangle seal impression filled with net pattern above vertical deep incisions; rounded keel with two half-circle depressions on its sides and arcs imitating fingernail impressions
43	1007/58	Shank end, stem, and fragmentary bowl; shank opening 1.8 cm; reddish-gray clay; weak red slip, burnished; ribbed lower bowl with deep, notch-rouletted vertical bands beneath notch-rouletted band; single line of crude rouletting around swollen shank end and single line of rouletting on shank; keel surrounded by rouletted line with three reed impressions
44	1017/12	Bowl; reddish-gray clay; weak red slip, burnished; fragmentary plain lily-shaped bowl with lower part decorated with rouletted lattice pattern above rounded floral seal impression; ribbed lower bowl with deep notch-rouletted vertical bands; rouletted lattice pattern on bowl-stem junction
45	1022	Bowl; reddish-gray clay; weak red slip, burnished; ribbed lower bowl with deep, notch-rouletted vertical bands beneath rouletted lattice pattern; rouletted lattice pattern on bowl-stem junction
46	1034/28	Bowl; reddish-gray clay; weak red slip, burnished; fragmentary ribbed lower bowl with deep notch-rouletted vertical bands beneath rouletted lattice pattern
47	1034/37	Bowl; gray clay; yellowish-red slip, burnished; fragmentary plain lily-shaped bowl; notch-rouletted bowl-stem junction
48	1037/35	Bowl; reddish-yellow clay; reddish-brown slip, burnished; fragmentary plain lily-shaped bowl; notch-rouletted bowl-stem junction
49	1024	Shank end, stem, and fragmentary bowl; shank opening 1.4 cm; dark reddish-gray clay; weak red slip, burnished; plain bowl with two small stamped impressions on front of the bowl; gadrooned shank with palmette seal impressions at their end below double-incised lines; notch-rouletted bowl-stem junction

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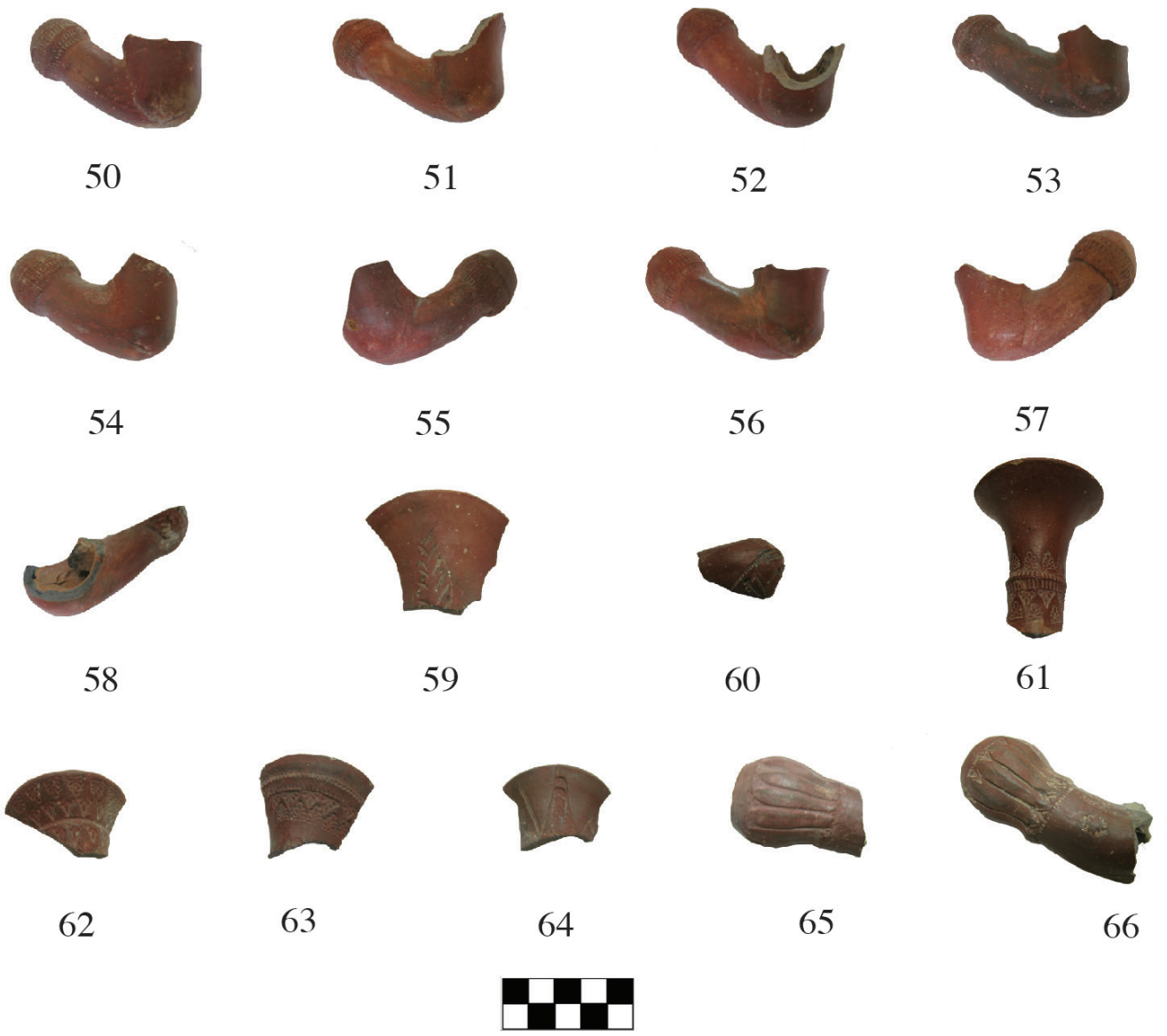

Figure 14.5. Group 2 (Nos. 50 to 66): Lily pipes with brown or red slip and burnishing from the second half of the nineteenth and early twentieth centuries.
Photograph by Lior Rauchberger.

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No.	Reg. No.	Description
50	1037/48	Shank end, stem, and fragmentary bowl; shank opening 1.3 cm; reddish-gray clay; red slip, burnished; rounded plain bowl with flared upper portion; double-incised line above notch-rouletted, swollen shank end; notch-rouletted bowl-stem junction
51	1016/148	Shank end, stem, and fragmentary bowl; shank opening 1.5 cm; reddish-gray clay; weak red slip, burnished; rounded plain bowl with flared upper portion; double-incised line above notch-rouletted, swollen shank end; notch-rouletted bowl-stem junction
52	1007	Shank end, stem, and fragmentary bowl; shank opening 1.6 cm; pinkish red clay; weak red slip, burnished; rounded plain bowl with flared upper portion; double-incised line above notch-rouletted, swollen shank end; notch-rouletted bowl-stem junction
53	1024/25	Shank end, stem, and fragmentary bowl; shank opening 1.4 cm; dark reddish-gray clay; reddish-brown slip, burnished; rounded plain bowl with flared upper portion; double-incised line above notch-rouletted, swollen shank end; notch-rouletted bowl-stem junction
54	1013/90	Shank end, stem, and fragmentary bowl; shank opening 1.6 cm; reddish-gray clay; red slip, burnished; rounded plain bowl with flared upper portion; double-incised line above notch-rouletted, swollen shank end; notch-rouletted bowl-stem junction
55	1050/10	Shank end, stem, and fragmentary bowl; shank opening1.5 cm; light reddish-gray clay; reddish-brown slip, burnished; rounded plain bowl with large flared upper portion; double-incised line above notch-rouletted, swollen shank end; notch-rouletted bowl-stem junction
56	1034/39	Shank end, stem, and fragmentary bowl; red clay; red slip, burnished; shank opening 1.7 cm; rounded plain bowl with flared upper portion; double-incised line above notch-rouletted, swollen shank end; notch-rouletted bowl-stem junction
57	1038/36	Shank end, stem, and fragmentary bowl; shank opening 1.5 cm; red clay; reddish-brown slip, burnished; rounded plain bowl with flared upper portion; incised line above notch-rouletted, swollen shank end; notch-rouletted bowl-stem junction
58	1024/27	Shank end, stem, and fragmentary bowl; shank opening 1.5 cm; dark reddish-gray clay; weak red slip, burnished; plain bowl; double-incised line above notch-rouletted, swollen shank end; notch-rouletted bowl-stem junction
59	1007/43	Bowl; reddish-gray clay; red slip, burnished; rim fragment of lily-shaped bowl with incised lines in form of floral motif (tree or branch?)
60	1007/44	Shank-bowl junction; reddish-gray clay; red slip, burnished; lower part of lily-shaped bowl with incised lines in form of floral motif (tree or branch?); notch-rouletted bowl-stem junction
61	1016/142	Bowl; reddish-gray clay; weak red slip, burnished; plain lily-shaped bowl with lower part decorated with two notch-rouletted lines and palmette seal impressions above and beneath them
62	1013/87	Bowl; dark reddish-gray clay; dark red slip, burnished; rim fragment of lily-shaped bowl with notch-rouletted line between palmette seal impression
63	1016/136	Bowl; gray clay; dark red slip, burnished; rim fragment of lily-shaped bowl with broad rouletted line above palmette seal impression
64	1026/37	Bowl; dark reddish-gray clay; dusky red slip, burnished; rim fragment of lily-shaped bowl with triangle made of two incised lines and filled with rounded seal impressions with dots
65	1034/57	Shank end; shank opening 1.7 cm; dark reddish-gray clay; weak red slip, burnished; swollen deep gadrooned shank end with palmette seal impressions at their two ends
66	1004	Shank end and stem broken at the shank-bowl junction; shank opening 1.4 cm; reddish-gray clay; dusky red slip, burnished; swollen deep gadrooned shank end with floral seal impressions at their two ends framed by rouletting; circular seal impression with floral(?) motif on right side of shank; notch-rouletted bowl-stem junction; incision on base

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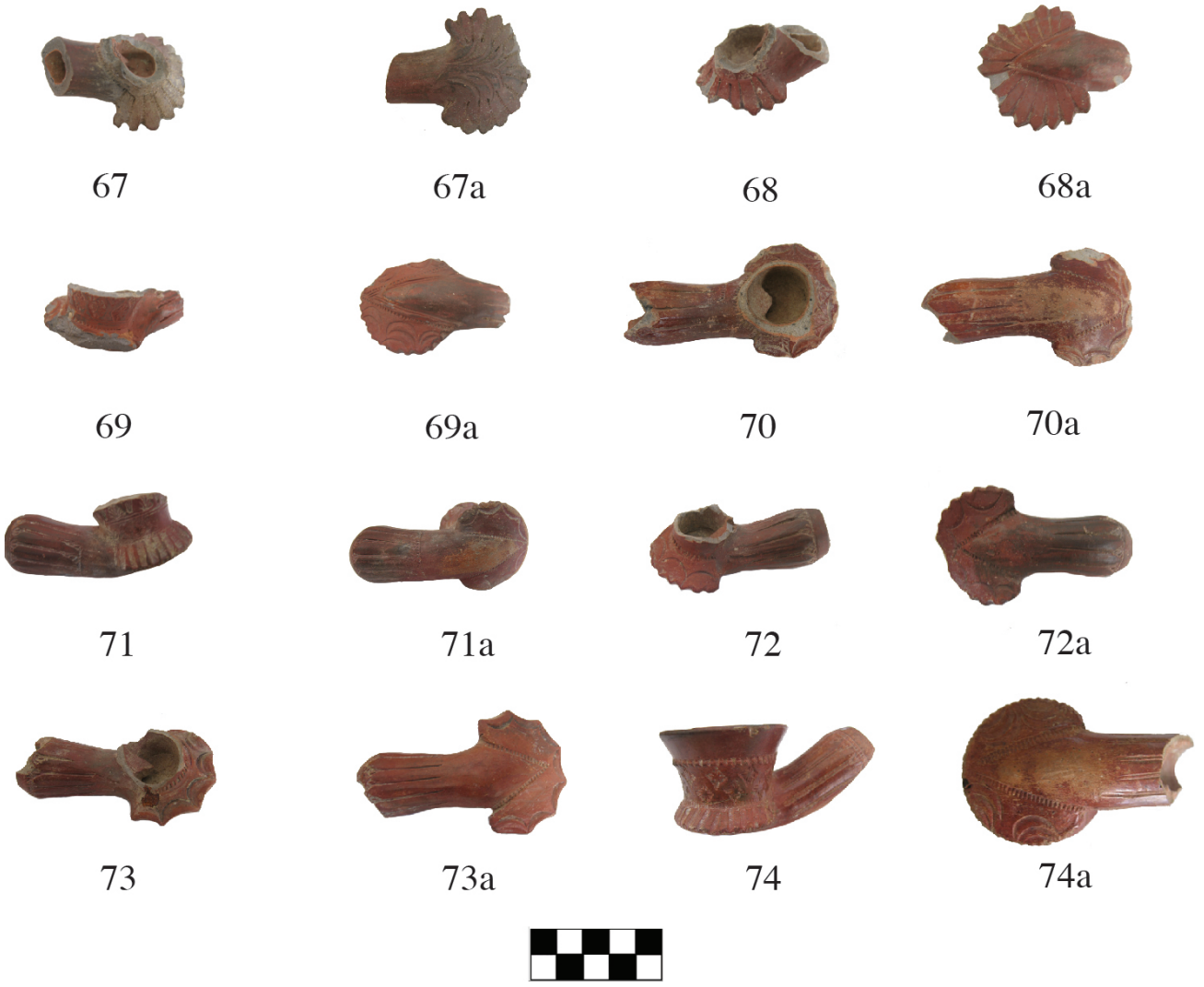

Figure 14.6. Group 3 (Nos. 67 to 74): Red-slipped burnished pipes with disk bases from the second half of the nineteenth century.
Photograph by Lior Rauchberger.

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No.	Reg. No.	Description
67	1022/71	Bowl and lower stem; dark reddish-gray clay; dark reddish-brown slip, burnished; lower part of upper bowl impressed with palmette seal impression; lower bowl and disk base with pattern of petal form separated by rouletted lines; the extension of the shank below the bowl becomes flattened and impressed with arcs imitating fingernail impressions forming a palmette tree; rouletted line at joint of bowl to shank
68	1019/26	Bowl and lower stem; gray clay; yellowish-red slip, burnished; lower part of upper bowl impressed with palmette seal impressions; lower bowl and disk base with a pattern of petal form separated by incised lines; the extension of the shank below the bowl becomes a flattened, tongue-shaped keel, surrounded by rouletted lines
69	1013/88	Bowl and lower stem; reddish-gray clay; reddish-brown slip, burnished; fragmentary upper bowl impressed with repeating lozenge seal impressions filled with pattern of two reversed palmettes; lower bowl with incised and notch-rouletted line above arcs imitating fingernail impressions; disk base with notch edges and arcs imitating fingernail impressions; the extension of the shank below the bowl becomes a flattened, tongue-shaped keel, surrounded by rouletting and incised lines; gadrooned shank
70	1019/23	Shank end, stem, and fragmentary bowl; shank opening 1.4 cm; gray clay; dark reddish-brown slip, burnished; lower bowl impressed with notch-rouletted line above palmette seal impression and arcs imitating fingernail impressions; disk base with pressed finger edges and arcs imitating fingernail impressions; the extension of the shank below the bowl becomes a flattened, tongue-shaped keel, surrounded by rouletting; gadrooned shank with palmette seal impression at their ends, framed by rouletting
71	1037/47	Shank end, stem, and fragmentary bowl; weak red clay; dusky red slip, burnished; shank opening 1.4 cm; upper bowl; impressed with palmette seal impression and triangle seal impression between them and beneath it two incised lines; vertical mold-formed ribbed lower bowl framed by notch-rouletted line; disk base with arcs imitating fingernail impressions; the extension of the shank below the bowl becomes a flattened, tongue-shaped keel, surrounded by rouletting; gadrooned shank with palmette seal impression framed by rouletting
72	1022/70	Shank end, stem, and fragmentary bowl; shank opening 1.5 cm; reddish-gray clay; dusky red slip, burnished; fragmentary plain upper bowl; lower bowl impressed with notch-rouletted line above arcs imitating fingernail impressions; disk base with notched edges and arcs imitating fingernail impressions; the extension of the shank below the bowl becomes a flattened, tongue-shaped keel, surrounded by rouletting; gadrooned shank with palmette seal impression below notch-rouletted line
73	1016/150	Shank end, stem, and fragmentary bowl; shank opening 1.6 cm; pale red clay; weak red slip, burnished; fragmentary plain upper bowl; lower bowl impressed with notch-rouletted line above arcs imitating fingernail impressions; disk base with pressed finger edges and arcs imitating fingernail impressions; the extension of the shank below the bowl becomes a flattened, tongue-shaped keel, surrounded by rouletting; gadrooned shank with palmette seal impression at their ends
74	1016/141 1016/145	Shank end, stem, and fragmentary bowl; gray clay; red core, dark red slip, burnished; fragmentary upper bowl with plain rim; lower part of upper bowl with lozenge seal impression filled with floral motif, framed by notch-rouletted lines; vertical mold-formed ribbed lower bowl; disk base with arcs as of fingernail impressions and extension of the shank below the bowl that becomes a flattened, tongue-shaped keel, surrounded by rouletting; disk base with notch-rouletted edges; gadrooned shank with triangle seal impression at their ends beneath; notch-rouletting

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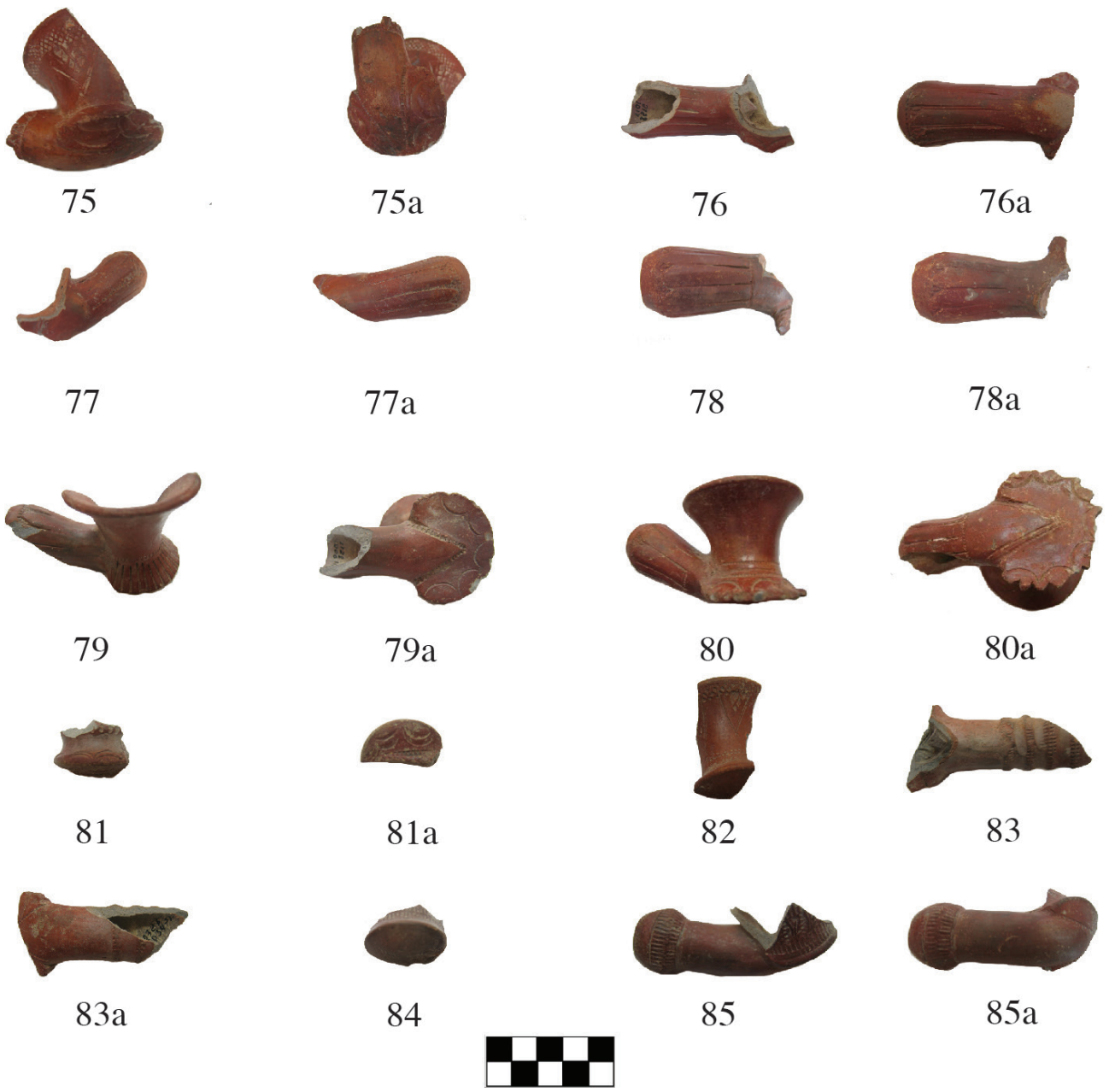

Figure 14.7. Group 3 (Nos. 75 to 85): Red-slipped burnished pipes with disk bases from the second half of the nineteenth century.
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No.	Reg. No.	Description
75	1037/25	Bowl and lower stem; light gray clay; reddish-brown slip, burnished; heavy, thick-walled pipe; fragmentary lily-shaped bowl; upper bowl with rouletted lattice pattern on rim and triangle seal impression filled with lozenge beneath it between double-incised lines and triangle floral seal impression on the opposite side; lower bowl with notch-rouletted line and arcs imitating fingernail impressions; disk base with arcs imitating fingernail impressions and extension of the shank below the bowl that becomes a flattened, tongue-shaped keel, surrounded by rouletting; lower part of shank with floral seal impression
76	1017/8	Shank end, stem, and fragmentary bowl; shank opening 1.6 cm; reddish-gray clay; weak red slip, burnished; lower bowl impressed with notch-rouletted line above arcs imitating fingernail impressions; disk base with pressed finger edges and arcs imitating fingernail impressions; the extension of the shank below the bowl becomes a flattened, tongue-shaped keel, surrounded by rouletting; gadrooned shank with palmette seal impressions at their ends beneath notch-rouletting
77	1019	Shank end and stem broken at the shank-bowl junction; shank opening 1.5 cm; weak red clay; dusky red slip, burnished; gadrooned shank end with vertical notch-rouletted lines and palmette seal impression at their ends beneath rouletting
78	1016	Shank end and stem broken at the shank-bowl junction; shank opening 1.6 cm; reddish-gray clay; red core; dusky red slip, burnished; gadrooned shank end with palmette seal impression framed by rouletting
79	1006/117	Semi-complete pipe; shank opening 1.4 cm; gray clay; reddish-brown slip, burnished; heavy, thick-walled pipe; fragmentary plain lily-shaped bowl; ribbed lower bowl with notch-rouletted line above vertical incisions; disk base with arcs imitating fingernail impressions and extension of the shank below the bowl that becomes a flattened, tongue-shaped keel, surrounded by rouletting; gadrooned shank with palmette seal impression at end
80	1029/8	Nearly complete pipe; shank opening 1.6 cm; weak red clay; dark red slip, burnished; heavy, thick-walled pipe; plain lily-shaped bowl with lower part decorated with two notch-rouletted lines with plain band between them; lower bowl with arcs imitating fingernail impressions; disk base with notch edges and arcs imitating fingernail impressions; the extension of the shank below the bowl becomes a flattened, tongue-shaped keel, surrounded by rouletted and incision lines; gadrooned shank with palmette seal impression at bottom of bowl, framed by rouletting
81	1024	Bowl; reddish-gray clay; weak red slip, burnished; part of lower bowl and disk base with notch-rouletted lines and arcs imitating fingernail impressions
82	1019/20	Bowl; gray clay; yellowish-red slip, burnished; lily-shaped broken bowl; upper bowl with rouletted lattice pattern on rim and triangle seal impression filled with lozenge beneath it between incised lines; lower part of bowl and disk base with notch-rouletted lines
83	1034/57	Stem and fragmentary bowl; dark gray clay; yellowish-red slip, burnished; lower bowl with pattern of petal form separated by rouletting; four double rouletted lines on shank; the extension of the shank below the bowl becomes a flattened, tongue-shaped keel, surrounded by rouletted and incised lines
84	1026	Bowl; light gray, reddish-brown slip, burnished; part of lower bowl with notch-rouletted lines; the extension of the shank below the bowl becomes a flattened, tongue-shaped keel, surrounded by rouletting
85	1062/34	Shank end, stem, and fragmentary bowl; shank opening 1.5 cm; light gray clay; dusky red slip, burnished; bowl with floral(?) seal impression framed by two broad, rouletted bands; two rows of rouletting around shank end; the extension of the shank below the bowl becomes a flattened, tongue-shaped keel, surrounded by rouletting

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Figure 14.8. Group 4 (Nos. 86 to 89): Red-slipped burnished pipes with rouletted bowls from the second half of the nineteenth century. *Photograph by Lior Rauchberger.*

No.	Reg. No.	Description
86	1029/19	Shank end, stem, and fragmentary bowl; shank opening 1.7 cm; light gray clay; light red slip, burnished; horizontal notch-rouletted rounded bowl; double-incised line above notch-rouletted, swollen shank end; notch-rouletted bowl-stem junction
87	1047/15	Bowl and stem; red clay; red slip burnished; horizontal notch-rouletted rounded bowl; notch-rouletted bowl-stem junction
88	1047/21	Shank end, stem, and fragmentary bowl; shank opening 1.5 cm; reddish-gray clay; weak red slip, burnished; two horizontal notch-rouletted bands on lower rounded bowl; double-incised line above notch-rouletted, swollen shank end; notch-rouletted bowl-stem junction
89	1050/27	Shank end, stem, and fragmentary bowl; shank opening 1.3 cm; red clay; weak red slip, burnished; rouletted lattice pattern lower bowl; double-incised line above notch-rouletted, swollen shank end

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Notes

1. Ottoman pipe assemblages from Palestine so far have only been published from Jerusalem (Cytryn-Silverman 2013:181–182, 199, fig. 7.11; Simpson 2008:433–446; Weksler-Bdolah 2006:112*–115*; Wightman 1989:73–74, 257, pl. 263), Akko (Edelstein and Avissar 1997:133–135; Shapiro 2010: 75*–80*; Stern 1997:68, figs. 136–138), Nazareth (Alexandre 2012:121–123, fig. 6.1), Ramla (Vincenz 2011), and Jaffa (Rauchberger 2013). The remaining assemblages come from smaller settlements such as Banias (Dekkel 2008), Qiryat Shemona (South) (Taxel 2012:130–132, fig. 7.7), Tel Jezreel (Zir'in; Simpson 2002:159–172), Yoqne'am (Avissar 1996:198–201; 2005), Ramat Hanadiv (Boas 2000a:222–224, 2000b:555–559), Belmont (Suba) (Simpson 2000), Kafr 'Ana (Gophna et al. 2007:62, figs. 63.20, 63.21), Yavneh (Fischer and Taxel 2007:268, fig. 235), and gathering places such as Nahal Ha-Taninim (Sharvit 2011) and El-Ahwat (Bar 2012:402–407, fig. 25.1). For a discussion of the publication of pipes, see Simpson (2000:170; 2002:1).

2. Seventy-seven fragments of lily pipes were not included in this catalog: 40 rim or bowl fragments, 34 stem fragments, and 3 fragments of stem-bowl joins with the joint.

3. See forthcoming report by A. de Vincenz on porcelain and ceramic vessels of the Ottoman period to appear in the final report for the excavations of Jaffa's Ottoman Qishle, edited by Yoav Arbel.

4. See n. 3.

5. In particular, see recent preliminary reports for excavations at the Ganor Compound by Peilstöcker and Burke (2011), the Flea Market by Peilstöcker et al. (2006) and Arbel (2008), the Clock Tower Square by Peilstöcker (2009), the Qishle by Arbel (Arbel 2009; Arbel and Talmi 2009), the French Hospital by Re'em (2010), the harbor by Haddad (2009) and the Postal Compound (Rauchberger 2010, 2015). A few final reports have recently appeared for the excavations in the Armenian compound (Part IV, this volume) by Arbel (chapter 20) and Rauchberger (chapter 21, but see also chapter 22 for ceramics), Ruslan St. by Kletter (2004:193–207) and Jerusalem Boulevard and its vicinity by Jakoel and Marcus (2017:44*–70*, 157–158).

6. The customers of the coffee houses in the alley did not necessarily sit only in the shops or near them but also on the crenellations of the seawall. Indications for this can be seen in some of Reuben Rubin's (1893–1974) drawings and in a photo taken by the amateur photographer, Dr. Max Buchmann (born 1896), titled "Arabian Coffee House on the Wall of Jaffa" (see Erde 2014).

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PART III

EXCAVATIONS AT THE POSTAL COMPOUND 2009–2011

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Chapter 15

The Postal Compound Excavations in Jaffa, 2009–2011:

Final Report

Eriola Jakoel
Israel Antiquities Authority

An Early Roman period cemetery and Hellenistic period architectural remains were discovered northeast of Tel Yafo, with fourteen tombs dating to the Early Roman period. Most of the tombs had been installed in an identical northwest-southeast alignment. Both single and multiple burials were identified in the tombs. Ossuary fragments and additional small finds link the cemetery to the Jewish inhabitants of Jaffa in the Early Roman period. Based on the ceramic finds, the cemetery ceased to be active in 70 CE, and this may be related to the conquests of Jaffa in the Early Roman period, described in the historical sources. The remnants of the walls and flooring found in the excavations and dated to the Hellenistic period may be the remains of a farmstead to the northeast of Tel Yafo.

Between August 2009 and March 2011, trial and salvage excavations were conducted at a site in 6 Shimon Ben Shetah St., Tel Yafo (map ref. NIG 177384–662648 177315–662603), prior to the construction of a residential building. The site is located approximately 550 m northeast of Tel Yafo and some 190 m northeast of the Clock Tower Square (Figure 15.1). The street lies within a triangular area referred to as the Postal Compound,[1] delimited to the east by Jerusalem Blvd., to the south by Marzuk and 'Azar St. and to the west by Razi'el St. As a result of intensive urban development and new construction projects, several excavations have been carried out in the area in the past decade, yielding remains ranging in date from the Bronze Age to the late Ottoman period (Jakoel and Marcus 2011; Peilstöcker 2007, 2011). To enable a broader understanding of the finds uncovered in the excavations, the remains found in the Postal Compound are presented here in chronological order.

Iron Age, Persian, and Ottoman Remains

A collecting vat from a wine press was discovered in 3762 St. (today Yechiel Shemi St.) containing a few potsherds dating to the Iron Age (Rauchberger 2010, 2015). Pottery fragments from the same period were discovered in Jerusalem Blvd. (Jakoel and Marcus 2013). During the Iron Age, localized activities (possibly industrial) may have been carried out in the vicinity. No remnants of buildings dating to the Persian period have been found in the area; only a few potsherds were found, and these may be the result

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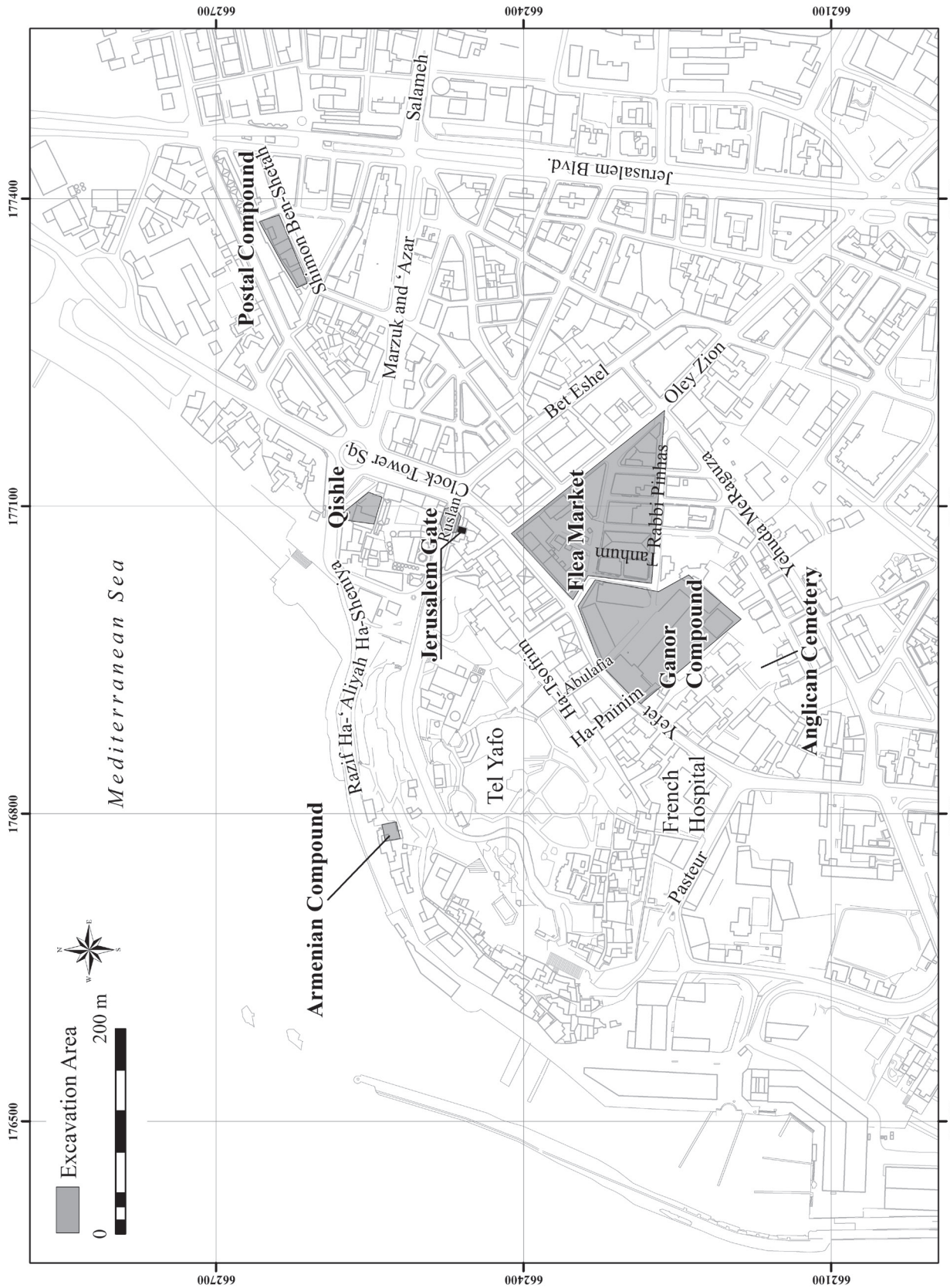

Figure 15.1. Location of Postal Compound excavations within Jaffa. *Map by Krister Kowalski.*

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of erosion from the tell. Hellenistic period remains were found in excavations conducted in Jerusalem Blvd. (Jakoel and Marcus 2013) and in Shimon Ha-Tzadik St. (Glick forthcoming). Architectural remains were exposed, possibly belonging to a farmstead (Jakoel and Marcus 2013). The architectural finds, together with Rhodian handles discovered during the excavations (Rauchberger 2010, 2015), indicate that settlement during the Hellenistic period extended beyond the confines of the upper city of Tel Yafo (Arbel and Peilstöcker 2009). Architectural remains dating to the Byzantine period have not been found. However, it should be noted that Byzantine period occupation levels have been found in excavations conducted in Marzuk and 'Azar St. (Peilstöcker 2000:49–50) and in subsequent excavations nearby (Jakoel 2011; Kletter 2001; Rauchberger 2009).

During the Byzantine period, the city may have spread as far as the Postal Compound to the northeast, but no centers of activity from the period have yet been found in this area. Finds dating to the Crusader period (potsherds and small finds) were discovered in nearly all the excavations in the area (Jakoel 2011), with no evidence of architectural remains. The demolition of the city walls during the Ottoman period led to urban expansion in the areas surrounding the ancient city center (Kark 2011). The development of the city is reflected in the finds from the Postal Compound and the surrounding streets. The remains of roads and streets, buildings, wells, and drainage systems dating to the Ottoman period are evidence of the city's urban and agricultural activities during this period (Jakoel and Marcus 2011, 2013; Rauchberger 2015; Ofer Sion, personal communication, 2015).[2] The remains are consistent with historical records documenting the spread of the city beyond its ancient nucleus, with extant historical maps (Shacham 2011).

The current excavations yielded remnants of walls and floors dating to the Hellenistic period (Figure 15.2). A cemetery dating to the Early Roman period was also exposed, including numerous types of graves: a sarcophagus, mausolea, ossuaries, covered cist graves, and cist graves found without covering slabs. Together with the graves, the site yielded a refuse pit that has also been dated to the Early Roman period. The remains were covered with an accumulated layer of brown soil containing ceramics dating from the Iron Age to the Ottoman period. In addition to a treatment of the ceramics by the author and Peter Gendelman (Chapter 16), the chapters in this section provide reports on amphora stamps (Chapter 17), numismatic finds (Chapter 18), and human skeletal remains (Chapter 19) encountered during the excavation of the Postal Compound.

The Hellenistic Architectural Remains

Walls and floors were exposed in the eastern part of the site (W.115, W.151, L.121; Figure 15.2–Figure 15.4). Wall 115 was aligned northwest-southeast and constructed of small- and medium-sized *kurkar* stones without mortar. The wall was preserved to a height of three courses in its northern part and four courses in its southern part. Wall 115 was damaged by a pit in its center (L.138: 1 × 0.35–0.62 m) containing a fill of brown soil with burnt matter and a very small number of potsherds. To the west of Wall 115, stone flooring was exposed (L.121) made of large- and medium-sized limestone slabs and beachrock (Figure 15.3). The stone flooring extended to the base of Wall 115.

Parallel to Wall 115, an additional wall was discovered, Wall 151 (Figure 15.4). The wall was constructed in a manner similar to Wall 115 but had only been preserved to the height of two courses. Although no direct connection was found between the two walls, their proximity, their manner of construction, and their parallel alignment may indicate that they belong to the same complex or structure. In the layer of fill disturbed by modern digging, a coin of Leo I (457–474 CE; see Coin 3, Chapter 18) was found. The coin cannot be regarded as a basis for dating the remains since it came from disturbed fills. Based on the ceramic finds from the fills above and beside the walls, they can be dated to the Hellenistic period (see Chapter 16). To the south and west of the two walls described above, clusters of small- and medium-sized *kurkar* stones were found (L.140; see Figure 15.2) that may represent debris originating from the walls.

The Roman Period Cemetery

Fourteen tombs were found in the excavations, including one sarcophagus, two mausolea, four uncovered cist graves, and seven covered cist graves (Figure 15.2). The tombs are generally oriented northwest-southeast, apart from T.190, which is on an east-west orientation. It should be noted that not all the tombs were excavated; four tombs were exposed, recorded, and relocated.[3]

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Figure 15.2. Plan of burials in Postal Compound excavations. *Drawing by N. Zak.*

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Figure 15.3. Wall 115 and floor L.121. View east. *Photograph by Assaf Peretz*.

Figure 15.4. Wall 151. Photo B.172783. View west.

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Sarcophagus (T.113)

The sarcophagus (T.113) was found in the southwestern part of the excavated area (1 × 0.75 × 2.05 m; Figure 15.2) and is made of hard limestone. On the corners of the lid, four rounded and schematically carved plinths were fashioned, one in each corner, with the southeast *acroter* only partially preserved (Figure 15.5). The sarcophagus was found sealed (Figure 15.6). The lid had been placed on the sarcophagus and closed/sealed with white plaster.

The finds in the tomb included human bones representing five individuals (three adults and two children; see Chapter 19). The burial was probably conducted in several stages, with two individuals being buried first and another adult and two children being interred with them at a later stage (Figure 15.7). Those interred in it may have been members of the same family. The brown soil fill excavated inside the sarcophagus contained no potsherds or small finds and could therefore not be used as a basis for dating. However, identical sarcophagi have been found on the slopes of Tel Yafo in the Ganor Compound (Peilstöcker and Burke 2011b), at Nes Ziona (Ad 2007), and at Caesarea (Avner and Gendelman 2007), where they have been dated to the Roman period (first through fourth centuries CE).

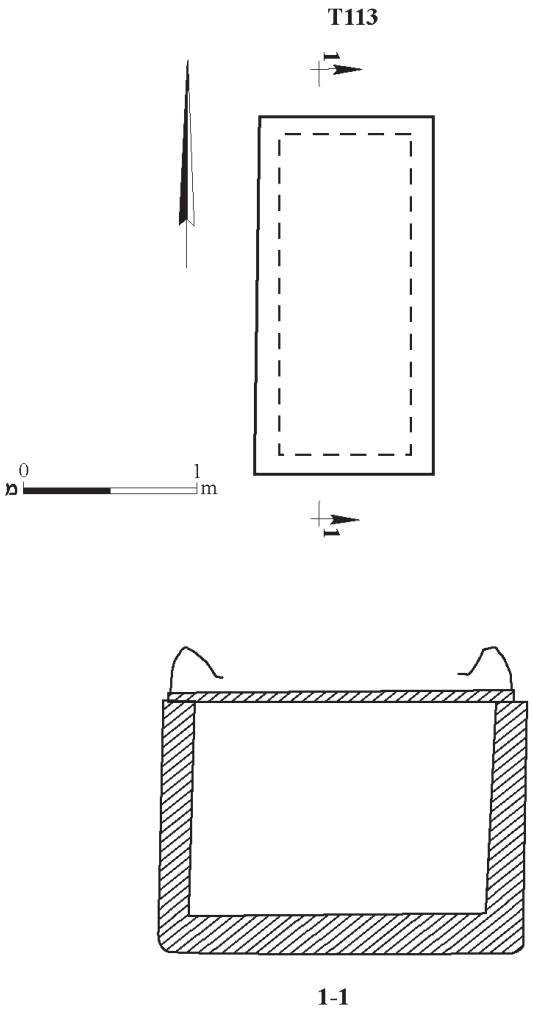

Figure 15.5. Plan of Tomb 113. *Drawing by N. Zak.*

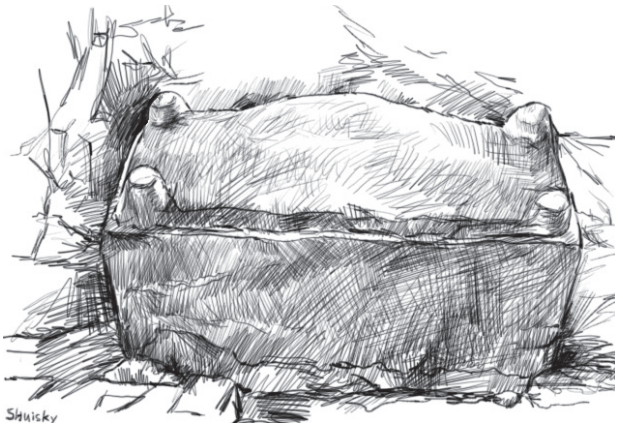

Figure 15.6. Illustration of sarcophagus in T.113. *Drawing by Marina Shuiskaya.*

Figure 15.7. Sarcophagus in T.113 after opening. View north. *Photograph by Eriola Jakoel.*

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Mausolea (T.142 and T.196)

Mausoleum (T.142).

A mausoleum was discovered in the center of the excavation site (Figures 15.2, 15.8, and 15.9). The mausoleum was divided into two rooms: the southeast room, which was used for primary burial, and the northwest room, used for secondary burial (in ossuaries). The southern, primary burial room had been partially preserved. The southwest wall (W.114) was preserved, as was the northwest wall (W.118) that separated the two rooms (Figure 15.2). The other walls enclosing the structure had not been preserved. The walls were built of medium and large *kurkar* stones plastered on the inside with gray plaster containing black and white grits. The floor of the rooms was also plastered, with grayish plaster containing black grits. The room was divided into four burial troughs separated by internal walls that had not been preserved to any height (only the negative imprints of the walls could be discerned). The structure had been used for several burials; the skeletons recovered indicated that most of the dead had been placed on the troughs in rows, with the skull on the northwestern side. In the most westerly trough, burials were detected on two levels, and some of the interred had been placed on top of others (see Chapter 19).

As noted above, the northern room was used for secondary burial in ossuaries. The floor of the room was plastered in a manner similar to that of the southern room. It contained a layer of brown soil fill with ossuary fragments, and at least one ossuary was found in situ. Due to pressure from ultra-Orthodox elements, the area was not excavated in its entirety. Few additional ossuary fragments were retrieved, all of which appeared to have come from the same ossuary, although this cannot be categorically determined (Figure 15.10).

The ossuary was made of soft limestone. The ossuary lid was recovered and was almost completely preserved. Two transverse holes used as handles were carved on two sides of the lid (Figure 15.11). Two sections from the wider side and a fragment from the narrower end of the ossuary were also preserved. Ossuary dimensions: *l.* 64 cm, *w.* 25 cm, and est. *h.* 30 to 39 cm. These dimensions are compatible with the standard bone collection dimensions required for an adult individual (Rahmani 1994:6). Human bones were detected, but the excavation was not completed due to Religious Affairs Ministry restrictions, precluding any anthropological information about the interred. The cover (*l.* 64 cm and max. depth: 6 cm) is slightly gabled, with

Figure 15.8. Mausoleum T.142. View north-northeast. Photos B.191133–B.191134. *Photograph by Assaf Peretz.*

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Figure 15.9. Mausoleum T.142, looking southwest. Photos B.191133–B.191134. *Photograph by Assaf Peretz.*

handles carved on both sides. On the inner wall of the cover, the ossuary stone-dressing marks can be detected (for comparison, see Rahmani 1994:pl. 53:441). The front (the longer side) is carved with three rosettes, each with six leaves (Figure 15.11). The rosettes are enclosed in a double circle (external diameter 16 cm) and are carved in a row with the central rosette placed slightly lower than the two side ones. Although only one of the carved rosettes was preserved in its entirety, the other two rosettes were probably crafted symmetrically. It is worth noting that traces of red paint were preserved on this side.

Another fragment from the other side of the ossuary was preserved and also adorned with a six-leaved rosette. The six-leaved rosette motif is very common in ossuary design (Rahmani 1994:39; for an ossuary with similar decoration, see Rahmani 1994:pl. 84:570). As in this instance, colored decorations were occasionally added to the ossuaries (Rahmani 1994:8). The narrow end was decorated with a motif of diagonal lines forming an X-shape within a double-lined frame. This motif is also very common in ossuary design (Rahmani 1994:30–31).

The ceramic finds and a few glass fragments (not illustrated) retrieved from the fills inside the mausoleum date from the Early Roman to the Byzantine period (see Chapter 16). Based on the style of the ossuaries, the mausoleum can be dated to the Early Roman period. Furthermore, the presence of ossuaries indicates Jewish burial customs at the site (Kloner and Zissu 2003:50–57). The Byzantine period potsherds in the complex may indicate when the tomb was destroyed or plundered.

Mausoleum? (T.196).

A structure found in the southeastern part of the cemetery compound (3 × 3 m; Figure 15.2) was built of large, well-dressed *kurkar* stones with no mortar. The stones were arranged header-stretcher style and were built into the sandy *hamra* soil (Figure 15.12). The floor was covered with grayish plaster applied up to the base of the walls. An entrance approximately 1.50 m wide was detected in the southern part of the structure, and a stone arrangement was found within the building, built of four large and meticulously arranged *kurkar* stones (L.197; ca. 1.60 m long). No human bones, pottery, or other artifacts were

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Figure 15.10. Ossuary fragments from T.142. Photo B.307703. *Photograph by C. Amit.*

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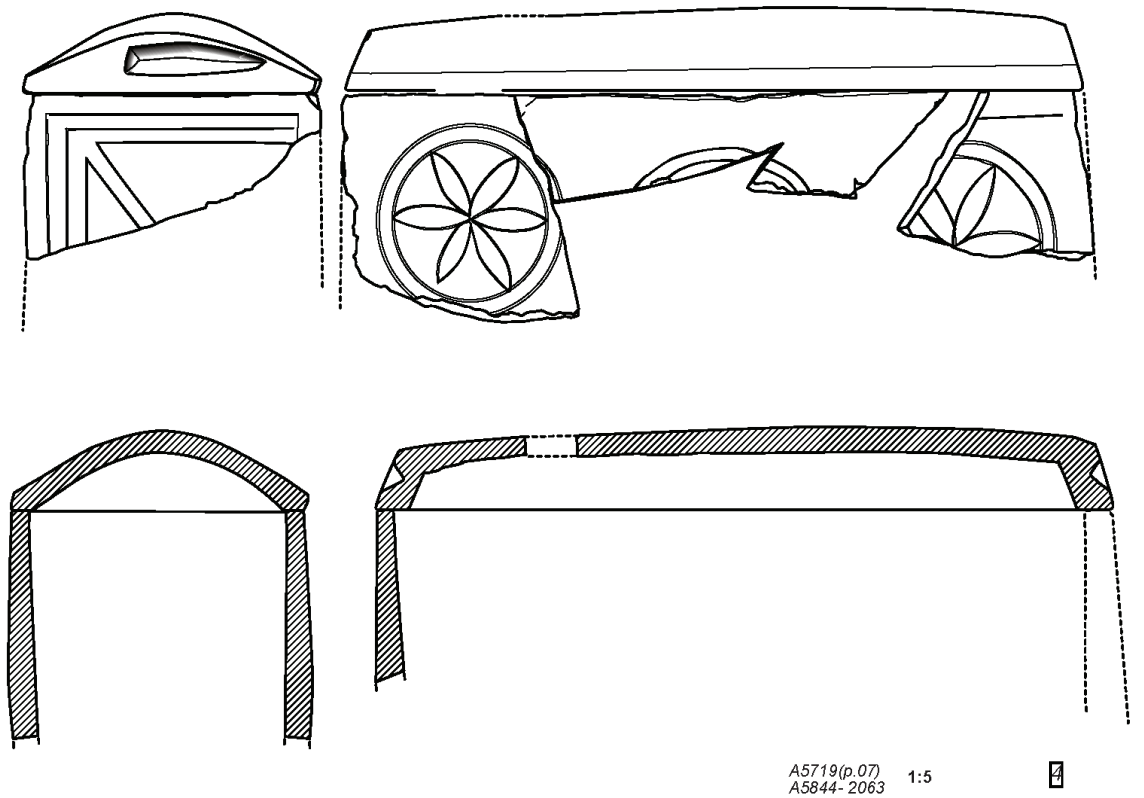

Figure 15.11. Drawing of reconstructed ossuary from T.142. *Drawing by Marina Shuiskaya.*

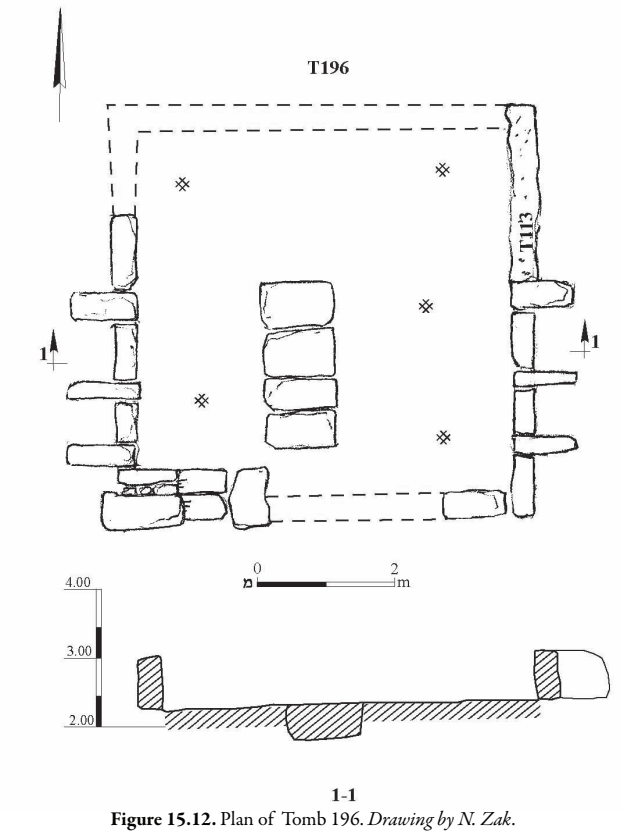

Figure 15.12. Plan of Tomb 196. *Drawing by N. Zak.*

found on the floor of the structure. The lack of finds from the structure precludes any identification of its purpose or date. Based on the style of the structure, however, it was probably a mausoleum. Tombs of this type are very rare. They are square in plan, with an inner room in which to lay the deceased (Avni 1997:30). Such tombs are known mainly from the north of Israel (Bet She'arim; Avigad 1972:92-96) and from the northern coastal plain (Siegelmann 1992:63–67). Sometimes lead coffins or sarcophagi were placed inside the tombs (Avni 1997:30). Based on the frequency of sarcophagi in the city, it may be that in Tel Yafo, a sarcophagus was placed in the mausoleum (L.197) rather than a lead coffin (not a single lead coffin has been found in Tel Yafo to date).

The ceramic finds retrieved from the fill inside the structure date from the Hellenistic to the Byzantine period and are therefore of no help in determining when the structure was in use. The later finds are the result of later fills. The orientation, which is identical to that of the other tombs found, together with its proximity to the other tombs (distance and stratigraphy), indicates that the structure was used for burial in the Early Roman period.

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Slab-Covered Cist Graves (T.162, T.178, T.185, T.195, T.198, T.209, T.210)

The excavations revealed seven covered cist graves (T.178, T.209, T.210, T.198, T.185, T.195, T.162; cited from west to east, see Figure 15.2). All the tombs of this type were built on a northwest-southeast alignment. Covered cist graves were a very common form of burial throughout Israel and were used during all these periods with no typological changes (Avni 1997:22-28). Tombs from the Roman period similar to those found in the excavations have been discovered at the Ganor Compound (Peilstöcker and Burke 2011b) and the Qishle (Meir Edrey, personal communication, 2013),[4] Akko (Tzaferis 1986; Tepper 2010), Caesarea (Porath 2007), Gesher Haziv in the Western Galilee (E. Mazar 1994), Kafr Kama (Ben-Nahum 2007), and elsewhere. Based on ceramic finds from tombs of this type, they can be dated to the Early Roman period (see Chapter 16). Based on the stratigraphy of the site and the identical orientation of the tombs, they were probably built during this period.

Gabled Tomb (T.162)

A cist grave (*l.* 2 m, *w.* 0.80 m, and depth: 0.60 m; Figure 15.2). The tomb was constructed of two parallel walls of well-dressed medium-sized *kurkar* stones dug into the sandy *hamra* soil (Figure 15.13 to Figure 15.15). The tomb had a gabled covering, built from two parallel rows of seven overlapping stone slabs. The fill inside the tomb consisted of *hamra* soil with *kurkar* conglomerates. The finds included human bones representing one adult individual, placed in a supine position, with the skull on the southeast side (see Chapter 19). To the east of the burial, a spindle bottle dating to the Early Roman period was recovered (see Chapter 16). Scattered fragments of another jug, also typical of the Early Roman period, were also recovered.

Tomb Covered with Large Stone Slabs (T.195)

The tomb was covered with three massive slabs (partially of sandstone) placed side by side (*l.* 2 m, *w.* 1 m, and depth of the cover: 0.20 m; Figures 15.2 and 15.16). This was probably a cist grave on which stone slabs were placed, like the other graves discovered in the excavation. The tomb was not excavated due to restrictions imposed by the Ministry of Religious Affairs, and we therefore have no anthropological information about who was buried in it.

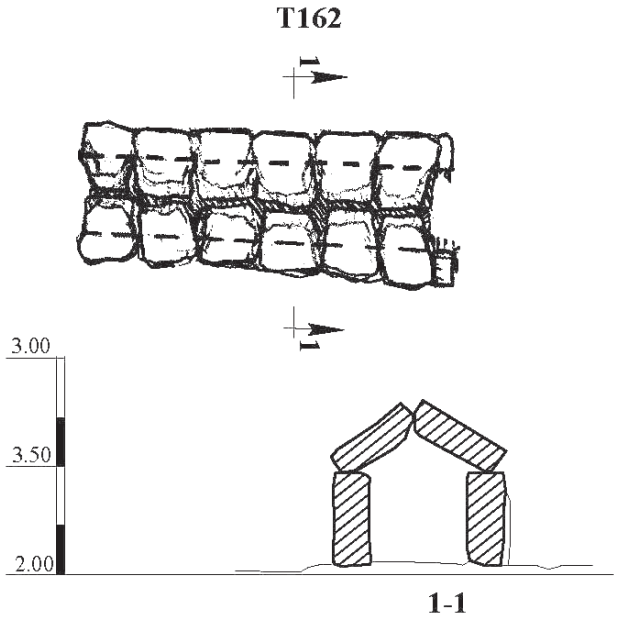

Figure 15.13. Plan of Tomb 162. *Drawing by N. Zak.*

Cist Grave Covered with Large Stones (T.185).

Cist grave (*l.* 2.30 m, *w.* 1 m, and depth of the covering: 0.50 m; Figure 15.2). The grave is covered with five massive hewn stones made of *kurkar* placed side by side along one axis (Figures 15.17 and 15.18). The southernmost stone was partially dressed with a rounded shape on its outer edge. This stone may have indicated the alignment of the burial. Once the northernmost stone had been removed, it became evident that the massive covering concealed a cist grave consisting of two parallel walls of dressed *kurkar* stones. The tomb was not excavated.

Cist Grave with a Monolithic Covering (T.198).

Three walls of the tomb were preserved (the western wall was not preserved), built of small, medium, and large *kurkar* stones (Figure 15.2). The stones were plastered on the inside with gray plaster mixed with small black and white grits (Figure 15.19). A monolithic hard limestone covering slab (0.50 × 0.74 × 0.30 m) had been laid over the southeast part of the tomb. The slab was carved in a slight gable in the center of its eastern side (Figure 15.20). The covering at the northwest end was missing and had probably not been preserved. The tomb contained two layers of interment with no intermediate separation. The upper layer (L.170) yielded two human skulls representing two infants. The finds in the lower layer (L.199) included fragments of bone from a 30-year-old adult male (see Chapter 19).

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Figure 15.14. Tomb 162 before opening. View north. *Photograph by Eriola Jakoel*.

Figure 15.15. Tomb 162 after opening. View north. *Photograph by Eriola Jakoel*.

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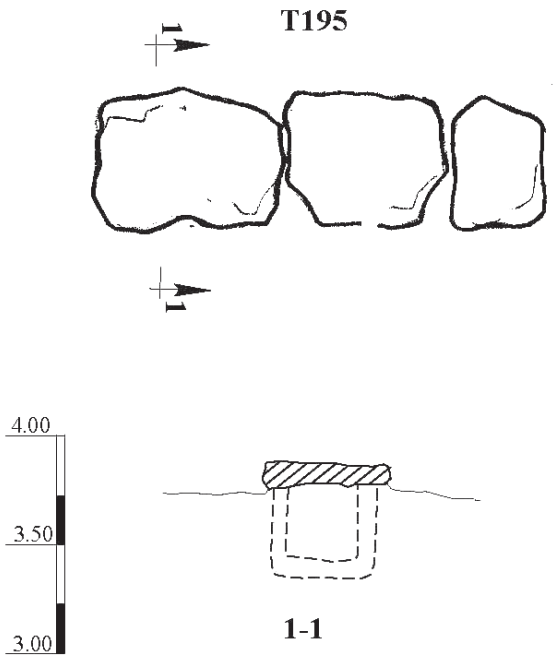

Figure 15.16. Plan of Tomb 195.
Drawing by N. Zak.

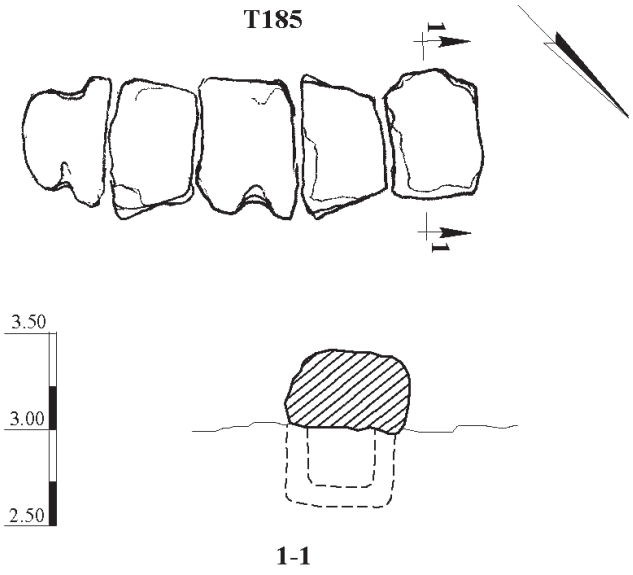

Figure 15.17. Plan of Tomb 185.
Drawing by N. Zak.

Figure 15.18. Tomb 185. View north. Photo B.191142.
Photograph by Assaf Peretz.

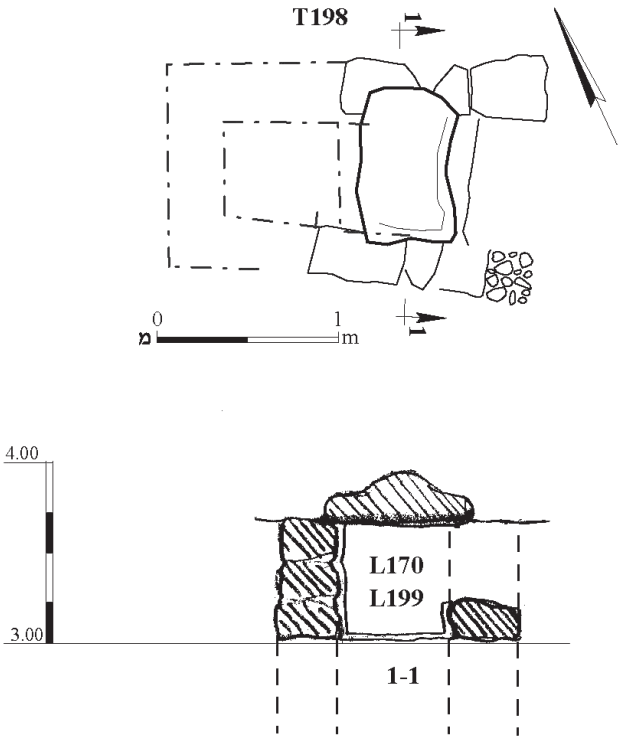

Figure 15.19. Plan of Tomb 198.
Drawing by N. Zak.

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Figure 15.20. Tomb 198. View north. *Photograph by Assaf Peretz*.

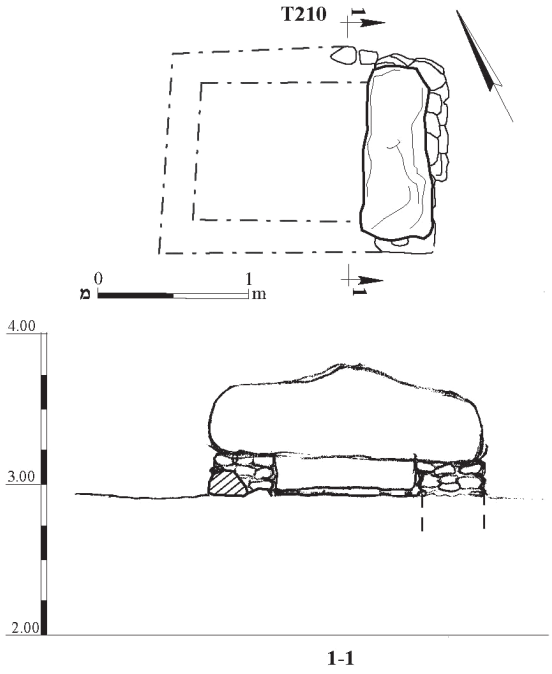

Figure 15.21. Plan of Tomb 210. *Drawing by N. Zak*.

Cist Grave with a Gabled Monolithic Covering (T.210).

Cist grave (*l.* 1.80 m, width preserved: 0.70 m-0.80 m, depth of slab: 0.30–0.60 m, and grave depth: 0.30–0.40 m; see Figure 15.2). The grave had a large, monolithic covering, the middle of which was carved in the shape of a gable (Figure 15.21), resembling the lid of sarcophagus T.113 (see Figure 15.6). The grave had been damaged in modern times, and its western end was not preserved. Excavation limitations meant that only the upper part and the western section of the grave were exposed. The grave was found to have a gray plaster floor like those of other graves discovered in the excavations. The fills above the grave yielded a mixed ceramic assemblage ranging in date from the Hellenistic period to the Byzantine period and could therefore not be used to date the grave.

Gabled Tomb (T.209). Cist grave

(*l.* 2 m, *w.* 0.80 m, and depth: 0.60 m; Figure 15.2). The grave had a gabled covering constructed from two parallel rows of five overlapping stone slabs (Figure 15.22). In the northern part of the grave, a larger stone was exposed that may have indicated the direction in which the individuals were buried. Only the upper part of the grave was exposed, and it was not excavated, precluding any anthropological information.

Cist Grave (T.178).

Cist grave (*l.* 1.25 m, outer *w.* 0.65 m, inner *w.* 0.30 m, and depth: 0.40 m; Figure 15.2). The two sides of the tomb (to the east and to the west) were constructed of small and medium fieldstones without mortar, in two courses (Figure 15.23). The tomb was dug into the *hamra* soil. The tomb was partially covered with medium *kurkar* slabs. It contained remains of a young individual (see Chapter 19).

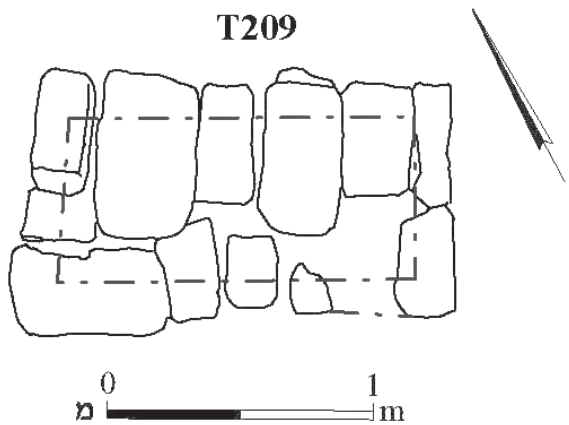

Figure 15.22. Plan of Tomb 209. *Drawing by N. Zak*.

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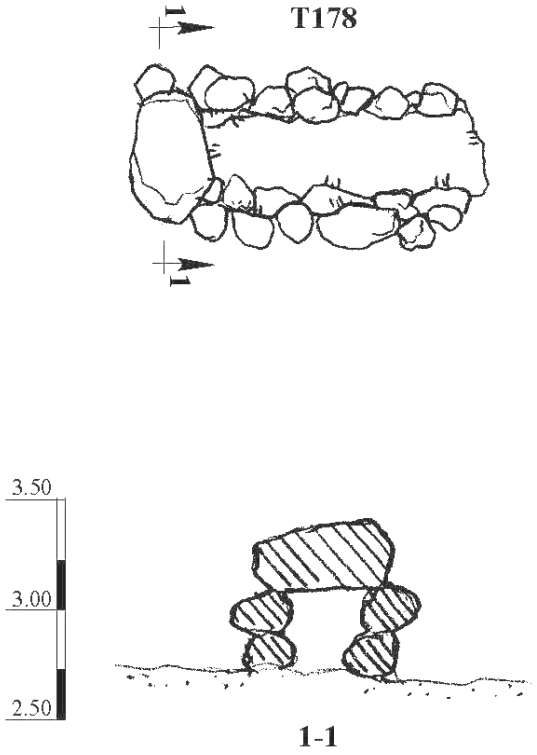

Figure 15.23. Plan of Tomb 178. *Drawing by N. Zak*.

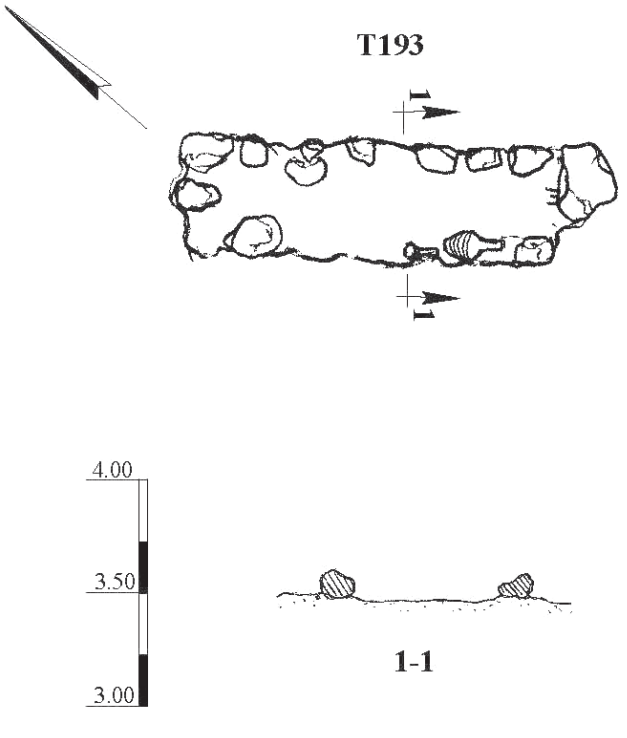

Figure 15.24. Plan of Tomb 193. *Drawing by N. Zak*.

Uncovered Cist Graves (T.179, T.190, T.193, T.201)

Four uncovered cist graves were discovered in the excavations (from southwest to northeast: T.193, T.190, T.201, T.179; see Figure 15.2). The tombs probably originally had covers that had not been preserved. Apart from Tomb 190, the other tombs were constructed on a northwest-southeast alignment. In the group in question, two tombs are worth noting (T.179, T.201), containing burials in two layers (some of the interred were placed on top of others). Based on the ceramic finds from the tombs, they can be dated to the Early Roman period (see Chapter 16).

Cist Grave (T.193).

The tomb was built into the *hamra* soil (Figure 15.2). It was enclosed in an outer wall built of small- and medium-sized *kurkar* stones without mortar (Figure 15.24). The sides of the tomb were preserved to a height of one to two courses. It contained a female individual aged 20 to 35 years placed in a supine position, with the skull in the southeast (see Chapter 19). Above the grave, on its northwestern side, a spindle bottle was discovered that had probably been deliberately placed over the grave. The spindle bottle dates to the Early Roman period (see Chapter 16). Inside the tomb, near the ribs of the interred, a bronze key was found together with a spatula fragment. Nails were also recovered, possibly indicating burial in a wooden coffin (see "Metal Artifacts," below).

Cist Grave (T.190).

The tomb was built on an east-west alignment[5] (*l.* 1.88 m, *w.* 0.75 m, and depth: 0.40 m; Figure 15.2) and enclosed by two parallel walls (to north and south) built of medium-sized *kurkar* stones placed on their narrower sides in the sandy *hamra* soil. No covering was found (Figures 15.25 and 15.26). The finds in the tomb included human bones representing one adult individual in anatomical articulation, placed in a supine position with the skull to the east (see Chapter 19). A fill of *hamra* soil containing *kurkar* conglomerates was excavated inside the tomb. This fill yielded potsherds dating to the Early Roman period (see Chapter 16). In addition, south of the lower limbs of the interred, a bronze shovel was found (see "Metal Artifacts," below). North of the lower limbs, a bronze spatula was found. Four nails were also found scattered around the grave: between the lower limbs of the interred, below the lower limbs, and to the north and the south of the interred. The nails may be evidence of burial in a wooden coffin. Traces of wood remains found on the lower part of the shovel strengthen the assertion that a wooden coffin was used in this grave.

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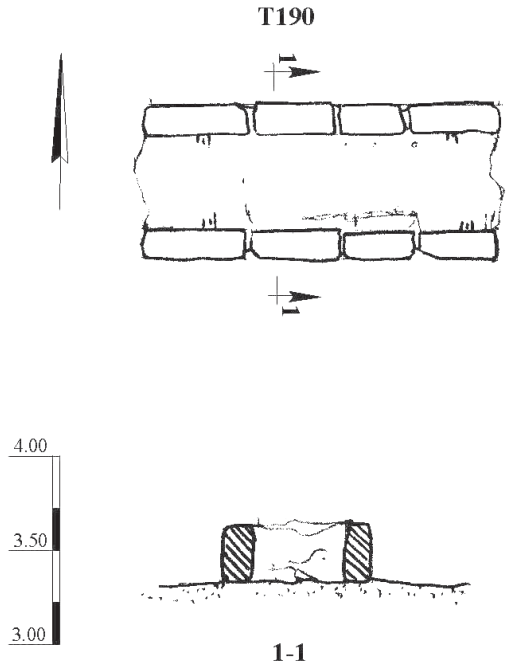

Figure15.25. Plan of Tomb. 190. *Drawing by N. Zak*.

Cist Grave (T.201).

Cist grave (*l.* 2.30 m, *w.* 1.20 m; Figure 15.2). The northern, southern, and eastern walls of the tomb were preserved. They were constructed of small- and medium-sized *kurkar* stones without mortar and plastered on the inside with grayish plaster (Figure 15.27). The northern and southern parts of the tomb had been damaged by modern intervention. Only the central section was excavated. Two levels of interment were detected (L.202, L.203), which were separated by beach-rock stone slabs. Due to modern damage, the anthropological information we have is limited. The upper burial level (L.202) yielded the bones of an individual aged younger than 18 years (see Chapter 19). The lower interment level (L.203) contained the remains of an individual aged under 18 years. A very disturbed fill of brown soil was excavated inside the tomb. The undisturbed parts of the layers yielded pottery vessels dating to the Early Roman period (see Chapter 16) and a fragment of a stone artifact.

Figure 15.26. Plan of Tomb 190. View west. *Photograph by Eriola Jakoel*.

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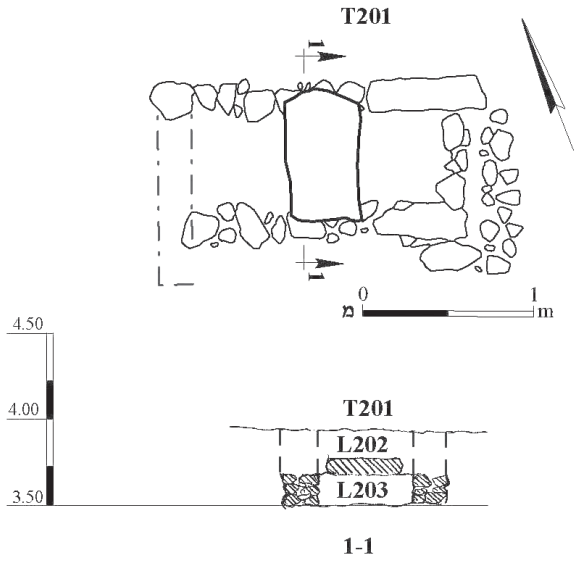

Figure 15.27. Plan of Tomb 201. *Drawing by N. Zak*.

Cist Grave (T.179).

Cist grave (*l.* 2.20 m, *w.* 1.35 m), built of small- and medium-sized stones without mortar (Figures 15.2 and 15.28). The inner sides of the grave were covered with gray plaster mixed with small black and white grits. Two layers of interment were found in the tomb; the upper layer (L.205) had been separated from the lower layer (L.206) by a partially preserved grayish-white plaster floor.

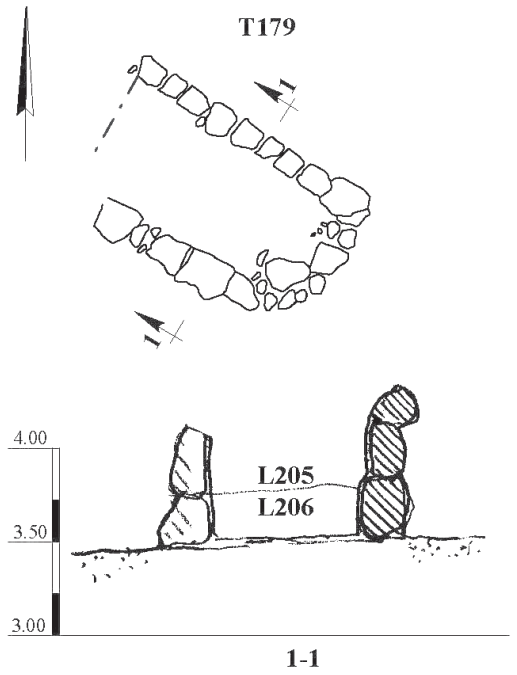

Figure 15.28. Plan of Tomb 179. *Drawing by N. Zak*.

In the upper layer (L.205), three individuals in articulation were buried in a supine position with their skulls on the northwest side. A female and two males were interred in this layer. In the lower layer (L.206), four individuals were buried in a manner identical to those in the upper layer: an infant, an adult individual, and two other males (see Chapter 19). Fills of brown soil containing Early Roman period potsherds were excavated inside the grave. A fragment of a stone artifact was also found (see "Stone Artifacts," below). In the lower burial layer (L.206), underneath the lower mandible of the middle (male) individual, a bronze amulet locket was discovered. The same layer also yielded a coin, found beside the lower limbs of the male individual (see Coin 1: Chapter 18, "Numismatic Finds"). The amulet locket was probably the personal belonging of the interred, and the coin was probably related to the pagan burial rite "Charon's Obol" (Jakoel and Tendler 2016).

Refuse Pit (L.137)

A refuse pit was uncovered in the northeastern part of the excavation site (L.137; ca. 4 m diameter; Figure 15.2). The pit cut into a Hellenistic period wall (W.151; see above) and yielded ceramic assemblages dating to the Early Roman period. These consisted of body fragments of jars, kraters, cooking pots, jugs, lamp fragments, and a fragment of a *kalal* dating to the Early Roman period (see Chapter 16; also "Stone Artifacts," below). An additional find was a coin of Hadrian struck in Dora (117 CE; see Coin 2: Chapter 18). The refuse pit may have been dug in connection with burial rites in the cemetery. The custom of breaking and throwing away artifacts (i.e., *killing them* or destroying the personal belongings of the deceased or artifacts connected with the burial ceremony) is known from various cultures throughout these periods (Toynbee 1971). The refuse pit, nonetheless, yielded no artifacts that could be restored, and it is therefore difficult to link this particular burial practice with the pit.

Stone Artifacts

Three body fragments of stone artifacts were found in the excavations (Figure 15.29:1–3), two of them in graves and the third in the refuse pit. The cups (Figure 15.29:1–2) are made of limestone. Such artifacts are typical of the Roman period (first through third centuries CE; Amit et al. 2002:105); similar cups have been found at sites with Jewish affiliations and were produced by the Jewish stone industry at the time of the Second Temple (Magen 2002).

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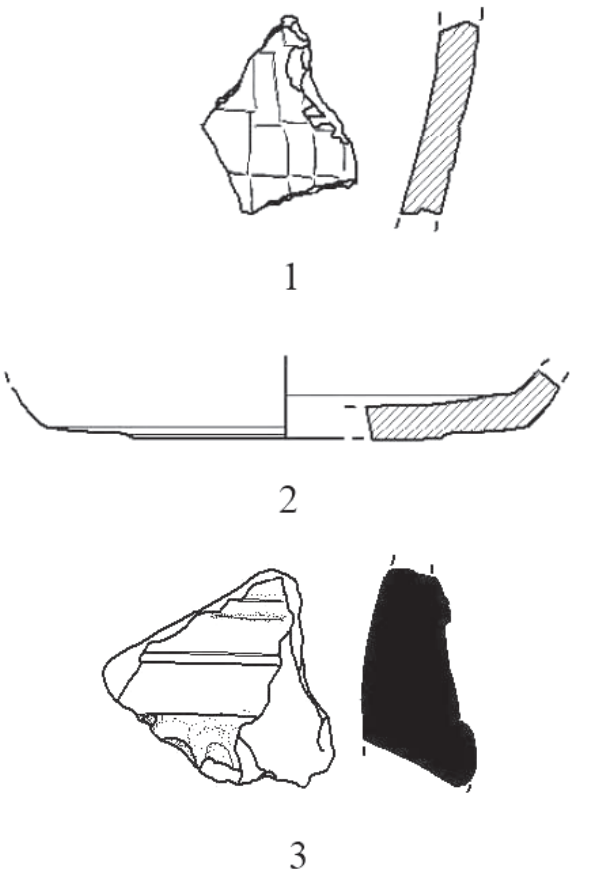

No.	Locus	Reg. No.	Context	Vessel
1	203	1194	Tomb 201	Cup
2	206	2201	Tomb 179	Cup
3	152	2066/5	Refuse Pit L.137	*Kalal*

Figure 15.29. Stone artifacts from Postal Compound excavations. *Drawing by Marina Shuiskaya.*

The presence of such tools in Tel Yafo (stone artifact fragments have been found in previous excavations but are as yet unpublished) is consistent with historical evidence about its Jewish population.

A limestone body fragment from a *kalal*-type vessel was retrieved from the refuse pit (Figure 15.29:3). A design of horizontal lines was carved on the side of the fragment, and parts of the design were preserved. *Kalals* have been found in Jerusalem in the Jewish Quarter, in the City of David, at Ophel, and elsewhere (Magen 2002:85), as well as at sites outside Jerusalem (Zissu and Ganor 2007), including Jaffa (see Tsuf 2011:274), with a chronological range from the first century BCE to the second century CE. Like the cups described above, the *kalal* is also connected with Jewish sites.

Metal Artifacts

The excavations yielded a number of metal tools and fragments. These included spatulas, a shovel, a bronze key, an amulet locket, a knife, and numerous nails.

Spatulas

Two spatulas were found in the excavations, both of them inside tombs (T.190, T.193).

1. Spatula No. 1 (*l.* 21 cm) is made of a copper alloy and well preserved (Figure 15.30:1, 2). One end is thickened (0.50 cm at the end), whereas the other end is wide and curved (2 cm), in the form of a spoon. Three lines and a rounded design were embossed between the spoon end and the handle of the spatula.
2. Spatula No. 2 (Figure 15.30:3): only the handle was preserved, without the spoon itself (preserved *l.* 10.50 cm). It was made of copper alloy, with no ornamentation on the preserved section.

Shovel

Discovered in Tomb 190, the shovel is made of iron, is 31 cm long, and consists of a pan and a handle (shovel body; *l.* 13 cm, *w.* 9 cm, shovel handle; *l.* 16 cm, width at join with pan: 4 cm, and 1.50 cm at end of handle; Figure 15.31). The pan was fashioned by bending the edges of a flat iron sheet. In the lower part of the shovel, organic matter (probably wood) was preserved, providing evidence of burial in a wooden coffin. Shovels have been found in burial caves at the French Hill in Jerusalem (A. Mazar 1982:45, fig. 2:12) where they were dated to the Second Temple period. Shovels have also been found in burial assemblages at Tel Abū Shusha (Siegelmann 1988:34–36, fig. 53) and at Kafr Kama (Ben-Nahum 2007:106, fig. 4:3).

Amulet Locket

Found in situ in Tomb 179, the amulet locket (Figure 15.32) was placed near the neck of the interred (a male individual; see Chapter 19). The amulet locket is made of a copper alloy and consists of a thin metal plate rolled into a narrow cylinder (*l.* 3 cm, *dia.* 1 cm). Two loops were wrapped around the rolled plate on both sides (bent copper without soldering), through which a cord was probably threaded. Prayers were usually placed in the amulet locket, often written on an organic material such as papyrus, which has not been preserved (Sa'ar 2004:57–58). Radiographic testing was carried out on the amulet locket, and no traces

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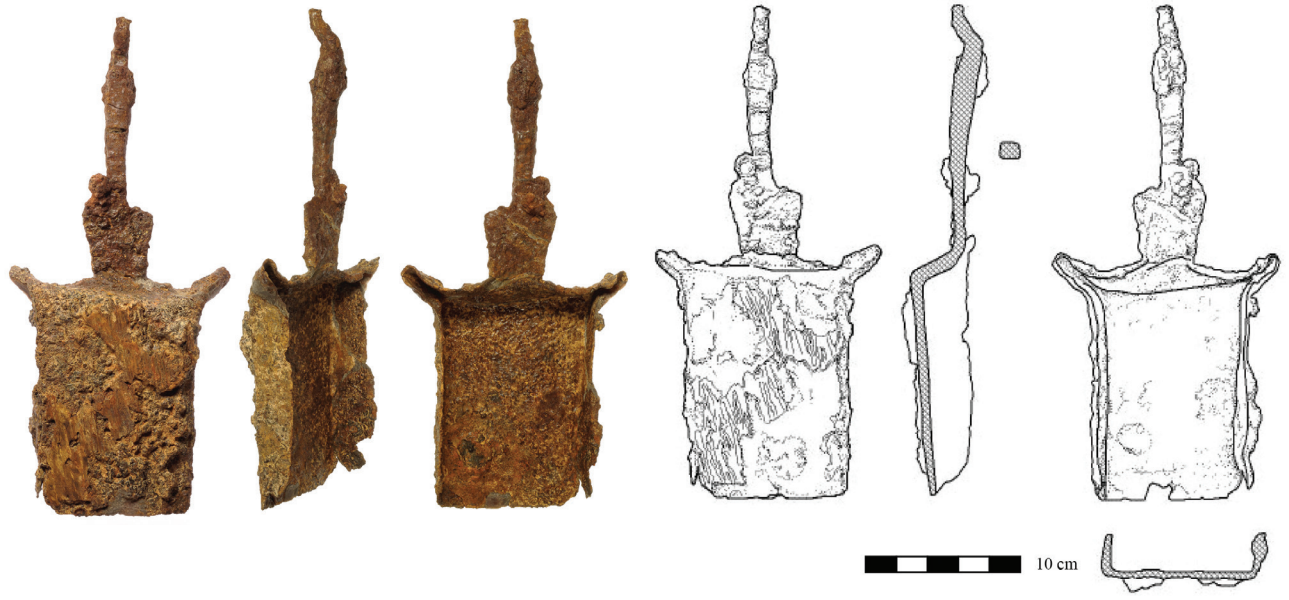
No.	Locus	Reg. No.	Context	Type
1	191	1175	Tomb 190	Spatula
2	194	1182	Tomb 193	Spatula

Figure 15.30. Spatulas. (1) Photo B.307695 and (2) Photo B.307694. *Photo by C. Amit. Drawing by Marina Shuiskaya.*



No.	Locus	Reg. No.	Context	Type
1	191	1172	Tomb 190	Shovel

Figure 15.31. Shovel. Photo B.307696. *Photo by C. Amit. Drawing by Marina Shuiskaya.*

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No.	Locus	Reg. No.	Context	Type
1	206	2205	Tomb 179	Amulet locket

Figure 15.32. Amulet locket. Photo B.307687. *Photo by C. Amit. Drawing by Marina Shuiskaya.*

of papyrus or any other organic material were found. A small cylinder made of copper was found inside the amulet (*l.* 3 mm, *dia*. 4 mm). The purpose of the cylinder is unclear. It may have held a scroll. Similar amulet lockets have been found at Motza 'Illit (Gudovitch 1996:68*–69*) and at Tiberias (Naveh and Shaked 1993:53); all were found in assemblages from graves dating to the Roman period. At both of these sites, preservation was poor and therefore the comparison is limited, but two identical parallels were found in a Roman period mausoleum at Jebel Jofeh in Amman (Harding 1950:pls. 27:244, 38:310). A fragment of a similar amulet locket, which was identified as a "tube" by the archaeologist, was found in a Byzantine period burial cave in Nahalat Ahim neighborhood in Jerusalem (Kogan-Zehavi 2007:66*, fig. 7:28), probably as a personal belonging buried along with its owner.

Key

Made of copper alloy with a 1.50-cm diameter ring (Figure 15.33:1). The body of the key has been preserved to the length of 1 cm and is partially hollow (0.50 cm). Keys with similar rings have been found at Caesarea (Raphael 2008:440, figs. 82–84) and in a mausoleum at Jebel Jofeh in Amman (Harding 1950:pl. 28:315). Variants of this type of key have been dated to between the first and the end of the fourth centuries CE (Raphael 2008:440). Keys are mentioned in Jewish sources as being one of the personal belongings buried with the deceased (Kloner and Zissu 2003:64).

Knife

Found in Tomb 142, the knife's blade is made of iron and is 14 cm long and 2.50 cm wide. There is a protrusion on the side of the handle, which is probably the nail that held the wood attached to it. It was molded in a single piece and is slightly curved near the point of the blade (Figure 15.33:2). Knives of this type are known from preclassical times (White 1967:85–103). Called *falx* in Latin (cutters), they were used for various domestic tasks or as work implements (e.g., shears or sickles; White 1967:85–103). Parallels have been found at Caesarea (Raphael 2008:449), at 'Ein Gedi (Chernov 2007:521–522), and elsewhere.

Nails

Eleven nails were found in Tombs 190 and 193: eight nails of iron and two of a copper alloy. They are very poorly

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No.	Locus	Reg. No.	Context	Type	Material
1	194	1186	Tomb 193	Key	Bronze
2	214	2023	Tomb 142	Knife	Iron
3	194	1185	Tomb 193	Nail	Iron
4	194	1184	Tomb 193	Nail	Iron
5	191	1171	Tomb 190	Nail	Iron
6	191	1169	Tomb 190	Nail	Iron

Figure 15.33. Ring of a key (B.307678), knife (B.307693), and nails (B.307682, B.307683, B.307689, B.307692). *Photograph by C. Amit.*

preserved (to between 2 and 5.50 cm; Figure 15.33:3–6). Fragments of bent nails were preserved (Figure 15.33:3–4). A small nail was also found (Figure 15.33:6) that may come from a wooden jewelry box (Edelstein 2003:78*, 93*). The large nails are evidence of burial in wooden coffins. Burial in wooden coffins has been found at a cemetery in Jericho (Hachlili 1994:173–181; Hachlili and Killebrew 1999). The organic traces of wood from the lower part of the shovel, found in the same tomb as the large nails (T.190), reinforce the evidence for burial in a wooden coffin.

Conclusions

The findings from the Postal Compound reflect activity northeast of Tel Yafo during the Hellenistic and Early Roman periods. In the Hellenistic period, the city of Jaffa was of regional importance both economically and politically (see Notley 2011). Jaffa functioned as a city port and had extensive trade links both with the hinterland and with remote regions (Fantalkin and Tal 2009:253–264). Its economic prosperity was reflected in the expansion of the city, and this created such a feeling of confidence that

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areas relatively far from the tell were settled. Architectural remains found around the tell indicate the existence of a lower city during the Hellenistic period (Arbel and Peilstöcker 2009:30, 36–37; see also Chapter 3).

The architectural remains found in the current excavation should not in my opinion be attributed to the lower city of Jaffa. The remains may belong to a farmstead northeast of the lower city, based on a comparison between the kind of architectural remains found in the lower city and those found on the tell. The nature of the remains found in the excavations, especially the architectural style, is not consistent with those from the lower city, which consisted mainly of various industrial installations, the remnants of scanty walls (very simply built), and domestic finds (Arbel and Peilstöcker 2009:36–37). The remains discovered in the current excavations are, however, well built and seem to form part of a larger structure. A similar picture, of massive construction dating to the Hellenistic period, has also been obtained from excavations in areas adjacent to the current excavation (Glick forthcoming; Jakoel and Marcus 2013).

Although an overall architectural plan cannot be detected, these remains may be related to each other and may be the remnants of a working farm northeast of the city of Jaffa. On examining the distance, it is evident that the remains discovered in the excavation were relatively far from the tell (some 550 m), and this is not compatible with the extent of the city's growth in the Hellenistic period; the lower city did not expand so far to the northeast. Based on the emerging data, the remains discovered should be interpreted as being part of a Hellenistic period farm; farms of this type were built outside main cities and acted as a rural hinterland for the cities, providing agricultural industries and grazing for cattle and dairy products (Tal 2007:116). Farmsteads have been found at different sites near the city of Jaffa and in the surrounding countryside (Fantalkin and Tal 2009:93–102). The remains discovered in the Postal Compound excavations to the northeast of the tell may be those of one of the neighboring farms found in the vicinity of the city of Jaffa. Additional excavations in a region to the north of the tell may shed light on this issue.

The cemetery found in the excavations is at present the earliest Early Roman period cemetery to be found northeast of Tel Yafo. Five types of burial were used in the cemetery: sarcophagus, mausoleum, ossuary, covered cist grave (both covered and uncovered cist graves were found), and probably a wooden coffin. The most common form of burial was the cist grave. All the burial types are known from numerous sites in Israel. Most of the grave types appear throughout these periods, usually with no architectural modifications, and they can therefore provide no aid to dating. The mausoleum (T.142) is the only one of its kind, both within the cemetery and in Jaffa. Because of its poor state of preservation, it is impossible to say if its size was intended to reflect the status of the interred. As well as being the largest of the tombs, it is located in the center of the cemetery. The tomb's central position may indicate that it was one of the first to be built in the cemetery, being the largest and most prominent tomb, with the others built around it. On the basis of these data, the possibility cannot be ruled out that the mausoleum belonged to a wealthy family. The phenomenon of monumental burial was common in Israel during the Roman period and continued for a short time into the Byzantine period (Tsafrir 1984:159–163). Wealthy Jews built imposing mausolea, called "tomb structures" in Talmudic sources (Patrich 1994) or *nafsha* (Weiss 1994:238–239). Other mausolea have been found near Sepphoris (Avigad 1973) and at Beth She'arim (B. Mazar 1942:17–19; B. Mazar 1958:34–35; Avigad 1972:92–94), Capernaum (Corbo 1977), Gush Halav (Vitto and Edelstein 1974), Marut (Zvi and Damati 1987:164–166), Kfar Giladi (Kaplan 1967), and Tiberias (Stepansky 1999).

Another type of interment found in the cemetery consists of burials in layers. This kind of burial is known from a few sites in Israel and probably had several reasons. The double graves were probably used for the members of one family. There may be a reference to this form of burial in the Mishnah (Avni 1997:29–30). The motive for burying several people on multiple levels in these graves may have stemmed from logistical considerations (i.e., a shortage of space, population density) or from economic factors, but not solely. Social conventions also influenced the choice of burial. In my opinion, the choice of multiple burial at the cemetery in the Postal Compound was also influenced by ideological reasons and the desire to preserve or perpetuate burial customs. Usually those buried in the same grave belonged to the same family, who used the grave for generations. Burial next to or with deceased family members was important in the Jewish tradition. Jewish sources have many references to being "gathered to one's forefathers," and this expresses the ideology behind family burial (Barkay 1994:110–113). Family/multiple

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burials reflect society's perception of the individual in the afterlife. While a single burial symbolizes the cessation of life and the severance of family and social ties, burial in a group (usually a family group) symbolizes the continuity of the family unit and the family gathering together in one place, even in the afterlife (Bar-Ilan 1994; Barkay 1994; Parker Pearson 1999:50; Rubin 1994). The preservation of burial traditions is reflected well in the mausoleum (T.142). The absence of *kurkar* rock prevented burial according to known burial traditions, such as the burial in *kokhim* caves common in the Second Temple period (Kloner and Zissu 2003). For this reason, the Jewish community at Jaffa built a tomb designed to copy group burials following the traditional custom (in troughs, etc.).

Ossilegium (bone collection) burials began in the first century BCE and continued up to the beginning of the third century CE (Aviam and Syon 2002). According to the ornamentation on the ossuary, it dates before 70 CE (Kloner and Zissu 2003:50–57; Rubin 1994, 1997:145–153). Based on these data, as well as the ceramic remains discovered in and around the tombs, the cemetery was apparently in use from the first century BCE to the first century CE. The burial in ossuaries and presence of stone artifacts inside the cemetery indicate that it was used by the Jewish community living in Jaffa in the Early Roman period.

A comparative examination of the dimensions of the tombs in the cemetery revealed no specifically defined, uniform burial standard. From this it may be assumed that although the tombs were built following a set format, there was no strict adherence to precise tomb measurements that might have been dictated by religious beliefs. However, all the graves (except one) follow a uniform northwest-southeast alignment. The uniform alignment of the graves may indicate that the population interring in the cemetery was homogeneous and well organized. The management of the cemetery may have been consigned to a central body, which would have been responsible among, other things, for arranging the burial plots, digging the graves, and so on. During the Roman period, such burial customs were known throughout the empire. For example, public burial was established by the inhabitants of cities, mainly the middle classes, who wanted to have their own burial plots and ensure that their burial rites were provided for (Hopkins 1983:211–217; Morris 1992:42). There is no information about such customs in Israel, yet they can be assumed to have existed. Jewish sources mention functions related to burial and to caring for the dead and to the custom of collecting bones (Kloner and Zissu 2003:51–52; Weiss 1992:365). Statistical analysis of the ages of those interred showed that the cemetery contained an urban population. No separation according to gender or age was detected in the burials, which may indicate social attitudes toward gender.

Most of the excavated tombs contained no additional artifacts, which is consistent with the customary attitude to funerary gifts in Judaism (Rubin 1997:136–140). According to prevailing attitudes, very few people placed grave offerings in tombs, stemming from a developing perception of life after death (Rahmani 1978:102–103). In Judaism, the deceased has no need for food or any other belongings in the afterlife, unlike in the pagan concept (Lieberman 1965:509–510; Rahmani 1978:102–103). The grave goods (juglets, spatulas, and metal objects) found in three tombs (T.162, T.190, T.193) may have served the needs of those burying the dead (fulfilling functional needs such as providing a pleasant aroma or anointing the deceased with oil before burial) rather than the needs of the dead themselves.

Applicators were used mainly as kohl sticks for applying cosmetics. Kohl sticks are made in a very uniform way, with one end thickened to apply cosmetics and the other end, which is narrow and flat like a spoon, used to extract cosmetics from the container. The applicator was dipped in water or fragrant oil and then in the cosmetic powder. This method would have been used to make up the eye or other part of the face (Dayagi-Mendels 1989:132–136). Cosmetic accessories were very popular throughout the ages and have frequently been found in burial assemblages (Gudovitch 1996:68*; Lieberman 1965:509–511). The spatulas may have been placed in the tombs as grave offerings, to be used by the deceased in the next world. Another possibility is that the spatulas were used by the deceased during their lifetime and had some intrinsic value, especially an emotional one. They were thus the personal belongings of the deceased, and the mourners therefore buried these artifacts along with the deceased for ideological reasons. Other researchers believe that the act of burying personal belongings expresses the respect and sorrow of the mourners for the deceased (Kloner and Zissu 2003:64–65).

Another object found in one of the tombs was a shovel. The shovel represented a ritual symbol for both

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Jews (Hachlili 1988:234–266) and Romans (Braslavi 1968:115, 118). Researchers have attempted to understand what the shovel was used for and have given different interpretations for its use: burial rites (Goodenough 1953–1968:195–208), cleaning the burnt oil in synagogues, a censer for burning incense (an incense shovel), or a ritual object connected with Yom Kippur (Braslavi 1968:117). Mazar claimed that the shovel found in the burial cave at Givat Shapira was used to collect bones, meaning that the shovel had a functional use (A. Mazar 1982:44–45). The dimensions of the shovel found in Jaffa would be consistent with those needed for bone collection, but in Jaffa, the artifact was found in a cist grave where the burial is primary and there is no need for bone collection. It can therefore be assumed that the Jaffa shovel had ritual significance or other functionality, perhaps to burn incense to obscure odors, or it could have been used to burn incense in memory of the deceased.

The cemetery apparently fell into disuse at the time of the Great Revolt (66–70 CE). The Jewish population that had used the cemetery ceased using it, raising the possibility that its disuse was related to the historical events in Jaffa at this time. According to the historical sources, the Jewish population of Jaffa suffered from two Roman conquests (see Notley 2011). The first was in 66 CE (when Castius Gallus conquered Jaffa; J. *BJ* 2.18.10) and the second in 67 CE (Aspesianus's conquest of Jaffa; J. *BJ* 3.9.3). The historical events therefore suggest a reduction in the Jewish population of Jaffa between 66 and 67 CE, a date that is completely consistent with the date of the cessation of burial in the Postal Compound cemetery.

In addition to an extension of the Postal Compound burials to the west in the Be'eri School area (see Chapter 26), tombs dating to the Early Roman period have so far been found at two other sites in Jaffa (Figure 15.1). One concentration of tombs was found to the east of Tel Yafo, in the Ganor Compound (Peilstöcker and Burke 2011). The second, in the Qishle on the northern border of the tell, yielded a few tombs (Meir Edrey, personal communication, 2014). Finds from these excavations are currently being processed, but preliminary data suggest that they cannot be related to Jewish burial but rather to pagan burial. Examination of these burial sites, as well as a comparison between them and the cemetery discovered in the Postal Compound and the Be'eri School, can aid in understanding the various populations living in Jaffa during the Early Roman period. An examination of the distribution of cemeteries shows that the burial sites were built around the tell in concentrations. The distribution of tombs in the Roman period was like a belt surrounding the built-up area of the city, with the tomb nearest to the tell found at a distance of approximately 100 m (i.e., Ganor Compound). The proximity between the cemeteries and the built-up area of the city (Jakoel 2013) indicates that during the Roman period, settlement in Jaffa was predominantly limited to the area of the tell (unlike in the Hellenistic period) and that the areas surrounding the tell were used as cemeteries. The remains discovered are compatible with the historical picture of the diminished status of Jaffa during the Roman period.

Acknowledgments

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Notes

1. The Postal Compound is the modern name for the compound, because of its proximity to the post office branch at 12 Jerusalem Blvd.

2. I am indebted to Ofer Sion for this information concerning his excavations along Razi'el St. and Ratosh St. in Jaffa, License No. A-5322/2007.

3. The burials were relocated by the Ministry for Religious Affairs in secondary burials at Yesodot, supervised by Yigal Israel. The tombs were first excavated and exposed on all sides; then iron bars were inserted under them, and they were clad with wooden boards. After being packed in this way, they were crane-lifted onto a truck and taken for burial at Moshav Yesodot cemetery.

4. I am indebted to Meir Edrey for sharing this important information.

5. This is the only grave built on an east-west alignment.

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Chapter 16

Ceramics from the Postal Compound Excavations, 2009–2011

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Israel Antiquities Authority

The pottery finds from the 2009 to 2011 excavations of the Postal Compound at 6 Shimon Ben Shetah St. can be divided into three assemblages: (1) assemblages from the Hellenistic period and associated with architectural remains, (2) ceramics from sealed loci from the tombs and from inside the refuse pit, and (3) accumulations above the remains, with no relation to the architectural finds (i.e., other loci). Each is addressed in this order below.

General Hellenistic Contexts

Pottery from the accumulations above, beside, and below the architectural remains date to the entirety of the Hellenistic period, with the majority from the beginning of the period (Figure 16.1). Several fragments of hemispherical bowls with red-black slip were found. One bowl (Figure 16.1:1) belongs to a shallow type of bowl with a slightly inturned rim. Parallels have been found at many sites, such as Dor (Guz-Zilberstein 1995:290–291, fig. 6.1:1–8), Apollonia-Arsuf (Tal 1999:153–154, fig. 4.35:2–4), and Tel Michal (Fischer 1989:183, fig. 13.3:2–3), and they make their appearance at the end of the Persian period, continuing into the beginning of the Hellenistic period (late fourth-third centuries BCE). The base of another bowl (Figure 16.1:2) belongs to the same type, but the bowl is deeper. Parallels have been found at Apollonia (Fischer and Tal 1999:236, fig. 5.11:1–3) and at Dor (Guz-Zilberstein 1995:290, fig. 6.1:14–15, 22) and date to the third to second centuries BCE. A jar (Figure 16.1:3) is characterized by an everted rim and a short neck. Parallels have been found at Tel Dor (Guz-Zilberstein 1995:311, figs. 6.35:8–10, 6.36:2–4, photo 6.37a–b) and at Apollonia-Arsuf (Tal 1999:102, fig. 4.13:12–13) and date to the fifth to third centuries BCE.

Two wheel-made lamp fragments were also recovered (Figure 16.1:4–5). One (Figure 16.1:4) is an Attic-produced lamp belonging to the Howland Type 23D, dating to the end of the fourth century BCE (Howland 1958:61, pls. 4:236–240, 37:236–240). The other is a fragment of a local imitation of imported lamps (Figure 16.1:5). Such lamps are common finds at sites in Israel (Rosenthal-Heginbottom 1995: figs. 5.13:9–10, 5.14:1–8; Briend and Humbert 1980:110, pl. 14:1–3; Tal 1999:161, fig. 4.41:15–16).

In Situ Assemblages

Most of the ceramic finds from the tomb assemblages date from the Early Roman period. Below are the finds from each tomb, listed in numerical order (Figure 16.2). It should be noted, however, that tombs T.113, T.196, T.209, T.210, and T.195 yielded no diagnostic ceramic finds that could be illustrated.

Tomb 142

The accumulated brown soil fill inside the built tomb contained potsherds dating from the Hellenistic to the Byzantine period. A fragment of an Eastern Sigillata A

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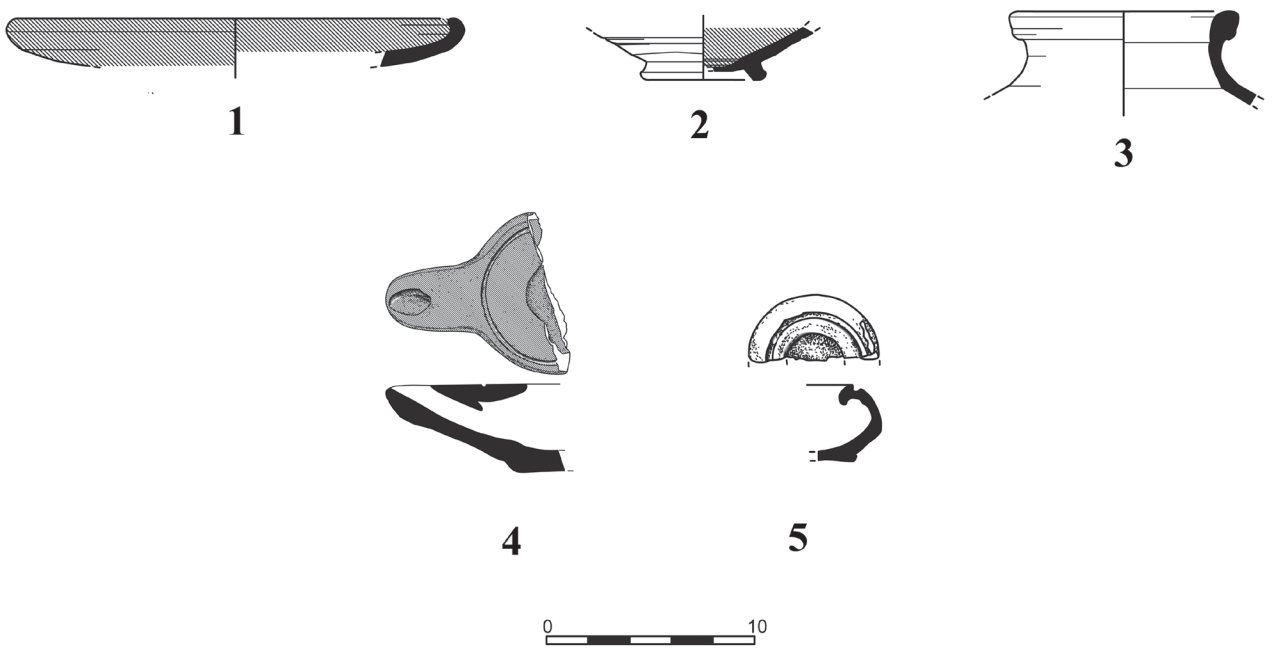

No.	Locus	Reg. No.	Form	Description
1	150	1124	Bowl	Pinkish clay, red-brown/gray slip
2	146	1120/4	Bowl	Strong brown clay, a few dark grits; dark brown slip
3	147	1117/5	Storage jar	Sandy buff clay with a few brown grits
4	106	1013	Lamp	Red clay with a few very small grits; black-red slip/glaze
5	146	1132	Lamp	Coarse pink clay with small red grits

Figure 16.1. Hellenistic ceramics from the Postal Compound excavations.

(ESA) ring-based plate was found (Figure 16.2:1). The ware probably belongs to *Atlante ESA Form 38*, dating to the early Roman period (mid-first century CE; Hayes 1985:31–32, pl. 5:14–15).

A bag-shaped jar (Figure 16.2:7) is characterized by a straight rim and an outer ridge. Similar jars, dating from the end of the first century BCE to the beginning of the second century CE, have been found in Jaffa and in Nahalat Yehuda (Kaplan 1964:6, fig. 1:1, 3) and also at Ben Shemen (Peilstöcker 2003:fig. 78:8).

The tomb also yielded the lid of a cooking pot (Figure 16.2:16) with a bifid rim. No parallels have been found.

Tomb 162

Two ointment bottles were found in the tomb. One is a pointed base alabastron with red-painted decoration low on the body (Figure 16.2:12). These Judean types of bottles have been found in tomb assemblages in Jerusalem (Rahmani 1967:fig. 14:2, 3; Tzaferis 1970:fig. 7:5; Kloner 1980:fig. 7:14; Vitto 2000:fig. 55:2) and other sites in Judea (Bar-Nathan 2002:61–62, pl. 10:112–116; Bar-Nathan 2006:pl. 35:33). They are a variant of spindle bottles that began to appear at the beginning of the second century BCE, became common in the first century BCE, and were in use until the mid-first century CE. As far as we know, such vessels have not been reported yet from outside of Judea and the Judean Shephelah.

The second is a fragmentary pyriform unguentarium with a dull red wash on the rim. This is a common type of unguentarium in Judea and the Judean Shephelah between the late first century BCE to first century CE (Bar-Nathan 2006:pl. 35:3–7; Geva and Rosenthal-Heginbottom 2003:pls. 6.5:25–27, 35, 6.9:13–15, 6.10:11). The vessels are well known from Judean sites, while in other regions, they are relatively rare and often mentioned as a Judean import (see Berlin 1997:67, pl. 15:115–116).

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Tomb 178

A cooking pot fragment (Figure 16.2:5) was recovered from the tomb. This cooking pot has a horizontal rim and a handle joined to the upper part of the rim. It is a common form of cooking pot all over the region (Kaplan 1964:6, fig. 2:8, 9) but especially in Judea. Parallels have been found at Herodium, Qumran, Jericho, and Masada and date from the last third of the first century BCE to the first third of the second century CE (Bar-Nathan 2006:154–157, fig. 45, pls. 27–28).

Tomb 179

The upper burial layer of the tomb yielded an Eastern Sigillata A bowl fragment (Figure 16.2:2). The bowl is characterized by a groove on the inside of the rim. The vessel belongs to Atlante ESA Form 43, dating to the beginning of the Early Roman period (Hayes 1985:33, pl. 6:8). The lower burial layer of the tomb yielded a bag-shaped jar fragment (Figure 16.2:8) dating from the end of the first century BCE to the mid-first century CE (see T.142 above).

Tomb 185

The accumulations above and alongside the tomb yielded potsherds dating to the Early Roman period. A fragment of a pyriform unguentarium was recovered (Figure 16.2:14). The vessel is characterized by a flared rim and has a long neck. Spindle bottles of this type are very common and have been found at Jericho (Bar-Nathan 2002:59–61, pl. 10:103–105) and at Masada (Bar-Nathan 2006:203, pl. 34:3–7), where they have been dated from the end of the first century BCE to the end of the first century CE. The tomb also contained a fragment of a frying pan with a thickened rim (Figure 16.2:3). Similar vessels have been found at Tel Anafa and date from the end of the first century BCE to the beginning of the first century CE (Berlin 1997:105, pl. 33). A mold-made discus lamp fragment (Figure 16.2:18) was also discovered in the tomb, dating from the end of the first to the beginning of the second century CE. Parallels have been found at Dor (Type 26; Rosenthal-Heginbottom 1995:244–245, fig. 5.22).

Tomb 190

Potsherds dating to the Early Roman period were found inside the tomb. Most were nondiagnostic body fragments. A casserole (Figure 16.2:4) was recovered, with a slanting wall, beveled cut lip, and horizontal handles. This type of casserole would have had a fitting lid; the two would have been made in one piece, producing a truncated rim. Parallels have been found at numerous sites and date to the first to third centuries CE (Berlin 1997:108, pl. 33:PW291–294; Calderon 2000:96–97, pl. 3:53; Guz-Zilberstein 1995:322, fig. 6.49:9; Silberstein 2000:437, pl. 7:3, 4).

Tomb 193

A fusiform unguentarium/bottle was found above the tomb (Figure 16.2:15). Similar vessels have been found in burial caves at Giv'at Ha-Mivtar (Tzaferis 1970:fig. 6:3), at Ashdod (Dothan 1971:figs. 18:4, 8–9, 79:10, 99:19, 24–26), and at Maresha (Levine 2003:113–114, fig. 6.14:146–150), where they dated from the end of the Hellenistic to the beginning of the Early Roman period (second to first century BCE).

Tomb 198

A bag-shaped jar fragment was recovered (Figure 16.2:9). The jar has a straight rim characterized by an outer ridge. This type of jar dates from the end of the first century BCE to the mid-first century CE (see T.142 above).

Tomb 201

Fragments of a bag-shaped jar (Figure 16.2:10, 11) identical to the one described above, were found inside the tomb. A fragment of a mold-made vessel with anthropomorphic ornamentation (Figure 16.2:17) was also found. It may be a lamp or terracotta statuette fragment. No parallels have been found.

Tomb 206

A cooking pot (Figure 16.2:6) was recovered inside the tomb. The cooking pot has a thin projecting rim. No parallels have been found.

Refuse Pit (L.137)

The pit yielded a ceramic assemblage dating mainly to the Early Roman period (Figure 16.3). A fragment of a household krater (Figure 16.3:1) has a sharply projecting flared and folded rim and a markedly protruding ridge beneath the neck of the vessel. It is probably a local type. A similar example was found at Masada, where it was dated to the end of the first century BCE to first century CE (Bar-Nathan 2006:124–125, pl. 23:1–3). Various types of cooking vessels were recovered (Figure 16.3:2–7). The casserole of local type (Figure 16.3:2) has a central groove in the rim to hold a lid, with a rim everted slightly

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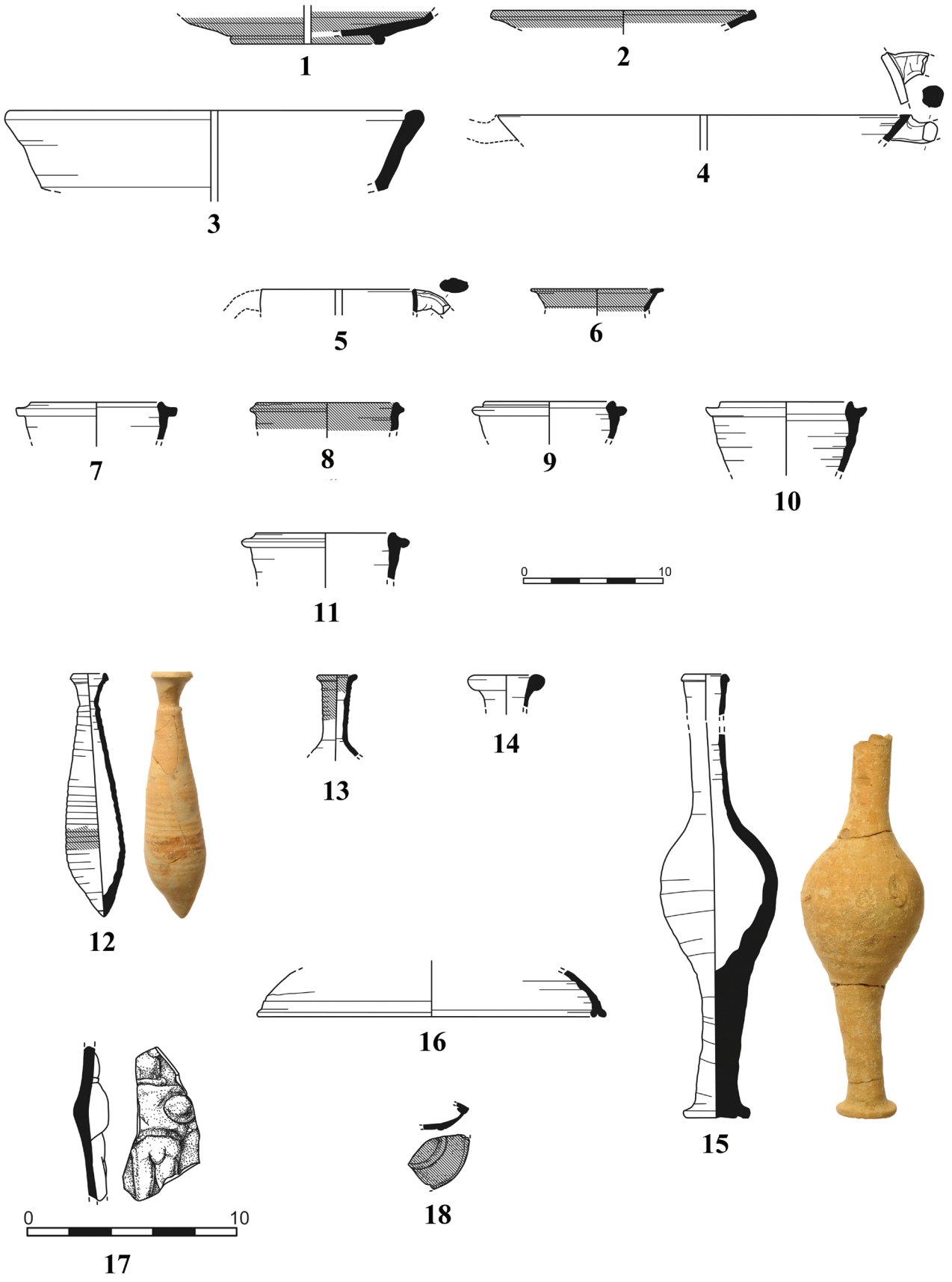

Figure 16.2. Ceramics from tombs in the Postal Compound.

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Figure 16.2. Ceramics from tombs in the Postal Compound *(continied)*.

No.	Locus	Reg. No.	Tomb	Form	Description
1	181	1153/3	142	Plate	Buff clay, red slip
2	206	2207/1	179	Bowl	Buff clay, red slip
3	188	1166/1	185	Skillet	Coarse brown clay, red grits, mica
4	191	1168	190	Casserole	Sandy red clay, a few white grits
5	189	1163	178	Cooking pot	Light brown clay, a few white grits
6	205	2200	206	Cooking pot	Red clay with inclusions, a few white grits
7	181	1153/2	142	Jar, bag shaped	Sandy brown clay, white grits
8	206	2207	179	Jar, bag shaped	Reddish clay, small white grits
9	172	1148/1	198	Jar, bag shaped	Sandy brown clay, white grits
10	203	1093	201	Jar, bag shaped	Sandy brown clay, white grits
11	202	1192	201	Jar, bag shaped	Sandy brown clay, white grits
12	167	1143/1	162	Spindle bottle	Buff clay, high-quality firing, decorated with red stripe on lower part of vessel
13	167	1143/2	162	Spindle bottle	Buff clay, small white grits and quartz; decoration in red on rim and neck of vessel (also inside)
14	186	1161/2	185	Spindle bottle	Light brown clay, a few white grits
15	192	1179	193	Spindle bottle	Light pink clay, many white grits and quartz
16	181	1153/1	142	Lid	Brown clay, white and dark grits
17	203	1194	201	Lamp(?)	Buff clay, figure holding a shield
18	188	1166/2	185	Lamp	Light pink clay, white grits, red slip

upward and outward, and pronounced wheel marks. The Jerusalem-type casserole (Figure 16.3:3) has a rim projecting sharply upward and outward with a slight groove to hold a lid. The body is very bulbous. Parallels have been found in the Jewish Quarter in Jerusalem and date to the Early Roman period (Geva and Hershkovitz 2006:112, pl. 4.12:19).

An imported frying pan from the Aegean Sea region (Figure 16.3:4) is characterized by thick walls projecting sharply upward and outward. The rim of the vessel is slightly rounded. Parallels dating to the second to third centuries CE have been found at numerous sites (Hayes 1983:fig. 9:99–102; Riley 1975:48, No. 119; Riley 1979:253–256, fig. 101:471, 472).

The cooking pots (Figure 16.3:5–6) are characterized by a ridged, upwardly everted rim, with a slight depression to hold a lid. Their necks are slightly rounded inward. The vessels' bodies are rounded. Parallels have been found at Ramat Ha-Nadiv (Silberstein 2000:pl. 5:8–12) and at Tel Hashash (Tal and Taxel 2010:fig. 13:4–6) and date to the Early Roman period.

The cooking pot (Figure 16.3:7) has a thickened upwardly everted rim, and the body of the vessel is joined to the rim without a clear neck. Parallels have been dated to the end of the first century to second century CE and found at many sites (Bar-Nathan 2006:167–168, pl. 30:62–68; Riley 1975:43, 48, fig. on p. 49:112; Tushingham 1985:63, fig. 22:31).

Two main types of bag-shaped jar can be distinguished in the refuse pit assemblage (Figure 16.3:8–9). The first type (Figure 16.3:8) has a very thin, outward-rolled rim with a prominent ledge. The vessel has quite a long neck with a collared rim. A parallel, dated to ca. 28/26 BCE to 6 CE, has been found at Masada (Bar-Nathan 2006:pl. 10:53). The second type of jar (Figure 16.3:9) was the most frequent type found at the site (see T.142 above).

The amphora (Figure 16.3:10) is thick walled with a thickened everted rim, pronounced wheel marks, and a marked ridge beneath the neck. It can be identified as an imported amphora originating from Cilicia and dates to the first to second centuries CE (Hayes 1983:fig. 23:103; Hayes 1991:93, fig. 68:d,e top, pl. 25:3; Reynolds 2003:125, fig. 15a–b).

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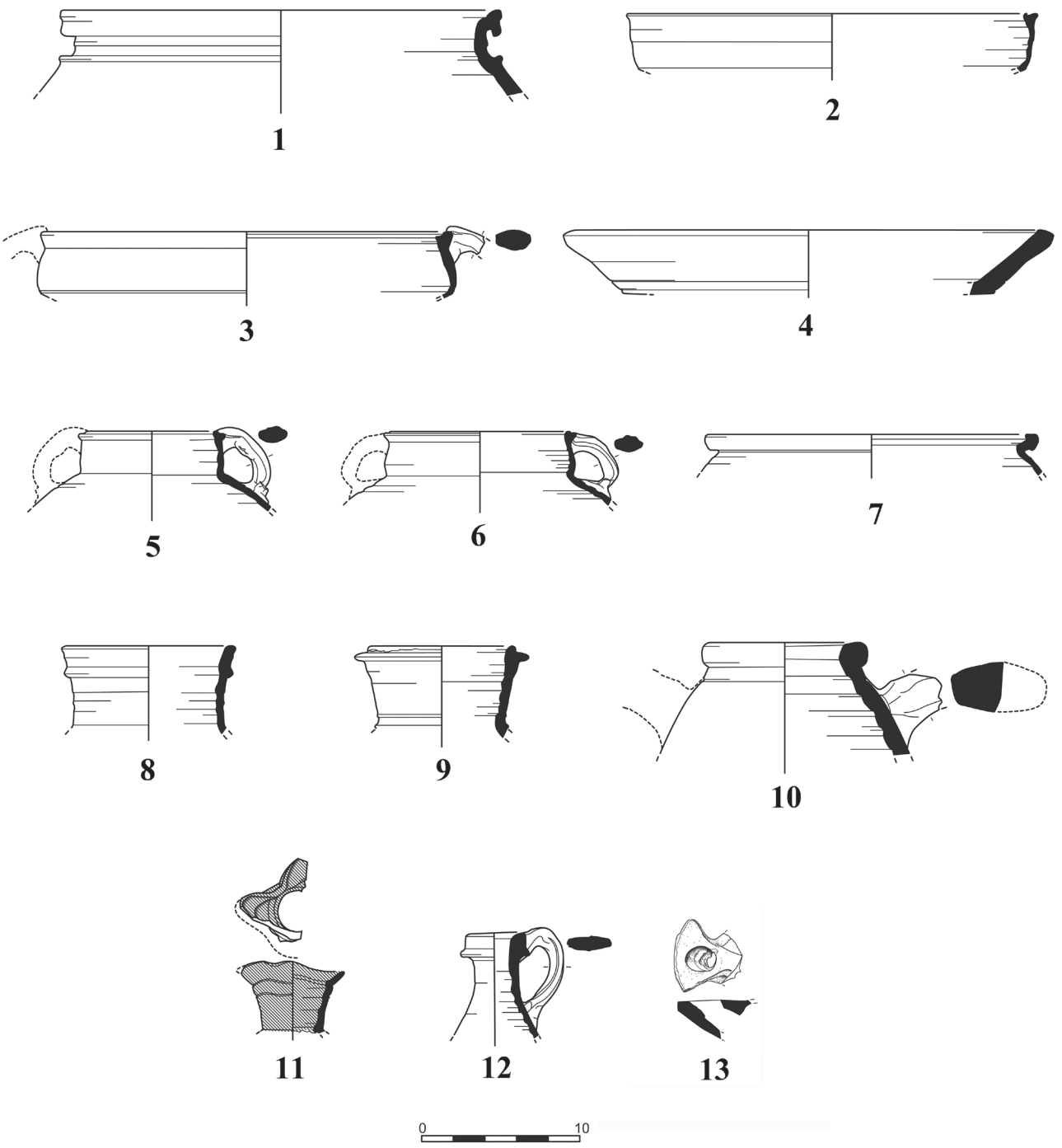

Figure 16.3. Ceramics from the refuse pit (L.127) in the Postal Compound.

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Figure 16.3. Ceramics from the refuse pit (L.127) in the Postal Compound *(continied)*.

No.	Locus	Reg. No.	Form	Description
1	104	1048/2	Casserole	Sandy red clay, gray core, white and dark grits
2	152	2066/3	Casserole	Dark brown clay, black core, a few white grits
3	104	1038/2	Casserole	Sandy red clay, gray core, clean white grits
4	123	1060/1	Skillet	Coarse brown clay, black core, white and dark grits and mica
5	152	2066/2	Cooking pot	Sandy red clay, a few white and dark grits
6	104	1027	Cooking pot	Sandy red clay, gray core, a few white grits
7	152	2066/1	Cooking pot	Sandy brown clay, a few white grits
8	123	1060/2	Jar, bag shaped	Sandy brown clay, white and dark grits
9	123	1060/3	Jar	Sandy brown clay, white and dark grits
10	123	1076	Amphora	Sandy brown clay, immersed in seawater, brown grits
11	153	1023/7	Jug	Red clay with mica, dark brown slip
12	104	1048/1	Jug	Red clay, a few white grits
13	152	2066/4	Lamp	Buff clay, dark red core

Two jugs were discovered. One is characterized by a distorted, upward, and outward-flaring rim, with pronounced wheel marks on the neck (Figure 16.3:11). Such jugs were produced by workshops around the Aegean Sea and date to the second to third centuries CE (Hayes 1983:105–106, 122, fig. 6:76). The other jug is local and characterized by a thickened rim folded slightly outward, with pronounced wheel marks on the neck (Figure 16.3:12). Parallels have been found at Ramat Ha-Nadiv (Silberstein 2000:pl. 3:19) and at Dor (Guz-Zilberstein 1995:323, fig. 6.49:20). This type of jug began to appear in the first century CE in Judea (Bar-Nathan 1981:59, pl. 4:14–16) and continued to be used until the second century CE in the coastal sites (Elgavish 1977:pl. 2:12).

Also recovered was a fragment of a knife-pared lamp (Figure 16.3:13), made somewhat carelessly. This type, associated with Jewish populations, is very common, and parallels have been found at many sites (Barag and Hershkovitz 1994:24–53, fig. 5).

Surface Finds

The ceramic surface finds and finds from the upper accumulations throughout the entire excavation site date from the Iron Age to the Ottoman period (Figure 16.4). Although the site was mainly occupied in the Hellenistic period (architectural remains) and the Roman period (cemetery), it also yielded potsherds from other periods that indicate activity in the area at these times. Despite having their origins in the accumulations in the upper level of the excavated site, the ceramic finds described above indicate activity to the northeast of Tel Yafo throughout the different periods, hence the importance of their publication.

The Iron Age (Figure 16.4:1–2)

A large bowl has a thickened, slightly projecting rim (Figure 16.4:1). This type of bowl was very common throughout the country during Iron Age IIA (Fantalkin 2005:7–8). Parallel bowls have been found in Jaffa (dating tenth–ninth centuries BCE; Fantalkin 2005:fig. 12:9–14, fig. 14:3), as well as at Tel Qasile, Stratum IX (Mazar and Panitz-Cohen 2001:62–64). A jar (Figure 16.4:2) with red slip has a handle joined to the upper body. This type of jar usually has a slightly thickened rim and a long, straight neck (not preserved in this instance). Parallels have been found in Jaffa (Fantalkin 2005:fig. 13:18) and date to Iron Age IIA (tenth to ninth centuries BCE).

The Hellenistic Period (Figure 16.4:3–5)

A Rhodian amphora handle (Figure 16.4:3) in a poor state of preservation has a partially preserved stamp (see Chapter 17). This type of amphora has a thickened and rounded rim, a long cylindrical neck, and a pear-shaped body (Guz-Zilberstein 1995:fig. 6.45:1). Rhodian amphoras of this type have been found throughout Israel. At Dor, they have been dated to the second century BCE (Guz-Zilberstein 1995:318). A Phoenician amphora handle with a stamped impression was also found (Figure 16.4:4; see Chapter 17).

A wheel-made lamp fragment (Figure 16.4:5) is characterized by a flat and raised base (for this type, see also

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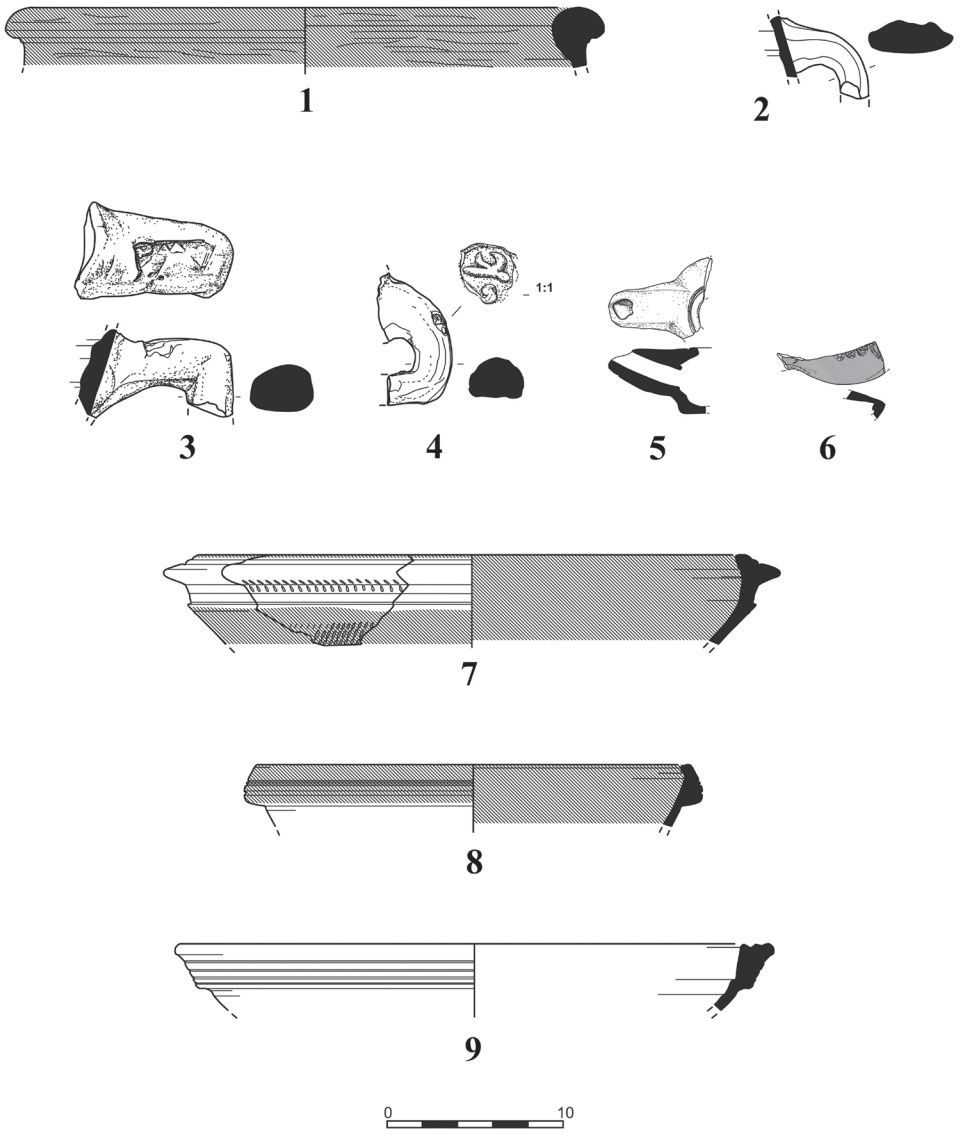

No.	Locus	Reg. No.	Form	Description
1	159	1133	Casserole	*Iron IIA*. Light brown clay, a few dark red grits. Red slip burnished inside.
2	175	1150	Jar	*Iron IIA*. Coarse red clay, white and dark grits
3	216	2026	Amphora, Rhodian	*Hellenistic*. Light pink clay, a few red grits, rectangular seal impression with Greek inscription
4	106	1050	Amphora handle, Phoenician	*Hellenistic*. Pink clay with a few red grits. Oval seal impression with Phoenician inscription
5	131	1094	Lamp	*Hellenistic*. Coarse pink clay with small white grits
6	103	1035	Lamp	*Roman.* Pink-orange clay with a few small white grits. Red slip
7	175	1151/1	Bowl	*Byzantine.* Brown clay, dark brown slip, rouletted decoration
8	214	2020	Bowl	*Early Islamic.* Reddish clay, red slip and burnish
9	175	1151/2	Bowl	*Ottoman*. Coarse pink clay, white and brown grits

Figure 16.4. Iron Age to Ottoman period ceramics from surface and overlying loci from the Postal Compound excavations.

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Figure 16.1:5 above). Parallels have been found at Dor (Type 6, Rosenthal-Heginbottom 1995:fig. 5.13:9–10, 5:14:1–4), dating to the end of the Persian period (mid-fourth century BCE) and continuing throughout the Hellenistic period (second century BCE; Rosenthal-Heginbottom 1995:235).

The Roman Period (Figure 16.4:6)

This fragment of a mold-made discus-type lamp has a rounded body and a short rounded nozzle; the discus has a central depression and an ovolo and double-axe ornamentation on the shoulder. This type is very common and has many variants. Parallels have been found at Dor, where they were dated from the last third of the first century to the second half of the second century CE (Type 26; Rosenthal-Heginbottom 1995:244–245, fig. 5.22).

The Byzantine Period (Figure 16.4:7)

A bowl has a thick, carinated, and grooved rim. The outer face of the bowl has a rouletted design. It is a common type of the Cypriot Red Slip Ware group, known as Hayes's CRSW Form 7 (Hayes 1972:377–379, fig. 81), and dates from the mid-sixth to the beginning of the seventh century CE.

The Early Islamic Period (Figure 16.4:8)

A bowl has a thickened and grooved rim, without decoration. This vessel belongs to the group of red-slipped vessels known as Egyptian Red Slip Ware, which in general imitates African Red Slip Ware (Hayes 1972:387). Defined as Hayes's EgRSW Type M, it dates to the seventh century CE (Hayes 1972:392, fig. 86).

The Ottoman Period (Figure 16.4:9)

A bowl with a carinated, grooved, and thickened rim has three ridges, representing a common type during the Ottoman period. Most of the bowls are of the Gaza Ware type (made of black clay, although that is not the case here; Israel 2006:205, fig. 215).

Conclusion

The ceramic finds presented in the excavations northeast of Tel Yafo in Shimon Ben Shetah St. suggest human activity in this area from the Iron Age through the Ottoman period. The ceramic finds from the accumulations above the architectural remains and the cemetery date from the Iron Age to the Ottoman period. Although no architectural remains were found that could be attributed to the Iron Age or to the Persian, Byzantine, Islamic, or Ottoman periods, the pottery found in the area indicates that there was occupation in the vicinity of the site during these periods.

Apart from the most common types (bowls and jars), the Hellenistic period ceramic finds consist of many imported vessels from all over the Eastern Mediterranean, thus reinforcing knowledge about the marine activities and trade relations of the city of Jaffa during the Hellenistic period. The ceramic finds dating to the Early Roman period are attributed to the cemetery discovered at the site. The most common types are vessels imported from Judea or local imitations of Judean types, which clearly attest to the identity of those buried here and indicate the close links between the Jewish communities in Jaffa and the main Jewish population in Judea, especially Jerusalem, during the Early Roman period.

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Chapter 17

Amphora Stamps from the Postal Compound Excavations, 2009–2011

Gerald Finkielsztejn
Israel Antiquities Authority

Two stamped amphora handles were found during the 2009 to 2011 excavations of the Postal Compound at 6 Shimon Ben Shetah St. (see Figure 15.1), one Rhodian and one Phoenician, roughly contemporary in the Hellenistic period (Figure 17.1).

Stamped Handles

Rhodian Stamp

Reg. No.: 5844/10.216.2026—rectangular stamp (Figure 17.1:1)
Description:

Μίδα	Grape
[Caduceus ←]	cluster ↑

The surface of the stamp is quite eroded and has a triangular lump of clay that partly obliterates it. The grape cluster is faintly visible, and only the lower part of the top of the caduceus is imprinted to the left. Amphoras endorsed by the fabricant Midas were very commonly exported to the Levant and also to Alexandria (Grace 1985:9–10, 42). He produced amphoras for approximately 12 years (Finkielsztejn 2001:133–135, Pl. XV–XVIII).
Date: ca. third quarter of the second century BCE

Phoenician Stamp (Tyre?)

Reg. No.: 5719/09.106.1050—oval stamp (Figure 17.1:2)
Description: This handle is typical of those belonging to the Phoenician/Tyrian amphoras from the Persian period onward. They are generally "twisted," but less so or not at all in the late Hellenistic to Early Roman period. This one is not twisted. However, the dissymmetry between the upper (circular section) and lower (pinched, flattened section) attachments is definitely typical of the class. In addition, the pinkish beige color of the fabric is also common.

𐤐 𐤊

pe kaf

This is the most probable reading from right to left. Although the two bars of the *kaf* appear as half a circle instead of being rectilinear, the letter bears all the features of the *kaf*. See Peckham 1968:69, Pl. VI, l. 5, 8 (132 BCE), 9 (second century BCE); 107, Pl.VIII, l. 3 and 5 (seventh century), 9 (beginning of the sixth century BCE). This class of handles may be stamped in Greek or Phoenician scripts and dates to the Hellenistic period (Finkielsztejn 1998:86, 97–99, 101, 121; 2004:250–255; 2009:140–142; Kawkabani 2003; Naveh 1997). It should be noted that some of these handles bear unusual stamps, such as this one. In particular, they are neither dated nor do they bear the name of the city. Since the form and the fabric of the handles are the same (to the naked eye), these amphorae may originate from different workshops in the territory of Tyre, subject to a different system of administrative control of the amphora production than that of the city itself.
Date: Possibly the first half of the second century BCE

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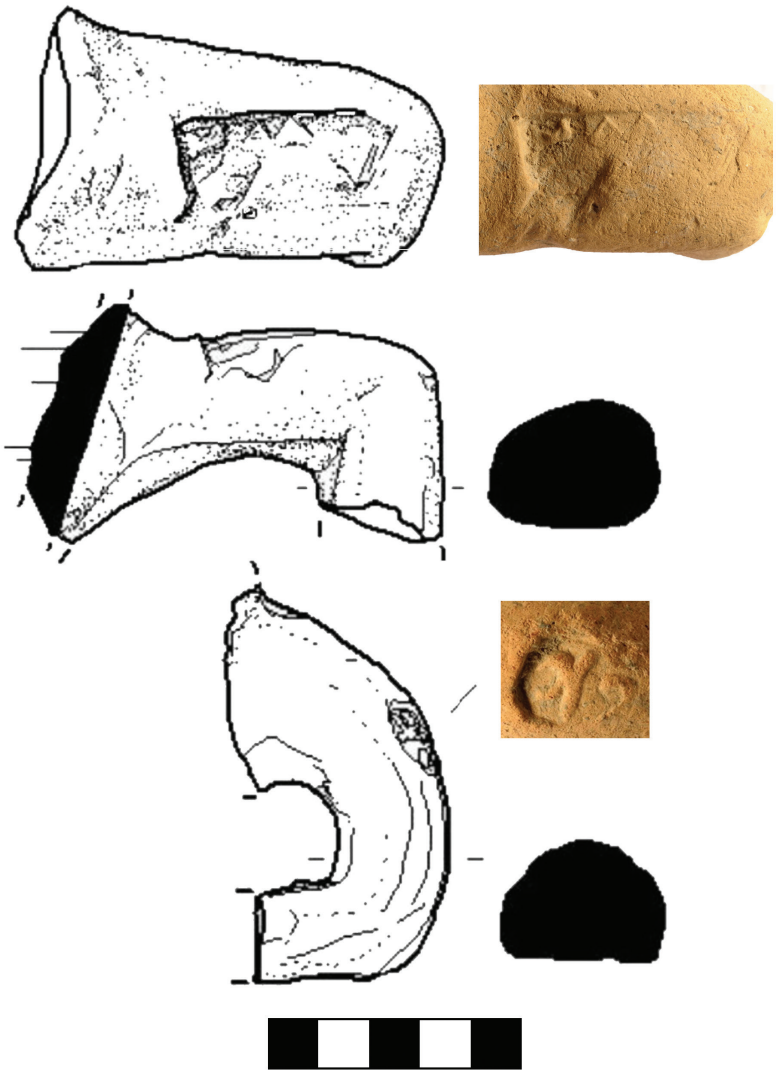

Figure 17.1. Rhodian and Phoenician stamped amphora handles from the Postal Compound.

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Chapter 18

Numismatic Finds from the Postal Compound Excavations, 2009–2011

Donald T. Ariel
Israel Antiquities Authority

Four coins were found during the 2009 and 2011 excavations of the Postal Compound at 6 Shimon Ben Shetah St. (see Figure 15.1) directed by Eriola Jakoel. The excavations are described in Chapter 15.

Coin 1

Reg. No.: IAA 141914
Context: Basket 2204, Locus 206, Tomb 179
Description: Hasmonean? Jerusalem, 129–76 BCE
Obv.: Illegible
Rev.: [Linear or dotted frame]
Æ, 2.38 g, 14 mm

Coin 2

Reg. No.: IAA 141912 (Figure 18.1)
Context: Basket 1030, Locus 104
Description: Hadrian, Dora, 117 CE
Obv.: AYTO TPA [AΔPIANW KAIC] Laureate, draped bust r.
Rev.: [ΔWP IEP AC]YΛAYT NAYAP Bust of Zeus r.
Æ, ↑, 10.29 g, 24 mm
Reference: Meshorer 1986–1987:70, No. 37.

Coin 3

Reg. No.: IAA 141913
Context: Basket 1018, Locus 111
Description: Leo I (457–474 CE)
Obv.: [- - -] Pearl-diademed, draped bust r.
Rev.: Figure stg. facing; in fields: [b]–Ḍ
Æ, ↑, 1.42 g, 9 × 11 mm
Reference: *RIC* X:295, No. 715

Coin 4

Reg. No.: NA (Figure 18.2)
Context: Basket 2064, Locus 175
Description: Coin-like ornament, Ottoman, nineteenth century CE
Obv.: Garbled Arabic inscription and garbled date inside a circle; enclosed in a plant motif
Rev.: Tughra-like motif
Æ, 0.39 g, 17 mm. Perforated, with a loop

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1986–1987 The Coins of Dora. *Israel Numismatic Journal* 9:59–72.
RIC X:
J. P. C. Kent
1994 *The Divided Empire and the Fall of the Western Parts, AD 395–491*. The Roman Imperial Coinage Volume X. Spink, London.

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Figure 18.1. Coin No. 2. Hadrian, Dora, 117 CE. Obverse and reverse, left to right. *Courtesy of the Israel Antiquities Authority*.

Figure 18.2. Coin No. 4, coin-like ornament, Ottoman, nineteenth century CE. Obverse and reverse, left to right. *Courtesy of the Israel Antiquities Authority*.

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CHAPTER 19

HUMAN REMAINS FROM THE POSTAL COMPOUND EXCAVATIONS, 2009–2011

VERED ESHED
Israel Antiquities Authority

Archaeological excavations conducted between 2009 and 2011 in the Postal Compound at 6 Shimon Ben Shetah St. (see Figure 15.1) exposed tombs containing human skeletal remains (see Figure 15.2). Following anthropological examination in the field, the bones were dispatched for reburial. The following is a description of the finds according to the tomb references.

Tomb 113. Sarcophagus Burial

Tomb 113 was found sealed and undisturbed, but it may have been opened for multiple burials at the time of its use (see Figure 15.5). The finds in the tomb included human bones representing at least five individuals. Two individuals were in primary burial, in anatomical articulation, and the remainder in primary burial that had probably been disturbed on the southern side of the tomb. Among the five individuals, three adults and two children were identified. Based on the stratigraphy of the skeletal remains in the tomb, the dead had been interred in the following manner.

In the first stage, at least one adult female individual was interred in the sarcophagus (in a primary burial that was disturbed some time afterward), with two infants (Individual Nos. 1–3, below). The infants were not found in anatomical articulation, and only some of their skeletal remains were present. The individuals (the adult and the two children) were discovered in the northwestern part of the sarcophagus and appeared to have been the first to be buried in it. Later on and at a higher elevation, to the south and the north, another two individuals were interred, one on top of the other, in a primary burial. The individuals had been placed in a supine position, on their backs and in articulation (northwest-southeast, with the skull at the southeast end). The two individuals were male (Individual Nos. 4–5); one was younger than the other. They may have been placed in the sarcophagus at the same time. The younger individual was buried first, followed by the older man, who was placed over him. When the two individuals were placed in the sarcophagus, it already contained the skeletal remains of the children and the adult female (Individual Nos. 1–3). To make room for the burial of the two males in supine position, the lower part of the female skeleton was moved and piled up on the northern side of the sarcophagus, while the upper body and skull remained virtually undisturbed. As noted above, the skeletal remains of two children of different ages were found below and close to the female skull. The following is a description of the individuals found in the sarcophagus according to age, gender, and location in the tomb.

Individual No. 1

This was an infant; finds included scattered postcranial bones (body bones) and parts of a skull. Based on (1) the length of the femur (which was not recovered in its entirety and measured about 144 mm) and (2) the size of one of the pelvic bones (pubis), the age of the infant was estimated to be 1 to 3 years of age (Bass 1987).

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Individual No. 2

This was a juvenile; finds included only scattered postcranial bones. Based on the length of the long bones and the fact that the epiphyses (bone ends) of the bone had not fused to the main body of the bone, the juvenile was aged 10 to 15 years (Johnston and Zimmer 1989). Since no teeth were found, it was impossible to determine the juvenile's exact age.

Individual No. 3

This was an adult in partial anatomical articulation, lying in a supine position, oriented northwest-southeast, with the head to the northeast facing west. The upper body was in articulation, while the lower body had been disturbed and was found on top of the upper part of the body, apparently because the tomb had been opened for a second time with the addition of Individual Nos. 4 and 5, described below. The finds included a cranial vault, lower mandible, teeth, and postcranial bones. The age was determined based on a number of characteristics: (1) the amount of wear on the teeth, indicating an age of 30 to 40 years (Hillson 1993), and (2) the chronological changes in the hip joint (the auricular surface of the ilium bone), suggesting an age exceeding 35 years (Brooks and Suchey 1990). The gender was determined based on long-bone measurements (vertical diameter of femoral head = 41 mm; bicondylar width of femur = 61 mm), which showed that the individual was female, and her estimated height was approximately 1.51 m (max. length of femur = 40 cm; Bass 1987).

Individual No. 4

Individual No. 4 was an adult in anatomical articulation, in a supine position oriented northwest-southeast with the head to the northeast facing south. The finds included a cranial vault, lower mandible, teeth, and postcranial bones. The amount of wear on the teeth indicated an age of 20 to 25 years (Hillson 1993). Based on the long-bone measurements (vertical diameter of femoral head = 51 mm), the individual was determined to be male (Bass 1987), with an estimated height of approximately 1.65 m (max. length of femur = 46 cm; Bass 1987). It was also evident that the individual's bones were very robust.

Individual No. 5

Individual No. 5 was an adult in anatomical articulation, in a supine position, in a northwest-southeast alignment, with the head to the northeast and facing south. This individual was placed on top of Individual No. 4. The finds included a cranial vault, lower mandible, teeth, and postcranial bones. The age of the individual was estimated to be over 50 years, based on a number of characteristics: the amount of wear on the teeth in the lower mandible (molar worn down to half the height of the crown) and the fact that some of the teeth had been lost before death (antemortem tooth loss [AMTL] of the first and third lower molars; Hillson 1993). This individual exhibited signs of aging in the long bones and cartilage, indicating an advanced age exceeding 50 years. The following features were identified: calcification of the cartilages in the body, including calcification of the thyroid and the ligaments of the muscles between the ribs (intercostal muscles), and ossification of the sternum bone (Ortner and Putschar 1981). Determination of gender: measurement of the long bones (vertical diameter of femoral head = 51 mm) indicated that the individual was male (Bass 1987), with an estimated height of approximately 1.65 m (max. length of femur = 46 cm; Bass 1987). It should also be noted that the individual's bones were very robust.

Summary

The sarcophagus contained five individuals: two children (one 10–15 years old and the other 1–3 years old) and three adult individuals comprising two males (a young male 20–25 years old and one older male aged over 50 years) and one female (aged 35–40 years).

Tomb 142. Mausoleum

Tomb 142 was a plastered burial structure with four burial troughs (see Figures 15.8 and 15.9). On the southwest side of the structure, four individuals were found placed in a northwest-southeast orientation. The individuals were placed side by side, one on top of the other, and it was therefore not always possible to distinguish between the bones of different individuals; therefore, some of the bones were studied as an assemblage. Most of the bones were found in anatomical articulation, indicating that the individuals had received primary burial. The following is a description of the interred from south to north.

1. One individual was lying in a supine position from northwest-southeast with the skull to the northwest. The individual was estimated to be over 50 years old (Hillson 1993), since all the teeth in the

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lower mandible had been lost antemortem and the mandible exhibited alveolar bone resorption. The gender was unclear.
2. Mandible of an infant, based on dental development (first and second deciduous molars present and first permanent molar erupted to half the height of its crown), aged about 3 years (Ubelaker 1978).
3. An individual, of uncertain gender, lying in a supine position from northwest-southeast, with the skull to the northwest. Measurement of the humerus (vertical diameter of humerus head = 34 mm) indicated that the individual was female (Bass 1987). Based on the amount of dental wear, the individual was over 50 years old (first left lower premolar tooth eroded to half the height of the crown and marked exposure of secondary dentin; Hillson 1993). In addition, some of the teeth in the lower mandible (right: second premolar and first molar, left: first and second premolars and first molar) had been lost antemortem, and alveolar bone reabsorption was present.
4. A juvenile, represented by scattered postcranial bones. Based on the length of the long bones and the fact that the epiphyses (bone ends) of the bone had not fused to the main body of the bone, the juvenile was aged 10 to 15 years (Johnston and Zimmer 1989). Since no teeth were found, it was impossible to determine the juvenile's exact age.

On the northeast side of the tomb, at least three individuals were found placed in a northwest-southeast alignment. The finds included the following:

1. One individual lying in a supine position from northwest-southeast, with the skull in the northwest. The individual was mature (over 18 years old). Based on measurement of the long bones, the individual was female (vertical diameter of humerus head = 40 mm; Bass 1987).
2. Skull on side, in northwest direction of the tomb. The bone of the cranial vault was thick and the supraorbital ridges were prominent, a morphology corresponding to a male individual (Bass 1987). Cranial bones partially closed along the cranial sutures (the outer part of the sagittal and coronal sutures), consistent with an individual aged over 35 years (Hershkovitz et al. 1997).
3. The finds included postcranial bones in a northwest-southeast alignment, in partial articulation. This was an adult individual aged over 18 years (Hillson 1993). There was no definitive assessment of gender.

Summary

In this burial structure, at least seven individuals were identified whose age and gender could be determined (five adults and two children; among the adults, two females and one male were identified). Additional individuals were probably interred in the structure, but as a result of poor preservation of the skeletal remains, it was impossible to estimate their age or gender.

Tomb 162. Cist Grave

The finds in Tomb 162 (see Figures 15.13 and 15.14) included human skeletal remains representing one adult individual in anatomical articulation (see Figure 15.15). The individual was lying in a supine position and oriented northwest-southeast, with the skull on the southeast side (facing north) and the lower limbs in the west. Based on dental wear, the estimated age was 30 to 40 years (Hillson 1993). The morphology of the facial and cranial bones (pronounced glabella and well-developed superciliary ridges) indicated that the individual was male (Bass 1987). Dimensions of the skull: max. breadth 143 mm, max. length 193 mm.

Tomb 178. Cist Grave

The finds in Tomb 178 (see Figure 15.23) included the human skeletal remains of one infant interred in anatomical articulation, probably lying on its right side in a northwest-southeast alignment, with the skull to the northwest. The bones were poorly preserved, but it was possible to determine the age as 0 to 1 years.

Tomb 179. Cist Grave

Two levels of interment were found in Tomb 179 (see Figure 15.28), an upper (L.205) and a lower (L.206).

L.205

The upper interment layer included two individuals, detailed as follows:

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1. *Western individual*. A skull, vertebrae, pelvis fragment, and limb bones were found in anatomical articulation, indicating primary burial. The individual was placed in a northwest-southeast alignment, with the head to the northwest. The skull presented a relatively well-developed mastoid process and a medium-sized supraorbital ridge, morphologically characteristic of a male individual (Bass 1987). Upper mandible (left): an incisor exhibited wear forming a dentine cup, a second premolar showed erosion forming a dentine cup on the two cusps, a premolar exhibited wear forming a dentine cup on all the cusps, and a second molar exhibited wear forming a dentine cup on one of the cusps. Based on the extent of dental erosion, the individual was estimated to be aged 30 to 50 years (Hillson 1993). Thoracic vertebrae showed a slight shift in the joint margins, a characteristic find in individuals aged over 30 years (Waldron 1991).
2. *Central individual*. A skull, lower mandible, pelvis, and lower limb bones were found in anatomical articulation, indicating primary burial. The individual was placed in a northwest-southeast alignment, with the head to the northwest. The skull was very small and presented a glabella and supraorbital ridges that were not pronounced, a typically female morphology (Bass 1987). Fragment of a lower mandible (right): all the molars had been lost antemortem, and the mandible exhibited bone reabsorption. The estimated age of the individual was over 40 years (Hillson 1993).

L.206

The lower burial layer included a number of individuals with the following details:

1. Bones from the eastern side of the tomb. The finds included fragments of a cranial vault, lower mandible, vertebrae, a pelvic fragment, and lower limb bones found in anatomical articulation, indicating primary burial. The individual was placed in a northwest-southeast alignment, with the head to the northwest. The skull was very small and represented a child. Lower mandible fragment: deciduous lower molar in situ, showing a closed root, premolars not erupted. Determination of the individual's age based on dental development: 3 to 10 years (Ubelaker 1978).
2. A skull found in the northern part of the tomb and a lower mandible fragment. The skull was very fragmentary. First and second molars showed wear forming a deep dentine cup on all the cusps; a third molar showed erosion forming a dentine cup on all the cusps. Determination of the individual's age based on the extent of dental erosion: >50 years (Hillson 1993). The gender of the individual was not clear.
3. A skull in the center of the tomb. Upper mandible fragment: middle incisors and a canine tooth showed wear forming a dentine cup, first and second premolars showed dentine exposure on the two cusps, and first molar showed dentine exposure on all the cusps. Determination of the individual's age based on the extent of dental erosion: 25 to 35 years (Hillson 1993). The individual's gender was not clear.
4. Skull on the western side of the tomb. The bones of the cranial vault were very delicate, and the sutures had not closed along their entire length. A first permanent upper molar had erupted, and a second permanent molar was about to erupt. Determination of the individual's age based on dental development: 10 to 12 years (Ubelaker 1978).
5. Skull on northwest side of the tomb. Only the front half was found. The skull exhibited relatively pronounced glabella and supraorbital ridges, morphologically characteristic of an adult male (Bass 1987). Two neck vertebrae were found beneath the skull, showing annular epiphyseal fusion, characteristic of an individual aged over 20 years (Johnston and Zimmer 1989).
6. A skull in the northern part of the tomb (beneath No. 2). These were very fragmentary skeletal remains. Fragment of a lower mandible: incisors showed erosion forming a deep dentine cup, first premolar showed wear forming a deep dentine cup on one of the cusps, and a third molar showed erosion forming a dentine cup on one of the cusps. Determination of the individual's age based on level of dental erosion: 40 to 50 years (Hillson 1993). The individual's gender was not clear.
7. Bones in the western part of the tomb (beneath No. 4). The finds included cranial vault fragments and a humerus and rib bones found in

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anatomical articulation, indicating primary burial. The individual was placed in a northwest-southeast alignment, with the head on the northwest side. The bones were very small and represented a child. The maximum length of the humerus was approximately 200 mm, a measurement consistent with an individual aged 7 to 8 years (Bass 1987).

8. Upper mandible fragment: molars, a canine, and deciduous molars in place, and a permanent canine developed to the full height of the crown. Determination of the individual's age based on dental development: 6 to 8 years (Ubelaker 1978).
9. Postcranial bone fragments of an adult individual (aged over 15 years). There was no definitive age estimate.

Dispersed bones were also encountered, presenting the following diagnostic elements:

1. Long bones, which could probably be combined with Individual No. 2 or 3. There was epiphyseal fusion in the long bones, characteristic of an adult individual. Complete humerus of an adult individual: the epicondylar breadth of the distal end of the bone measured approximately 61 mm, characteristic of a male individual (Bass 1987). Lumbar and thoracic vertebrae showed osteophytes measuring 1.5 mm, a find characteristic of an individual aged over 50 years (Waldron 1991).
2. Occipital bone fragments in the center of the tomb, exhibiting a relatively developed rear ridge (superior nuchal line), a typically masculine morphological feature. The bones may belong to Skull No. 5, of the lower burial layer of this locus (described above), whose remains had been moved from this place to make room for an additional burial.
3. Fragment of a lower mandible on the northern side of the tomb. An incisor exhibited wear forming a dentine cup, a second premolar showed erosion forming a dentine cup on the two cusps, a premolar exhibited wear forming a dentine cup on all the cusps, and a second molar exhibited wear forming a dentine cup on one of its cusps. Estimate of individual's age based on extent of dental erosion: 30 to 40 years (Hillson 1993). This mandible fragment may belong to Skull No. 5 of the lower burial layer of this locus.
4. Fragment of a lower mandible (left): lateral incisor and canine showed dentine exposure, and first and second premolars showed dentine exposure on one of the cusps. Determination of the individual's age based on level of dental erosion: 20 to 30 years (Ubelaker 1978). This mandible fragment may belong to Skull No. 3 of the lower burial layer of this locus (described above).
5. Fragment of a lower mandible (front part and left side). Incisors exhibited erosion forming a dentine cup, a left first premolar showed erosion forming a dentine cup on one cusp, and a second premolar had been lost antemortem and the bony socket had eroded here. A first molar showed erosion forming a deep dentine cup on all the cusps and a band of dentine between two cusps. The first premolar on the right side showed erosion forming a dentine cup on the two cusps. Determination of the individual's age based on extent of dental erosion: 35 to 50 years (Hillson 1993). This mandible fragment may belong to Individual No. 1 from the top burial layer (L.205).
6. Fragment of a child's lower mandible. A permanent incisor and canine had erupted, with only the enamel eroded. Estimate of the individual's age based on dental development and wear: >8 years (Ubelaker 1978). This mandible fragment may belong to Skull No. 4 in the lower burial layer of this locus (described above).

Summary

The bones from this tomb represent at least nine individuals, interred in the tomb in primary burial in a northwest-southeast alignment with the skulls on the northwest side. The lower individuals had been disturbed at the time of the interment of the upper individuals, and most of their skeletal remains had therefore been dispersed. Among the individuals, four children and five adults were found, and it was possible to determine that one of the adults was male (see also Table 19.1).

Tomb 190. Cist Grave

Tomb 190 (see Figures 15.25 and 15.26) was found without a covering, and its upper part had been disturbed. The finds in the tomb included one adult individual in anatomical articulation, lying in an east-west direction,

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Table 19.1 Age and gender estimates for the human skeletal remains from the Postal Compound.

Tomb/Locus	Individual No.	Male	Female	Indeterminate Gender	Child	Age Estimation
113	1				1	1–3
	2				1	10–15
	3		1			30–40
	4	1				20–25
	5	1				>50
142	1			1		>50
	2				1	3
	3			1		>50
	4				1	10–15
	5		1			>18
	6	1				>35
	7			1		>18
162	1	1				30–40
178	1				1	0–1
179.205	1	1				30–50
	2		1			>40
179.206	1				1	3–10
	2			1		>50
	3			1		25–35
	4				1	10–12
	5	1				>20
	6			1		40–50
	7				1	7–8
	8				1	6–8
	9			1		>15
190	1	1				30–40
193	1		1			20–35
198.170	1				1	11–12
	2				1	5–6
198.199	1	1				>18
201.202	1			1		>18
201.203	1			1		>18
TOTALS	32	8	4	9	11	

with the skull in the east facing north. Based on the morphology of the lower mandible, the individual was male (Bass 1987). Determination of the individual's age based on extent of dental erosion: 30 to 40 years (Hillson 1993).

Tomb 193. Cist Grave

The human bones found in Tomb 193 (see Figure 15.24) were examined in situ, and the excavation was not completed. The finds included a skull and postcranial bone fragments found in anatomical articulation, indicating primary burial. The individual was placed in a supine position in a northwest-southeast alignment, with the head in the southeast end. A pelvic fragment shows fusion of the iliac crest, a finding typifying an individual aged over 20 years (Johnston and Zimmer 1989). The coronal suture on the cranial vault was not closed, a typical finding for an individual aged over 35 years (Hershkovitz et al. 1997). The long bones were very thin and fine. The cranial vault, glabella, and supraorbital ridges were not pronounced, a typically female morphological feature (Bass 1987). This was therefore the primary burial of one female individual, aged 20 to 35 years.

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Tomb 198. Cist Grave

Two levels of interment were found in Tomb 198 (see Figures 15.19 and 15.20), an upper (L.170) and a lower (L.199).

L.170

Upper interment layer: The finds included two human skulls representing two children. The children's skulls were placed with the occipital upward and the upper mandible downward (on the ground). The skulls were found without the lower mandible and without the postcranial bones. The skulls were probably interred in a secondary burial. When the remains of the children were transferred from a primary to secondary burial, only their skulls were preserved or exhumed and subsequently reburied in this tomb. The two skulls were placed in a northwest-southeast alignment, with the occipital bone in the southeast. The details of the skulls are as follows:

1. The northern skull was found placed with the occipital upward and the upper mandible downward (on the ground). The third molar erupted to about a third of the height of the crown (Ubelaker 1978). Child's age based on dental development: 11 to 12 years.
2. The southern skull was found with the right side lying on the ground and the face to the north. The second permanent molar had erupted to about a third of the height of the crown (Ubelaker 1978). Child's age based on dental development: 5 to 6 years.

L.199

The lower burial layer included fragments of a cranial vault, teeth, and postcranial bones found in partial anatomical articulation, indicating primary burial that had been disturbed. The individual was laid on his back, in a northwest-southeast alignment, with the skull at the southeast end. The cranial vault fragments presented a pronounced glabella and supraorbital ridges, as well as a relatively developed mastoid process, all typically masculine morphological features (Bass 1987). Fragment of a left femur: the vertical diameter of the proximal head measured approximately 51 mm, a typical measurement for a male individual (Bass 1987). An exact estimate of the individual's age is unclear, but it was an adult (>18 years).

Tomb 201. Cist Grave

Two interment layers were found in Tomb 201 (see Figure 15.27), an upper layer (L.202) and a lower layer (L.203).

L.202

Upper interment layer, above a partition floor of beachrock stone slabs. The finds included lower limb bones, from the knee area downward. The bones were found in anatomical articulation, indicating primary burial. The individual was placed in a supine position, in a northwest-southeast alignment, with the head (which was not found) at the northwest end. The tibia and fibula bones presented fused epiphyses, typical of an individual aged over 18 years (Johnston and Zimmer 1989). A more exact age of the individual could not be determined.

L.203

This is the lower interment layer, underneath the plastered floor. The finds included lower limb fragments from the knee region. The remaining parts of the skeleton had apparently been disturbed and moved from their original location. The bones were found in anatomical articulation, indicating primary burial. The individual was placed on his or her back, in a northwest-southeast alignment, with the head (not found) to the northwest. A distal epiphysis of the femur and a proximal epiphysis of the tibia were fused, a find typical of an individual aged over 18 years (Johnston and Zimmer 1989). The individual's gender could not be determined.

Conclusion

Thirty-two individuals from the tombs were identified, of whom 21 (65.6%) were adults and 11 (34.4%) were children. Among the adults, eight male individuals (38.0%) and four females (19.0%) were identified, and the gender of nine individuals (43.0%) could not be determined (Table 19.1).

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PART IV

Excavations at the Armenian Compound, 2006–2007

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CHAPTER 20

EXCAVATIONS AT THE ARMENIAN COMPOUND IN JAFFA, 2006–2007: FINAL REPORT

YOAV ARBEL
Israel Antiquities Authority

In 2006 and 2007, development plans for the Armenian Compound in Jaffa necessitated salvage excavations by the Israel Antiquities Authority. Ottoman fills including Early Islamic pottery were recovered within excavations under the church, as well as surfaces directly above bedrock. Retaining walls, occupational surfaces, an installation, and a possible fortification wall appear to be dated to the Early Islamic period.

Historical Background

The Armenian Monastery, one of the oldest continuously functioning institutions in Jaffa, is located by Jaffa's Sea Promenade (Figures 20.1–20.2). Founded in the late seventeenth century on one of the sites traditionally associated with the house of Simon the Tanner (Acts 9:39–43, 10:5–6), it was intended to serve as a hostel and religious center for Armenian pilgrims (Glick et al. 2014; Kark 1990:56), answering the need created by the circumstances of Jaffa during this period.

All Christian and Jewish pilgrims arriving in Jaffa in the centuries since the Mamluk conquest of 1268 and the subsequent destruction and partial abandonment of the city faced hardship and humiliation while waiting for days or weeks in the Crusader ruins for permission to proceed to Jerusalem.[1] During the seventeenth century, this situation gradually but significantly improved. Permission to build a convent, which would also serve as a pilgrims' hostel, was first given to the Franciscans in 1654 (Tolkowsky 1924:136). In the following decades, the Armenians, Greek Orthodox, and possibly the Jews were granted rights to build religious centers and pilgrim shelters of their own. At that point, Jaffa also returned to being a functional town. Construction focused on the narrow confines between the Mamluk-Ottoman guard towers (present location of St. Peter's Church) and the waterline. By the second part of the eighteenth century, Jaffa was once again a vibrant and fortified harbor town (Alderson 1843:23–25; de Volney 1788:145–146; Shacham 2011). As such, it also attracted the attention of ambitious local warlords and foreign aggressors. The town subsequently endured several siege and conquest episodes between the late eighteenth century and the first decade of the nineteenth century.

The Armenian Convent played an important role during the brief Napoleonic occupation between March and May 1799, the most calamitous of these warfare episodes. Pestilence followed the massacre inflicted by marauding French soldiers, infecting locals and French alike. The Franciscan and Armenian convents were turned into military hospitals for wounded or plague-ridden troops.[2] During the First World War, the Turkish authorities

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Figure 20.1. Map showing the location of the Armenian Compound in Jaffa. *Map by Krister Kowalski.*

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Figure 20.2. The Armenian Convent at present. View southeast. Photo B159782. *Photograph by Y. Arbel. Courtesy of the Israel Antiquities Authority.*

ruled that residents of the land refusing to renounce their European citizenships and adopt Ottoman citizenship instead (and thus become eligible for military conscription) would be exiled, and Jaffa became the port of departure. On December 14, 1914, hundreds of Jews were concentrated at the Armenian Convent's grounds before boarding ships to Egypt (Tolkowsky 1924:163; see Yinnon 2001:140–143 for original citations).

Following various developments and processes within the Armenian ecclesiastical administration in Israel in recent years, it was decided to lease parts of the compound's eastern segments for refurbishment into apartments, while the church and the western parts retained their monastic functions. The refurbishment, which demanded major architectural and infrastructure alterations, was preceded by large-scale salvage excavations carried out by teams from the Israel Antiquities Authority (see Appendix 2: Excavation Licenses for the full list of excavations).

Prior Excavations and Research

The Armenian Compound excavations relate directly to excavations along the Sea Promenade (Razif Ha-'Aliyah Ha-Sheniya St.) onto which it faces to the north, and the excavations at the harbor further to the west. The earliest of those excavations were directed by Jacob Kaplan in 1978 (Ritter-Kaplan 1978) but remain mostly unpublished. Among his discoveries in the harbor were two substantial walls, perhaps a quay, structures he described as a "Crusader wall with its towers" (Ritter-Kaplan 1978:26),[3] and two additional walls of uncertain date with incorporated steps. One of these walls was exposed in front of the Armenian Convent.

In 1997, Martin Peilstöcker and Maya Priel dug a sounding at the present Sea Promenade, approximately 100 m east of the Armenian Convent (Peilstöcker and Priel 2000:40–41). They discovered an ashlar wall that they identified as part of the Crusader fortification system and buildings that may have belonged to a famous nineteenth-century market destroyed in the early twentieth century by the governor Hasan Bey (Ben-Arieh 2007:72, 92; Kark 1990:20, 49; Tolkowsky 1924:164). Peilstöcker excavated four additional trenches in the promenade in 1998, finding part of a large wall, a cobbled road that led to the port in late Ottoman and British Mandate times, and a chessboard-pattern floor of an Ottoman building.[4] Priel (2002:53) opened more soundings along the promenade later in the same year and found remains of substantial walls that she identified as Crusader structures reused in Ottoman foundations. Other Ottoman buildings, pavements, and channels were also exposed.

Work resumed in 2000 under Peilstöcker and Noy Vladnetzki, who unearthed architectural remains of different Ottoman phases in front of the Armenian Convent (Martin Peilstöcker, unpublished data). Part of a massive Ottoman wall was detected ca. 30 m west of the Armenian Convent during the laying of infrastructure in 2008 (Lior Rauchberger, personal communication, 2013). In 2007, Elie Haddad discovered impressive architectural remains from the Crusader and Ottoman periods, during extensive excavations at the harbor (Haddad 2009). Important excavations in a building facing the harbor, where various Crusader and Ottoman phases were discerned, were carried out in 2010 by A. Glick (2013). A recent article by Glick et al. (2014) discusses a rare and highly significant Armenian inscription directly related to the inauguration of the Armenian Monastery in Jaffa in 1651.

The first two seasons of excavations at the Armenian Convent took place between 2002 and 2004, under the direction of Felix Volynsky and Martin Peilstöcker (see Appendix 2: Excavation Licenses for license numbers). Work focused on five rooms and six additional spots within the complex (Felix Volynsky and Martin Peilstöcker, personal communication, 2013). Several segments of two walls were discovered, including a massive wall built on a parallel axis to the existing building. The walls could not be precisely dated, as there were no clearly associated floors. Fill accumulations several meters high contained large quantities of pottery, most of which dated to the Early Islamic period (eighth to tenth centuries CE). Water channels and several graves related to the Armenian Convent itself were

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found in late Ottoman layers, as were scattered cannonballs. Several restorable vessels of Late Bronze and Iron Age date were found at the upper part of the compound, nearer to the core of the ancient mound. Amit Re'em conducted additional excavations in 2005 under the convent's church, preceding excavations in the same place described in this report. Re'em began his work at the level of the church's floor. His excavations reached the structural remains of a strong Ottoman building that predated the church, and deeper layers dated to the Early Islamic period (Amit Re'em, personal communication, 2013).[5]

The 2006–2007 Excavations

The excavations from 2006 to 2007 covered by this report were conducted in three phases. The first phase, between January and February 2006, was confined to a chamber built over the southernmost part of the roof of the convent's church and directed by Lior Rauchberger (see Chapters 23 and 24). The second and third phases, directed by Yoav Arbel from February to March 2006 and January 2007, began at the level reached by Re'em under the church floor in 2005 and ended on bedrock (Arbel 2010b).[6]

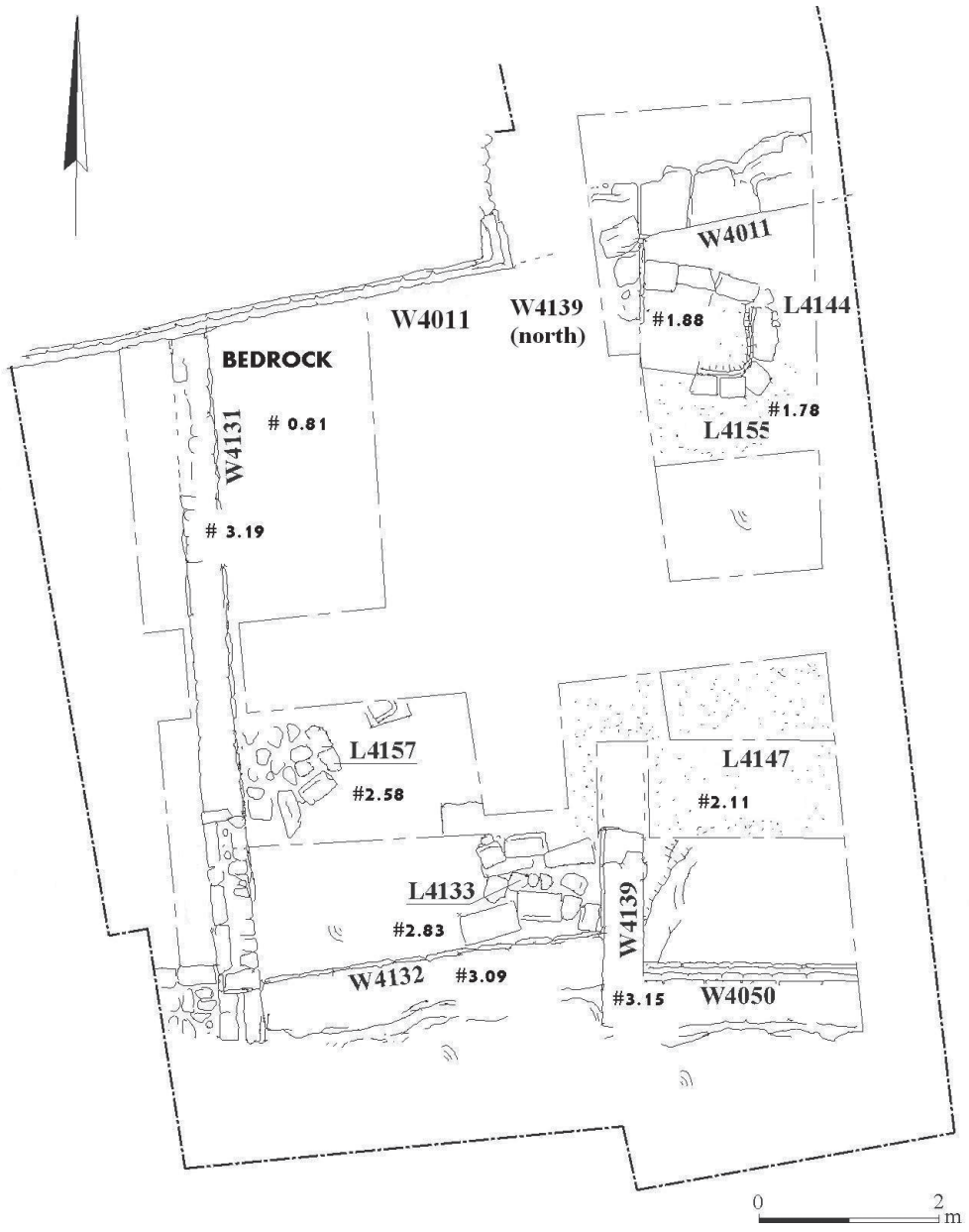

Figure 20.3. Plan of Early Islamic remains under the Armenian Church. *Courtesy of the Israel Antiquities Authority.*

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Excavations under the Church

An area of 10.5 × 10 m was opened, divided into four squares between 4 × 5 m and 5 × 5 m in size (Figure 20.3). Over 4.50 m of fill were excavated between the maximal elevation (+5.70) and bedrock (+1.15). Technically, the fill contained various horizons, yet no occupations were detected other than directly over the bedrock. In addition, the majority of the substantial volume of pottery found in the fill dated to the Early Islamic period (eighth through tenth centuries CE; see Chapter 22). Other finds included a small number of glass sherds, shells, and animal bones (mostly sheep, goat, and some horse and bovines). The massive fill was intentionally introduced. Massive introduction of earth to alter the declining topography is a phenomenon familiar in Jaffa also from the late Ottoman period (Arbel 2009a, 2009b, 2010a).

Distinct complexes were only found in conjunction with the floors over bedrock level, once the masses of fill had been removed (Figure 20.3). The foundation beds of these floors were paved directly over the bedrock face. The architectural remains were too incomplete for specific structural units to be discerned.

The Retaining Walls

Two massive walls (W.4050, W.4132) were built against the natural cliff to the south and probably functioned as retaining walls as well as architectural segments of building complexes. They were constructed in different styles and may belong to more than one phase.

Wall 4050 (Figure 20.4) was exposed to a length of 3.20 m between its corner with W.4139 to the west and the excavation's limit to the east. The wall was preserved to a remarkable height of nearly 4 m (17 courses). It was built of ashlars, some of which were in a header-stretcher arrangement. Its identification as a retaining wall rests on its slight tilting toward the north (in accordance with the sandstone cliff acclivity) and on its lack of a discernable southern face. The wall's lowermost course was founded directly upon the bedrock. Wall 4050 forms a 90-degree angle with W.4139, which turns northward from their point of meeting. Despite the straight corner and obvious association, the two walls show distinct construction styles and probably do not follow a single original plan. Wall 4050 was presumably constructed first, probably mostly for supporting the steep cliff face, and W.4139 is a later addition associated with the structure into which the retaining wall was also incorporated.

Wall 4132 abuts the corner between W.4050 and W.4139 from the west and continues westward along the cliff-parallel contour of W.4050. It was exposed to its entire length of 3.80 m. Seven courses survived to a maximal height of 1.80 m, consisting of ashlars consolidated with hard white mortar. The wall lay directly over the natural bedrock, which showed clear marks of quarrying. As with W.4050, the northern façade had no equivalent at the southern side that faced the natural cliff. An accumulation of cut stones

Figure 20.4. Retaining wall W.4050 built against the northern cliff of Jaffa. View south. Photo B51897. *Photograph by T. Sagiv. Courtesy of the Israel Antiquities Authority.*

Figure 20.5. Accumulation of building stones next to W.4132. View southeast. Photo B83125. *Photograph by T. Sagiv. Courtesy of the Israel Antiquities Authority.*

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(L.4133) was exposed by the eastern part of the wall, near its corner with W.4139. The stones may have been gathered there in preparation for secondary utilization (Figure 20.5). Another concentration of large cut stones was found against the western face of W.4151, at the excavation's southwestern corner.

The Fortification Wall

Two segments of a massive wall (W.4011) were discovered at the northern end of the excavation (9.40 m long by 1.50 m wide). This wall was reused as foundation for the northern wall of the Armenian Church. Both northern and southern faces were built of ashlars (average size 40 × 25 cm) consolidated with hard mortar. The compact core comprised fieldstones and mortar. Twenty courses remained, reaching a height of 5 m (Figure 20.6). The lower courses are clearly superior in construction investment, raising the possibility of more than a single construction phase. The size of the wall and its construction style indicate a fortification, dated by finds to the Early Islamic period.

Figure 20.6. Fatimid (late tenth to eleventh centuries) defensive wall, W.4011. View north. Photo B51904. *Photograph by T. Sagiv. Courtesy of the Israel Antiquities Authority.*

Other Architectural Remains

The excavation's plan shows a general division into western and eastern parts. The western part (3.80 × 7.30 × 4.40 × 7.50 m) is located between W.4132 to the south, W.4131 and W.4151 to the west, W.4011 to the north, and W.4139 to the east. The eastern part (2.00 × 8.00 × 2.40 × 8.50 m) covers the space between W.4050 to the south, W.4139 to the west, W.4011 to the north, and the excavation's eastern section. These dimensions exceed the plausible extent of domestic units. Open courtyards are more viable options.

Wall 4131 (7.80 × 0.50 m) stretched on a north-south axis from retaining wall W.4132 to the fortification (W. 4011). The western face was built of cut stones, with up to seven surviving courses. The eastern face was constructed of small fieldstones and mortar and coated with plaster (Figure 20.7).

Only the southern and northern ends (1.50 m and 1.20 m, respectively) remained of the opposite wall (W.4139). Preservation of the northern end was fragmentary, but the two parts matched in construction style, materials, and dimensions and formed a straight line measuring 8.00 × 0.50 m overall. The maximal height preservation was 1.50 m. A robbing trench was clearly identified at the southern segment. The wall was founded on bedrock. The robber trench contained sherds dating to the Early Islamic period.

An examination of the exposed architecture provides a viable chronological sequence. The earliest element is probably retaining wall W.4050. Wall 4139, with which it joins in a straight corner, may have been built shortly afterward. Wall 4131 shows a very similar style and may belong to the same phase. The fortification (W.4011) was built next

Figure 20.7. W.4131, the western frame wall of the Early Islamic complex. View northwest. Photo B90434. *Photograph by T. Sagiv. Courtesy of the Israel Antiquities Authority.*

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Figure 20.8. Fatimid (late tenth to eleventh centuries) defensive wall W.4011 built over the northern extension of W.4131. View northwest. Photo B90428. *Photograph by T. Sagiv. Courtesy of the Israel Antiquities Authority.*

(Figure 20.8). As it was erected over the northern extension of W.4131, it postdates the latter. Wall 4132, which abuts both W.4139 at the east and W.4131 at the west, is the latest structure in the complex. It may have been built to prevent erosion of the cliff after an already prolonged period of occupation.

Occupation Floors

Two floors relating to the architectural remains were exposed in three spots, at elevations ranging between +1.80 m and +2.11 m: L.4147, north of retaining wall W.4050 (Figure 20.9), and L.4155, between fortification wall W.4011 and the northern segment of W.4139. Both floors were composed of compact earth mixed with crushed lime ca. 2 cm thick. Foundation beds were made of sand mixed with bits of *kurkar* and in some cases dense *hamra*, laid directly over sterile sand and bedrock. Pottery from the fill, floors, and foundation beds dates to the Early Islamic period (see Chapter 22). Finds include an Abbasid stamped jar handle (see Chapter 23). Other finds from the floor

Figure 20.9. Early Islamic floor in the southeastern room of the Early Islamic complex. View south. Photo B90423. *Photograph by T. Sagiv. Courtesy of the Israel Antiquities Authority.*

Figure 20.10. Locus 4144, the horseshoe-shaped installation. View north. Photo B90416. *Photograph by T. Sagiv. Courtesy of the Israel Antiquities Authority.*

levels include fragments of basalt grinders; pieces of marble tiles; glass sherds; bones of sheep, goat, and cattle; various molluscs, among them cowry; and variants of mother of pearl and the common shell (*Glycymeris insubrica*), which is densely represented on Jaffa's beaches and were on occasion used as floor foundation beds. All these types of artifacts were found in small numbers.

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Installations

Two installations were discovered at floor level: L.4144 and L.4157. L.4144 represents a horseshoe-shaped cell, built against the eastern face of the northern part of W.4139 (Figure 20.10). Its outer dimensions were 1.50 × 1.20 m, and inner dimensions were 1.20 × 0.90 m. The installation was built of ashlars of various sizes and shapes (35 × 25 cm on average) in secondary use. A single course survived. The inner face was plastered, although coating survived only at the seam line between the stones and the floor. The installation's floor was made of packed earth and crushed lime, identical to the floor outside its limits (L.4155). The stone frame was apparently built over the floor. Neither plaster nor ash was discovered in it. There were no signs of ash in the fill over the floor either and thus no indication of function either in the installation or its immediate surroundings. Although its exact function remains unclear, a small storage facility is the most a viable option. Pottery from the installation dated to the Early Islamic period.

The second installation (L.4157) had a roughly circular shape (1.10 m in diameter). It was built against the eastern face of W.4131, at the western part of the excavation. The installation consisted of a single course of stones in secondary utilization, some of them cut, and was found filled with debris, including dressed building stones. The installation may have simply been an improvised frame for the concentration of dismantled building stones for secondary incorporation. Associated pottery dated to the Early Islamic period.

Conclusion

The almost total absence of Ottoman pottery at a site known to have been built in the Ottoman period merits consideration. Re'em, excavating the uppermost layer directly below the church's floor tiles, found some Ottoman ceramics, including typical objects such as clay smoking pipes. Conversely, the only clearly identifiable Ottoman artifact from the lower layers covered in this report was a coarse ware oil lamp of the open saucer type (Figure 20.11) found at a relatively high level of the fill, approximately 1 m under the church's floor.[7]

Figure 20.11. Late Ottoman open saucer oil lamp: (a) above and (b) side. *Photographs by A. Gorzalczany. Courtesy of the Israel Antiquities Authority.*

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Islamic finds of the eighth to tenth centuries CE otherwise dominate identifiable types from lower levels down to the bedrock (see Chapter 22). The explanation can be found in the analysis of the architectural history of the complex. As mentioned above, the Armenian Convent was one of the earliest buildings to be erected in Ottoman Jaffa, dating back to the resettlement of the town during the seventeenth century. Although the building must have gone through several alterations, there are no architectural indications for any substantial changes in the plan of the church. As the heart of the religious complex, it must have been one of the first parts to be built and one of the least likely to change locations within the complex. It would therefore be logical to assume that the fill upon which it was founded was practically sealed throughout the Ottoman period, thus explaining the scarcity of Ottoman artifacts found in the excavations under its floor.

Two or three Early Islamic building phases are represented. The earliest consisted of probably domestic units and courtyards that developed between the steep cliff against which the retaining walls were built and the water line. The fortification wall was built during the second phase, with domestic activities possibly continuing in the diminished area. The third phase saw the introduction of the massive fill. The fill may have been introduced as a platform upon which the church was originally built, using soil containing Early Islamic debris. An alternative reconstruction would place the fortification wall and the fill in a single phase, putting an end to the domestic activities and completely modifying the site. The domestic walls may have been dismantled then and the stones incorporated in the fortifications. In such a case, W.4011 would have served as a fortification as well as a retaining wall for the massive fill. As for the purpose of this immense earthwork effort, the question cannot be securely answered based on existing evidence. A defensive program that combined fortifications and substantial filling that would present a more formidable challenge to attackers is a viable option, although it is speculative. A possible historical background for the construction of fortifications in Jaffa during the Abbasid period is the Karmatian invasions that took place in the tenth century CE (Tolkowsky 1924:78).

Fragmentary circumstantial evidence raises the possibility that, as with other Ottoman-era and modern churches (Pringle 1993:31, 33), the Armenian Convent may have been founded over the site of a Byzantine or Crusader church. Christian communities thrived in Jaffa during both of these periods. In light of Jaffa's New Testament traditions related to the apostle Peter (Acts 9:36–43, 10:9–16), the town must have housed churches associated with saints or biblical events as well as standard communal structures (Tsafrir 1993:4).[8]

Figure 20.12. Fragments of a marble chancel screen or offering tables. *Photographs by A. Gorzalczany. Courtesy of Israel Antiquities Authority.*

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Figure 20.13. Columns found as debris in the convent's fill. *Photograph by Yoav Arbel.*

A white marble element found in the fill under the church may have been part of a chancel screen or offering tables (Figure 20.12). Such elements were found in numerous Byzantine churches and, in the case of tables, also in Crusader churches (Pringle 1993; Tsafrir 1993:5 for numerous examples; also Habas and Amir 2004:figs. 12.3.2, 12.4.1–6; Kletter 2010:151; Taxel 2009:165; Zelinger and Di Segni 2006:462). Several architectural elements associated with public structures were found on the grounds of the Armenian Compound outside secure archaeological contexts (Figure 20.13). Marble columns were also incorporated in the architecture of the monastery's Ottoman period halls (Figure 20.14). This assemblage of marble architectural elements is one of the largest known from a single location in Jaffa.[9] Although this evidence does not substantiate the option of a Byzantine or Medieval church on the site of the Armenian Convent, it should be taken into consideration.[10]

Notes

1. Numerous records describe the situation. As examples, the French traveler Bertrandon de la Brocquière, who visited Jaffa in 1432, saw a "few tents covered with reeds, whither pilgrims retire to shelter themselves from the sun" (cited in Tolkowsky 1924:130), and in 1575, the Belgian Jean Zuallaert describes four

Figure 20.14. Marble column incorporated in the Ottoman period structure. View southwest. *Photograph by Yoav Arbel.*

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"vaulted grottoes," in two of which the Turks "cause pilgrims to stay upon their arrival" (Tolkowsky 1924:133–134).

2. A visit paid by Napoleon to the Armenian Convent is depicted in Antoine-Jean Gros's 1804 painting, *Bonaparte visitant les pestiférés de Jaffa* ("Bonaparte Visiting the Plague Victims of Jaffa"), which Napoleon himself commissioned from the artist. It should be noted that the painting does not depict the Armenian monastery but the large courtyard of a mosque. Upon their withdrawal, Napoleon is said to have ordered the mercy killing of soldiers too infirm to join the retreating army. His chief military surgeon, René-Nicolas Dufriche-Desgenettes, refused, famously stating, "My trade is to heal men, not kill them" (de Chateaubriand 1849–1850:XIX, 16).

3. These remains may have actually been the foundations of the nineteenth-century Ottoman customs building (Martin Peilstöcker, personal communication, 2013).

4. Such floors were common in nineteenth-century Jaffa's more prominent dwellings. Similar floors were recently discovered at Ha-Tsorfim St., along the southeastern limit of Jaffa before its expansion eastward in the late nineteenth century (Arbel 2010a) and at Mifratz Shlomo St., next to the old Ottoman government building (*sarāy*) (Arbel et al. 2012).

5. Other than a fragmentary wall at the southwestern corner of the site, no architectural remains that may relate to this prechurch Ottoman phase were found in the excavations reported here.

6. The excavations were undertaken on behalf of the Israel Antiquities Authority (Lic. Nos. A-4620/2005, A-5014/2007) and underwritten by the Gel-Du Company Ltd. Assisted by R. Haim (assistant field supervisor), O. Ashkenazi (field recording), the late S. Ya'akov-Jam (administration), V. Essman and V. Pirsky (surveying), T. Sagiv (field photography), C. Amit (studio photography), A. de Vincenz (ceramic finds), and D. T. Ariel and R. Kool (numismatics). The coins were cleaned by H. Rosenstein.

7. Such lamps, which can also be found in Gaza Ware varieties from the same period (Israel 2006:fig. 270), are characteristic of Ottoman layers in Jaffa (Kletter 2004:fig. 10.4).

8. Building remains of possibly Byzantine churches were discovered at the Ganor Compound (Peilstöcker and Burke 2011: 181) and at Shim'on HaTzadik Street (unpublished, A. Glick, IAA Lic. No. A-6247).

9. Such large architectural elements are rare in Jaffa, probably due to the transportation of most of them to Egypt after the Mamluk conquest of Jaffa (Ben-Arieh 2007:52–54; Arbel 2010a; Irby and Mangles 1823:186). Examples can be found in one of the courtyards of the Mahmudiyya Mosque, but those were in all likelihood introduced by the early nineteenth-century Muḥammad Agha Abū Nabūt from ruins of classical coastal cities (Kana'an 2001:136; Irby and Mangles 1823:126).

10. Other likely church-related marble elements were found within piles of rubble during inspection work in 2003 (L. Rauchberger, personal communication). Besides the earlier dating options, it is also possible that they were used in some earlier phase of the Ottoman-era Armenian Church.

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CHAPTER 21

EXCAVATIONS IN THE ROOM OVER THE CHURCH IN THE ARMENIAN COMPOUND EXCAVATIONS, 2006

LIOR RAUCHBERGER
Israel Antiquities Authority

Excavations in the room over the church of the Armenian Compound were conducted in January to February 2006 by the author. Previous excavations in the compound were conducted by Martin Peilstöcker, Felix Volynsky, and Amit Re'em. Later excavations were directed by Yoav Arbel (Chapter 20, this volume). The excavations in the room over the church yielded remains from several Ottoman phases, including an assemblage of exclusively pre-nineteenth-century pottery and a rare Athenian black-figured sherd (see Chapters 22 and 24, respectively).

EXCAVATIONS OVER THE CHURCH, 2006

The room was situated one level above the Armenian Church. Both the room and the open yard to the north of it were built over the church's vaulted roof (Figure 21.1). The room was partly stone built and partly hewn into the natural *kurkar* cliff face. Its ceiling was vaulted. The room had a rectangular shape (7.80 × 2.60 m), set on an east-west axis. In its modern phase, it was subdivided by an inner wall into eastern and western chambers. Each chamber was accessed by a doorway in the common northern wall. The door accessing the western chamber was arched, while the door to the eastern chamber had a straight lintel. A small window was built near each door (Figure 21.2). Three vaulted niches were fitted into the inner walls, one at the western wall and two at the southern wall. The eastern chamber's floor was 5 cm higher than the floor in its western counterpart. Excavation under the modern floors exposed architectural remains and installations dated by associated ceramic finds to the late Ottoman period, with the exception of a black-figure Athenian sherd (see Chapter 24).

The Western Chamber

A plaster floor laid over a relatively soft foundation bed was unearthed following the removal of the modern cement tile pavement (Figure 21.3). The floor and its foundation bed were 30 cm thick. The fill between its surface and the modern pavement included bricks, tiles, and sherds dating to the late Ottoman period. Excavation was concluded with the exposure of the vaulted roof of the southernmost part of the church (Figure 21.4).[1]

The Eastern Chamber

The floor in this part of the room consisted of thin, two-tiered cement sheets. The fill between the sheets included *kurkar* gravel, bits of plaster, fragments of animal bones, and many sherds. Under the floor were two plastered channels (L.4094 and L.4092), a half-circular stone base (L.4082), a wall (W.4074), and an associated plaster floor (L.4077). Parallel to the northern wall of this chamber was a plastered channel (L.4094) built of *kurkar* stones (Figure 21.5). The channel was 4.60 m long and declined moderately toward

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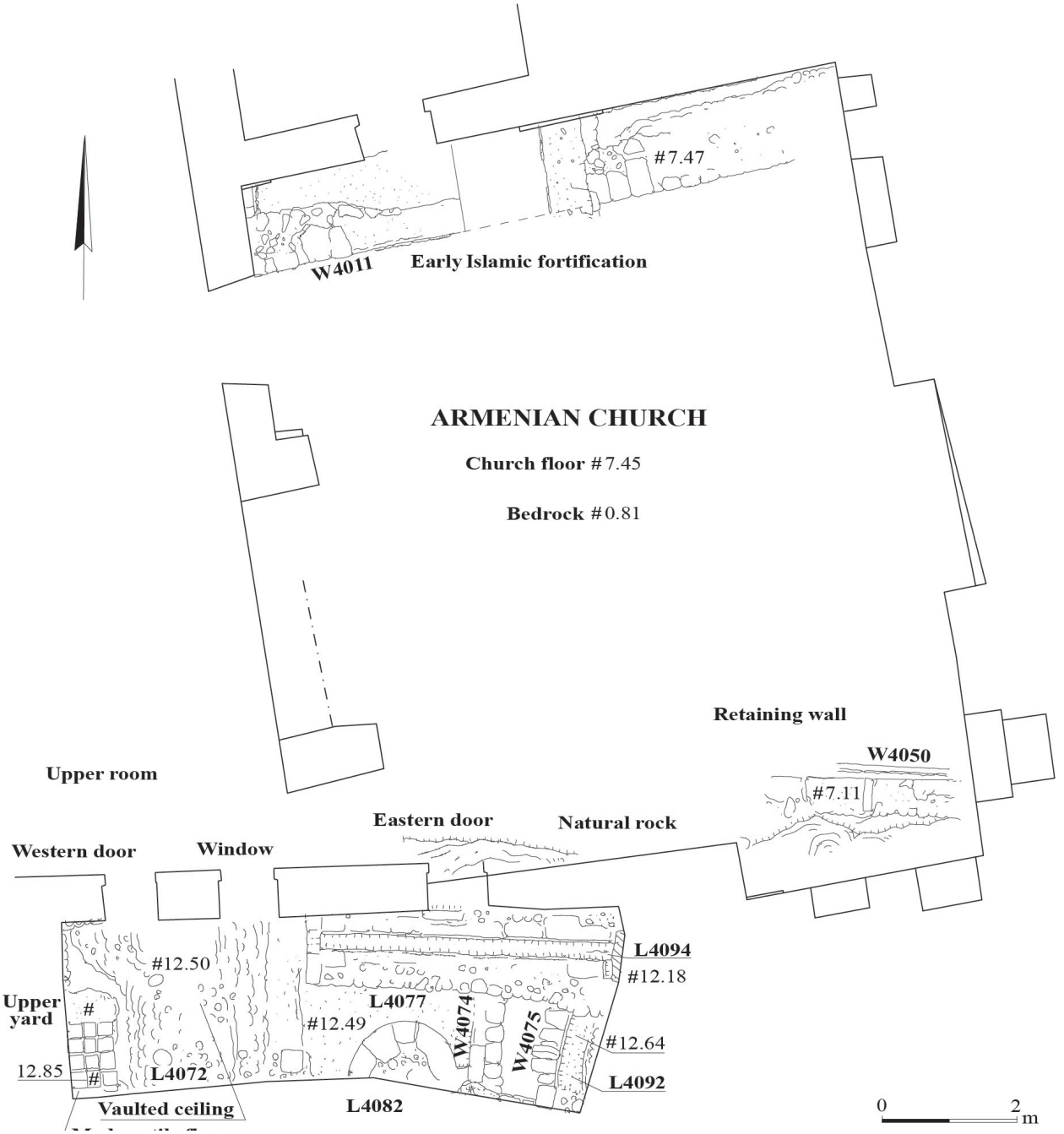

Figure 21.1. The Ottoman remains from the seventeenth to eighteenth centuries CE in the upper room over the church. *Survey and drafting by Viatcheslav Pirsky and drawing by Elena Ilana Delerzon. Courtesy of the Israel Antiquities Authority.*

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Figure 21.2. The modern phase of the upper room before excavation. View west. *Photograph by Yoav Arbel.*

the east. Its inner width reached 0.15 m, and the width of each of its frames was 0.50 m. The western end of the channel was blocked with a perforated square stone. At the eastern end, the channel extended below the room's wall.

Another channel (L.4092) was built at a perpendicular angle to L.4094 and on a parallel line with the eastern wall of the room, under which most of the channel's eastern frame was sealed. Its western frame (W.4075) was built of cut stones. It was 2 m long, with a 30-cm-wide inner breadth, and a moderate decline northward. The northern end of this channel was blocked by the southern frame of channel L.4094. A 3-cm-thick gray plaster floor (L.4077) was discovered to the south and west of this channel. The floor was paved over a layer of *kurkar* field stones. The floor and the channel seemed to be of a single phase. The same floor abuts the circular stone base (L.4082) and W.4074. The circular base comprised a single course of dressed stones with an inner fill made of earth and gravel (Figure 21.5). It protrudes northward from the southern wall of the room. It was 0.23 m thick and measured 1.60 m in diameter. The base was founded on a layer of 10-cm-thick uncut *kurkar* stones. It was sealed under plaster floor L.4077. East from the base was the lowest course of W.4074 (1.35 × 0.50 × 0.14 m, north-south axis). Excavation of the partition concluded with the exposure of the natural bedrock.

Figure 21.3. Late Ottoman plaster floor under modern tile pavement. The vaulted ceiling is visible in the center. View west. Photo 47796. *Photograph by T. Sagiv. Courtesy of the Israel Antiquities Authority.*

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Figure 21.4. Vault of church ceiling under late Ottoman plaster floor. View south. Photo 47800. *Photograph by T. Sagiv. Courtesy of the Israel Antiquities Authority.*

Figure 21.5. Half circular base and drain channel. View south. Photo 47797. *Photograph by T. Sagiv. Courtesy of the Israel Antiquities Authority.*

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Figure 21.6. The channel at the southern part of the church's yard. View east. Photo 69603. *Photograph by T. Sagiv. Courtesy of the Israel Antiquities Authority.*

Conclusion

While the excavations under the church relate to historical phases predating the Armenian Convent, the room over the church lends, for the first time, archaeological support to the textual and artistic testimonies that point to the Armenian Convent as one of Ottoman Jaffa's earliest buildings in continual use. In fact, it is one of the few sites in Jaffa, if not the only one so far, where exclusively pre-nineteenth-century pottery of definite Ottoman date was collected in significant volume (see Chapter 22). The many changes that the complex underwent since its foundation in the seventeenth century precludes a precise delineation of the room in its original architectural context, and its function can only be speculated upon. From the size of the room, it is clear that it served no public function. Assuming that the doors and windows in the northern wall were original or reflect the original arrangement, the room is unlikely to have been use for storage, leaving the more reasonable option of its function as a dwelling for the monastery's monks. It should be noted that the decline in the number of monks in the monastery is a relatively modern phenomenon. The plaster floor below the modern tiles probably belongs to the original phase.

The presence of drain channels under the room's floor is not surprising. The room cuts into the rock of Jaffa's natural northern slope, which even today remains steep. The channels were found disassociated from their original drain systems, but it can be safely assumed that they were part of a drain network that directed water—both from direct rainfall and higher ground flow—from rooftops either into cisterns or out into the sea. A similar channel from the Ottoman period was found across the southern part of the yard in front of the church (Figure 21.6). It cannot be presently determined whether this channel drained water that earlier passed through the channels under the rooftop room, but the general locations and directions allow for that option. The hemispheric platform remains an enigmatic feature, and its use remains obscure. The most plausible possibility is that it served as a base for a pilaster that was dismantled at some stage. A work platform and the base for some industrial installation are also possible, but there were no hints in the relevant layer for any kind of industrial activity.

The Armenian Convent's close proximity to the heart of the historical mound is reflected in the presence of artifacts from periods seldom encountered in the Lower City excavations in recent years. The clear linkage between the historical sources that discuss either the Armenian complex or the area where it was built demands constant reference to these sources in the interpretation of the archaeological finds but also presents the opportunity to corroborate textual information through material evidence. These advantages should be bolstered with the future publication of the parts of the site investigated by its other excavators (see Chapters 20, 22–24).

Note

1. Preliminary work in this chamber was conducted by Yoav Arbel, who also partook in the writing of this chapter.

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Chapter 22

The Ceramics from the Armenian Compound Excavations, 2006–2007

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The ceramics discussed here come from stratigraphically significant fills during the 2006 to 2007 excavations by the Israel Antiquities Authority in the Armenian Compound in Jaffa (Chapter 20). Most of the materials were unearthed under the convent's church (Figures 22.1–22.3) and can be dated to the Byzantine and mainly the Early Islamic period. The remaining sherds are from a separate room built over the southern part of the church's southern roof (Figure 22.4) and dated to the Ottoman period. The assemblages are presented typologically.

Bowls, Basin, Casseroles, and Lids

Figure 22.1:1. Bowl with a rounded rim and flaky red slip. It seems to belong to the group of Egyptian "C" Ware (Hayes 1972:399–401), which can be dated to the eighth to ninth centuries CE.

Figure 22.1:2. Fragment of a red slipped bowl belonging to the group of Late Roman "C" Wares (cf. Hayes 1972:329–338, Form 3). This is the most common bowl form of this group. The coarse ware and careless slip as well as the rather crude nicks incised on the rim could point to a later date of this piece than the usual fifth- to sixth-century.

Figure 22.1:3. Fragment of red slipped bowl belonging to the group of Cypriot Red Slip Wares (cf. Hayes 1972:377–379, Form 7.1). These bowls are rather common and are dated to the sixth and seventh centuries.

Figure 22.1:4. Rim belonging to bowl with a ledge-rim with knobs; the hole is visible on the lower side of the rim. The body is decorated with rouletting. The bowl belongs to the group of Cypriot Red Slip Wares and corresponds to Hayes's CRS Form 4 (cf. Hayes 1972:376–377). An identical bowl has been reported from Caesarea (Johnson 2008:27, no. 83). This bowl possibly dates to the fifth century.

Figure 22.1:5. Base of a bowl with a stamped cross. The cross has a double outline. This type of cross is the most common cross on bowls of the Late Roman "C" type and is dated to the fifth to sixth centuries (cf. Hayes 1972:365, LRC Form 71 and fig. 79:b–f).

Figure 22.1:6. Base of a bowl with a stamped animal. It seems to be a lioness pacing. Lions of this type have been seen on bowls of the Late Roman "C" type and dated to the fifth century and maybe later (cf. Hayes 1972:359, fig. 75:38i, m).

Figure 22.1:7. Body sherd belonging to a bowl(?) with painted decoration. The bowl is slipped whitish and the decoration is probably geometric in black lines. The ware of this vessel is hard fired and almost metallic in sound. Although the shape cannot be reconstructed, it is safe to assume that it belongs to the group of Fine Byzantine Ware bowls. During the eighth century these bowls were occasionally decorated with paint (cf. Magness 1993:193). Fragments of such bowls have been found in Khirbet el-Mafjar (Baramki 1944:fig. 9:5, 13, 15–17, 23–24, 27–28, 30, 34, 38).

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Figure 22.1:8 and 9. Rims of small buffware bowls with inverted thickened rim. This simple type of bowl is the most common type of bowl in the Early Islamic assemblages and appears either in buffware or in coarse ware (Vincenz 2008:pl. 4.7:1). Buffware bowls of this type have been reported from an Early Islamic context at Mevo Modi'im (Eisenberg and Ovadiah 1998:*11, fig. 14:2–3), Tiberias (Stacey 2004:fig. 5.5:5), and Ramla (Kletter 2005:fig. 14:5; Vincenz forthcoming:Type B.a.1). They are dated to the eighth to tenth centuries.

Figure 22.1:10. Rim of a small glazed bowl with everted round rim. The bowl is glazed with green and yellow glaze and brown stripes. The glaze is applied over a beige preparation slip, visible on the back of the bowl, which is not entirely glazed. The bowl belongs to the group known as Common Glazed Bowls and was common during the eighth to tenth centuries. They have been reported from various sites such as Yoqne'am (Avissar 1996:fig. XIII.3) and Ramla (Kletter 2005:63).

Figure 22.1:11. Rim of a glazed bowl with slightly pinched rim. The bowl is heavily encrusted but seems to be glazed with a monochrome light green glaze. The shape of the bowl would suggest it belongs to the Monochrome Lead Glazed Wares such as those published from Yoqne'am (Avissar 1996:82, fig. XIII.8:7).

Figure 22.1:12. Rim belonging to a bowl with flaring walls. It is glazed with deep green glaze on the outside and over the rim. It belongs to the group of Monochrome Lead Glazed Wares such as those published from Yoqne'am (Avissar 1996:82, fig. XIII.8:7).

Figure 22.1:13. Fragment of a shallow container with a flat base and rim that is beveled, possibly to hold a lid. The body is molded and seems to be decorated with a floral pattern (garland of leaves?). It is glazed on both sides with an olive green glaze, thinner on the base, and applied directly to the clay without a preparation slip. No satisfactory parallel has been found for this type of vessel.

Figure 22.1:14. Rim and body of a basin made of pinkish ware with inverted folded rim and combed lines on the body. It continues the tradition of the Byzantine basins with an arched rim (cf. Magness 1993:204–207). Similar basins have been reported from Tiberias (Stacey 2004:98–99, fig. 5.13:7), where they are dated to the eleventh century, which however seems too late in our context.

Figure 22.1:15 and 16. Rims of casseroles with upturned handles (Figure 22.1:15) and with an almost horizontal handle (Figure 22.1:16). The vessels are made of the common brittle cooking pot ware and continue the tradition of globular casseroles common in earlier periods. The first vessel is heavy and the body is not ribbed; the rim is beveled for holding the lid. The second vessel is also not ribbed but is thinner than the previous one.

Figure 22.1:17 and 18. Rims of two lids made of the same brittle ware as the casseroles. The first one (Figure 22.1:17) has an out-turned flat rim and a ribbed body while the second one (Figure 22.1:18) has flaring walls, which are ribbed, and a beveled rim.

Storage Jars, Jugs, Flasks, and an Amphora

Figure 22.2:1. The rim belongs to a storage jar made of coarse, almost brittle ware. The neck is ribbed, and there is a ridge at the bottom of the neck. Characteristic of these jars are the bag-shaped body and the ridge at the bottom of the neck, following the Byzantine tradition (Vincenz 2008:118–121).

Figure 22.2:2. Rim of a storage jar made of coarse reddish ware with clay accretions. As noted above, the storage jars of the Early Islamic period are bag shaped and continue the tradition of the Byzantine period (for a discussion cf. Vincenz 2008:118–121). Our jar is directly derived from the Byzantine tradition, and even the ware, which is dark red, is similar to that of the Byzantine jars. A dating to the beginning of the Early Islamic period thus seems probable.

Figure 22.2:3. Rim belonging to a large storage jar with pinched ending; a ridge at the bottom of the neck sets off the neck from the rest of the body. As noted above, the jars continue the Byzantine tradition with a bag-shaped body and a straight neck. Two loop handles are positioned on the shoulder of the vessel. Storage jars have been reported from Ramla (Kletter 2005:82 with references, fig. 19:12; Vincenz forthcoming:Type C.i).

Figure 22.2:4. Rim belonging to large storage jar with pinched ending; a ridge at the bottom of the neck sets off the neck from the rest of the body. The body is decorated with combed lines, and the neck seems to have an incised line decoration. The jar is made of buffware. As noted earlier, the jars continue the Byzantine tradition with a bag-shaped body and a straight neck. Two loop handles are positioned on the shoulder of the vessel. Storage jars have been reported from Ramla (Kletter 2005:82 with references, fig. 19:12; Vincenz forthcoming:Type C.i).

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Figure 22.2:5. Rim of a water jug made of buffware with four incised lines under the rim. As observed earlier (Figure 22.2:11), these jugs were very common during the Early Islamic period and have various shapes. They are found on many sites such as Ramla (Vincenz forthcoming:Type B.f.1–12; Kletter 2005:fig. 16:1–2 with additional references) and can be dated to the eighth to tenth centuries.

Figure 22.2:6. Rim of a water jug made of buffware. Water jugs were very common during the Early Islamic period and have various shapes. The rim of this jug belongs to a vessel with an elongated body with a rather long, slightly flaring neck ending in a round or slightly pinched rim. Some of these jugs, like our example, have incised lines under the rim. It seems that these jugs imitate metal vessels. They are found on many sites, including Ramla (Vincenz forthcoming:Type B.f.1-12; Kletter 2005:fig. 16:1–2 with additional references), and can be dated to the eighth to tenth centuries.

Figure 22.2:7. Rim and partial handle of a large buffware jug. This jug is rather heavy with a thick handle starting from the rim. A small pointed knob decorates the upper part of the handle. Buffware jugs are common and appear in different shapes with thinner and thicker wares. The decorative knobs on the handles might have their prototype in metal vessels and are also useful for holding the vessel while pouring.

Figure 22.2:8–10. Rims of buffware jugs. The neck is mold-made, and the decoration is divided into three registers. The middle register consists of leaves framed by a lower and upper register consisting of oblique squares (Figure 22.2:8), rosettes in the upper register, and half-stars in the lower one (Figure 22.2:9) or the upper with oblique squares and the middle one with leaves (Figure 22.2:10). The seam at the base of the neck is clearly visible on the back of the vessel. Jugs with a mold-made neck have been found in large quantities in Ramla, and from those examples, it can be seen that not only the neck was molded but also the base, which bears similar decorations as the neck (Vincenz forthcoming:Type B.g.). In other excavations at Ramla, complete molded vessels and molds have been found (Rosen-Ayalon and Eitan 1969). Complete molded vessels have also been found at Khirbet al-Mafjar (Baramki 1944:pl. 20:1–2 and fig. 14:2–4), where they are dated after the earthquake of 749 CE. In Caesarea, molded vessels are dated to the eighth and ninth centuries (Brosh 1986:67). Molded vessels were common during the Early Islamic periods throughout the Near East and have been found in Susa (Kervran 1984; Rosen-Ayalon 1974) and Samarra (Sarre 1925:Tafel IV, IX); also, in Nishapur, molded vessels and molds were quite common (Wilkinson 1974:355, fig. 137–143a [molds], 356–360 [molded vessels]).

Figure 22.2:11. Ribbed neck of a flask made of orange brittle ware. As can be seen from the complete neck, the handles (probably loop-handles) were attached to the upper part of the shoulder. A flask with a similar ribbed neck and everted rim has been reported from Ashkelon and is dated to the seventh to eighth centuries (Nahshoni 1999:fig. 2:7).

Figure 22.2:12. Neck of a buffware flask with two prominent ridges and an everted folded rim. As on the flask discussed above (Figure 22.2:9), it is visible from the complete neck that the handles were positioned on the shoulder. Jugs of the same type have been reported from Khirbet al-Mafjar (Baramki 1944:fig. 5:10 and pl. 21, 1).

Figure 22.2:13. Base belonging to an amphora of the type Benghazi Mid-Roman 3. The base is hollow and recessed, and the main characteristic is the highly micaceous ware of this jar. They are rather common on excavations in the area and are commonly dated from the first to the early fourth centuries (for a discussion, see Johnson 2008:100–101 and figs. 1209–1216).

Lantern, Lamps, Figurines, and Glass Bracelets

Figure 22.3:1. The peculiar rounded hole in this piece identifies it as belonging to a lantern. Lantern fragments have been found on various sites but are rarely recognized. Byzantine and Umayyad period lanterns have been reported from Beth-Shean (Hadad 2002:143–146 with references). At En Gedi, fragments of lanterns have been identified (Vincenz 2007:257 with references and pl. 28).

Figure 22.3:2. Fragment of a lamp. The ware is similar to that of Cypriot Red Slip Ware vessels. The shape of the lamp recalls the lamps of the African Red Slip Ware group (cf. Rosenthal and Sivan 1978:68–74). The decoration on the discus cannot be identified.

Figure 22.3:3. Fragment of a candlestick lamp with Greek letters. The letters read as follows:

Φ E N H = [φως Χ(ριστο)υ] φαιν[ει πασιν] = The light of Christ shines for all.

Greek inscriptions appeared on small candlestick lamps during the fourth century (Loffreda 1995:12) but seemed to be more common on the larger specimens.

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The reading of these inscriptions has proven to be difficult, because of the popular nature of the script, the diversity of the script directions, and the rotation of the letters. A useful study has been published by Loffreda (1989) and can be used as a guide for the reading of these lamps. It is indeed true that the reading of the inscriptions is important (Magness 1993:176–177). It seems that the lamps were used as *eulogiae*, which means that they were associated with a specific holy site. Thus, for instance, the common inscription "the light of Christ shines for all" could be associated with the Church of the Holy Sepulcher (for a discussion, see Magness 1993:176).

Figure 22.3:4 and 5. These Early Islamic lamp fragments belong to the group of Channel Nozzle Lamps. They are mold-made in two parts: the conjunction of the upper and the lower part is visible on the coarser examples. Their shape is oval and pointed toward the nozzle, and their section is biconical. They tend to have quite large filling holes surrounded by two ridges; the outer one builds the channel, which runs to the wick hole. The handle in the examples discussed here is probably a tongue handle, which had been attached after the two parts of the lamps had been put together; sometimes, this handle is high, starting from the junction of the two parts of the lamp and leaving a space between the handle and the ridge of the filling hole. The lamps are decorated on the rim and usually in the channel. The decorations may be vegetal, animal, or geometric, and sometimes inscriptions are written on the rim. The channel is decorated with stylized palm trees, herringbone patterns, or other vegetal decorations more or less stylized. The base follows the line of the lamp and such is a pointed oval plain or decorated with flowers, arabesques, and even inscriptions mostly in Arabic. Similar lamps have been found in Ramla (Kletter 2005:82–86, fig. 21:3–11 with references) dated to the Abbasid period.

Figure 22.3:6. Fragmentary zoomorphic figurine. It shows the lower part of the animal with the legs. A similar fragment has been reported from Ramla (Kletter 2005:87–88, fig. 22:4 with references). It is dated to the Umayyad period.

Figure 22.3:7. Fragment of a handmade, hollow object perforated with a small hole on one side. Its use is unknown.

Figure 22.3:8 and 9. Two fragments of glass bracelets. Both bracelets have a semicircular section and are monochrome. Glass bracelets are common and are found mainly in fragments in archaeological excavations dating from the Roman to the Ottoman period. M. Spaer attempted a classification of these items (Spaer 1988, 1992). In other excavations in Jaffa, many fragments of bracelets have been revealed, and those are dated mainly to the Ottoman period. No precise dating can be proposed for our two fragments here, but a dating to the Ottoman period is suggested.

Figure 20.11. Complete lamp of the saucer type. The nozzle is pinched and bears soot remains. The lamp has a small base slightly set off from the body. The ware is rather fine reddish-yellow (5YR 6/6) in color with occasional large limestone inclusions. The surface is fired to buff (7.5YR 7/3 pink) with a self-slip.

Saucer lamps are the most basic lamp form and are known from the early periods such as the Bronze and Iron Ages. During the Mamluk period, however, this lamp shape came back into fashion and has been found on many sites in the region. The base of these lamps is flat and not as accentuated as in our lamp (cf. Gichon and Linden 1984). A lamp similar in shape has been found in an Ottoman context elsewhere in Jaffa (Kletter 2004:fig. 10:6). During the early Ottoman period, lamps were still produced as small saucers, as during the Mamluk period, and they were sometimes also made of the well-known gray ware of which many so-called Gaza vessels were produced (cf. Kletter 2004:198 and fig. 10:4). Our lamp, which comes from an Ottoman context, can thus be dated to that period.

Early Ottoman Assemblage

The ceramic assemblage presented here comes from a back room in the monastery and can be dated to the early Ottoman period (seventeenth to eighteenth centuries).

Figure 22.4:1. Marmorizzata di Pisa base fragment of a dish or large bowl decorated with mottled colors. The colors of this fragment create the effect of colored marble. The piece here is decorated with light green, darker green, and brown glaze over a white slip. The outside of the vessel is glazed green except the base. This ware was produced in various centers in northern Italy and Provence (Vroom 2003:176), and Vroom believes that given "the hold that Pisa seems to have had on the trade on lead-glazed wares throughout the Mediterranean, it is more likely that most of the dishes and bowls came from Pisa" (Vroom 2003:177). This type of vessel can be dated from the late sixteenth century to the eighteenth century.

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Figure 22.4:2. Rim of a jar for carrying water called an *asslyie*. They typically have a bag-shaped body with a round base, a flaring neck with a flanged rim, and two loop handles drawn from the base of the neck to the upper shoulder. Our example comes close to Israel's Subtype 2 and is dated from 1700 to 1970 CE (Israel 2006:116–117).

Figure 22.4:3–5. Fragments of the most common and well-known vessel type of Gaza Ware, which is the drinking jug or *ibriq*. This is a jug with a long or short spout for pouring (drinking) and two handles. As can be seen in Figure 22.4:5, the spout can be positioned directly under one of the handles. Our examples could belong to Israel's Subtype 4 with the ribbed neck and short spout. The date range he suggests for this subtype is seventeenth to eighteenth centuries (Israel 2006:153–154).

Black or dark gray Gaza Ware has usually been associated with Ottoman sites, but its origin and first appearance is still disputed. Gibson et al. (1991) ascribe the Gaza Ware from Sataf to the seventeenth century, but other scholars such as Rosen and Goodfriend (1993) go even further and push the date of its appearance to the sixteenth century. Israel (2006), who studied the subject for his PhD dissertation, dates it from the seventeenth to the twentieth centuries.

Figure 22.4:6. Rim fragment belonging to a jar. The fact that the interior is glazed, along with only the upper part of the exterior, would suggest that the vessel has a wide body, which then narrows toward the neck, so that only the upper and visible part of the inner neck is glazed. The vessel could be related to similar jar types found in Saraçhane, Istanbul, which have a narrow neck and wide body, a flat base, and two handles (Hayes 1992:fig. 119:75.11 and fig. 124:83.29). A date range of seventeenth to eighteenth centuries can be suggested.

Kütahya Coffee Cups

Kütahya coffee cups are made of white and rather thin frit ware and are decorated with floral or vegetal patterns in different colors under a transparent glaze. Usually, the painted patterns are in black, blue, red, and green. Yellow as a color was introduced at the beginning of the eighteenth century, while purple appears only in the second quarter of the eighteenth century (Carswell 1972:19). Some of them are decorated with blue patterns only, imitating the Chinese Blue and White porcelain, which was very fashionable at the time.

Figure 22.4:7. Base of a coffee cup decorated with a blue line outlining the outer and inner base. The center of the cup bears a plant with red flowers and leaves outlined in black and filled in with green and yellow. The base bears a potter's mark: a spiked star. Similar marks have been published by Carswell (1972:95). This cup dates to the eighteenth century.

Figure 22.4:8 and 9. Two small fragments decorated in blue on white can be tentatively identified as coming from Kütahya and dated to the seventeenth or eighteenth century. In Damascus, fragments of *Kütahya* coffee cups have been recovered that resemble our example (François 2009:fig. 4:21).

Chinese Porcelain

Figure 22.4:10. This small fragment probably belongs to a Chinese Blue-on-White cup. Already in the sixteenth and seventeenth centuries, Chinese porcelain was exported to this region as can be seen from multiple finds in Damascus and Akko (François 2009:61 and tableau IV). A fragment with a similar delicate floral decoration comes from Damascus and is dated to the sixteenth century (François 2009:fig. 2:11), which is a little early for our piece, for which a suggested date is the seventeenth century on the basis of the other finds.

Smoking Pipes

Five nearly complete pipes and two shank fragments were found.

Figure 22.4:11–13. These pipes are small in dimension and have a small rounded bowl with a straight upper part, a short shank, and a stepped ring. The decorations are usually stamped, but rouletted bands are also common. Their ware is light gray to pale brown, and there is no slip or burnishing on the surface. These pipes are commonly dated to the seventeenth or beginning of the eighteenth century (Dekkel 2008:121, fig. 4.6:24–25). The two shank fragments also belong to this type.

Figure 22.4:14. The bowl of this type of pipe is large and round. The shank is extremely short and upturned and widens to a thickened end. The bowl is decorated with deeply carved lines and the keel is not pronounced. Pipes of this type have been found in the Qishle excavations in Jaffa and can be dated to the eighteenth century (Vincenz forthcoming); moreover, pipes with similar shank ends come from Banias and are also dated to the eighteenth century (Dekkel 2008:146, fig. 4.11:59).

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Figure 22.4:15. Bowl of a glazed pipe. It has a rounded body and no keel, and the shank is short but straight ending in a stepped undecorated ring. The decoration on the bowl consists of vertical rouletted bands. The glaze is yellow to deep yellow. Glazed pipes are not very common and, as Robinson states, may be a by-product of a particular pipemaker (Robinson 1983:273). It is still quite peculiar, however, that in the Qishle excavations, a total of 10 glazed pipes have been found. They are all of the same type, made of what appears to be the same clay and glazed in various shades of yellow. They are dated to the eighteenth century.

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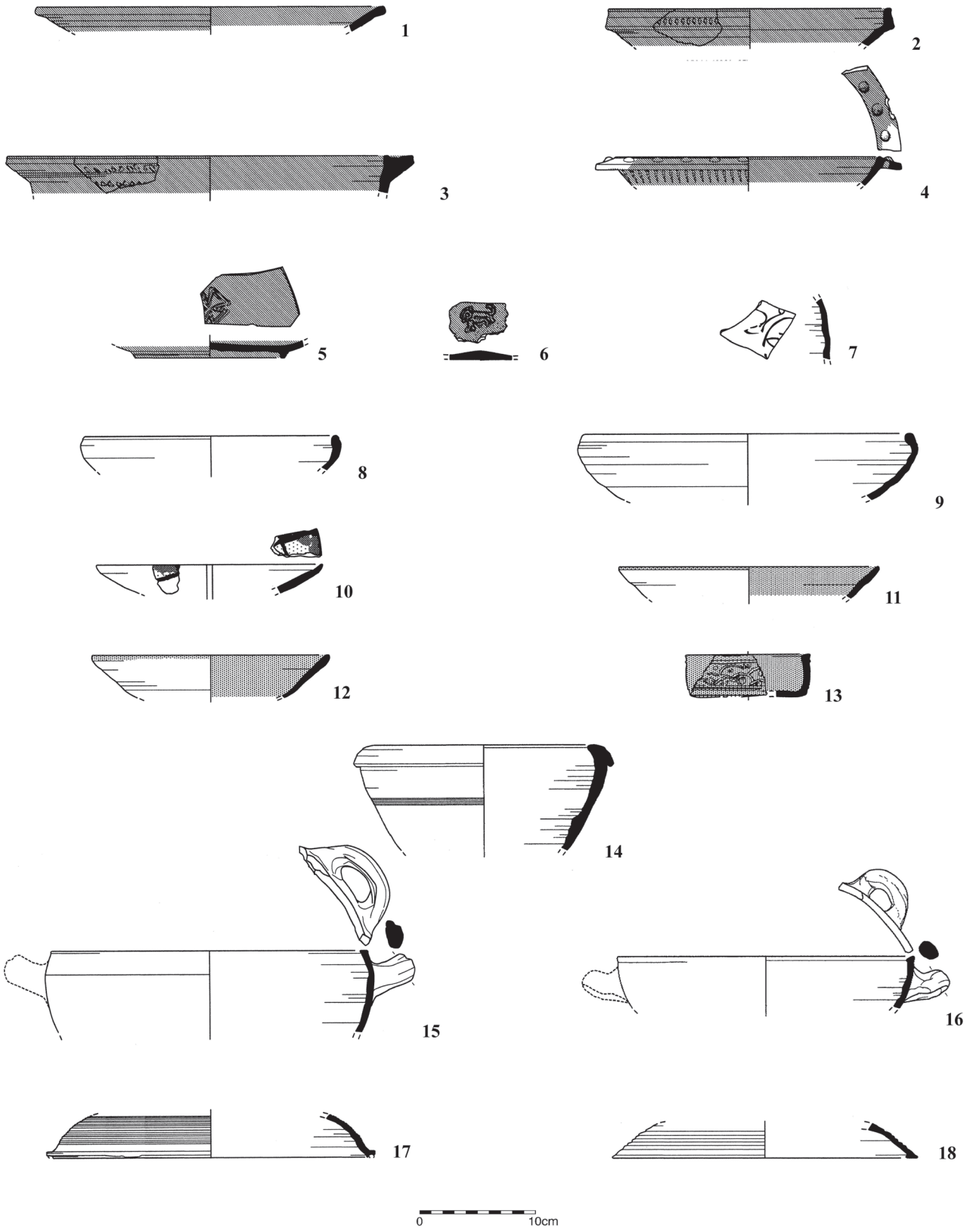

Figure 22.1. Bowls, casseroles, cooking pots, and lids from the Armenian Compound.

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No.	Locus	Reg. No.	Form	Ware	Dimensions
1	L.4156	B.609/11	Bowl; red slipped; round rim	2.5YR 7/6 light red, few very small white inclusions Slip: 2.5YR 6/6 light red	*dia.*: 28 cm Rim: 5% *h.*: 3.1 cm
2	L.4150	B.572/1	Bowl; red slipped; inverted round rim with incised nicks	2.5YR 6/8 light red, few small white and black inclusions Slip: pale 2.5YR 5/8 red	*dia.*: 18 cm Rim: 7.5% *h.*: 3.8 cm
3	L.4150	B.610/8	Bowl; red slipped; heavy triangular rim with deep grooves. Incised nicks on body	5YR 6/6 reddish-yellow, few large white and small black inclusions Slip: 2.5YR 5/6 red discolored on rim	*dia.*: 36 cm Rim: 7% *h.*: 3.1 cm
4	L.4130	B.545/4	Bowl rim; red slipped; rouletted decoration on body and knobs on rim	5YR 6/8 reddish-yellow, few large black inclusions Slip: 10R 5/6 red	*dia.*: 22 cm Rim: 12.5% *h.*: 3.5 cm
5	L.4142	B.529/3	Bowl base; red slipped; stamped cross in center	2.5YR 6/8 light red, few small white and black inclusions Slip: pale 2.5YR 6/8 light red	No rim or diameter preserved *dia.* of base: 12 cm
6	L.403	B.1024/1	Bowl base; red slipped; stamped animal in center	5UR 6/8 reddish-yellow, few small white inclusions Slip: 5YR 6/4 light reddish-brown	No rim or diameter preserved
7	L.4148	B.571/7	Bowl, painted body sherd	5YR 5/6 yellowish-red, few small white inclusions Exterior painted white and black lines	No diameter or rim preserved
8	L.4147	B.566/3	Bowl; inverted thickened rim	5YR 6/6 reddish-yellow, few small white inclusions	*dia.*: 20 cm Rim: 5% *h.*: 3.1 cm
9	L.4143	B 530/1–9	Bowl; inverted thickened rim	10YR 8/4 very pale brown, few pebble inclusions	*dia.*: 26 cm Rim: 13% 6.5 cm
10	L.4147	B.530/13	Glazed bowl; round rim	5YR 7/6 reddish-yellow, few small white inclusions Green and yellow glaze over beige preparation slip	*dia.*: 18 cm Rim: 4% *h.*: 4.5 cm
11	L.4156	B.610/6	Glazed bowl; slightly pinched rim	5YR 7/4 pink, few very small white inclusions Interior: light green glaze over beige preparation slip	*dia.*: 26 cm Rim: 6% *h.*: 3.4 cm
12	L.4138	B.524/1	Glazed bowl; flaring walls and round rim	5YR 7/4 pink, few small black and white inclusions Dark green glaze on interior and over the rim	*dia.*: 26 cm Rim: 5% *h.*: 5.5 cm
13	L.4138	B.524/2	Bowl, shallow; glazed molded; flat base and flat rim	5YR 7/3 pink, few small black and white inclusions On exterior molded leaf pattern and deep green glaze	*dia.*: 12 cm Rim: 9% *h.*: 4 cm
14	L.4156	B.609/7	Large bowl; inverted folded rim; combed lines on body	5YR 6/6 reddish-yellow, few small white inclusions	*dia.*: 16 cm Rim: 5.5% *h.*: 9.8 cm
15	L.4143	B.564/4	Casserole; horizontal handle, flat rim, and unribbed body	5YR 4/6 yellowish-red, many small white inclusions	*dia.*: 22 cm Rim: 12% *h.*: 6.7 cm
16	L.4156	B.609/9	Casserole; horizontal handle and beveled rim	7.5YR 4/4 brown, few small micaceous inclusions	*dia.*: 24 cm Rim: 8% *h.*: 5 cm
17	L.4148	B.567/14	Cooking pot lid; beveled rim	7.5YR 4/4 brown, few small white and micaceous inclusions	*dia.*: 26 cm Rim: 11% *h.*: 5.2 cm
18	L.4156	B.610/5	Cooking pot lid; beveled rim and ribbed body	2.5YR 4/6 red, few small and large white inclusions	*dia.*: 20 cm Rim: 5% *h.*: 4.6 cm

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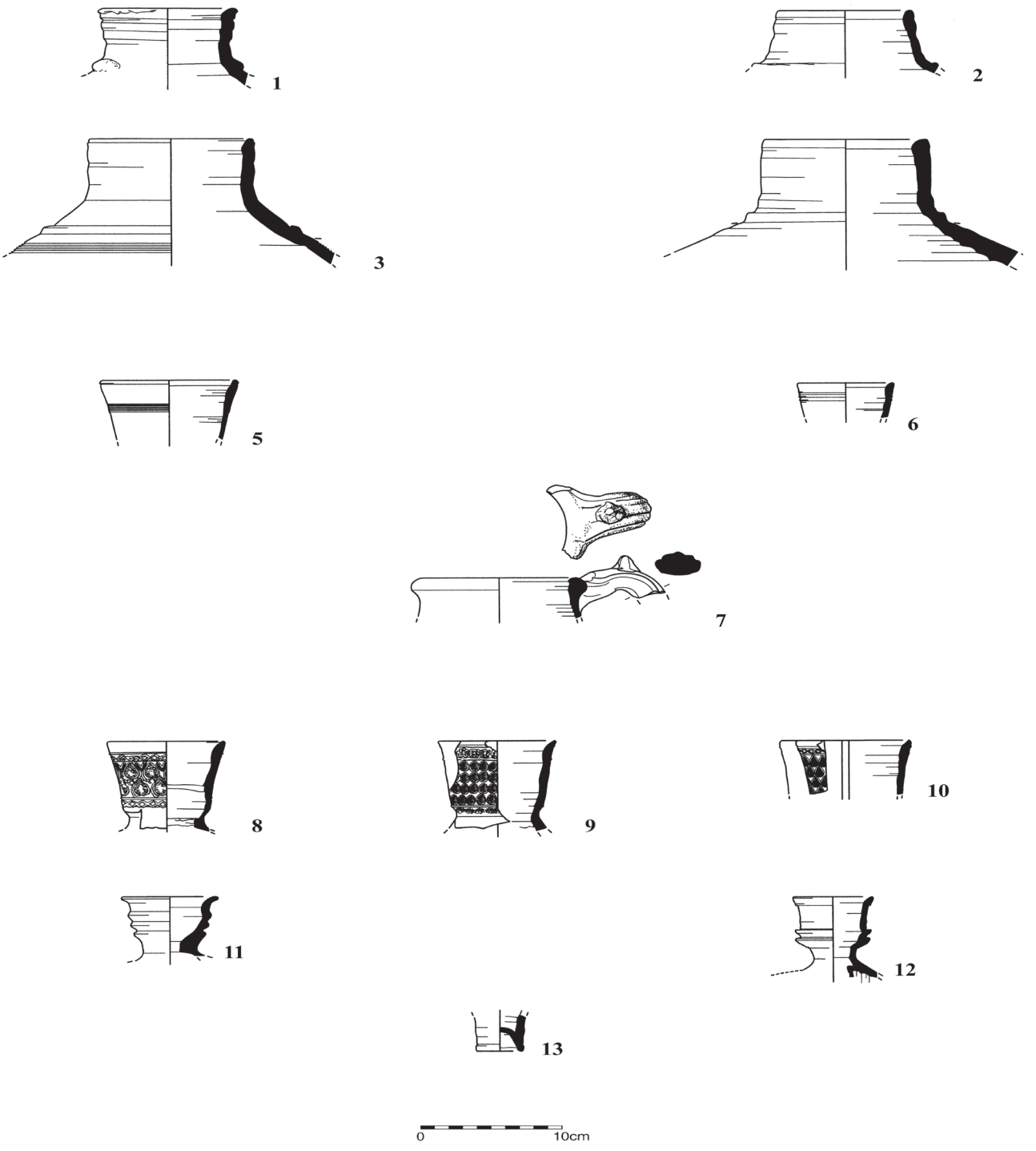

Figure 22.2. Storage jars, jugs, flasks, and an amphora base from the Armenian Compound.

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No.	Locus	Reg. No.	Form	Ware	Dimensions
1	L.4150	B.572/2	Storage jar; ribbed neck and round rim	25YR 4/6 red, many small black and white inclusions	*dia.*: 10 cm Rim: 22% *h.*: 6.7 cm
2	L.4148	B.567/8	Storage jar; clay accretions on shoulder	5YR 5/6 yellowish-red, many large white inclusions	*dia.*: 6 cm Rim: 12.5% *h.*: 5.8 cm
3	L.4156		Storage jar; slightly pinched rim, ridge at bottom of neck and combed lines on body and neck	75YR 7/4 pink, thick light gray core and many small and large white inclusions	*dia.*: 11 cm Rim: 22.5% *h.*: 9.5 cm
4	L.4150	B.587/8–11	Large storage jar; slightly ribbed neck, ridge at bottom of neck and pinched rim	25YR 6/6 light red, core 75YR 7/4 pink; surface fired to buff 10YR 8/3 very pale brown	*dia.*: 10 cm Rim: 60% *h.*: 13 cm
5	L.4138	B.519/2	Water jug; pinched rim and four incised lines under rim	25Y 8/3 pale yellow, few small black inclusions	*dia.*: 8 cm Rim: 19% *h.*: 5.6 cm
6	L.4145	B 554/4	Water jug; pinched rim and 4 incised lines under rim	25Y 8/4 pale yellow, few very small white inclusions	*dia.*: 8 cm Rim: 14% *h.*: 3 cm
7	L.4143	B.559/9	Jug; handle drawn from rim; decorative knob on handle	10YR 8/4 very pale brown, few gray and white inclusions	*dia.*: 10 cm Rim: 20% *h.*: 3.5 cm
8	L.4143	B. 559/2B.530/5	Mold-made jug; molded decoration: leaves and squares	10YR 8/4 very pale brown, few small gray and white inclusions	*dia.*: 8 cm Rim: 25% *h.*: 7.8 cm
9	L.4147	B.566/1	Mold-made jug; molded decoration: leaves, rosettes, and half-stars	10YR 8/4 very pale brown, few small white and black inclusions	*dia.*: 10 cm Rim: 7.5% *h.*: 7.8 cm
10	L.4156	B.599/2	Mold-made jug; molded decoration: leaves and squares	10YR 8/4 very pale brown, few small black inclusions	*dia.*: 14 cm Rim: 5% *h.*: 4.7 cm
11	L.4146	B.561/8	Flask; ribbed neck and everted round rim	25YR 6/8 light red, few small white and micaceous inclusions	*dia.*: 6 cm Rim: 50% *h.*: 5.6 cm
12	L.4138	B.539/6	Flask; stepped neck and everted folded rim	10YR 8/4 very pale brown, few small black and large white inclusions	*dia.*: 6 cm Rim: 12.5% *h.*: 7.3 cm
13	L.4150	B.587/2	Amphora base	5YR 5/6 yellowish-red, few small black a nd many small micaceous inclusions	Base *dia.*: 3.5 cm Base: 100% *h.*: 3.1 cm

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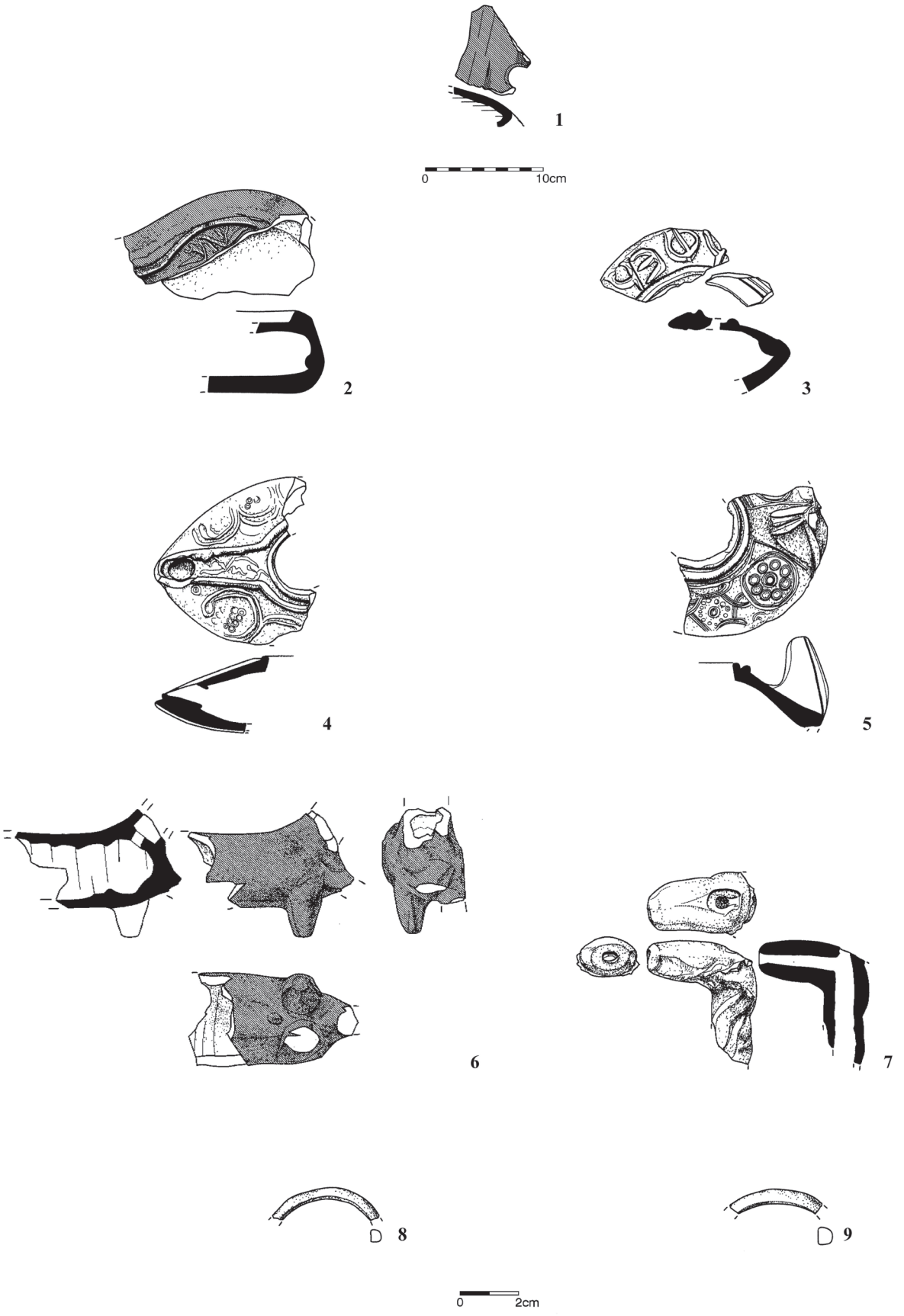

Figure 22.3. Lantern, lamps, figurines, and glass bracelets from the Armenian Compound.

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No.	Locus	Reg. No.	Form	Ware	Dimensions
1	L.4150	B.572/8	Lantern fragment	5YR 7/6 reddish-yellow, many small white and black inclusions	No diameter or rim
2	L.4150	B.577	Lamp, sunken decorated discus	5YR 6/4 light reddish-brown, few small black inclusions Remains of red slip	*l.*: 6.5 cm *h.*: 3 cm
3	L.4107	B.390	Lamp fragment, Greek letters	5YR 7/6 reddish-yellow, few small white inclusions	4.2 cm
4	L.4118	B.443	Lamp fragment, vine leaves and rosettes on rim and garland in nozzle	5YR 7/8 reddish-yellow, few small white inclusions	*l.*: 5.7 cm *h.*: 2.9 cm
5	L.4110	B.418/8	Lamp fragment, rosettes in circles and squares; pointed knob handle	2.5Y 8/4 pale yellow, few small black and white inclusions	*l.*: 5.4 cm *h.*: 3 cm
6	L.4105	B.383	Zoomorphic figurine fragments	5YR 6/8 reddish-yellow, few small white inclusions	Several fragments
7	L.4071	B.306	Perforated handmade object	5YR 6/8 reddish-yellow	3.5 × 3.5 cm
8	L.4071	B.311	Glass bracelet fragment	Blue glass	*dia.*: 0.5 cm *l.*: 3.7 cm
9	L.4107	B.321	Glass bracelet fragment	Dark blue glass, heavy white patina	*dia.*: 0.7 cm *l.*: 3.4 cm

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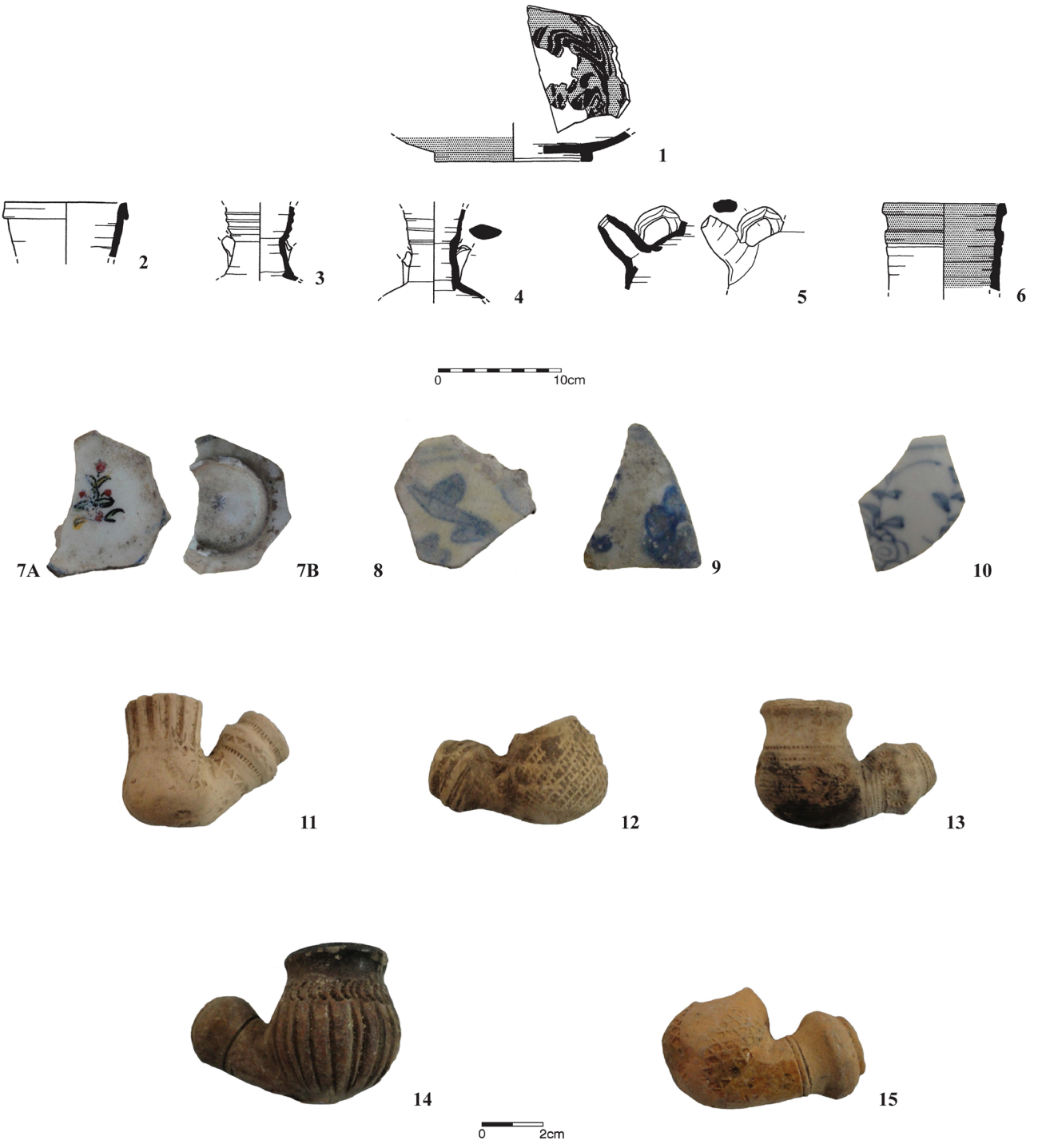

Figure 22.4. Early Ottoman assemblage from the Armenian Compound.

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No.	Locus	Reg. No.	Form	Ware	Dimensions
1	L.4086	B.342	Dish/bowl	Marmorizzata di Pisa; 25YR 6/6 light red with few small white inclusions	Base *dia.*: 10 cm
2	L.4091	B.359	Water jar (*asslyie*)	Gaza Ware; 25YR 4/2 weak red with many small white and few small pottery inclusions	*dia.*: 8 cm Rim: 20%
3	L.4070	B.302	Drinking jug (*ibriq*)	Gaza Ware; gray with few small white inclusions; surface fired to buff: 10YR 7/2–7/3 light gray to very pale brown	No rim
4	L.4080	B.354	Drinking jug (*ibriq*)	Gaza Ware; gray with many very small white inclusions	No rim
5	L.4073	B.318	Drinking jug (*ibriq*)	Gaza Ware; gray with few very small white inclusions	No rim
6	L.4070	B.302	Jar	25YR 5/6 red with many small and very small white inclusions. Interior and upper exterior glazed green on white slip	*dia.*: 10 cm Rim: 25%
7	L.4072	B.316/1	Coffee cup	*Kütahya* coffee cup; white soft paste decorated in blue, green, black, red, and yellow	Base *dia.*: 2.5 cm
8	L.4072	B.316/2	Coffee cup	*Kütahya* coffee cup; white soft paste decorated in blue	No diameter. Very small part of rim preserved
9	L.4072	B.316/3	Coffee cup	*Kütahya* coffee cup; white soft paste decorated in blue	No diameter. Very small part of rim preserved
10	L.4069	B.304	Cup?	Chinese Blue-on-White porcelain, decorated in blue	No diameter. Very small part of rim preserved
11	L.4088	B.349	Pipe	10YR 8/2 very pale brown	Shank *l.*: 2.5 cm Shank opening: 0.7 cm
12	L.4080	B.329	Pipe	10YR 8/2 very pale brown	Shank *l.*: 2.8 cm Shank opening: 0.8 cm
13	L.4101	B.376	Pipe	10YR 8/2 very pale brown	Shank *l.*: 2.2 cm Shank opening: 0.8 cm
14	L.4070	B.303	Pipe	Brown gray; surface with brown slip and burnishing	Shank *l.*: 3.7 cm Shank opening: 1.2 cm
15	L.4070	B.309	Pipe	Light gray with surface fired to buff and yellow glaze	Shank *l.*: 3.6 cm Shank opening: 1.1 cm

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CHAPTER 23

AN ABBASID STAMPED HANDLE FROM THE ARMENIAN COMPOUND EXCAVATIONS, 2006–2007

NITZAN AMITAI-PREISS
The Hebrew University of Jerusalem

A jar handle (Reg. No. 2011-386) with a stamped Arabic inscription (Figures 23.1 and 23.2) was unearthed during the 2006 to 2007 excavations by the Israel Antiquities Authority in the Armenian Compound in Jaffa (see Chapter 20). Such inscribed jars are significant as they provide direct evidence for the shipment of commodities during the Abbasid period and the locations from which such shipments originated.

The Inscription

The inscription contains three lines:

1. From من
2. Ahmad احمد
3. pure مخض

The inscription can be loosely translated: "From the manufacturer of a product, named Ahmad, (the product) is pure." We assume the product carried in the jar was olive oil. This is the first attestation of this particular inscription.

The inscription is a declaration of the purity of the product that the jar contained. At this point, it is impossible to determine where either the olive oil or the jar was produced. A somewhat equivalent term of excellence describing a product is found on a large jar handle unearthed at Caesarea. The three-lined inscription is according to its script from the early second century AH/eighth century CE (Sharon 1999:291–292). The inscription can be translated, "From my finest work":

من \ عملي \ بنك

The Arabic word *bunk* means both originality and excellence (Sharon 1999:292). In this case, it is also not clear which product was stored in this jar.

Conclusion

Since Jaffa was the port of the *jund* (county) Filastīn, the discovery of jars containing products transported to the city is not surprising. Jar handles from the same general period, some of which were stamped, were found in other areas within Jaffa, such as the French Hospital and Mifratz Shlomo St., both of which will be published by this author. One of the stamped handles from the French Hospital is from Dīr Samu'īl's monastery (Amitai-Preiss forthcoming). The products that were manufactured at the Nebi Samu'īl monastery were wine and oil (Magen and Dadon 1999:68; Sharon 2004). Thus, we have evidence for two products brought to the city port for export. Another city that shows evidence for export products, as we read above, was Caesarea,

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Figure 23.1. Abbasid stamped handle (Reg. No. IAA 2011-386) with impression. *Courtesy of the Israel Antiquities Authority.*

Figure 23.2. Profile view of Abbasid stamped handle (Reg. No. IAA 2011-386). *Courtesy of the Israel Antiquities Authority.*

where a few types of Arabic inscriptions and symbols stamped on jar handles were found on *zīr* storage jars handles. Moshe Sharon dated these inscriptions to the end of the eighth and beginning of the ninth centuries CE (Sharon 1999:291). The inscription on the jar handle from the Armenian Monastery in Jaffa can be assigned the same range of dates. Additional evidence may shed light on the origin of the jar, which may coincide with the product's origin.

Acknowledgments

I thank A. Elad and Robert Hoyland for their useful remarks.

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CHAPTER 24

AN ATHENIAN BLACK-FIGURED KRATER FRAGMENT FROM THE ARMENIAN COMPOUND EXCAVATIONS, 2006

PETER GENDELMAN
Israel Antiquities Authority

A small fragment of a painted vessel was found during the 2006 excavations by the Israel Antiquities Authority in the room over the church in the Armenian Compound in Jaffa (see Chapter 21). The sherd was found in late Ottoman fill in the church upper room.

The Sherd

The inner side of the sherd fragment is covered with excellent black glaze, while the outside is painted in the black-figure technique with details emphasized by incisions etched before firing (Figure 24.1). The vessel was made of red, well-levigated clay without any visual inclusions. The fragment originated from the neck of a large vessel and preserves the beginning of a much wider rim, the transition emphasized by a horizontal black painted line, likely from the column or volute of the krater. The painted scene was part of a frieze adornment on the vessel's neck. Although vessel neck friezes are uncommon features on Attic black-figured kraters, some examples are known. One such example is the Late Archaic (ca. 510–500 BCE) Fleischman volute krater attributed to the Leagros group, on which athletic scenes are displayed, now part of the collection of the Getty Villa in Malibu, California (True and Hamma 1994:89–91, Cat. No. 37).

The image is of the upper part of a reclined bearded satyr(?) with pointed ears. The figure's upper body is bare, and its extended left hand holds a cotile-krater. The head, depicted in profile, rests on his folded right hand. The figure is painted without etched outlines, while the eye, hairline, beard, and chest are underlined with incisions. The hairs on the head and beard are emphasized by scratching. The cotile-krater's painted rim is underlined with fine incisions. Small upturned handles are painted on both sides of the krater. Vine stems with stylized dot-like leafs to the right and left splay from the krater's rim. On both sides of the figure are fragmentary remains of other unpreserved forms. The painter's work is generally good, although the incisions occasionally deviate from the painting. This minor negligence may be explained by the supposition that this was probably not the main scene to be depicted on the vessel's body.

The general association of the scene to the Dionysian or Heraclean circle is clear. Satyrs in symposia banquet scenes are commonly affiliated with these two deities. Furthermore, both the ivy and krater are Dionysian attributes. No exact parallels to the Jaffa fragment have been found, but it generally belongs within numerous black-figured vase paintings of the late sixth to early fifth centuries BCE. As an example, the ivy treatment is closely related to those attributed to the Leagros group (Beazley 1928:26–28, pls. 14,15; Beazley 1951:81–87, pls.

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Figure 24.1. Athenian black-figured krater fragment from the Armenian Compound.
Photograph by K. Amit. Courtesy of the Israel Antiquities Authority.

42–43) and to works signed by Nikosthenes (Hoppin 1924:212–213, 256–259) and Pamphaios (Hoppin 1924:300–309), both Athenian masters of the transitional period (second half of the sixth century BCE). The body treatment of the satyr as well as the vine closely relates to several vessels of the late sixth century BCE, such as a cup from Basel showing Heracles and centaurs dated ca. 500 BCE (Berger-Haas 1964:42, pl. on p. 43:72); two oinochoi with Dionysian scenes from the same collection dated ca. 490/480 BCE (Berger-Haas 1964:44, pl. on p. 45:77–78); a cup from Toronto of Sub-Type A attributed to a painter of the Leafless group dated ca. 480 BCE (Hayes 1981:32, pl. 37:920.68.15); and a *lekythos* from the National Museum at Prague of Style Athen 581i, depicting a banquet of Heracles dated ca. 500 BCE (Bažant et al. 1990:61, fig. 37:3, pl. 36). A very similar krater is depicted on a white ground *lekythos* with a symposium scene from Basel (Berger-Haas 1964:46, pl. on p. 45:79), dated to ca. 500 BCE.

Conclusion

Attic black-figured vessels are not common finds in Israel (Wenning 2004a, 2004b), although some fragments, mainly of late fifth century date, occur at coastal cities such as Dor (Marchese 1995:127). Jaffa likewise provides several good examples of Late Archaic Attic black-figured vessels, now including this sherd from the Armenian Monastery excavations.[1]

Note

1. For additional sherds from Jaffa, see the forthcoming publication by Orit Tsuf on finds from the Persian to Byzantine period from Kaplan's excavations.

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PART V

The Kaplan Excavations, 1955–1974

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Chapter 25

Excavations in Areas B, D, F, and G by Jacob Kaplan, 1959–1964

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Macquarie University, Sydney

Between 1959 and 1964, Jacob Kaplan conducted salvage excavations at the north end of Tel Yafo in Areas B, D, F, and G. These trenches, in and around the Ottoman bathhouse, exposed remains of the Iron Age, and possibly Middle Bronze Age ramparts at the site. Additional finds, particularly in a narrow trench in Area G, included occupational phases dated to the Iron IIB-C, Hellenistic, Roman, Islamic and Crusader periods.

This chapter deals with Kaplan's excavations in Areas B, D, F, and G (Table 25.1). Each of these areas is discussed separately first, offering local stratigraphic and ceramic analyses.[1] At the end of the chapter, a synthesis is offered that incorporates the finds from all four areas. The order in which the areas are discussed below follows the order in which they were excavated.

Area B

Introduction

Area B is located within the Hammam (Ottoman bathhouse) that sits on the northeastern slope of Tel Yafo on the south side of Mifratz Shlomo St. (Figures 25.1 and 25.2; Table 25.1). Excavations were conducted between December 1959 and March 1960 in conjunction with repairs made to the Hammam (Kaplan 1961:191, 1964a:273) within areas Kaplan referred to as the "Large Room" and the "Small Room" (Figure 25.2). The following description is based upon the remaining records of Kaplan's excavations, including pottery bucket tags, top plans, a labeled northern section drawing (the accuracy of which is unclear; Figure 25.3), and field photographs of the eastern half of the Large Room. Unfortunately, no field diary or photographs from either the Small Room or the western half of the Large Room have been found.[2] Aside from the two Iron Age glacis,[3] all of the layers in Area B were layers of fill that contained very little datable material. No ancient surfaces or architectural features were encountered adjoining or cutting the glacis. Kaplan, however, did cut sections through both glacis, providing some stratigraphy.

Stratigraphy

Phase 4: Iron IIB–C

This phase is represented by Glacis 1, which was the earliest distinct feature encountered by Kaplan. It was made of mudbricks (L.12*; Figures 25.4, 25.5, and 25.6)[4] sloping downward from west to east at an angle of 34°. This glacis was uncovered for a width of 4 m and a length of 10 m in the "Large Room," and it was as many as five courses thick of mudbrick. The mudbricks averaged 58 × 38 × 11 cm in

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Table 25.1. Phase chart correlating strata in Areas B, D, and G.

Period	Date (Century BCE/CE)	Area B	Area D	Area G
Ottoman		1	—	—
Mamluk		—	1	—
Crusader	Twelfth to thirteenth CE	2?	2, 3	1?
Abbasid		—	—	2?
Umayyad		—	—	2?
Byzantine		—	—	—
Late Roman	Second to fourth CE	—	—	3
Hellenistic	Third to first BCE	—	4?	4
Persian		—	—	—
Iron IIB–C	Late eighth to early seventh BCE	3, 4	5?	5

size and were sun-dried. Unfortunately, the construction of the Hammam damaged the glacis both on the west, at the level of the Hammam's floor, and on the east, where the foundations of the Hammam cut through it. Kaplan, however, did open a probe trench to the east in the "Small Room" in an effort to locate a continuation of the glacis down-slope, although it appears that he did not excavate deep enough to find this mudbrick layer.

In addition to the small section that Kaplan cut through the mudbrick glacis that revealed its thickness in courses (Figure 25.6), he also opened two other probes that are sketched on the Area B top plan (Probes 1 and 2, Figure 25.2). Unfortunately, neither the purpose of these probes nor what pottery buckets should be associated with each probe are clear, although it may be assumed that Kaplan was attempting to find more materials by which to date the layers of sloping fill below the glacis. The first probe is L-shaped (approximately 2 × 1.5 m; see Figures 25.2 and 25.5) and is located in the northwest corner of the room, while the second is a 1-m × 1-m square opened just southwest of the section cut through the glacis.

Phase 3: Iron IIB–C

This phase is represented by Glacis 2 (Figures 25.2 and 25.3). Following the construction of Glacis 1 of Phase 4, a layer, or layers, of soil 1.5 m thick (L.9*) was deposited over its face and a second glacis (L.6*) was constructed at a slope of 24°. A 4-m × 1.75-m segment of Glacis 2 was exposed in the "Small Room," where it was constructed of stone slabs ranging in size from 50 × 10–30 × 10 cm and was apparently one course thick.

It appears that Kaplan made no distinction between Phases 4 and 3, as done here, but rather saw the stone slabs, fill, and mudbricks as part of one defensive feature. In his description of the fortifications, he wrote that the glacis "has an external facing of stone slabs beneath which appeared alternate layers of sand, black soil, red clay, and sun-dried mud brick . . . the total thickness of the combined layers is 5 m" (Kaplan 1961:191–192). The layer of mudbricks was considered by Kaplan to be a layer that helped to retain additional external layers, which is a construction technique that appears at the nearby site of Tel Gerisa already in the Middle Bronze IIC. There, a layer of mudbricks was topped with layers of both "earth mixed with *kurkar*" and "hard brick material" (Geva 1982:12ff.). At Jaffa, however, the intrusion of the Hammam's foundations obfuscates the construction history of the glacis. Whether the layers of red clay and black soil mentioned by Kaplan were merely additional layers of fill between the mudbricks and the stone slabs or whether one of those layers was actually the glacis is unclear. The direct relationship between the layer of mudbricks of Glacis 1 (L.12*), the soil layer(s) of L.9*, and the stone slabs (L.6*), as suggested by Kaplan, is conjecture.[5]

Despite Kaplan's interpretation, the presence of two separate glacis appears more preferable than the suggestion of just one. First, in discussing the Iron Age glacis discovered in Area A in 1973, Kaplan (1974:136) himself notes that there were two phases of construction. While these two phases of construction are not yet entirely clear, one glacis is of crushed chalk, as attested in a photograph from 1973.[6] Based on Kaplan's preliminary dating of the glacis in Area A to the Iron Age—contemporaneous with the glacis in Area B—it would stand to reason that there are two phases of glacis construction in Area B as well. Second, the slopes of the mudbrick layer and stone slabs are different—34° and 24°, respectively.

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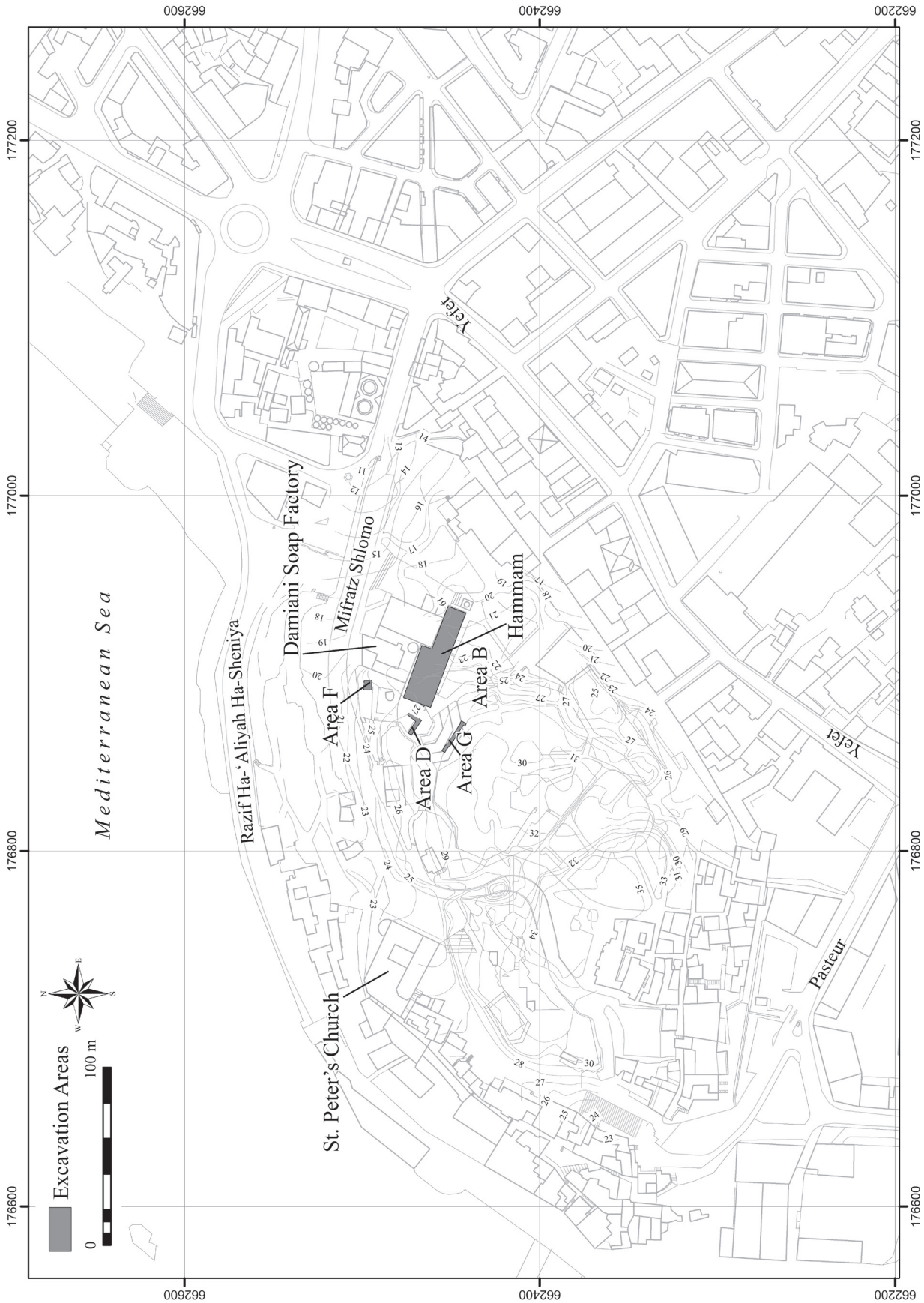

Figure 25.1. Map showing location of excavation Areas B, D, F, and G on Tel Yafo. *Map by Krister Kowalski.*

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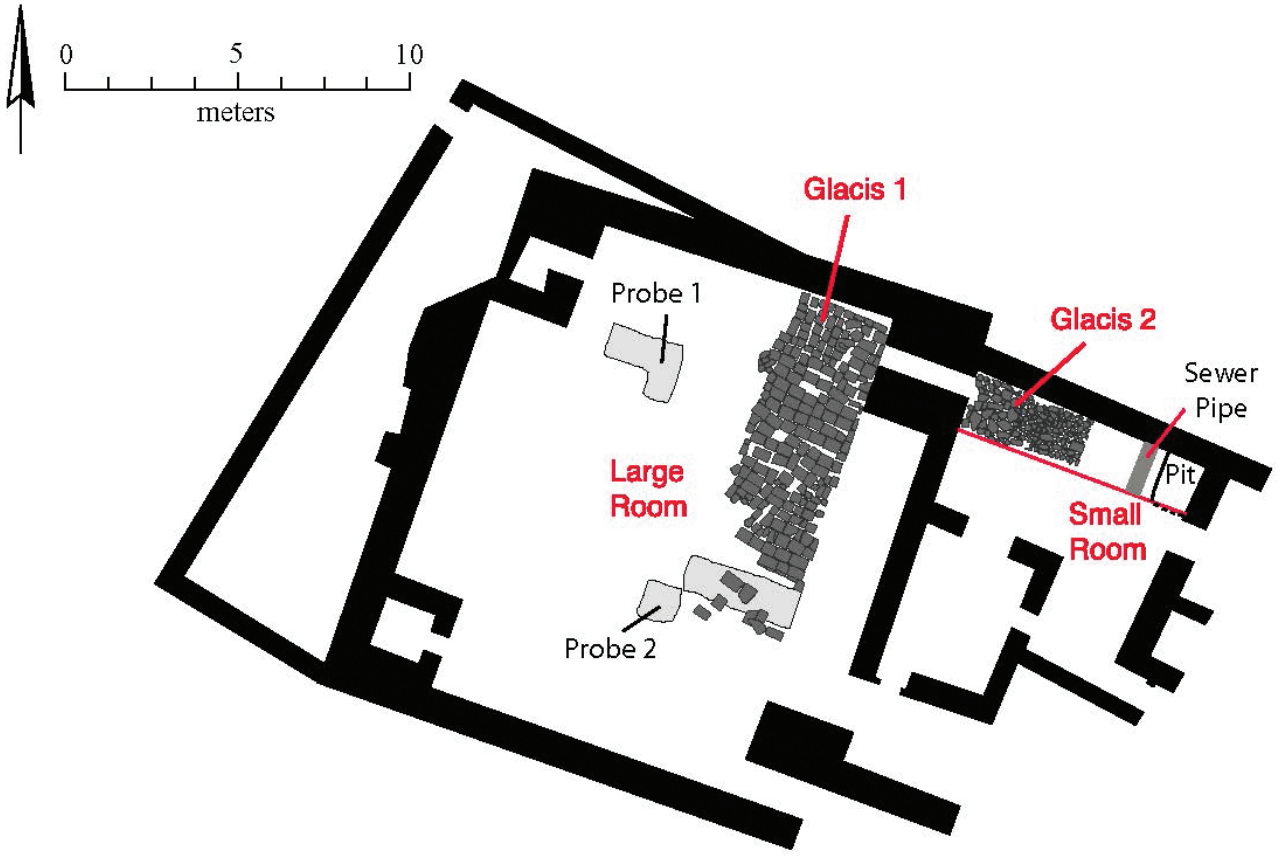

Figure 25.2. Plan of Area B. *Drawing by George Pierce.*

While it is acknowledged that any meaning behind this difference in slope may be artificial, as each subsequent layer of fill may have been deposited at a slightly decreased gradient, the fact that the layers of soil below the mudbrick glacis are of a similar slope with the mudbricks themselves suggests that they were deposited together, while the soil layer(s) above the mudbricks, including the stone slabs, were themselves deposited together at a different slope. Unfortunately, the intrusion of the Hammam foundations and the paucity of excavation records preclude any detailed assessment of the intermediary L.9*, including the nature of its composition and the slope or slopes of its constituent parts. If L.9* comprised multiple soil layers, the slopes of which could be shown to be different, then there would be added support for Kaplan's interpretation of a single phase of construction. However, only the upper few centimeters of L.9* were breached in the Small Room, and Kaplan's records make only passing reference to the soil layers above the mudbricks in the Large Room; there is no detailed discussion of L.9*, likely because of its disturbed nature. The ceramics recovered from dismantling the two glacis offer no additional help as sherds from the late eighth to early seventh centuries BCE were recovered from both.

Phase 2: Mixed Iron II–Crusader

Phase 2 is represented by deposits after Glacis 2 fell out of use (Figure 25.3). It is marked not by any architectural remains but by mixed layers of fill (L.4*, L.5*) with assorted ceramics found above Glacis 2 and below the floor of the Hammam. In addition, a pit (L.3*) that is approximately 1.80 m deep and over 1 m in diameter exists along the east side of the "Small Room" and is attributed to this phase (see Figure 25.2). The full dimensions of this pit are unknown due to the limited size of the excavation area and because it also is cut by the foundations of the Hammam. Nothing can be said about the layer(s) of fill or the pit that comprise this level except that the associated ceramics range in date from Iron II to Crusader for the pit and from Iron II to the Mamluk period for the fills.

Phase 1: Modern

Phase 1 represents the construction of the Hammam. The most recent phase of occupation in Area B is marked by

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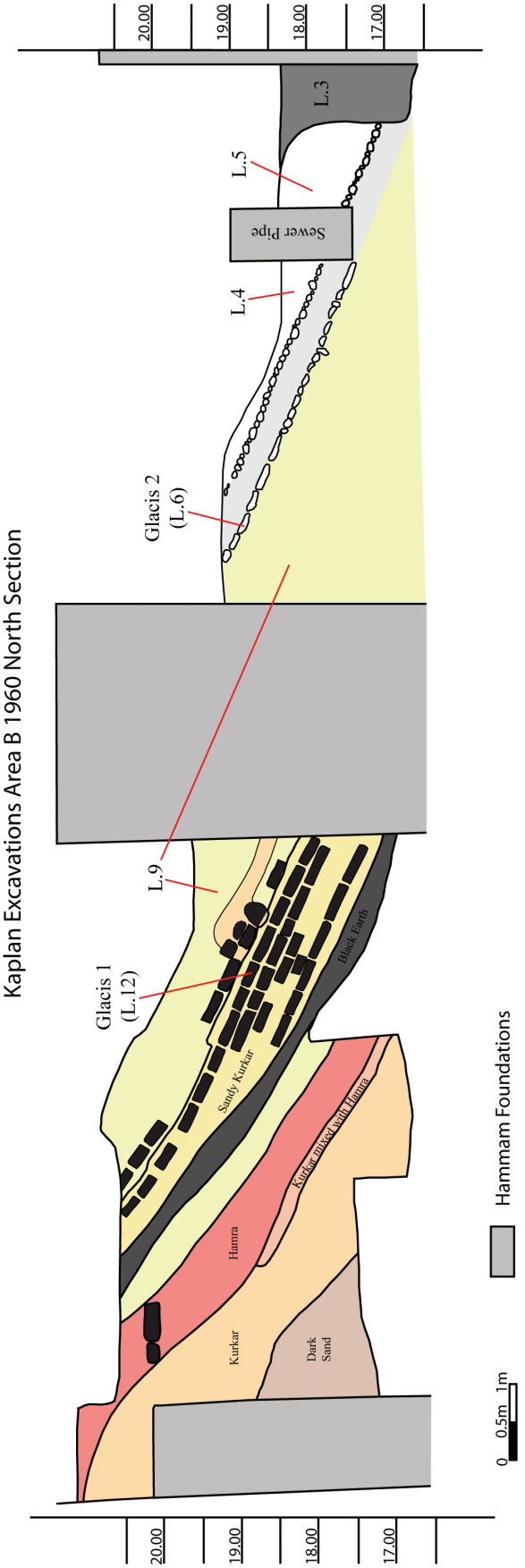

Figure 25.3. Northern section of Area B. *Drawing by Kyle Keimer.*

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Figure 25.4. Mudbrick glacis (Glacis 1, L.12*) in Area B. View northeast. *Kaplan Archive*, Photo B234-11.

Figure 25.5. Overview of the eastern half of the "Large Room" in Area B with mudbrick glacis (Glacis 1, L.12*). View northeast. Probe 1 is visible in the upper left. *Kaplan Archive*, Photo B234-10.

the construction of the Ottoman Hammam, which stands today and was built in the late eighteenth century CE. It was attached to the Ottoman *sarāy*, which later became the Damiani soap factory, of which the Jaffa Museum is a part. The Hammam has undergone multiple renovations, one of the most recent of which prompted Kaplan's excavations in Area B. Its foundations, drains, and pipes all cut through the earlier strata in Area B and were encountered during excavations. These features, however, were not investigated archaeologically, and the only references to them occur on the pottery bucket tags where they serve as markers to provide relative locations for some of the pottery buckets.

Ceramics

There is a dearth of surviving ceramics from Area B. Of the indicative sherds kept by Kaplan, very few can be used for dating purposes because there were few clean loci, and also the sherds are very fragmentary. Only those sherds collected from disassembling the two glacis are secure; the emphasis below will be on these. As for the layers of fill below Glacis 1 (L.11* and L.13*), their dates cannot be determined because it is unclear which ceramics belong to those layers. Kaplan attributed some of them to the Middle Bronze Age; however, that date cannot be substantiated presently. As a matter of notation only, because they come from mixed contexts, there are sherds of imported Iron Age wares that are poorly attested and/or are completely absent in the other excavation areas in Jaffa, including an almost complete Black-on-Red II juglet, two sherds of Cypriot White Painted Ware, and one sherd each of a Bichrome painted vessel and Achziv Ware. In addition, multiple sherds of both Philistine Monochrome and Bichrome (e.g., MHA 2359) Wares were found.

Phase 4: Iron IIB–C

Bowls. Six bowl rim fragments were recovered from dismantling the mudbrick glacis. MHA 5016 (Figure 25.7:1)

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Figure 25.6. Close-up of partial section through mudbrick glacis (L.12*) in Area B. View northeast. *Kaplan Archive*, Photo 35240.

and MHA 5025 (Figure 25.7:2) are from Phoenician Fine Ware bowls and are highly burnished. The former has only spots of red slip on the interior of the rim, while the latter has a band of red slip that covers the entirety of the interior and the exterior of the rim. Neither MHA 5016 nor MHA 5025 is preserved well enough to determine the presence and degree of carination below the rim, so appropriate parallels may range from bowl types BV at Horbat Rosh Zayit (Gal and Alexandre 2000:37, figs. III.82:20; III.86:32) to bowl CP1a or CP1c from Tyre-al Bass (Núñez 2004b:328–330) to the Ir2c Phoenician Bowl 1 at Ashkelon (Stager, Master, et al. 2011:97, fig. 96.92). There are a few additional body sherds of the Fine Ware bowls recovered from dismantling the glacis, each with concentric circles in red and yellow slip, although they are even more fragmentary than the rim sherds. Phoenician Fine Ware bowls with simple rims and slightly convex walls appear already in the late tenth or early ninth century BCE (Hazor Stratum Xb; Horbat Rosh Zayit Stratum IIa), are more common in the eighth century BCE, and continue into the seventh century BCE in many coastal sites (Tyre Stratum I, Sarepta Stratum B, Ashkelon, and Dor Area A Phase 9; cf. Gilboa 1995:7). A specific date for MHAs 5016 and 5025 is not, however, possible.

MHA 5024 (Figure 25.7:3) is a rounded shallow bowl with a rounded rim. There is a thin ridge below the rim on the exterior, and a slight carination is visible on the interior of the sherd. There is no surface treatment. The best parallels appear at Ashdod in Strata IX to VII (Dothan 1971:figs. 5:17, 39.16; 1982:fig. 10:4, 11), but here they are typically red-slipped and burnished (cf. MHA 5012 below). Bowl Type 37 at Tel Batash (Mazar and Panitz-Cohen 2001:35) and Bowl Type 45 from Gezer (Gitin 1990:165) are also likely related to this form, although most of the cited examples are not as similar to MHA 5024 as are those from Ashdod. This type of bowl appears infrequently at sites across the Coastal Plain from the late tenth to the seventh centuries BCE but rarely occurs further inland (although see Mazar and Mazar 1989:pl. 25:28 for an exception).

MHAs 5018 (not illustrated) and 5021 (Figure 25.7:4) are shallow bowls/plates that have a horizontal rim with interior thickening and a shallow depression on the exterior below the rim. The walls are slightly convex. MHA 5018 and MHA 5021, the latter of which is burnt to a dark gray, are most similar to Núñez's Bowl Type CP6d (2004a:fig. 55.45–46; 57.16; 2004b:338–340) and Bikai's Plate Types 7 and 2—the former type is likely the predecessor of the latter and is slightly larger with a narrower ridge (1978:23; pls.VIIIA; XVIA.14, 17). This bowl type is a typical Phoenician form common at coastal sites, including Tyre, Tyre al-Bass, and Sarepta (Anderson 1988:Type X-17E) from the mid- to second half of the eighth century BCE and possibly continuing into the seventh century BCE.

MHA 5019 (Figure 25.7:5) is a shallow bowl/plate or chalice with a rounded body and an everted horizontal rim. There is a faint ridge on the interior of the rim that leads to a sharp carination. The fragmentary state of this sherd makes identifying the specific vessel form difficult. At Yoqneʿam, vessels identified as lamps have similar profiles to that of MHA 5019 (Ben-Tor et al. 2005:fig. I.71.3), but there are no indications that MHA 5019 was ever used in such a way. This form is likely related to Bikai's Plate 2 Type from Tyre (1978:pl. 8:11, 31) or Mazar's Chalice 2 Type from Qasile (1985:48–49). A date anywhere between the late eleventh and eighth centuries BCE is possible.

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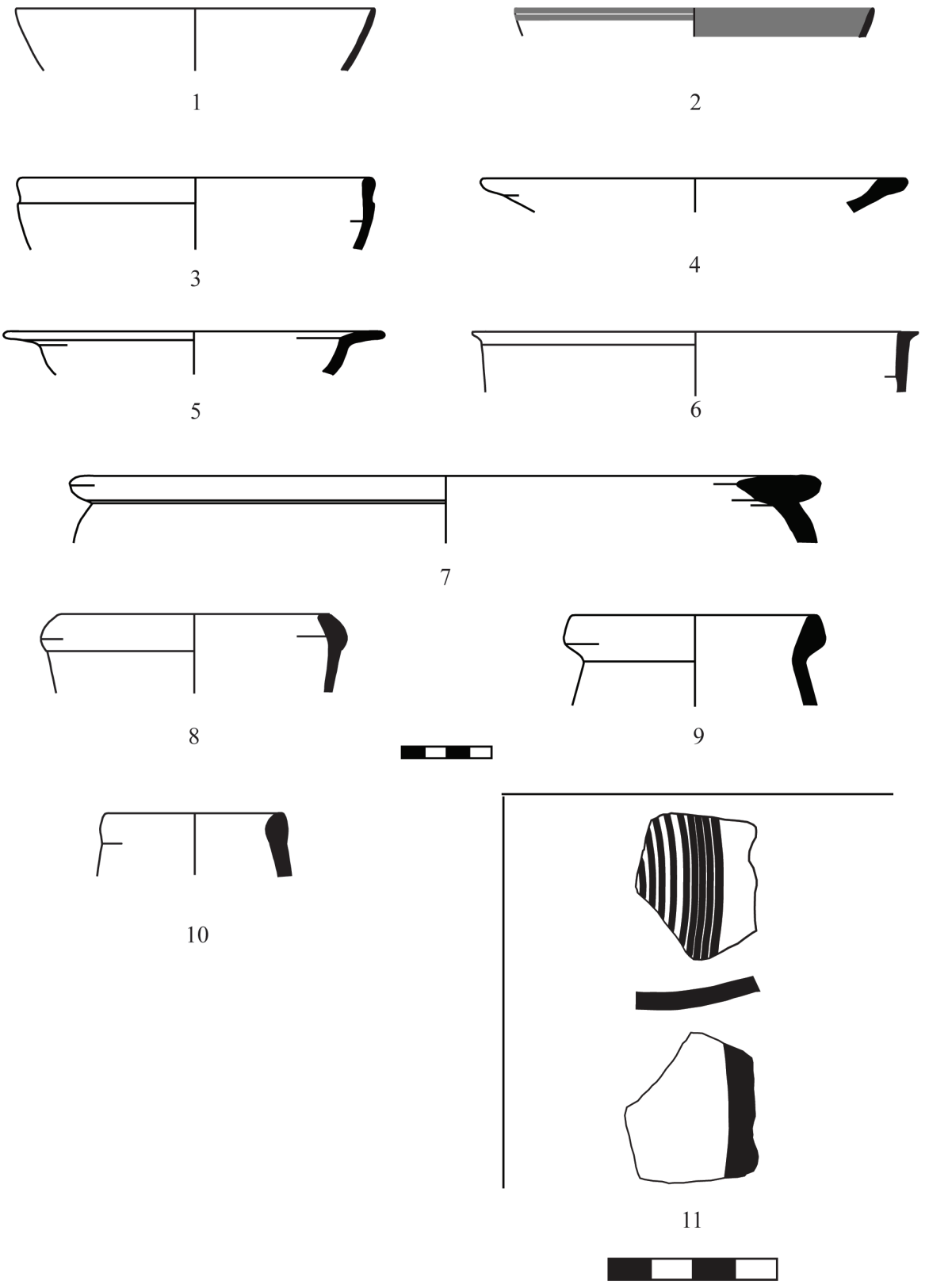

Figure 25.7. Area B, Phase 4 ceramics.

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No.	Form	Period	Reg. No.	Description
1	Bowl	Iron IIA-C	MHA 5016	Phoenician Fine Ware; light orange ware, burnished on interior and exterior; small sprinkles of red slip on interior
2	Bowl	Iron IIA-C	MHA 5025	Phoenician Fine Ware; light orange ware, burnished on interior and exterior; band of red slip on interior and top of rim
3	Bowl	Iron IIA-C	MHA 5024	Dark red clay
4	Bowl	Iron IIB-C	MHA 5021	Burnt gray fabric
5	Bowl	Iron I-IIB	MHA 5019	Orange clay; black core
6	Krater	Iron I	MHA 5017	Orange clay; black core; few white inclusions
7	Krater	Iron I-II	MHA 5023	Orange clay; black core; few white inclusions
8	Jug	Iron I-IIB	MHA 5020	Orange clay; thick white slip on interior and exterior
9	Storage jar	LB	MHA 5014	Orange clay; few white inclusions
10	Storage jar	Iron IIA-C	MHA 5022	Orange clay
11	Bowl, body sherd	Iron IIC	MHA 2357	Cypriot White Painted IV body sherd; orange-brown clay. Purplish decoration

Kraters. MHA 5017 (Figure 25.7:6) is an angular-profiled krater/bowl typical of the Iron I (cf. Briend and Humbert 1980:pl. 66:11a). It has a flatter rim than many similar vessels (cf. Dothan et al. 2006:fig. 3.34.13) and is very thin. MHA 5023 (Figure 25.7:7) is a flat-topped hammerhead rim of a krater that has no surface treatment. The body of the vessel is convex, but aside from this general observation, the fragmentary nature of the sherd makes any further assessment impossible. The best parallels appear to be Krater Type 14b from Tel Batash (Mazar and Panitz-Cohen 2001:63), which are typically red-slipped and burnished, and Bowl Groups B-20 and B-27 from Lachish (Zimhoni 2004b:1669, 1672) that would date MHA 5023 to the Iron I or IIA. The hammerhead rim, however, does appear later into the Iron II, so a later date for MHA 5023 is not impossible.

Jug. The fragmentary nature of MHA 5020 (Figure 25.7:8) makes a clear identification difficult. The rounded rim and slightly everted neck, however, suggest a similarity to jugs common from the Iron I to Iron IIA but that continue into the Iron IIB (Ben-Tor et al. 2005:figs. I.37.13, I.38.20–21, I.58.42; Panitz-Cohen and Mazar 2006:pl. 66:6; Zimhoni 2004a:figs. 25.29.17, 25.33.6; 2004b:26.27:5). Although these jugs are often identified as "cooking-jugs," both the fabric and the presence of a white slip on this piece suggest that is was not used for cooking (cf. Mazar and Panitz-Cohen 2001:109, 111, JG 130).

Storage Jars. There are two store jar rim fragments. MHA 5014 (Figure 25.7:9) has a thickened everted rim with an elongated and slightly inverted neck. It is similar to Yoqneʿam Store Jar Type IB (Zarzecki-Peleg et al. 2005:298–299) and Storage Jar Type 20 at ʻIzbet Sartah (Finkelstein 1986:76, figs. 78.16 and 10.79). This form is common in the Iron I and is a development of a typical Late Bronze Age form. MHA 5022 (Figure 25.7:10) is a neck and rim of a store jar. The neck is slightly inverted with a shallow exterior trough just below the rim. The rim is slightly rounded with a thickened interior. It shares characteristics with sack-shaped store jars found at coastal and northern Israel sites (Anderson 1988:194, SJ-199; Gal and Alexandre 2000:50, SJ III; Gilboa 1995:10, SJ 17a) and with oval-shaped store jars common in the Shephelah and Judah (Gitin 2006; Shai and Maeir 2003; Zimhoni 2004a:fig. 26.30:24). Without more preserved, however, it is impossible to say to which, if either, MHA 5022 belongs. Both types are common from the ninth to seventh centuries BCE.

Cypriot White Painted (WP) Sherd. MHA 2357 (Figure 25.7:11) is a Cypriot White Painted body sherd. It is covered with a thin white slip on the interior and exterior and has a series of concentric circles painted on the interior and one thick band painted on the exterior. The paint has a purplish hue common in the White-Painted Ware (WP) IV–V families, but the fragmentary nature of the sherd makes the assignation to a specific White Painted family imprecise. Still, the fabric is fairly well levigated, which ties it more closely to WP IV over the rough and gritty fabric of WP V. Regardless, if this piece is in fact WP IV or a later family type, then it has chronological significance for dating the glacis as WP IV does not appear until ca. 700 BCE (Gjerstad 1948:423). It should be noted, however, that this sherd comes from the first layer of mudbricks removed from the glacis and, therefore, may be intrusive.

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The dearth of pottery recovered from dismantling Glacis 1 makes dating it difficult, but the latest dated sherds suggest that this feature was constructed in the second half of the eighth century BCE at the earliest. The presence of a possible Cypriot White Painted IV sherd, if it is not intrusive, may even lower this date into the early part of the seventh century BCE.

Phase 3: Iron IIB–C

Bowls. MHA 5012 (Figure 25.8:1) is almost identical in form to MHA 5024 (from Phase 4) but has a less pronounced exterior ridge. Also, MHA 5012 is decorated in the (Cypro-)Phoenician Black-on-Red style; it has a horizontally burnished red slip on both its interior and exterior, and there is a black band painted on the top and exterior of the rim. The best parallels are bowls from Ashdod (see above under MHA 5024 for citations), which date from the late tenth to seventh centuries BCE.

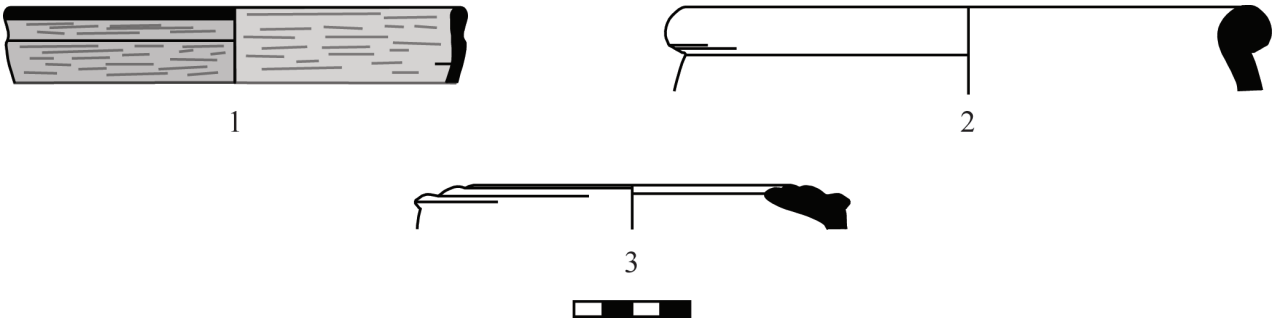
MHA 5011 (Figure 25.8:2) is to be identified as a deep bowl or a krater that has a rounded or bulbous rim and is covered with a very worn cream-colored self slip. This type of rounded rim bowl/krater is found largely along the coastal plain and in the north of Israel (Ben-Tor et al. 2005: figs. I.20.4, I.34.10, I.40.17–18; Briend and Humbert 1980:pl. 81:11, 11a; Finkelstein 1986:fig. 13:19; Mazar 1985:fig. 27.10), where it is dated to the Iron I, specifically 1100 to 1050 BCE at Qasile and similarly 1100 to 1075 BCE at Tel Keisan. At Yoqne'am, it is most common in the early Iron I (Str. XVIII) and fades into the Iron IIA (Str. XIV). Bulbous rim kraters of this type are also common slightly earlier at Taanach in Period IB (1150–1125 BCE; Rast 1978:fig. 12.2–7; 16:3) and continue into Period IIA (Rast 1978:fig. 18:2).

Store Jar. MHA 5009 (Figure 25.8:3) is a rilled-rim, hole-mouth store jar. These store jars are found throughout the Shephelah (Mazar and Panitz-Cohen 2001:pls. 21:1–2, 36:5, 47:13–14, 93:19; Grant and Wright 1938:pls. LXV:19, 24, 26, 30–32; Zimhoni 2004b:fig. 26.19.4) and at some coastal sites (Dothan 1971:fig. 47.3; Mazar 1985:fig. 57:7–13; Naveh 1962:fig. 5:11). Mazar and Panitz-Cohen (2001:107) note that this form appears in Judah in both the eighth and seventh centuries BCE but appears along the coast largely in seventh-century BCE contexts.

The most important sherd for dating purposes from Phase 3 is the rilled-rim hole-mouth store jar (MHA 5009; Figure 25.8:3). It places the construction of Glacis 2 in the seventh century or less likely in the late eighth century BCE.

Phases 2–1

There were no clean loci for either Phase 2 or 1. Ceramics from the Iron II to Crusader periods were found scattered throughout levels in the Small Room in Area B.[7]



No.	Form	Period	Reg. No.	Description
1	Bowl	Iron IIA–C	MHA 5012	Orange clay; red-slipped and wheel burnish interior and exterior; black paint on exterior and top of rim
2	Krater	Iron I	MHA 5011	Orange clay; cream self slip
3	Storage jar	Iron IIB–C	MHA 5009	Orange clay; black core

Figure 25.8. Area B, Phase 3 ceramics.

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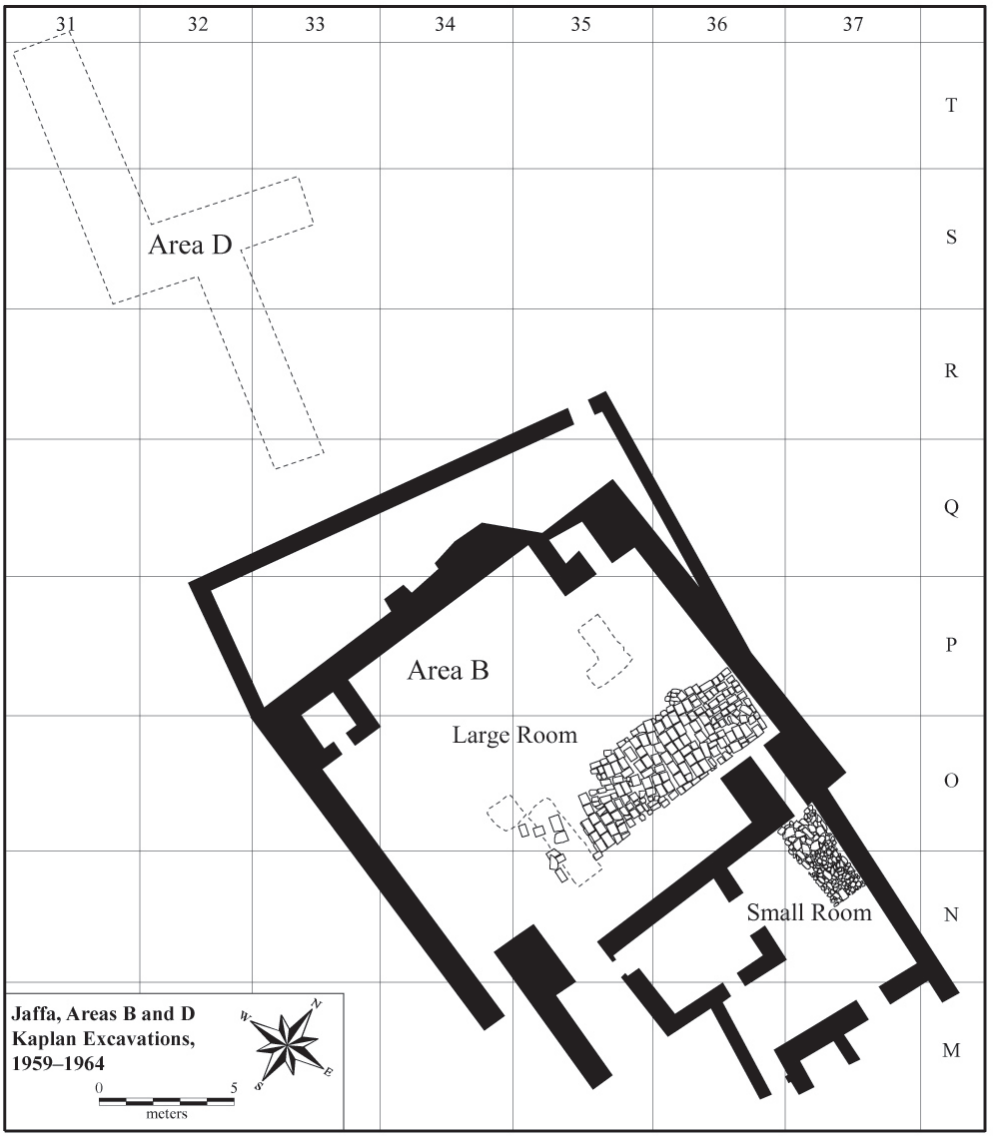

Figure 25.9. Plan of Areas B and D. *Drawing by George Pierce.*

Area D

Introduction

Area D is located just west of Area B and was excavated intermittently from July 8 to October 29, 1963 (Figure 25.1 and Table 25.1). It was chosen for exploration because Kaplan hoped to discover more of the Iron Age glacis and the earlier Bronze Age ramparts (Kaplan 1964b:10). The area was excavated, largely by machine, in five adjoining trenches (Probes 1 to 5), reaching a depth of approximately 5 m in some places. The size and location of these probes relative to one another is unknown, except for Probe 5 (see below). It is assumed that they were opened from west to east based on the two northern section drawings, but any reconstruction of the excavations in Area D is made difficult by the fact that even fewer records remain than for Area B and, furthermore, by the fact that the area was backfilled and has a theater stage now built over it. Therefore, the following analysis is based upon surviving pottery bucket tags; one schematic top plan, which, unfortunately, is devoid of any features; two section drawings; and available photos.[8]

According to the schematic top plan, the excavated area was a long trench that extended approximately 20 m northwest-southeast and was generally 2 m wide (Figure 25.9). At one point, the area extended an additional 3 m to the north. Each of these measurements is based upon elevations recorded on the section drawing that adjoined this top plan, as no scale is given on the top plan itself. Dimensions

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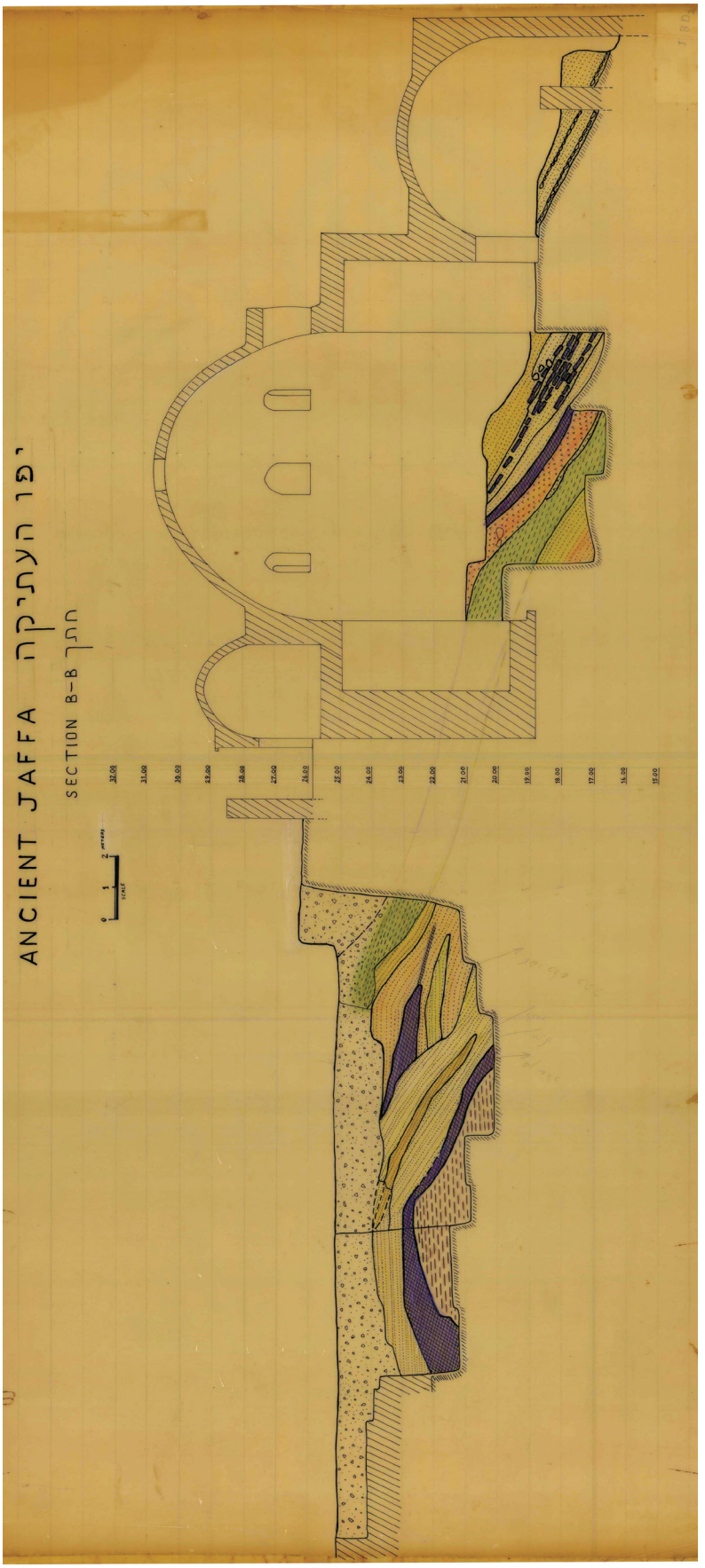

Figure 25.10. Northern section of Areas B and D. *Kaplan Archive*, Plan B64-003.

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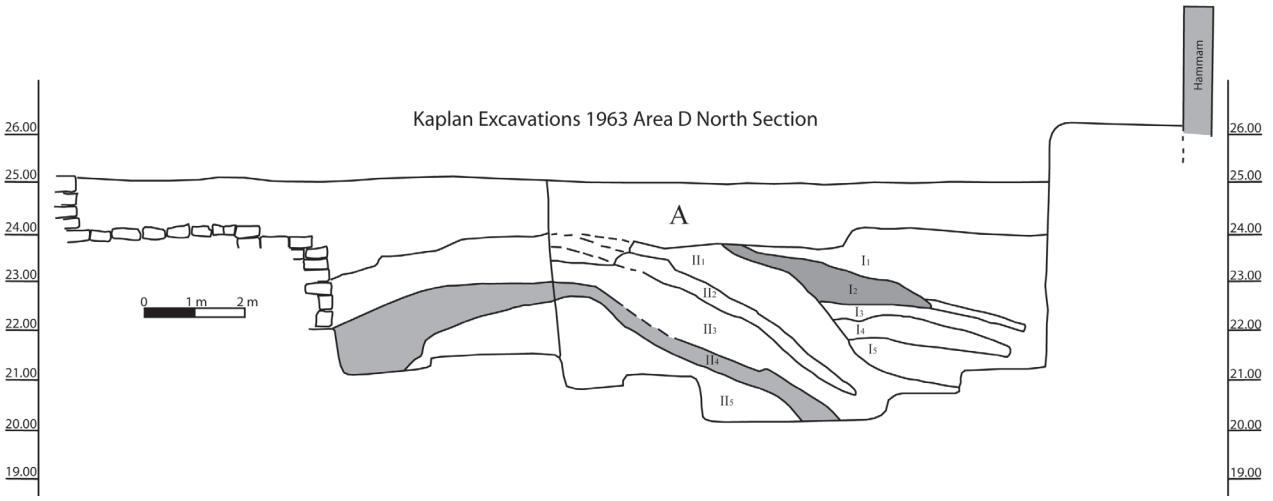

Figure 25.11. Northern section of Area D. *Drawing by Kyle Keimer.*

of 20 × 2 m, however, do appear likely as they correspond to the trench dimensions in Area G, which was excavated the following year (see below). Whatever features, whether surface or subterranean, which caused the trench in Area D to be diverted and extended to the north are not noted.

Of the two section drawings, which do appear to be drawn to scale and depict the northern section (Figures 25.10 and 25.11), only the latter labels some of the strata in Area D. Unfortunately, the labels used appear to be abbreviations for which no key is provided. Presumably the "I" and "II" represent what Kaplan considered fills related to the Iron Age ("I") and Middle Bronze II ("II") ramparts. The only difference between the two section drawings is that one appears to have been drawn at the completion of the excavation of Probe 4, while the other includes Probe 5, which was an eastward extension of the area excavated after a month and a half hiatus.

Stratigraphy

Most of Area D comprised layers of sloping fill similar to what was excavated in Area B. Occasional distinct features were encountered (i.e., Locus 1 to 7; Wall 1; Floor 2; Graves 2, 5, and 7), but these features are not represented on the top plan and must not have crossed into the section, except for one feature presumably made of bricks and shown in the western extent of Probe 1. Any attempt to situate these labeled features horizontally is not possible with the records at hand, although many have elevations preserved. These elevations, however, are at times difficult to correlate with the section drawing; while the elevations on the section drawing are given in meters above sea level, those given for the features and preserved on the pottery bucket tags are given in centimeters below a datum point. Unfortunately, the elevation or location of the datum point is unknown, and multiple datum points may have been used (see discussion of Area G below). Considering that there are gaps in elevations between subsequent pottery buckets, it is unclear whether Kaplan changed datum points or if he merely left unrecorded any soil layers that were devoid of finds.

Delineating any stratigraphy in Area D is further complicated by the fact that most of the area was excavated in arbitrary horizontal levels (e.g., 10–20 cm) without evidence of attempts at following the sloping nature of the soils as seen in section, which suggests that mechanical equipment was involved (and supported by photographic evidence). On occasion, locus numbers were given (seven of them); however, aside from Locus 1, which is a pit, and Locus 3, which is a "structure," no identification of the remaining loci (i.e., L.2, 4, 6, and 7) has been found. Even the details surrounding these two labeled loci are lacking as they are merely mentioned in a limited number of pottery bucket tags as relative markers by which to locate some pottery buckets. Despite the problems and uncertain records, some conclusions concerning Area D are still possible. Five phases can be differentiated with some caution.

Phase 5: Middle Bronze to Iron Age?

The earliest phase is only identified by a handful of body sherds from the lowest depths of Probe 5 (PBs 1963.48–51); no architectural features can be attributed to this phase. Based on a comparison of the fabric of the ceramics from elsewhere in Area D and other areas at Jaffa, the sherds uncovered in this deep probe are either Bronze or Iron Age in date. The fragmentary state of the sherds and

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the dearth in number do not allow a more precise dating than this. Based on the section drawings, the assumption is that these sherds originated from glacis fills, presumably earlier in date than the Iron II glacis encountered in Area B, discussed above. It remains uncertain, however, whether this supports the existence of a Middle Bronze Age glacis, as noted by Burke, who follows Kaplan's identification (see Kaplan 1972:75) while noting that there is no evidence as of yet to corroborate an MB IIA date for Jaffa's fortifications in the Middle Bronze Age (A. Burke 2008:272–273).[9]

Phase 4: Hellenistic/Roman?

The existence of this phase is questionable but is suggested based on the fact that Hellenistic and Roman pot sherds were found in the lowest elevations reached by Kaplan in Probes 1 to 4. Furthermore, as will be seen in the discussion of Area G below, it appears that a massive leveling or robbing of the top of the tell occurred by at least the Hellenistic period.[10] Although the northern section drawing of Area D does not suggest such a robbing, the presence of numerous Hellenistic sherds in layers of fill that stratigraphically appear to run beneath the Iron Age glacis in Area B need to be explained. Another possibility is that an unidentified Hellenistic or Roman pit was excavated but is not depicted because it did not reach the northern section.

Phase 3: Crusader

This phase entails a Crusader floor of unknown composition.[11] Multiple vessels and sherds were discovered, presumably in situ, although there are not enough preserved details in the records to verify this. It is clear from the descriptions on the pottery bucket tags, which refer to discarding sherds, that only a portion of the excavated ceramics was kept. No function for the room with which the floor was associated can be proposed.

Phase 2: Post-Crusader

Phase 2 comprises a layer of fill that marks an oddity in the stratigraphy. The ceramics from this fill are largely Hellenistic in date (PBs 2, 4, and 16). The presence of much earlier material above Phase 3 remains, which contain only Crusader ceramics, suggests two possible explanations: a Crusader pit cut through Hellenistic layers and, when excavated, was not identified, causing a mixing of the ceramics, or there was a Crusader layer that was leveled over with soils containing Hellenistic pottery brought from another part of the site. This latter option is more favorable as Kaplan's descriptions of the Crusader ceramics of Phase 3 appear to place them on a floor.

Phase 1: Post-Crusader

This phase entails burials from a post-Crusader period, possibly the Mamluk period in the fourteenth century CE when Jaffa was largely in ruins (see K. Burke 2011:127). There are at least seven burials, of which only four have any information preserved. Graves 1, 2, and 5 have elevations preserved but no descriptions, graphic representations, or associated finds. From one burial comes metal rings/bracelets. The attribution of these graves to the post-Crusader period is based solely on stratigraphic considerations.

Ceramics

The only one of Kaplan's loci from Area D that can be reasonably identified is the Crusader period floor from Phase 3. Kaplan refers to the pottery as "Arabic" in date (i.e., Islamic) on the pottery bucket tags, but it is actually Crusader in date. Imports from all over the Mediterranean, including Italy (Proto-Maiolica ware) and Cyprus (Cypriot Monochrome Sgraffito), were found. In addition, Zeuxippus ware and bowl fragments of Port St. Symeon Polychrome Sgraffito were discovered along with a deep cooking pot from the second half of the thirteenth century CE.[12]

Area F

Area F is located approximately 25 m north of Areas B and D (Figure 25.1).[13] Kaplan makes hardly any reference to this area, but it is likely that he opened it in hopes of finding the northern boundary of the tell. Excavations were conducted in 1960 as a short-term salvage operation that preceded the planting of trees in the area. Three small probes, each producing one pottery bucket, were opened before the area was landscaped. Another short-term investigation was conducted in 1963, this time six days long. This latter excavation produced only four pottery buckets.

Aside from the seven pottery buckets and registration cards for four objects, the only other records for Area F are a few photographs of the area (Figures 25.12 and 25.13).[14] Apparent in the photographs, however, is the fact that Area F was more substantially excavated than Kaplan's other records indicate. A deep trench descending from north to south was excavated by tractor but was presumably limited in size due to the substantial overburden evident in the sections seen in the photographs and because of the salvage nature of the work. According to the pottery tags, most of the ceramics were not kept, but those that were range in date from the Iron Age to the Early Islamic period.

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Figure 25.12. Overview of Area F. View north. *Kaplan Archive*, Photo 2478.

Figure 25.13. Overview of Area F. View south. *Kaplan Archive*, Photo 2475.

Area G

Introduction

Area G was opened 10 m to the south of and parallel to Area D in 1964 in an effort to uncover more of the Bronze and Iron Age fortifications (Figure 25.1 and Table 25.1).[15] It was excavated between August 4 and 30, 1964, in 2-m × 2-m squares numbered 20 to 29 from east to west (Figures 25.14 and 25.15). Each square had its own datum point by which all vertical measurements for that square were taken. The two westernmost squares (28 and 29) were offset 50 cm north of the line upon which the other squares were set. This was done to expose more of W.1002. Furthermore, Square 20 was expanded an additional 1 m to the south to expose more of the Iron Age glacis. The excavation of this 1-m extension, as well as the upper layers of soil in Area G, was done by tractor. Following its excavation, Area G was backfilled and is currently below the modern open-air theater that is just southwest of the Hammam.

The records found for Area G include the field notebook with daily sketches of the excavation areas and some notes, a northern section drawing, one multiphase top plan, multiple photographs of the area (Figures 25.16 and 25.17), and the pottery bucket tags. While these records are more complete than those for the other areas, they remain largely schematic and difficult to interpret. The top plans included below for each individual phase are extrapolated from the sketches in the notebook as well as from the one multiphase top plan drawn by Kaplan. To differentiate those features that were measured and drawn accurately from those that were only schematic, the convention below has been to depict the accurately drawn features as they appeared (i.e., stone by stone), while the schematic features are presented as block features with gray fill.

Stratigraphy

Phase 5: Iron Age IIB–C

A 1-m-wide by 3-m-long section of the mudbrick glacis (L.505*; Figures 25.18 and 25.19) was discovered in the eastern half of Square 20. This glacis sloped downward from northwest to southeast and should be equated with Glacis 1 (L.12*) discovered in Area B based largely on construction technique and the fact that there is a comparable layer of black soil directly below the mudbricks in Areas B and G. Kaplan did not dismantle any of this glacis but reached the layers of fill below it by excavating further to the west.

Phase 4: Hellenistic

Beginning in the Persian period, an unknown portion of Tel Yafo appears to have been removed, as observed in the excavations of Area C and the Ramesses Gate in Area A. In Area G, such an operation, dated to the Hellenistic period, is visible in the northern section drawing where it appears as a massive pit stretching from Square 22 in the east to beyond Square 29 in the west and reaching up to 3 m in depth (Figure 25.15). In this newly leveled area, inhabitants

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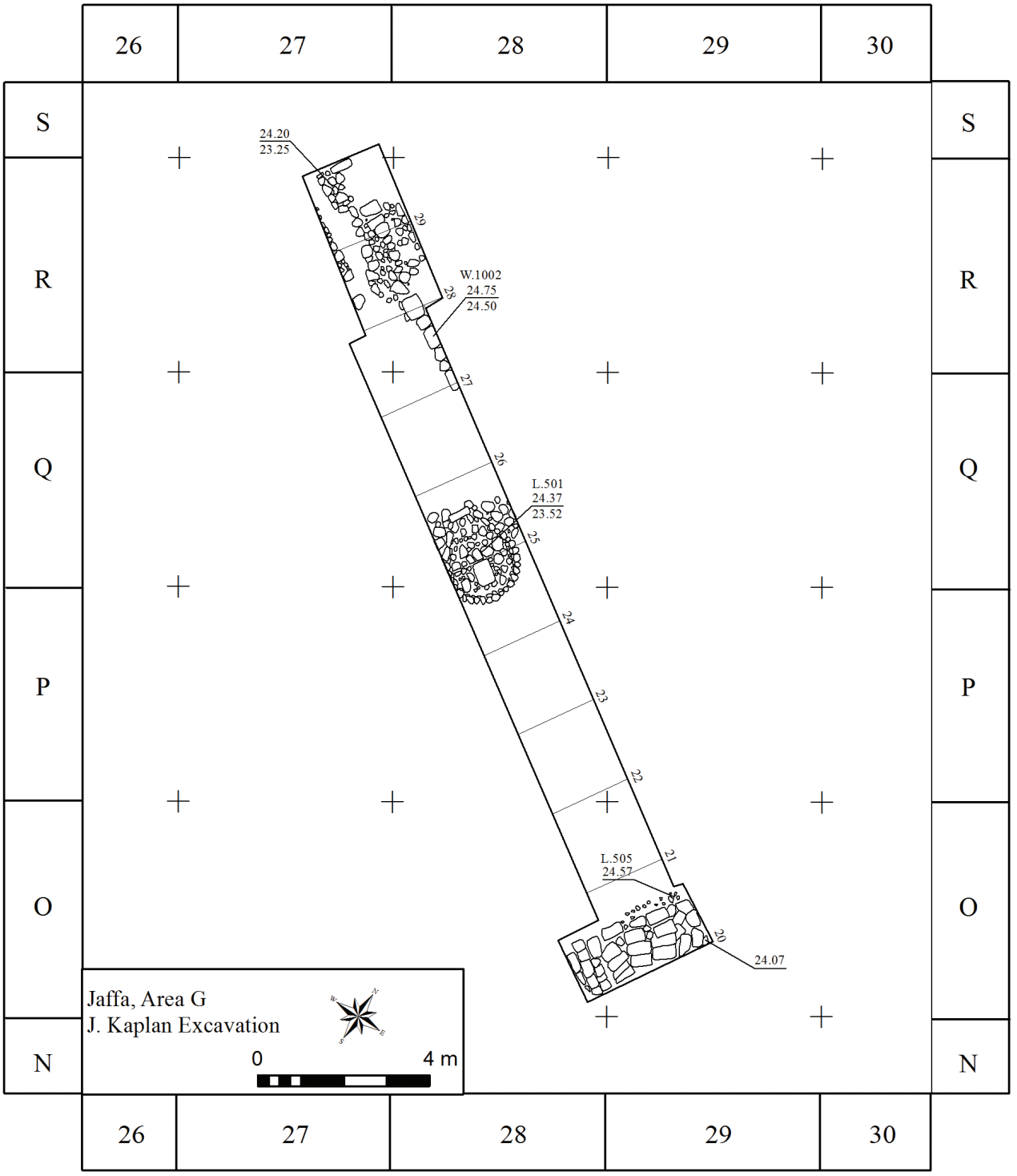

Figure 25.14. Plan of Area G. *Drawing by George Pierce.*

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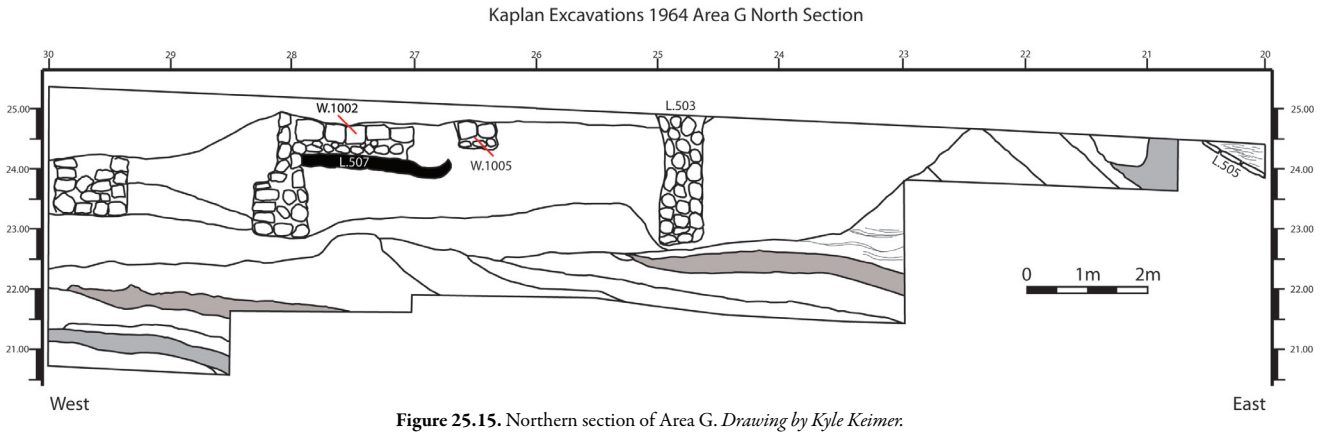

Figure 25.15. Northern section of Area G. *Drawing by Kyle Keimer.*

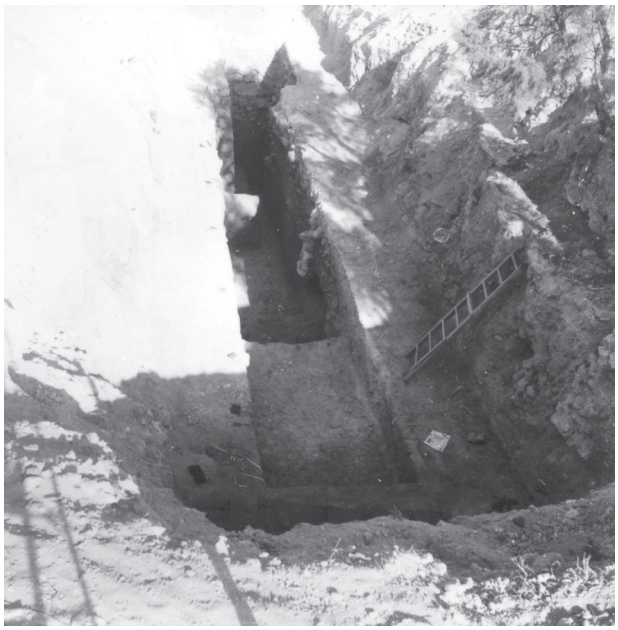

Figure 25.16. Overview of Area G. View northwest. *Kaplan Archive*, Photo 2613.

Figure 25.17. Overview of Area G and the immense quantity of overburden. View southeast. *Kaplan Archive*, Photo 2604.

constructed a large pottery kiln (L.501) and a nearby wall (W.1003) with an associated floor (L.506*). Kiln 501 was preserved almost in its entirety (Figures 25.20–25.23). It was shaped like a horseshoe in plan, measuring 1.45 m north-south and 1.75 m east-west, and was shaped like a dome in section, standing approximately 1.40 m high. There was a flue 27 cm wide by 15 cm tall located at the bottom of the kiln on the west side (Figure 25.22). A central pier of rectangular stones measuring 35 × 70 × 25 cm supported the kiln; these stones almost touch the eastern wall of the kiln and have rounded corners. Some ceramics were recovered from inside the kiln, with most dating to the Hellenistic period.[16]

Wall 1003 stood 1.5 m to the west of Kiln 501 and curved to the southwest before continuing into the southern section (Figure 25.20). It was 1.7 m long by 0.50 m wide and preserved to an unknown height. One of the sketches in Kaplan's notebook suggests that W.1003 originally continued into the northern section but was dismantled, presumably in antiquity; the curved eastern end of the wall would likely have been a later phase of construction. No other details concerning phases of construction are recorded in the notebook, however, and the one photograph of W.1003 (Figure 25.21) does not allow the identification of either a northern extension of the wall or a robber trench where it used to stand. There is the possibility that a northern continuation

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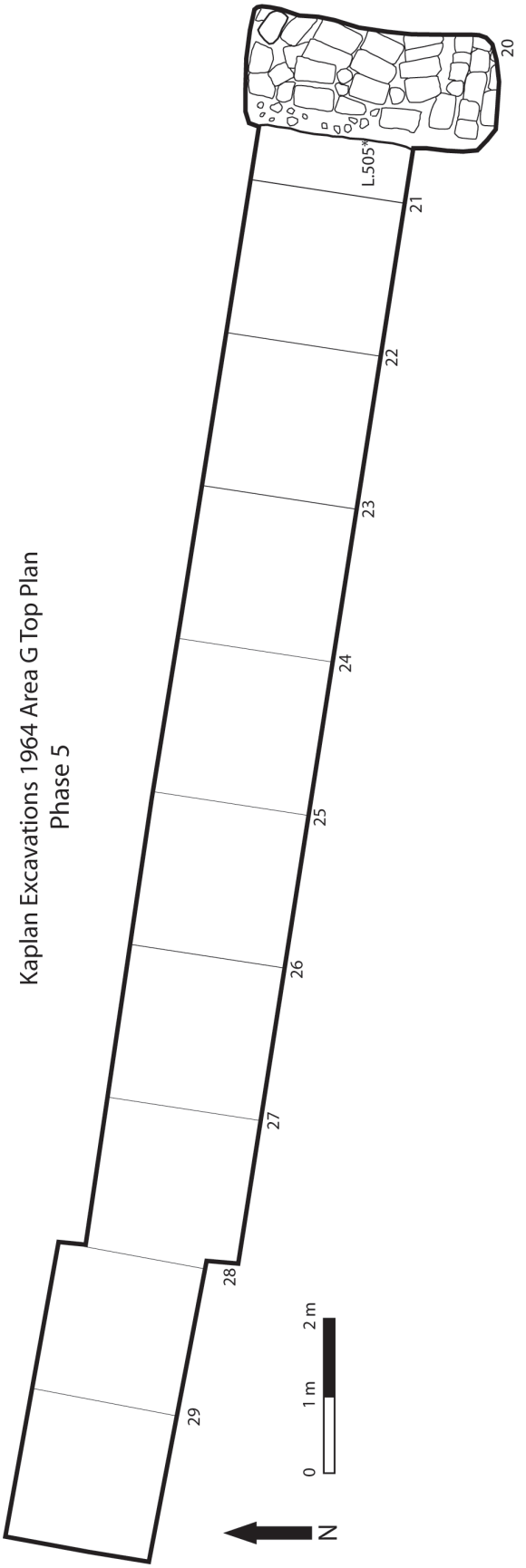

Figure 25.18. Area G, Phase 5. *Drawing by Kyle Keimer.*

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Figure 25.19. The Iron Age glacis (L.505*). View southwest. *Kaplan Archive*, Photo 2621.

of W.1003 is marked by the stones below the ash layer (L.507*) on the northern section drawing of Area G. If these stones are not a continuation of W.1003, then it is unclear to which feature they belong. What is clear is that a floor of unknown composition (L.506*) ran up to the eastern face of W.1003. The elevation given for this floor is the same as that given for the bottom of the pottery kiln and is the same elevation for the bottom of L.502, which is fill or collapse sitting on Floor 506*.[17] Floor 506* does not continue east to Kiln 501.

How long Kiln 501 continued to function is unclear. A few fragments of Roman pottery were recovered from the kiln, although they may be intrusive and not indicative of continued usage. At some point in time, a layer of fill was deposited around the kiln. Whether this fill completely covered the kiln or left the upper part exposed for continued usage is unclear. A layer of ash (L.507*) west of the kiln can be seen in the northern section of Area G (Figure 25.15). The eastern extent of this ash layer curves upward in the section at the line where the western wall of the kiln would have stood. This suggests that despite the fill being deposited around the kiln, its upper portion either was still visible or had created a bulbous bump in the surface. In fact, an ash layer (L.507*) may somehow be related to the use of Kiln 501. The other option is to see L.507* as part of the foundations for W.1002. It does not appear that L.507* is a destruction layer as it is limited to Squares 26 and 27.

Phase 3: Late Roman (Second to Fourth Centuries CE)

Wall 1002 was built of what appear to be fieldstones up to 60 cm long and 40 cm wide (Figure 25.24). The wall was 72 cm wide, was uncovered for over 6 m, and ran through Squares 26 to 29. The eastern end of W.1002 appears to end in a doorway, the opposite side of which is bound by W.1005*. Only a very small segment of W.1005* protruded from the baulk, but it is clear that W.1005* runs perpendicular to W.1002. Both are at similar levels and, if the section drawing does present any level of accuracy, have smaller pebble-sized stones set as a bedding for the larger fieldstones set on top (Figure 25.15). Locus 500, a tabun 70 cm in diameter, was partially preserved to the south of W.1002 (Figure 25.25). This tabun was directly below W.1001 and above Kiln 501. Although there is no mention of a surface in the Area G notebook, there must have been one as Tabun 500, W.1002, and W.1005* all share similar elevations and appear to be parts of a single phase.

Phase 2: Early Islamic?

This phase was only identified in Square 24 where a stone feature (L.503*) was uncovered (Figures 25.15 and 25.26). This feature is variously identified as a "foundation" in Kaplan's notebook or a "pillar" on the section drawing.[18] It was preserved to a height of 1.49 m and was 0.60 to 0.70 m in diameter, although it continued into the northern section. Locus 503* lay directly below Surface 504* of Phase 1 and was not excavated, making it impossible to offer any precise date for this feature/phase. The suggested Early Islamic date is based solely on stratigraphic considerations.

Phase 1: Crusader/Post-Crusader?

Fragmentary foundations dating to the "Arab" period were uncovered just below surface level in Squares 25, 26, 27, and 29 (Figure 25.27). The exact date of these foundations, however, is unclear due to the fact that no Early Islamic, Crusader, or Mamluk ceramics were kept from the dismantling of these walls. Wall 1001, which was only roughly sketched in the Area G notebook, runs southeast-northwest for approximately 5.5 m. It stood to a height of 0.36 m with an unrecorded number of courses and reached up to 0.95 m in width, although its total width is unclear as it continued into the south section. Wall 1001 does not continue into Square 28, suggesting that either the stones were robbed or collapsed, or there was an entrance between W.1001 and W.1004* (Square 29). Wall 1004* was 1.5

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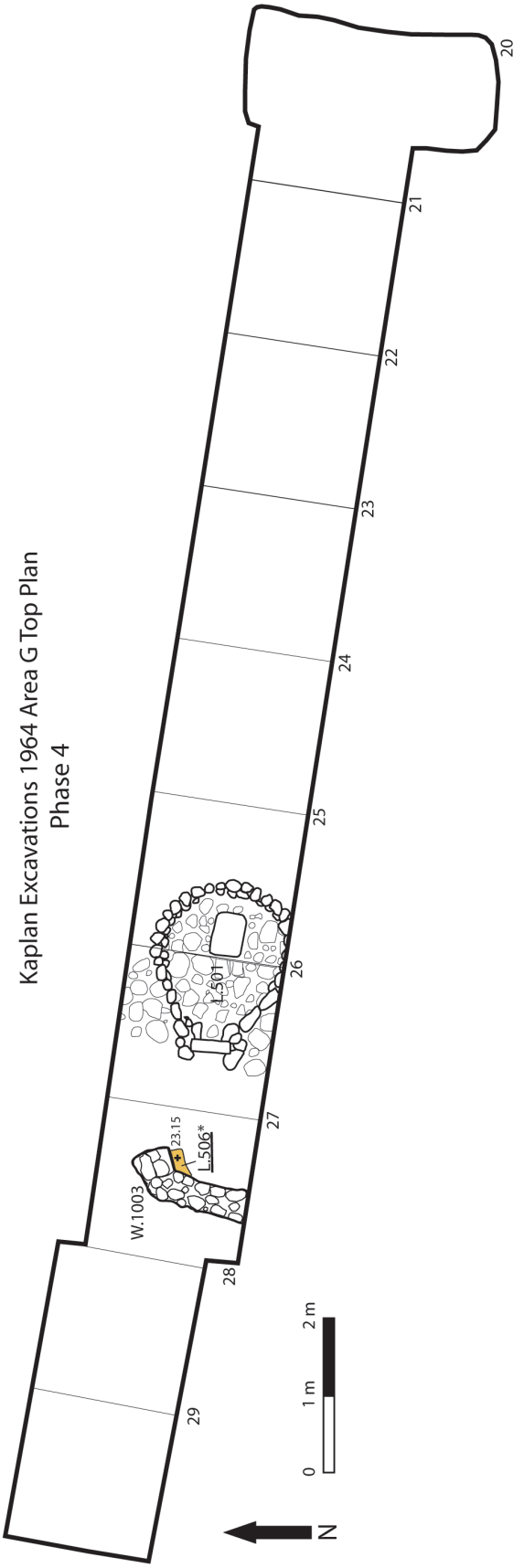

Figure 25.20. Area G, Phase 4. *Drawing by Kyle Keimer.*

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Figure 25.21. Overview of Squares 24 to 27, including the Kiln 501 and W.1003 in the foreground. View southeast. *Kaplan Archive*, Photo 2590.

Figure 25.22. Close-up of Kiln 501. View southeast. *Kaplan Archive*, Photo 2575.

m long by at least 0.70 m wide, although this feature also continues into the southern section. Just north of this feature is a poorly preserved layer of stones (L.508*, 2.2 × 1.8 m), which is likely a cobblestone surface associated with W.1004*. East of W.1001, an area of collapsed stones or another possible cobblestone surface was exposed (L.504*). This feature only appears as a sketch in the notebook with the description, "layer of stones across the entire square [Sq. 24]." These stones continued into Square 25, where their exact relationship to W.1001 is unclear.

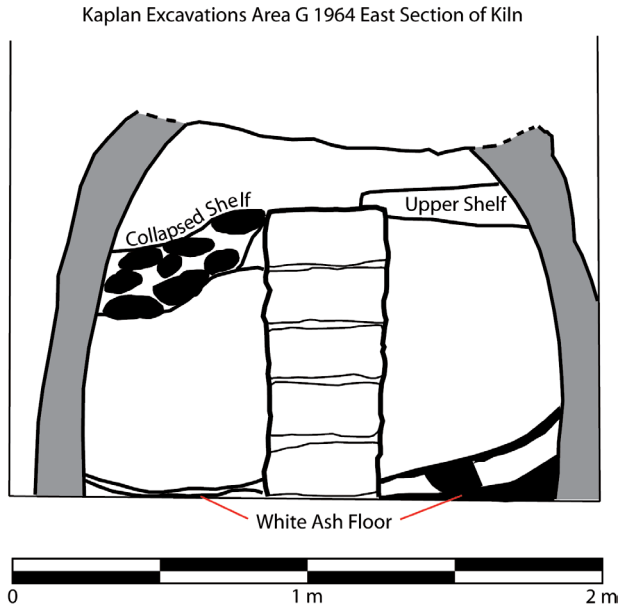

Figure 25.23. Eastern section of Kiln 501 in Area G. *Drawing by Kyle Keimer.*

Ceramics

Phase 5: Iron Age IIB–C

The ceramics discussed from this phase are confined to those sherds that come from layers of fill that were not disturbed by the Hellenistic intrusion of Phase 4 (Figure 25.28). Due to the method of excavation, the small scale of exposure, and the nature of the deposits (i.e., relatively sterile fills), there are but a few ceramics that fall into this category. "Clean" layers of fill, meaning those layers that were securely below the glacis and undisturbed by the later Hellenistic/Roman activities, contain ceramics from the Middle Bronze II (one body sherd of Cypriot Red-on-Black, MHA 3630) through Iron Age II periods. The Iron Age sherds should be dated to the Iron IIB–C and are the latest sherds found in the deposits directly below the mudbrick glacis. As such, these sherds serve as a *terminus post quem* for the glacis and further corroborate the dating of Glacis 1 in Area B.

Bowls. MHA 3632 (Figure 25.28:1) is a sherd of Cypriot White Painted II. It is a simple bowl with a thinned rim, a grayish slip, and brown painted decoration. This type of Cypriot vessel is rather ubiquitous in the Levant in the LB II. MHA 5045 (Figure 25.28:2) is a shallow Egyptianizing bowl with slightly curving sides and a simple, rounded rim that is decorated with a band of red paint ("lipstick") and splashes of red paint on the interior of the bowl. Similarly decorated bowls were found at Late Bronze Age Beth-Shean (Mullins 2007:pls. 38:1, 55:2–3) and are

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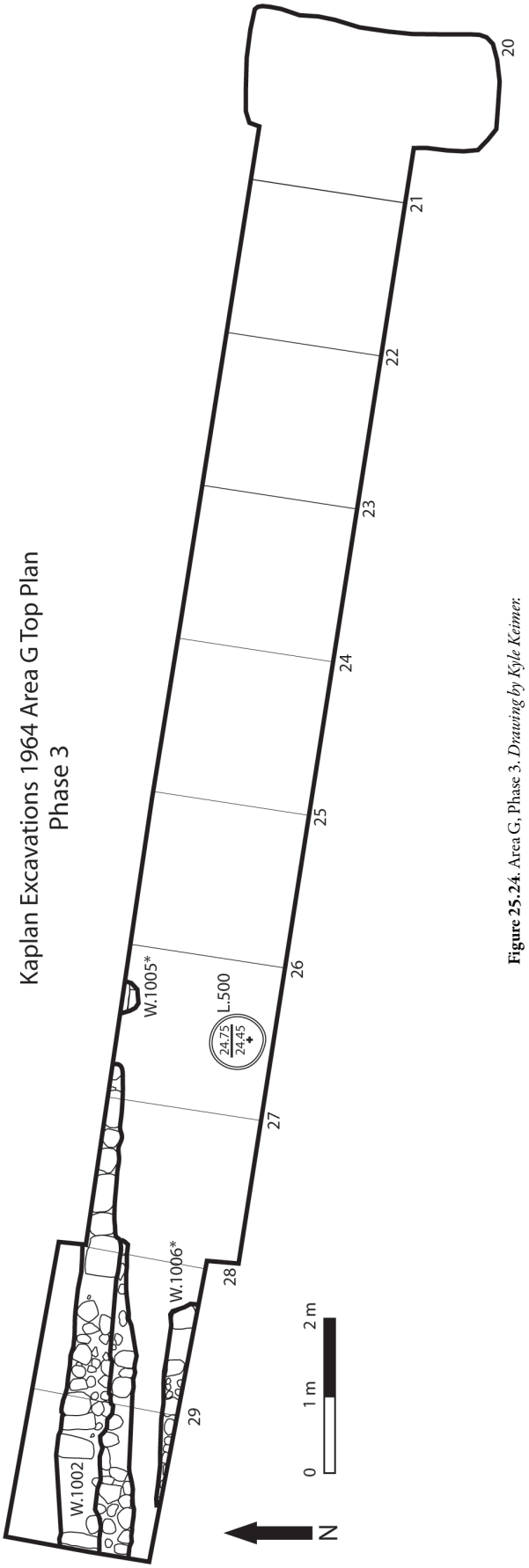

Figure 25.24. Area G, Phase 3. *Drawing by Kyle Keimer.*

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Figure 25.25. Overview of Squares 25 (left) to 27 (right) with Tabun 500. View southwest. *Kaplan Archive*, Photo 2587.

Egyptianizing. The specific method of applying red paint with the splashes on the interior of the bowl is limited to the reigns of Thutmoses III (ca. 1482–1428 BCE) and Amenhotep II (ca. 1428–1402 BCE).

Krater. MHA 5042 (Figure 25.28:3) is the fragmentary rim of a krater or a deep bowl. A deep bowl with a similar everted rim appears in the eighth century BCE at Tyre (Bikai 1978:pl. 10:33 [Str. III, PlateMisc.]).

Cooking Pot. MHA 5043 (Figure 25.28:4) is the rim of an everted, triangular rimmed cooking pot. The shape is a later development of the typical LB II–III cooking pot and is common in the Iron I. Good parallels to MHA 5043 appear at Dan, Stratum VI (Biran 1989:fig. 4.12:14), Keisan Niv. 12a/b (ech. 1/3; Burdajewicz 1994:pl. 18.10), and Izbet Sartah Stratum III (Finkelstein 1986:fig. 8.4). Also, a near-identical version of this piece is referred to as a bowl and has red slip and is burnished at Tel Mevorakh dated to the tenth century BCE (Stern 1978:fig. 12.27).

Jug. MHA 5044 (Figure 25.28:5) is a neck and rim of a medium-sized jar. The neck is slightly concave and the rim is thickened. There is also a slight depression just below the rim on the interior of the vessel. This jug finds its closest parallels to (store) jars of the Iron I and early Iron IIA (tenth century BCE), although this form does appear in slightly lesser quantities both earlier in the Late Bronze Age and later throughout the Iron IIB–C. Many parallels occur along the coast (e.g., Dor: Gilboa 2001:125, JR123), but related forms also appear further inland at Yoqneʿam, Hazor, and Taanach (Ben-Tor et al. 2005:fig. I.4.12; I.58.43; Yadin et al. 1989:pl. 167:1; Ben-Tor and Bonfil 1997:fig. III.42.20; Rast 1978:fig. 31:4, 6).

With the exception of MHA 5042, the sherds from Phase 5 are Late Bronze to Early Iron Age in date. However, a tenuous *terminus post quem* in the eighth century BCE is provided by MHA 5042 from a similar krater at Tyre from an eighth-century BCE context. Such a date corresponds with Glacis 1 in Area B, a correlation that is strengthened by the characteristics of the construction of the glacis found in both areas and by the fact that a black layer of soil lay directly below the lowest brick layer in each section of the glacis.

Phases 4–3: Hellenistic to Late Roman (Second to Fourth Centuries CE)

The ceramics of these phases fall within the scope of Orit Tsuf's publication of finds from this period and are discussed in more detail there.

Phases 2–1: Early Islamic(?) to Post-Crusader

As noted above, the lone feature of Phase 2 was unexcavated, so no ceramics were recovered for this phase. There is a similar dearth of ceramics for Phase 1. The only locus from this phase that apparently contained ceramics was cobble surface, L.504*. Its pottery buckets (PB 1964.007, 1964.009, and 1964.011) contained a mix of sherds from the Iron II to the Crusader period, with a lone fragment of Port St. Symeon Polychrome Sgraffito ware providing a tenuous *terminus post quem* in the thirteenth century CE for Phase 1. A Medieval date, as opposed to any earlier date, for Phase 1 is further supported by the stratigraphy; a clear (Late) Roman phase (Phase 3) is attested directly below W.1001 of Phase 1. It does not appear that the Port St. Symeon sherd is just a late intrusion into another Roman period phase. If, as suggested, Phase 1 is Medieval, then the appearance of Iron Age and Hellenistic sherds in that phase mirrors the scenario apparent in Area D. That is, following the Crusader (or even Mamluk) occupation of Jaffa, layers of fill were brought in. This fill, the origin of which is unknown, contained ceramics from earlier periods.

Conclusions

Through his work in Areas B, D, F, and G, Kaplan was able to articulate the northeastern boundary of the upper mound and the Iron II fortifications of Jaffa. While his goals may have included the identification of remains of

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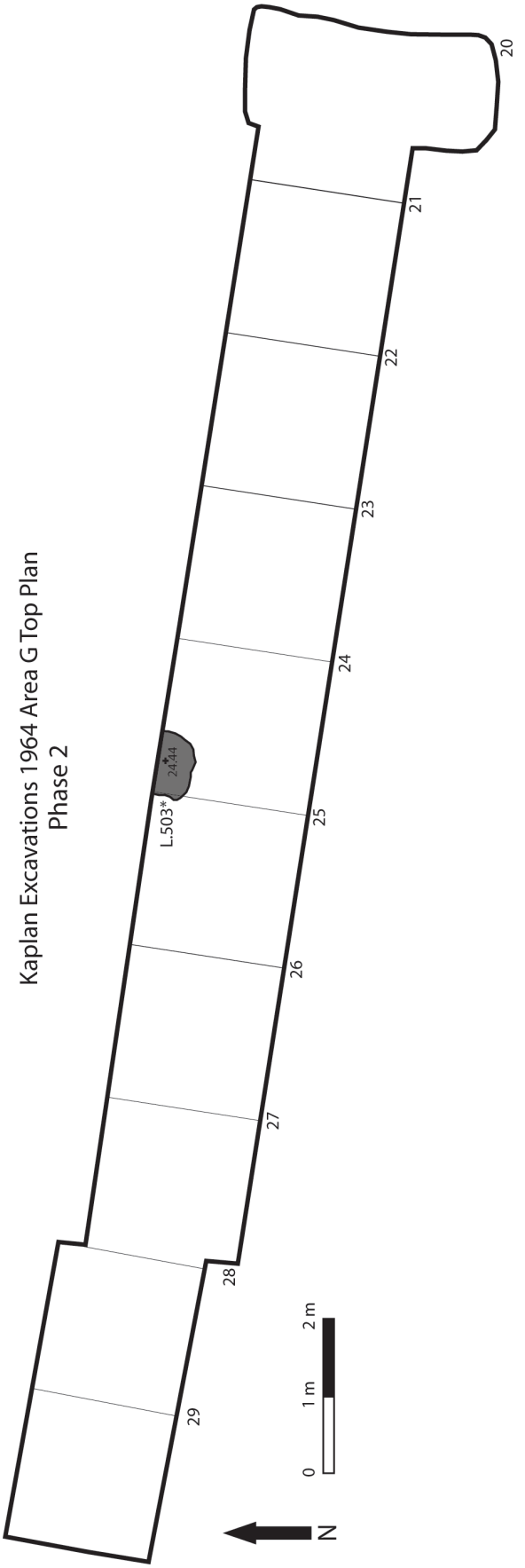

Figure 25.26. Area G, Phase 2. *Drawing by Kyle Keimer.*

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Figure 25.27. Area G, Phase 1. *Drawing by Kyle Keimer.*

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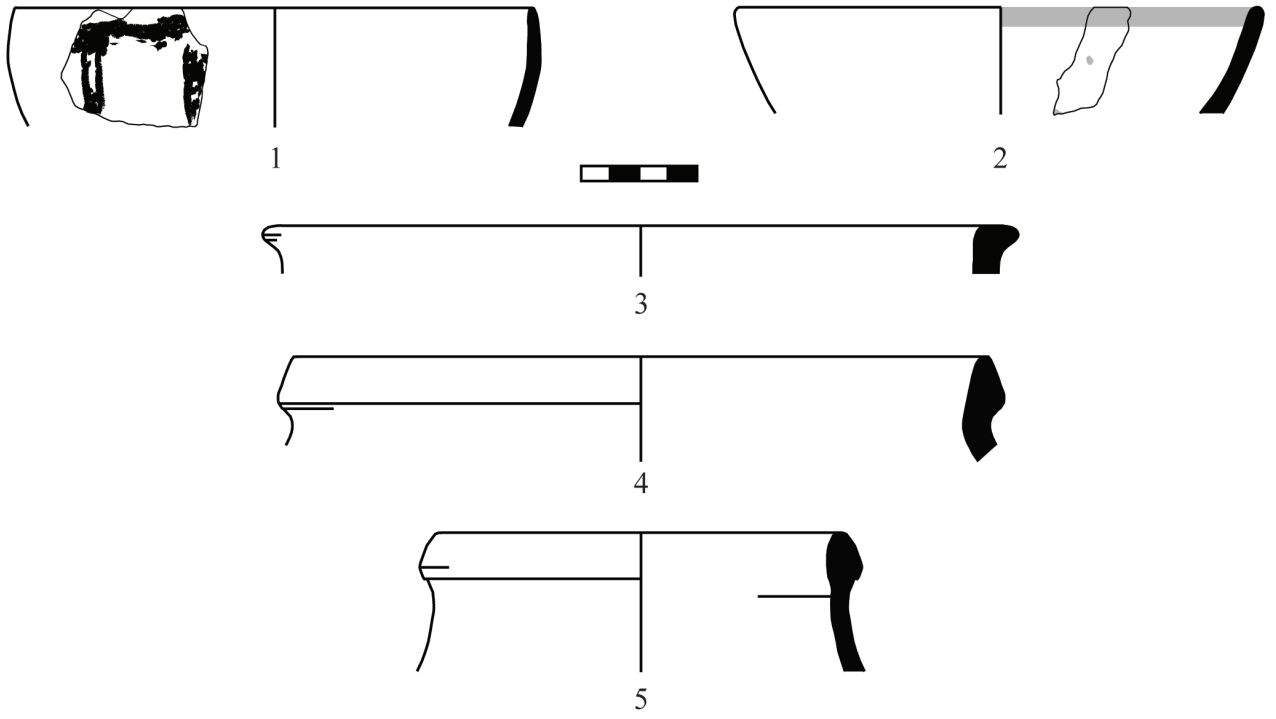

No.	Form	Period	Reg. No.	Description
1	Bowl	LB II	MHA 3632	White Slip II, brownish slip; brown paint, reddish-orange clay
2	Bowl	LB	MHA 5045	Red Paint on rim with splashes
3	Krater	Iron IIB	MHA 5042	Orange clay, few white grits, black core
4	Cooking Pot	LB II–Iron I	MHA 5043	Orange clay, many large white and gray grits
5	Jar	Iron I–IIA	MHA 5044	White clay

Figure 25.28. Area G Phase 5 Pottery.

earlier Middle Bronze fortifications to discuss the growth and development of Jaffa, later intrusions and overburden hampered a definitive statement with regard to that effort. For this reason, the exact location, extent, and even presence of a Middle Bronze rampart in these areas remains unclear.

The remains from the Middle or Late Bronze Ages in Areas B, D, and G were confined to scattered pottery sherds that were found in fill layers. While it is feasible that the layers of sloping fill in Area D could be Middle Bronze Age in date—as claimed by Kaplan (Kaplan 1965:553; also Burke 2008:272–273)—the ceramics recovered from Area D do not provide clear evidence for this conclusion. In fact, Kaplan (1972:75) himself notes that there is no clear connection between the Middle Bronze II ceramics and the layers of fill. If clearer exemplars of Middle Bronze Age ceramics were found in Area D, they have not yet been encountered. Perhaps Kaplan attributed the nondescript body sherds of PBs 1960.48 to 1960.51 to the MB II, and this served as his sole criterion for dating some layers to that period. Findings from Area A likely provide a better glimpse of the fortifications of Jaffa before the Iron Age.

The Iron I and IIA phases of Jaffa were similarly confined solely to ceramic evidence in the present areas, and there are no indications of the construction of fortifications at Jaffa during these periods. The first architecture in Area B, D, or G is the monumental mudbrick glacis from the Iron IIB–C transition. If, as it appears, the glacis segments discovered in Areas B and G can be equated, it means that the glacis was, at a minimum, 10 m in height and that it spanned more than 15 m of the northeastern side of the tell. While no evidence of this mudbrick glacis was found in Area A further to the south, the excavations in that area did reveal both a *kurkar* and a chalk glacis

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sloping from north to south. Kaplan (1974:136) dated both to the second half of the eighth century BCE, with the first attributed to the period of Tiglath-Pileser III's campaigns (734–732 BCE) and the second to the period of Sennacherib (701 BCE).[19]

In his preliminary reports, Kaplan (1972:86) originally dated the construction of the mudbrick glacis in Areas B and G to the ninth century BCE before lowering that date to the eighth century BCE. Based on the few ceramic finds that came from dismantling a section of the glacis in Area B and from the fills directly below the glacis in Area G, it does appear that the eighth century BCE is the earliest period during which it was constructed, although it is also possible that it was only constructed in the beginning of the seventh century BCE. The pottery that Kaplan recovered when he cut a section in the second (stone) glacis, in the Small Room in Area B, offers a similar date in the late eighth or, more likely, the seventh century BCE for its construction. The case for Glacis 2, however, should not be overstated because the records are quite limited and the corpus of pottery is even smaller than that recovered from Glacis 1. If there are two phases, then the similarities in the ceramics suggest that there was little time between the construction of Glacis 1 and 2. This similarity in ceramics may be part of the reason Kaplan believed there to be only one glacis instead of the two that are identified here.

If the present interpretation, which states that the mudbricks served as a separate glacis from the stone slab glacis, is correct, then there are no direct parallels for the Iron II mudbrick glacis at Jaffa. Such glacis, however, are known earlier in the Middle Bronze Age (e.g., Ashkelon North Slope Phase 14; Stager et al. 2008:218). It is acknowledged that a stone glacis as interpreted by Kaplan would make better sense for a site situated on the coast, as stones weather better than unbaked mudbricks. Furthermore, a glacis constructed with a technique similar to that at Gerisa, in which mudbricks were incorporated within the rampart below the glacis, would provide stability for the outer layers of the glacis and prevent drainage problems (cf. Geva 1982:18).

Coastal sites, the glacis of which have been exposed, generally have stone glacis (A. Burke 2008:55–56)—for example, Bronze Age Byblos, Ashkelon (North Slope Phase 13; Stager et al. 2008:218), and Ugarit and Iron Age Beirut (Badre 1997:60ff.; Finkbeiner and Sader 1997:126–128). Even inland sites featured glacis that were usually constructed from stone and not mudbrick. For example, Iron IIA Tel Malhata had a stone glacis (Kochavi 1998:32–33), as did the two sites whose glacis are closest in time to Jaffa's—Beersheba (Strata III–II) and Lachish (Stratum III). Sites such as Tell el-Hesi (Fargo 1993:633) and Dor (Sharon 1995:146–150) have slightly variant glacis that were made of pebbles/stones and plaster.[20] The reason for depositing almost a meter and a half of fill over the earlier glacis is unclear. Perhaps this fill and subsequent stone glacis are somehow related to preparations for or renovations following Sennacherib's campaign in 701 BCE, in which he mentions that he "surrounded and conquered" the site (Cogan 2000:303).

Areas B, D, F, and G are devoid of any architectural remains following the Iron Age until the Hellenistic or Roman period. The evidence from Areas D and G suggests that a large portion of the tell was removed or leveled during or prior to this period but before new structures were constructed. In Area G, a large kiln was constructed and may have served as part of a ceramic production facility. When this facility went out of service presumably sometime in the late Roman period, a smaller tabun was built on the same location along with a new structure that was partially excavated, but the plan of which is unclear.

Following the Roman period, only a single pillar of stone attributed to the Early Islamic period was preserved in Area G. The dearth of remains from the Byzantine and Early Islamic periods is unexpected due to Jaffa's importance in these periods (Foran 2011) and is no doubt the result of later disturbances to the tell. In Areas B and D, there are no remains until the Medieval period, when there is evidence of Crusader period construction. The nature of the Crusader layer, however, is unclear. Although Kaplan mentions two floors in Area D (via the pottery bucket tags), it is not entirely clear whether the Crusader ceramics came from an in situ deposit on those floors or if they were part of a fill that was deposited later, although the former seems more likely.

At the end of or after the Crusader period, the northeastern part of the tell was leveled off with soils brought from elsewhere. This is evident in the fills above the Crusader remains that contain only Hellenistic ceramics. While there is no indication where these fills came from, it may be posited that they were deposited in the fourteenth century CE during the short period of respite following Baybars's destruction of the city in 1268 CE but preceding the destruction by Sultan Naṣir ad-Dīn Muḥammad Ibn Qalawūn in the late 1330s (see K. Burke 2011).

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Kaplan encountered additional post-Crusader period features in Areas B, D, and G. Those in Area D, however, are not depicted on the surviving top plans or sections. Of the seven numbered loci, only two have any further identification: Locus 1 is a pit and Locus 3 appears to be a building. Furthermore, seven burials were excavated before official excavations began. Any attempt at synthesis is complicated and tentative at best. Just to the south in Area G, the foundations of a building with a possible door and a floor (possibly from the same period) were partially uncovered, but the best-preserved post-Crusader remains are in Area B, the Hammam.

Acknowledgments

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Notes

1. *Editor's note:* This chapter was updated by the editors owing to subsequent analysis of excavations since examination of the records by Keimer before 2010. Specialist studies (e.g., botanical, faunal, shell) of excavated remains from Areas B, D, F, and G will be published in a forthcoming volume of excavations in Jaffa.

2. For the problems encountered in dealing with the records for Area B (and, to a lesser extent, Areas D and G), see Keimer (2011). This final report updates some of the preliminary dating and stratigraphical statements made there. The discussion of the problematic nature of the records, however, remains unchanged.

3. A glacis is understood to be the outer coating of a rampart, whether it is made of plaster, mudbrick, stone, or other materials.

4. Starred (*) loci are locus numbers assigned by the JCHP and are not original to Kaplan's records.

5. The labels on the section drawing do not match the terms used by Kaplan in his published description of the rampart and glacis. As a result, it is not possible to determine whether he was referring to all of the layers of the rampart and glacis together in his publication or only to layers of soil between the mudbricks and stone slabs, our L.9*. If the former, then Kaplan merely listed the various layers of sloping fill without preserving their order as presented in the section drawing. If the latter, then none of the individual layers of L.9* are depicted on the section drawing.

6. The presence of a crushed chalk glacis suggests either that there was no unified construction technique for the defenses of Jaffa or that the original chalk glacis in Area B was actually removed with the construction of the Hammam or unidentified during the excavations.

7. Any sherds of note dating from the Hellenistic to Byzantine periods will be dealt with in forthcoming works by O. Tsuf, while K. S. Burke will address any sherds from the Early Islamic to Crusader periods.

8. Area D appears in plans B64-001 to B64-003. The 22 photos from Area D are numbered 2450 to 2471.

9. Kaplan claimed to have identified a rampart of "beaten earth and kurkar" in Area A that he assigned to Level VIII (Kaplan and Ritter-Kaplan 1993).

10. *Editor's note:* The JCHP's directors would argue, on the basis of excavations in both Qedumim Square (Area C) and Area A, Ramesses Gate, that the leveling occurred during the Persian period, since the orthogonal layout of Jaffa originates in this period.

11. The pottery bucket tags refer to this floor as "Floor 2." The nature of "Floor 1" is unclear as no other details concerning this feature are available. Whether these floors are two exposures of the same Crusader period floor in different locations or if they are floors from different periods is uncertain.

12. K. S. Burke will publish these Medieval ceramics in detail in the future.

13. The area was initially identified as Mifratz Shlomo St.

14. In addition to pottery bucket tags, records include field Photos 2472 to 2479.

15. Records of excavations in this area include a complete bucket list, notebook, Plan G64-001, and field Photos 2575 to 2623.

16. See forthcoming report by Orit Tsuf.

17. No description of the nature or composition of fill L.502 is given in the original records.

18. Locus 503* is drawn incorrectly on Figure 25.15. Its upper elevation is actually 24.44 m according to Kaplan's notebook and not 24.82 m as suggested by the section drawing.

19. These fortifications will be discussed in greater detail in the final publication of Area A.

20. The glacis in Area A at Jaffa, as mentioned above, is more similar to this type of construction.

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Chapter 26

The Be'eri School Excavations by Jacob Kaplan, 1965

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[1]University of California, Los Angeles and [2]University of Science and Technology Beijing

In July 1965, Jacob Kaplan carried out salvage excavations on the grounds of the Be'eri School about 400 m north of Tel Yafo. These excavations yielded a number of fragmentary installations, which were substantially damaged by bulldozer work prior to the excavations. Nonetheless, the finds are in keeping with the location's identification as an extension of the Hellenistic to Early Roman period cemetery extending from the Postal Compound at 6 Ben Shetah St., which is located to the west of the Be'eri School. Together, these areas support the identification of this area as a burial ground during these periods, with substantial disturbances in later periods.

Among the salvage excavations undertaken by Jacob Kaplan around Jaffa was a short-lived project in the yard of the Be'eri vocational school from July 6 to 14, 1965. The excavations, under the supervision of Abraham Joseph, appear to have been the result of preparations for the installation of the school's bomb shelter (Kaplan 1966:282–283; Figure 26.1). The Be'eri School was located along Ha-Kovshim St., which is today Nahum Goldman St. and the location of the Amal School, which is of no relation to the earlier school. Its location is about 400 m to the northeast from the Jaffa Museum of Antiquities on the northeastern edge of Jaffa (Figure 26.2).[1] Although many maps from the nineteenth century fail to provide details of this area, the 1863 map produced by Lt. F. D. G. Bedford labels this area a "cemetery" just north of an extramural "Egyptian village" (see Figure 9.8). All other maps, such as the Palestine Exploration Fund map dated to 1877, show nothing but agricultural land in this area (see Figure 9.8).

Kaplan's excavations are the only ones conducted in this area to date, as the nearest IAA excavations were located to the east along Marzuk and 'Azar St. (Kletter 2001; Peilstöcker 2000; Rauchberger 2009) and at the Postal Compound located at 6 Ben Shetah St. (see Part III). The Be'eri excavations are therefore an important archaeological datum point concerning the area approximately a half kilometer to the northeast of the tell and within 100 to 200 m from the shoreline to its west. These excavations also gain greater importance in the context of recent efforts to locate an early inland harbor and its opening to the sea (see Chapter 4). The periods attested during Kaplan's excavations are analogous to those encountered along Marzuk and 'Azar St., revealed during more recent excavations (Peilstöcker 2000)—namely, Hellenistic, Roman, and Ottoman. Peilstöcker (2000:40*) notes that the area was largely devoid of settlement through the end of the nineteenth century, as witnessed on maps, except perhaps for an Ottoman period cemetery (Kletter 2001), which is also known from David Roberts's illustration of Jaffa as viewed from the north (Figure 26.3).

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Figure 26.1. Bomb shelter constructed at the Be'eri School as it appeared in 2011. *Photograph by Brett Kaufman.*

Kaplan published a preliminary discussion of these excavations in the *Israel Exploration Journal* (Kaplan 1966:282).[2] The relevant section of the report is quoted in full here (our annotations appear in brackets):

> Jaffa, Courtyard of the Be'eri School. The excavation took place in the western section of the school-yard (about 500 m north-east of the mound of Jaffa). Hellenistic remains were uncovered including several jar-necks with seal-impressions [MHA 2376–2377].
>
> Sunk into the Hellenistic settlement stratum is a bread(?) oven [Locus L-1] from the Crusader period (13th century). It consisted of sun-dried mud bricks, partly fused together by the heat of the oven. The dimensions of the oven are 2.5 × 3.5 m with its outer ceiling built in the form of a barrel vault supported by two walls; a row of pillars divided the underpinnings of the oven into two parts. The oven was heated by hot air flowing from the sink near its entrance to chimneys built along the sides of the structure.[3]

This description must be reconciled with the report Kaplan submitted to the Israel Department of Antiquities and Museums in 1966 (see Appendix at the end of the chapter). Among other things, it indicates that the excavations were only 400 m from the site (slightly more accurate than the reference in the *Israel Exploration Report*). It also mentions the existence of a modern Muslim cemetery in this vicinity, which is not referenced in the preliminary report, his plans, or other excavation records. The recognition of these relatively modern disturbances is likely instrumental in the interpretation of the contexts encountered at Be'eri, as discussed below. Furthermore, he notes that the "oven" was "sunken into" the earlier Hellenistic remains. These observations provide a starting point from which the excavations can be analyzed and reevaluated using the available records, ceramics, and finds to serve as a final report of Kaplan's work.

Records

The records of this excavation consist of only 17 pottery buckets, one plan with a section drawing, and 30 black and white photographs. Although no excavation books remain for this excavation, pottery bucket tags reveal excavations beyond the extent of the area shown on the

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Figure 26.2. Map showing location of Be'eri School excavations north of Jaffa. *Map by Krister Kowalski.*

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Figure 26.3. Illustration by David Roberts of Jaffa, 1839. View south.

plan into Square C7 to the west. Elevations on pottery bucket tags are recorded as local levels. Without knowledge of the point of reference, it is impossible to convert these to actual elevations, as shown on the plan (Figure 26.4) and inferred to be measurements above sea level (ASL). Analysis of the photos available for this area reveals only 10 unique views of the excavations, which are also exclusively of the so-called oven (see Figures 26.5–26.14).[4]

Excavated Loci

The limited information preserved for the excavations at Be'eri inhibits a detailed analysis of the loci Kaplan encountered. Indeed, it is only possible to describe one locus adequately. Based on elevation information, the surface loci throughout the area were dominated by Hellenistic and Roman burial deposits but also included some Crusader finds and evidence of Muslim, presumably Ottoman period burials. This situation is not surprising given the nature of preservation in the associated cemetery as a whole, as revealed during the excavations of the Postal Compound (see Chapter 15) and the preservation of finds (see Chapters 16 to 19).

History of Use

Pre-Hellenistic Remains

Although far from clear, residual sherds of the Middle Bronze Age within the fill of Locus L-1 (discussed below) may suggest earlier use of the area, possibly as an extramural cemetery. There is some possibility, based on a metal fragment suggested to be the tip of a dagger, that Locus L-1 disturbed a Middle Bronze Age burial, but this is far from certain since the loci and pottery buckets outside of L-1 cannot be precisely located within the excavation area.

Hellenistic and Roman Periods

Although many body sherds of Hellenistic date are common throughout the buckets from the excavations, unequivocal evidence of the Early Roman period is clearer. Kaplan also mentions "two Rhodian handles" in his IDAM report (see Appendix 1), presumably references to two registered vessels, MHA 2376 and 2377 (see Figure 26.15) at the Jaffa Museum, which could not be located for further analysis prior to publication. These "jar-necks with seal-impressions" had been ascribed previously by Kaplan to the Hellenistic period, but ample comparisons can be

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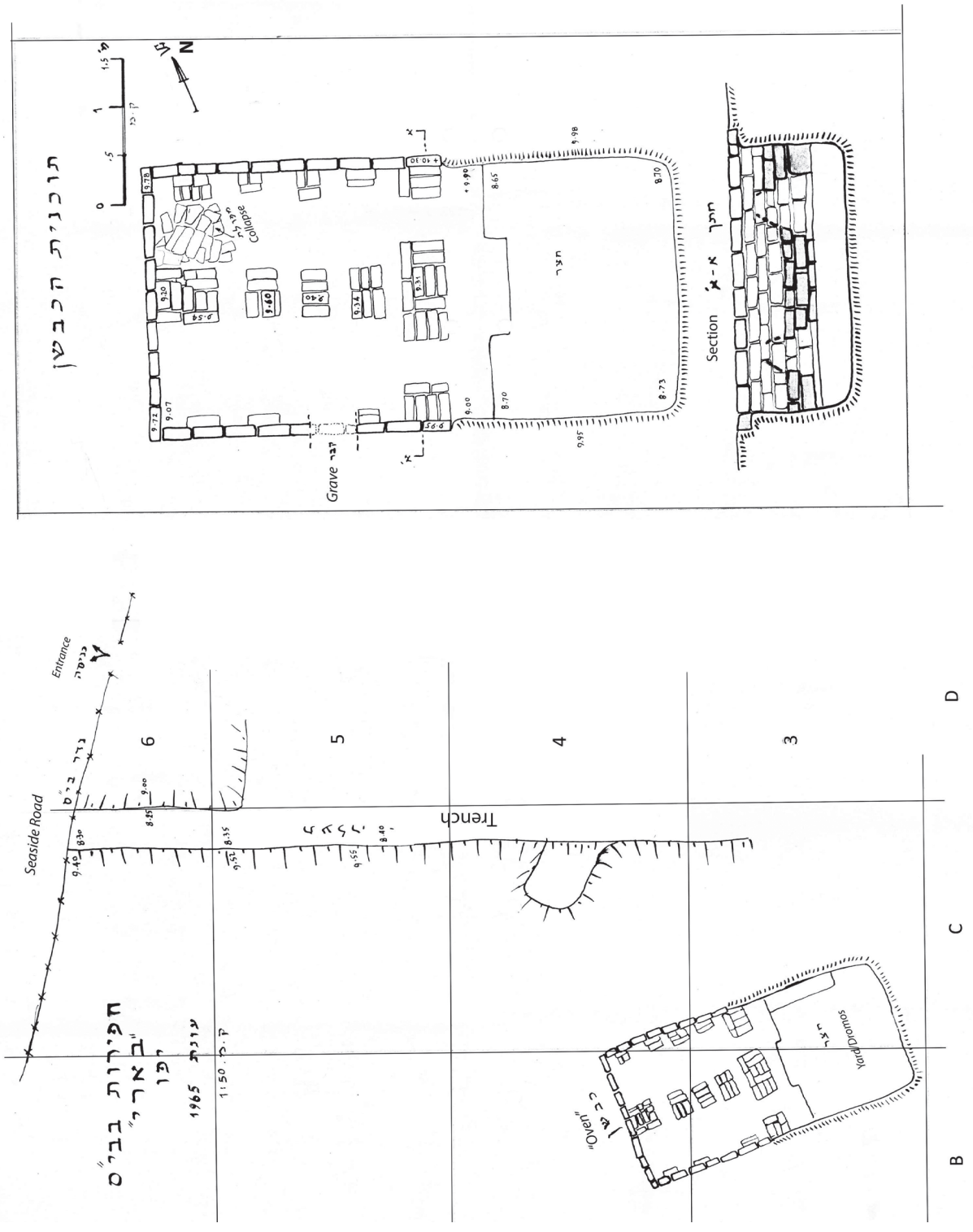

Figure 26.4. Plan of Excavations at the Be'eri School, Jaffa. 1965 Season including detail plan and Section A-A of Locus L-1. English annotations added. *Kaplan Archive,* Plan BR65-001. *Courtesy of the Israel Antiquities Authority.*

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Figure 26.5. Locus L-1 and *dromos* after excavation. View northwest. *Kaplan Archive*, Photo 2699. *Courtesy of the Israel Antiquities Authority.*

Figure 26.6. Western end of Locus L-1. View southeast. *Kaplan Archive*, Photo 2697. *Courtesy of the Israel Antiquities Authority.*

Figure 26.7. Pillars in western half of Locus L-1 with *dromos* in background. View southeast. *Kaplan Archive*, Photo 2696. *Courtesy of the Israel Antiquities Authority.*

Figure 26.8. Detail of northern interior side of Locus L-1 following excavation. View north. *Kaplan Archive*, Photo 2677. *Courtesy of the Israel Antiquities Authority.*

made with Early Roman period low-collar storage jars from Kaplan's excavations in Area C (Tsuf 2011:276–277, cp. fig. 25.2:33, and references therein). No other finds were noted in association with the remains of these isolated vessel fragments.

The primary feature encountered in this area was the so-called oven (Locus L-1), which was excavated in Squares B3, B4, and C3 and was dated to the Crusader period by Kaplan as mentioned in the preliminary report quoted above (see Figure 26.4). However, as the following analysis reveals, this feature likely constitutes the remains of an Early Roman burial structure. On extant pottery bucket tags, this locus is identified as L-1. The mudbrick superstructure was preserved approximately 1.65 m high (elevation ranges from 8.65 m to 10.30 m). Bricks used in the feature measured 8 × 13 × 33 cm, according to Kaplan (see Appendix 1). Although all material culture recovered from the feature is recorded as originating in Square B3 on its south side, it is likely that

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Figure 26.9. Floor of chambers of Locus L-1 viewed from *dromos*. View northwest. *Kaplan Archive*, Photo 2678. *Courtesy of the Israel Antiquities Authority*.

Figure 26.10. Northwest corner of Locus L-1 showing mudbrick collapse and skull on surface of chamber below debris. View north. *Kaplan Archive,* Photo 2694. *Courtesy of the Israel Antiquities Authority*.

Figure 26.11. Detail of skull below debris in the northwest corner of the north chamber of Locus L-1. View north. *Kaplan Archive*, Photo 2704. *Courtesy of the Israel Antiquities Authority*.

Figure 26.12. Locus L-1 with unexcavated collapse debris in the northwest corner. View northwest. *Kaplan Archive*, Photo 2683. *Courtesy of the Israel Antiquities Authority*.

this was simply the square that came to be associated with the feature's interior for the sake of convenience. That no mention was made of either the discovery of a skull, discussed below, or the debris from the ceiling of the structure that likely buried in situ deposits supports this interpretation of the association of pottery buckets with B3.

In difference to Kaplan's identification of the feature, the following discussion presumes that the feature is, as demonstrated below, a double-vaulted, mudbrick burial chamber that was likely used during the Hellenistic period, if not the Early Roman period. In addition to possessing two parallel chambers separated by mudbrick pillars supporting vaulted ceilings over each chamber, the area in front of the doors (which are the only openings in these features) is stepped down and was likely a *dromos* at the front of this feature. The entire complex is about 5.45 m long by 2.80 m wide and aligns almost exactly east-west (Figure 26.5 and Figure 26.6). The eastern half of the feature was occupied by the

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Figure 26.13. Northwest corner of kiln (L-1) showing debris above collapse. View north-northeast. Kaplan Archive, Photo 2685. *Courtesy of the Israel Antiquities Authority.*

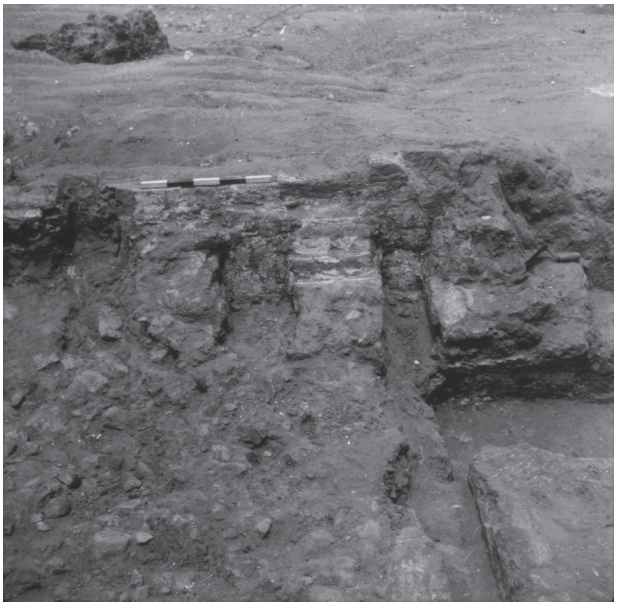

Figure 26.14. Western end of Locus L-1. View north-northeast. Kaplan Archive, Photo 2892. *Courtesy of the Israel Antiquities Authority.*

dromos, which, based on the section drawing, was dug into the ground 0.30 to 0.35 m deeper than the mudbrick superstructure. The mudbrick superstructure over the western half of the complex was 3.7 m long and was preserved 0.9 m high. It was constructed of unfired mudbricks, which Kaplan asserted were only partially fired during its use (Kaplan 1966:282). This partial firing is, however, adequately accounted for only if this feature was used secondarily as some type of burning installation during a later period. The two east-west chambers were separated by four mudbrick pillars (Figure 26.7) with openings on the east end (see Figure 26.5). That the roof of the installation was vaulted is illustrated not only by the slopes of the mudbricks in these pillars but likewise from the four buttresses on each side of the installation, each of which was located opposite one of the pillars (Figures 26.8–26.10).

One of the clear arguments against Kaplan's identification of this installation as a kiln or oven is the lack of ash on the floor of the supposed firing chamber (Figure 26.9) and below the collapsed debris in the northwest corner (Figure 26.10), which should have preserved evidence of the original use of the feature.[5] Kaplan never mentioned ash in the descriptions of any loci. In fact, much of the installation appears to have been disturbed and revealed no in situ remains. There are also no openings for the regulation of airflow within the superstructure; the only openings are on the eastern end. While these are significant observations, the most convincing evidence of the structure's function is its comparability with the structures of the so-called mausolea excavated in the Postal Compound, Tomb 142 and Tomb 196 (see Chapter 15, Figures 15.8 and 15.12). In the first place, these structures are oriented in the same direction as Locus L-1. In the second place, Tomb 196 bears a nearly identical plan, with a dividing row (L.197) separating two chambers, which also preserve the remains of supports for the superstructure (see Figure 15.12).

The only in situ remains in Locus L-1 were, as indicated above, located in the northwest corner where collapsed mudbricks were found in situ (Figure 26.9). It was here that, tucked into the very corner of the installation beyond the mass of bricks, an undamaged skull was encountered (Figures 26.10–26.12), which was never mentioned by Kaplan in any records. It seems unlikely that the skull was undisturbed, as no vertebrae or other skeletal remains can be seen in association with it. Its appearance therefore provides the clearest clue as to this feature's original use, namely, as a burial complex. This is now confirmed by the nature of the skeletal remains from the Postal Compound, where only skulls were recovered for some individuals, suggesting reuse and disturbance of such chambers. Consequently, the exterior space of the Locus L-1 complex should probably be interpreted as a *dromos*, giving access to the eastern openings of two vaulted chambers constructed of unfired mudbricks. That these bricks were not originally fired would imply that the superstructure of this feature was either buried under earth to create a tumulus or surfaced with mud or other plaster to protect it.

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Figure 26.15. Early Roman stamped amphora tops (MHA 2376 and 2377). Kaplan Archive, Negatives Y-87-01-14 and 01-15. *Courtesy of the Israel Antiquities Authority.*

Although few parallels can be identified for this feature outside of Jaffa in Israel, other examples of vaulted burial complexes of the Hellenistic period do exist. About 4.5 km to the southeast at Holon, at the intersections of Levy Eshkol and Miqweh Israel Blvd., a double-gabled burial complex of Hellenistic date with skeletal remains and ceramics in situ was encountered during salvage excavations (see Tal 2006:231, fig. 7.19). Although this feature was constructed of ashlar stones, its structure parallels the Be'eri feature. Tal cites parallels at Akko and Brit Ahim and suggests that the type may have been a coastal type (Oren Tal, personal communication, 2015). Thus, there appears to be a substantial presence of what were likely Early Roman burials in this area. This is not surprising since it is less than 200 m to the north of the Early Roman burial grounds encountered along Marzuk and 'Azar St., discussed above.

Unfortunately, the burial complex L-1 was heavily disturbed in later periods, as is revealed by a number of the other items that were found. Along with other finds, the recovery of several Crusader artifacts (see "Medieval Period," below), which indicates that the Roman and Hellenistic remains were disturbed in the Crusader period. An absence of Byzantine or Early Islamic remains, however, leads to the conclusion that the installation should date prior to the Byzantine period, to either the Roman or Hellenistic periods. Finally, mixing may also have been associated with bulldozing of the area in 1965 during preparations for construction at the school (note "teeth marks" of bulldozer in Figures 26.13 and 26.14), but Kaplan provided no indication that the primary context of the finds in the excavation areas was disturbed prior to the salvage operation.

Medieval Period

Medieval period remains of any certainty are limited to small finds from within the debris of Locus L-1 (Table 26.1). These include a handful of pottery sherds, five clenched nails, and a coin of John of Brienne, King of Jerusalem from 1210 to 1225 CE (see Chapter 27). It was the recovery of a Crusader coin (MHAN 452; Figure 26.16), the latest dated item recovered from this context, that led Kaplan to date this feature to the Crusader period, operating under the assumption that all of the remains were in situ. However, Kaplan was unaware that a collection of iron nails he recovered from here is also consistent

Figure 26.16. Verso of coin of John of Brienne (MHAN 452). *JCHP photograph.*

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with Crusader (thirteenth-century) forms of the northern European ship nail tradition (MHA 2378–2382), although they were identified as Roman in date on the museum object registry cards. These nails are actually clenched iron nails of the southern English type and associated with Crusader activity (see Chapter 27). According to a daily top plan (July 12, 1965), the coin was found 1 m below the benchmark in the northeastern corner of the complex within the *dromos* outside the chambers and in association with the iron nails.

Ottoman Period

Locus L-1, the Early Roman burial complex discussed above, was cut on its southern side by what was likely an Ottoman burial (see "רבק" in Figure 26.4).

Conclusion

Since no excavations have been carried out since Kaplan's excavations in 1965 in this location, the Be'eri School excavations are significant for their contribution to completing our understanding of the use of the area to the north of Tel Yafo. The excavated remains, which consist of what appear to be burial remains from the Hellenistic, Early Roman, and late Ottoman periods, along with intrusive remains from the Crusader period, supplement the data provided by nineteenth-century maps and illustrations of the area. No doubt, salvage excavations within this area in the future will further clarify the occupational history here, as the excavations in the Postal Compound to the west have recently done.

Table 26.1. List of registered finds from Be'eri.

	Reg. No.	Mus Reg. No.	Square	Locus	PB	Item Description
1	MHA 2376	79/3488/65/001	C6	—	1965.014	Roman, low-collar amphora, top portion. 14.5-cm diameter rim (Figure 26.15)
2	MHA 2377	79/3488/65/002	C6	—	1965.014	Roman, low-collar amphora, top portion. 15-cm diameter rim (Figure 26.15)
3	MHA 2378	79/3488/65/003	B3	L-1	1965.015	Clenched, iron Crusader ship nail. 6.2 cm long (see Chapter 27)
4	MHA 2379	79/3488/65/004	B3	L-1	1965.015	Clenched, iron Crusader ship nail. 14.6 cm long (see Chapter 27)
5	MHA 2380	79/3488/65/005	B3	L-1	1965.015	Clenched, iron Crusader ship nail. 7.6 cm long (see Chapter 27)
6	MHA 2381	79/3488/65/006	B3	L-1	1965.015	Clenched, iron Crusader ship nail. 4 cm long (see Chapter 27)
7	MHA 2382	79/3488/65/007	B3	L-1	1965.015	Clenched, iron Crusader ship nail. 5 cm long (see Chapter 27)
8	MHAN 452	N/79/3488/65/001	B3	L-1	1965.015	Coin of John of Brienne (1210–1225 CE). IAA No. 47582 (Figure 26.16)

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Appendix: Letter from Kaplan to Director of Antiquities

The following is a translation by Brett Kaufman of the official correspondence in Hebrew of Jacob Kaplan with Avraham Biran, then director of the IDAM. Several details are made clear in this documentation that were omitted from the published preliminary report in the *Israel Exploration Journal*. Annotations and clarifications by the authors are added in square brackets.

Museum of the Antiquities of Tel Aviv–Jaffa
May 15, 1966
To: Doctor A. Biran
Director of the Department of Antiquities and Museums
P.O. Box 586
Jerusalem

Dear Dr. Biran,
Subject: Excavation Report of "Be'eri" 1965
I send you this "first stab" at a report of the abovementioned excavation. There are three additional reports in preparation. I request that you verify that you received the report.

With great respect,
Dr. J. Kaplan, Museum Director

May 13, 1966
The excavations in the courtyard of the Be'eri school, Ha-Kovshim Street; Jaffa, July 4–15, 1965
The area is 400 meters northeast from ancient Jaffa, and it contained a recent Muslim cemetery. The site was discovered upon digging up an area earmarked for the construction of a bomb shelter for the school.

In the western cut of the area earmarked for the bomb shelter and beyond it in the Hamra soil were discovered Hellenistic ceramic sherds, among them two Rhodian handles and two pitcher necks with stamped maker's marks. In the area along the cut remains of an ancient channel were seen and in it were bright earthen chunks, stones, and Hellenistic ceramic sherds. This area was labeled "A."

In the southwestern [*sic* southeastern] corner of the area an oven for baking bread was found sunken inside of the Hellenistic remains, its measurements being 3.0 × 3.8 meters. The hearth area was labeled "B."

From the hearth there remained, of the bottom portion, four walls, a pilaster in its center, and at its northern side were found parts of arches that supported the oven floor that the bread was laid on. All of this was built of clay that was vitrified by the heat of the oven, the brick measurements being 8 × 13 × 33 cm. A depression was uncovered in the internal part of the oven where fire would rise for heating purposes. Finds in the depression included a few ceramic sherds of the Crusader period and a coin with the inscription REX BALDIVINUS (Baldwin IV—1174–1183 AD [*sic*]). It is therefore likely that the oven was built in this period.

The excavations were conducted on behalf of the Museum of the Antiquities of Tel Aviv–Jaffa under the directorship of Dr. J. Kaplan and was assisted by Mr. Abraham Joseph, who works in the Museum.

Field Notes:
July 12, 1965: Locus L-1—Sherds in the fire pit until the ash layer, two iron nails were found, and also a Crusader coin was discovered on the floor of the oven room. [cf. PB 1965.015]

July 14, 1965: Locus L-1—Bones and nails from the oven floor. [cf. PBs 1965.017 to 020]

July 15, 1965: Locus L-1—[Nails] and bones from the oven floor—southern side [cf. PB ND?]

Acknowledgments

The research for this report was generously supported by the Shelby White–Leon Levy Program for Archaeological Publications granted to Aaron Burke and Martin Peilstöcker. We thank Tzvi Shacham for assistance with locating the excavations and Oren Tal for information concerning parallels for the Hellenistic burial chamber and reference to Lisa Yehuda's publication.

Notes

1. The NIG coordinates are southwest corner at E: 177250 N: 662699 and northeast corner at E: 177257 N: 662700.
2. These excavations are strangely omitted from Kaplan's discussion of his excavations in Jaffa (Kaplan and Ritter-Kaplan 1993).
3. This report was also translated into French (Kaplan 1967).
4. The following sequence was reconstructed for these photos. Duplicate images occur in brackets: 2683 [2682], 2685, 2892 [2681], 2694, 2704 [2703], 2691, 2688, 2689 [2690], 2677 [2676], 2678, 3077, 2695 [2698–2701], 2702, 2696, 2697 [2679, 2680, 2692], and 2686 [2687, 2693].

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5. Lisa Yehuda has identified no cooking or firing installations of the type that Kaplan sought to attribute to the Crusader period here (Yehuda 2011).

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Chapter 27

Evidence for Northern European Crusader Ships at Jaffa:

Steel Nails from the Be'eri School Excavations

Davide Zori and Brett Kaufman
Baylor University and University of Science and Technology Beijing

During the 1965 salvage excavations at the Be'eri School, five bent iron nails were recovered that we argue were curated from thirteenth-century Crusader ships. Typological and metallographic analyses of the nails reveal links to the northern European ship construction tradition and provide the first documented example of Crusader steel in Jaffa. These artifacts contribute to our understanding of Crusader iron production, economic sustainability in the Crusader states, and the contact between northern European and Mediterranean ship construction traditions.

The harbor town of Jaffa was a central node for the Medieval Crusader states (Figure 27.1). The port provided a gateway for pilgrims, Crusaders, and communication flowing between Europe and the Latin East. Although historical texts document the role of Jaffa during this period (see Boas 2011), archaeology still has much to reveal about the economics and connectivity of Crusader period Jaffa. We seek to contribute to this understanding with an analysis of a cache of Crusader period artifacts excavated from the floor of a mudbrick feature (Locus L-1) during the 1965 salvage excavations at the Be'eri School, which was located to the northeast of Tel Yafo (see Chapter 26). The assemblage included five iron nails (MHA 2378–2382; Figures 27.2 and 27.3), and a coin minted for John of Brienne, king of Jerusalem from 1210 to 1225 (MHAN 452; Metcalf 1995). The coin may indicate a 1210 *terminus post quem* for this deposit and gives us the clearest idea of the date of the nails. No finds postdating the early thirteenth-century CE date were found in a repurposed Early Roman tomb, although the area is known to have served later as an Ottoman period cemetery (see Chapter 26, this volume).

We posit that analysis of the thirteenth-century Crusader nails sheds light on local availability of iron, the nature and origin of Crusader ships, and contemporary ferrous production techniques. The nails are ship nails extracted and curated for reuse locally, potentially indicating a shortage of iron in thirteenth-century Jaffa. Iron recycling practices of the Crusaders are corroborated by historical sources (d'Aguilers 1969). The morphology of the nails is characteristic of a tradition with origins in northern Europe, providing archaeological evidence of northern European-type ships in the eastern Mediterranean (Figure 27.4). The nails are fashioned from iron that includes substantial steel phases.

The nails from Be'eri contribute to an understanding of the historical currents of increasing maritime interaction between northern and southern Europe during the

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Figure 27.1. The Levantine coast showing Jaffa and other sites mentioned in the text.

Medieval period. We present metallographic examination of the nails that has documented the first examples of Crusader steel from the Medieval Levant. Our typological analysis permits the identification of the five nails as ship nails of the northern European tradition that have been purposefully removed from ships for reuse in a nonmaritime context.

Analysis of the Nails

Typology and Use

The archaeological context of the nails found in Be'eri is discussed in Chapter 26. Here we focus more narrowly on the nails themselves and their typological associations with other Medieval assemblages. The nails found on the floor of the Be'eri repurposed tomb appear to derive from ships. They were probably used to fasten together overlapping planking in the hull of a ship in a clinker-style construction (discussed below). The identification of these nails as ship nails is supported by typological correlations with documented ship hardware and the postforging morphological changes that the nails underwent as they were put to use in ship construction. As would be expected from such ship nails, the Be'eri nails show evidence of having been clenched into a 90° angle along the face of the planking to prevent them from drawing out.[1] The angle of the nails as they appear today is wider, as a consequence of their subsequent extraction, when the nails were extended back 45° for removal from the ship planking. McGrail (2004:150–2, see also fig. 1.3) calls these "turned nails." Turned nails are clenched directly on the wood without a washer or rove. The bent shank lies flush with the planking and is not bent again back into the wood. Nails that are bent twice, so that the point turns into the wooden plank, are referred to typologically as "hooked nails" or "double-clenched nails" (McCarthy 2005, with references to McGrail 1987:139). The use of these typologically distinct nails can be mapped temporally and geographically. The type of turned nail found at Be'eri is identical to the form McGrail argues is characteristic of the ship-building tradition in southern England. This suggests that the Be'eri nails may derive from a ship constructed in northern Europe. It is also possible that blacksmiths and ship builders trained in the English northern European tradition forged and employed these nails in the Levant for use in locally constructed ships.

The Medieval ship traditions of northern and Mediterranean Europe differed in evolutionary trajectory and in construction methods. The two ship-building traditions employed constituent parts and diagnostic hardware that can be materially identified through archaeological remains. The northern European tradition around the North Sea was dominated by a shell-first construction in which planks were fastened together with variable types and frequencies of iron clench nails, clench bolts (or boat rivets), and wooden pegs (Bill 1994; Crumlin-Pedersen 1994; McGrail 2004; Zori 2007). Mediterranean ships, on the other hand, were constructed shell first with wooden mortise-and-tenon construction or frame first with planking nailed to the frame (Kahanov 2003:49; Pedersen 2008:90). By the twelfth century, all Mediterranean ships were being constructed in the skeleton-first manner and employed a lateen-rigged sail. The northern European ships continued to be shell-first construction using the square sail (Kreutz 1976:80).

Over the course of the Crusades, the regional separation between the two ship-building traditions

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MHA No.	Museum Reg. No.
MHA 2379	79/3488/65/004
MHA 2380	79/3488/65/005
MHA 2378	79/3488/65/003
MHA 2382	79/3488/65/007
MHA 2381	79/3488/65/006

Figure 27.2. The five clenched Crusader nails recovered from the Be'eri repurposed tomb. Artifact registration numbers clockwise from bottom.

substantially decreased, especially after the Third Crusade, when large numbers of ships from northern Europe entered the Mediterranean. Intermixing of these shipbuilding traditions resulted in technological and stylistic interchange that saw, for example, features such as Mediterranean-style fore and aft towers appearing on northern European ships. The intermixing of ship traditions by the late twelfth century opens the possibility that the ship nails from Be'eri were part of this influence in the Mediterranean of the northern European ship construction tradition. However, although the external styles of ships have been seen as relatively easily transferred from one cultural tradition to the other, the underlying construction techniques—reflecting a deep material and methodological heritage—are often much more conservative (McCarthy 2005:48). The ship builders of southern Britain had built Mediterranean-style carvel ships in the Roman period, but with the departure of the Roman legions and the arrival of the Angles, Saxons, and the Jutes, the northern European clinker-style ship became the dominant ship tradition (McCarthy 2005:51). As evidenced on the late eleventh-century Bayeux Tapestry, the Norman conquerors of England also used clinker construction ships, which they had inherited from the Scandinavian Viking Age seafarers discussed below.

Typologies of ship nails that distinguish between subunits of the northern European tradition have been built primarily on morphological differences in nail heads, nail

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Figure 27.3. MHA 2379 with round head and the square section of the shank.

apexes, and shank cross sections. These nail shapes vary culturally, regionally, and chronologically (Bill 1994:55). The five Be'eri nails have round low heads, square shanks, and pointed turned apexes, a combination of features that matches Bill's Ship Nail Type ACD (Figure 27.4; Bill 1994:fig. 2). This type is consistent with ship nails produced in England. Although nails with square cross sections, such as the Be'eri nails, were used throughout the Middle Ages, the square-shanked nails dominated the comparative assemblage at the end of the twelfth century (Bill 1994:60). Bill suggests this shift is connected to a change in the context of manufacture, in which boat nail production was transferred from the boat builder, who only periodically made nails, to the blacksmith, who possessed a permanent workshop. Square-shanked nails were easier to fashion, as they could be drawn quickly through a nail board without any further need of hammering for rounding. As documented below, the Be'eri nails contain steel. Although we can only guess without any further comparative evidence, it is possible that the presence of consistent steel phases in the Be'eri nails is related to an increased quality of iron production in professionalized permanent workshops.

Various types of iron nails were of course employed in Mediterranean ship-building traditions. Iron nails have been recovered from excavated Mediterranean shipwrecks and are shown in artistic renderings of Medieval Mediterranean ships (e.g., Bonino 1978; Martin 2001). Clenched nails turned back into the wood are used in Mediterranean ships and have been found archaeologically in contexts as early as the fourth-century BCE Kyrenia ship, where mortise-and-tenon planks were clench-nailed to the frame timbers (Steffy 1985; 2001:52). The Byzantine vessels that have been recovered archaeologically are frame based and use hardware that differs from the Be'eri nails (Hocker and McManamon 2006:7). The seventh-century CE Yassiada ship, as well as the Serçe Limani ship from 1025/1026, both used mortise-and-tenon planking nailed with straight nails into the frame of the hull (Steffy 2001:55–56). The later Venetian *Contarina I* wreck from ca. 1300, which comes closest in date to the thirteenth-century Crusader nails from Be'eri, did in a very specific context use clenched nails to fasten the keel to floor timbers (Bonino 1978:15). However, the *Contarina I* nails differ stylistically from the Be'eri nails and were much larger, as it was necessary for the nails to penetrate through the keel before being clenched. The remains of the *Contarina I* vessel were destroyed after the 1898 excavation, unfortunately precluding closer morphological study of the iron hardware. Venetian documents from the fifteenth to seventeenth centuries describe ship construction techniques that are consistent with the archaeological evidence of a

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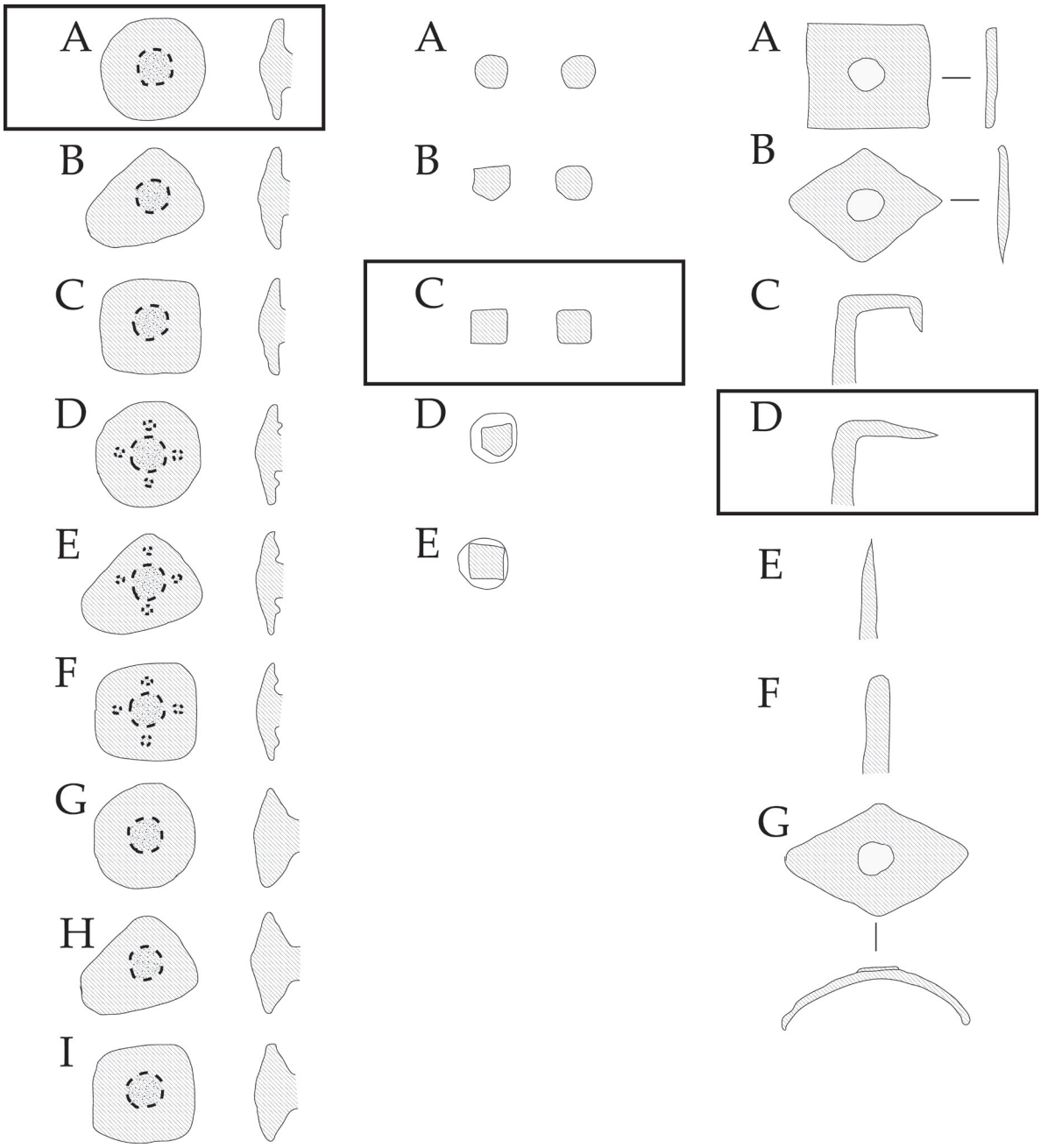

Figure 27.4. Jan Bill's typology of boat nails (reworked from Bill 1994:57). The rectangles indicate the three-part nail type of the Be'eri nails: ACD (round head, square shank, turned apex). Full descriptions of the letter types are as follows:

Head Shape	Shank Cross Section	Apex
A: round, low domed	A: round	A: rectangular rove
B: irregular, low domed	B: multisided irregular	B: rhomboid rove
C: square, low domed	C: square	C: hooked
D: A + points under head	D: B + plug	D: turned
E: B + points under head	E: C + plug	E: pointed
F: C + points under head		F: dull
G: A + conical toward shaft		G: curved rove
H: B + conical toward shaft		
I: C + conical toward shaft		

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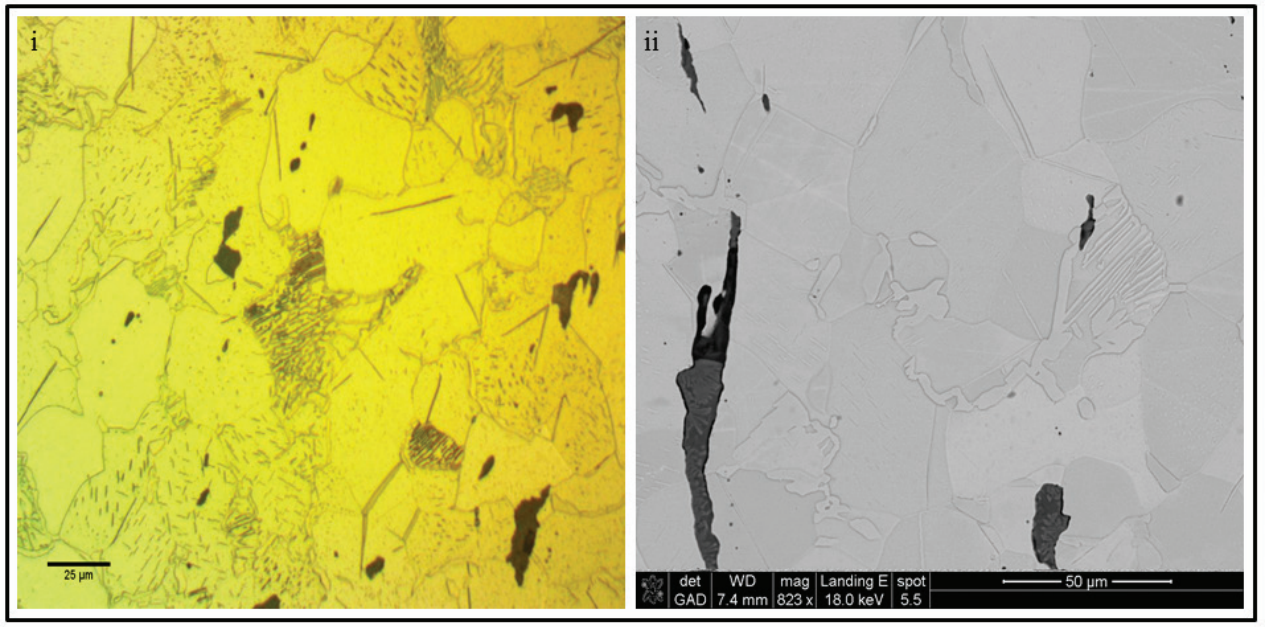

Figure 27.5. (i) Light optical micrograph of α-ferrite grains with lamellar pearlite in the center, nitride needles scattered throughout, and dark glassy slag inclusions. MHA 2378. (ii) SEM micrograph of white lamellar pearlite to the right, spheroidal pearlite along grain boundaries, and olivine slag. MHA 2378.

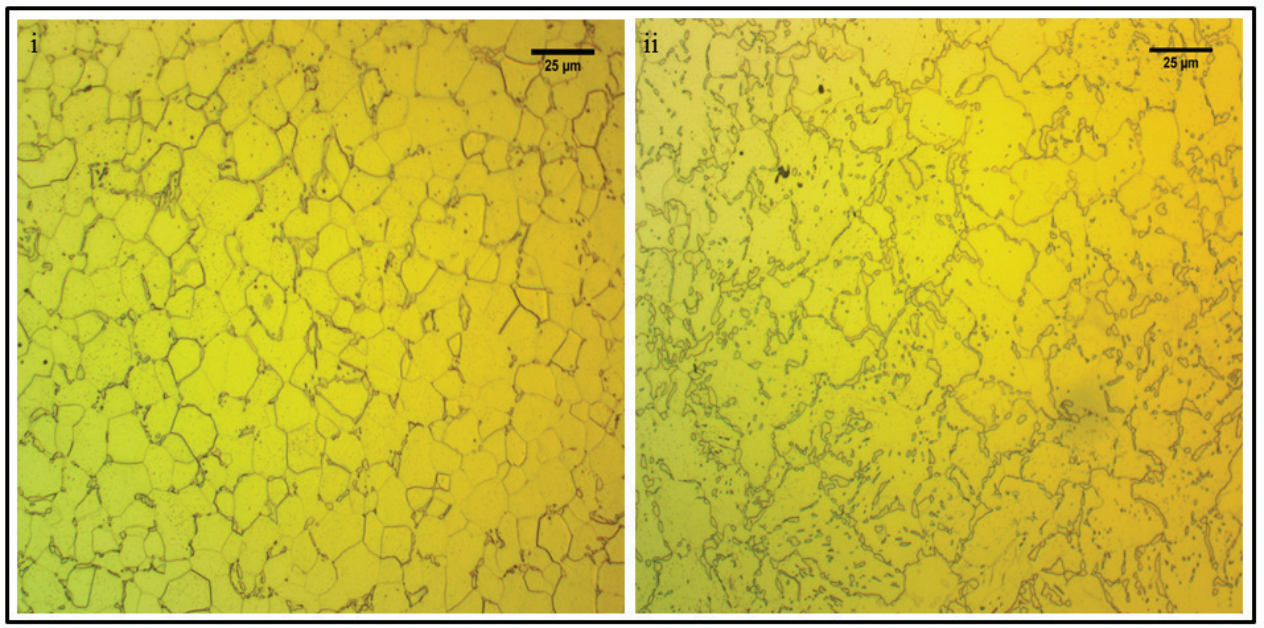

Figure 27.6. Light optical micrographs of spheroidal pearlite clustering along the α-ferrite grain boundaries. (i) MHA 2380 and (ii) MHA 2382.

frame-built vessel of the deeper Byzantine Mediterranean tradition (Hocker and McManamon 2006:8–9). Despite the typological similarities with nails produced in the northern European ship hardware tradition, the variability in local ship traditions in the Mediterranean, combined with the limited archaeological recovery of Medieval Mediterranean ships, means that the possibility of the Be'eri nails deriving from a ship in the Mediterranean tradition cannot be ruled out completely.

Archaeometallurgy

Here we offer a brief summary of the most salient technological characteristics of the iron and steel production found in the Be'eri assemblage. Characteristic wrought iron α-ferrite microstructure is found across the assemblage, along with lamellar phases indicative of "natural steels" (Figure 27.5; Buchwald and Wivel 1998), as well as an abundance of spheroidal pearlite and carbide inclusions (Figure 27.6). Spheroidization occurs when the α phase

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precipitates out of cementite (Fe_3C). The α phase leaves to join up with ferritic grains, leaving Fe_3C behind in spheroidal form or simply as iron carbides. In some nails, nitride needles and fayalitic slag that possess strontium and barium impurities are "relics" from the smelt (Hauptmann 2014:101). There are various slag phases attested in the corpus of the four analyzed nails, ranging from fayalite and glassy phases (Figure 27.7) to those richer in iron oxide phases (Figure 27.8). The abundance of pearlite would have served to harden the iron-carbon alloy and demonstrates what is likely intentional steeling, but the spheroids and carbides, along with the high quantity of slag impurities, conversely indicate a lack of control in the forging environment. Microstructural evidence of welding occurs in one or two of the nails (Figure 27.9). The Be'eri nails, with alternating phases of steel and wrought iron, would have been both strong and malleable, characteristics meant to endure the mechanical stresses they would have encountered as ship nails.

Comparative Archaeometallurgical Data

Very little metallographic and compositional analysis has been undertaken of ferrous metal or copper alloy artifacts from sound archaeological contexts from the Crusader states (e.g., Ponting 1999 for a useful attempt toward rectifying this situation). The analysis of the admittedly few ship nails from Be'eri presented here therefore helps to fill a gap in our knowledge of metalworking in the Latin East. Some archaeometallurgical literature on contemporary coinage has been published (al-Kofahi and al-Tarawneh 2000; Giumlia-Mair 2005). The recent comprehensive publication of iron Crusader remains by Ashkenazi et al. (2013) may be the first archaeometallurgical analysis of ferrous artifacts of the Crusader period to date. They selected six arrowheads (from a rich corpus of over 1,200) and three iron bolts from the Crusader castle of Arsuf for analysis. These remains came from a mixed Crusader/Mamluk destruction layer, and the authors believe that most of the weaponry should be attributed to Mamluk use. The assemblage consists microstructurally of some badly corroded artifacts, metallic wrought iron phases, and austenite phases that pseudomorphed into magnetite phases during the postforging burning of the castle, according to the authors (Ashkenazi et al. 2013:253–254).

Crusader mining, smelting, smithing, and recycling activities remain little understood. No archaeological evidence of any of these activities has been previously published. A good deal is known, however, about the metallurgical practices of other areas of Medieval Europe, in part from historical documents but drawing primarily on archaeological remains.[2] These sources provide important suggestions as to the nature of the metal production characteristic of the Be'eri ship nails.

Historical sources suggest variability in organization and specialization of smithing during the Medieval period. In

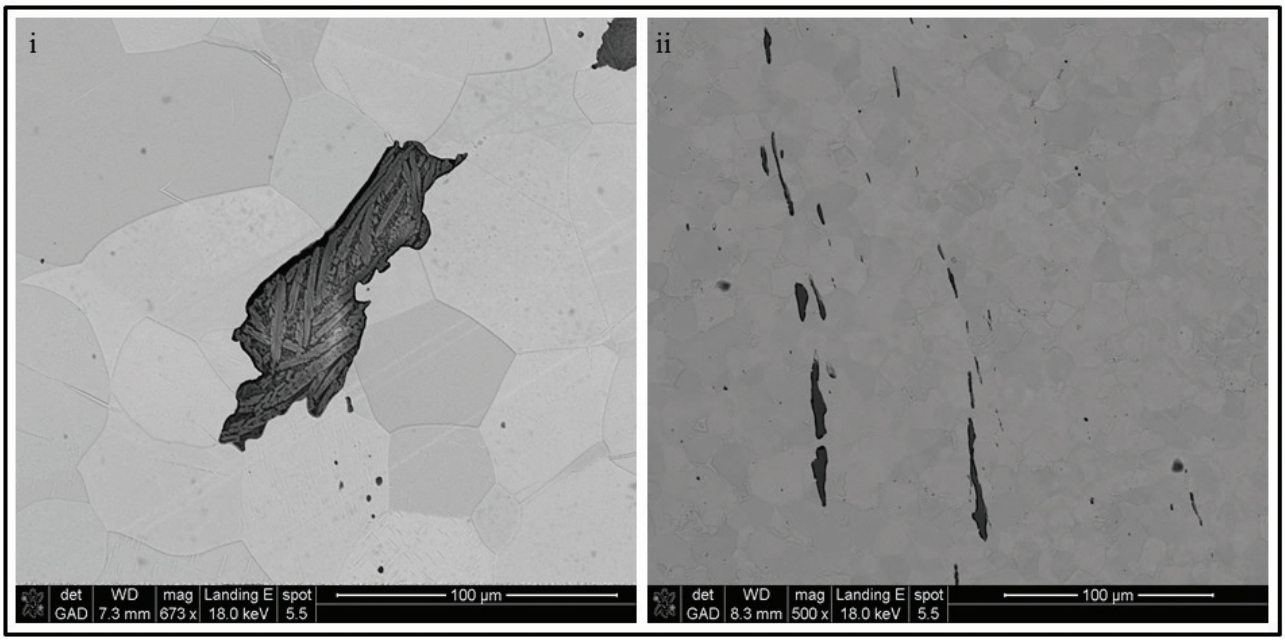

Figure 27.7. (i) SEM micrograph of α-ferrite grains with fayalite-rich slag impurity in the center. MHA 2378. (ii) SEM micrograph of α-ferrite grains with glassy slag stringers. MHA 2380.

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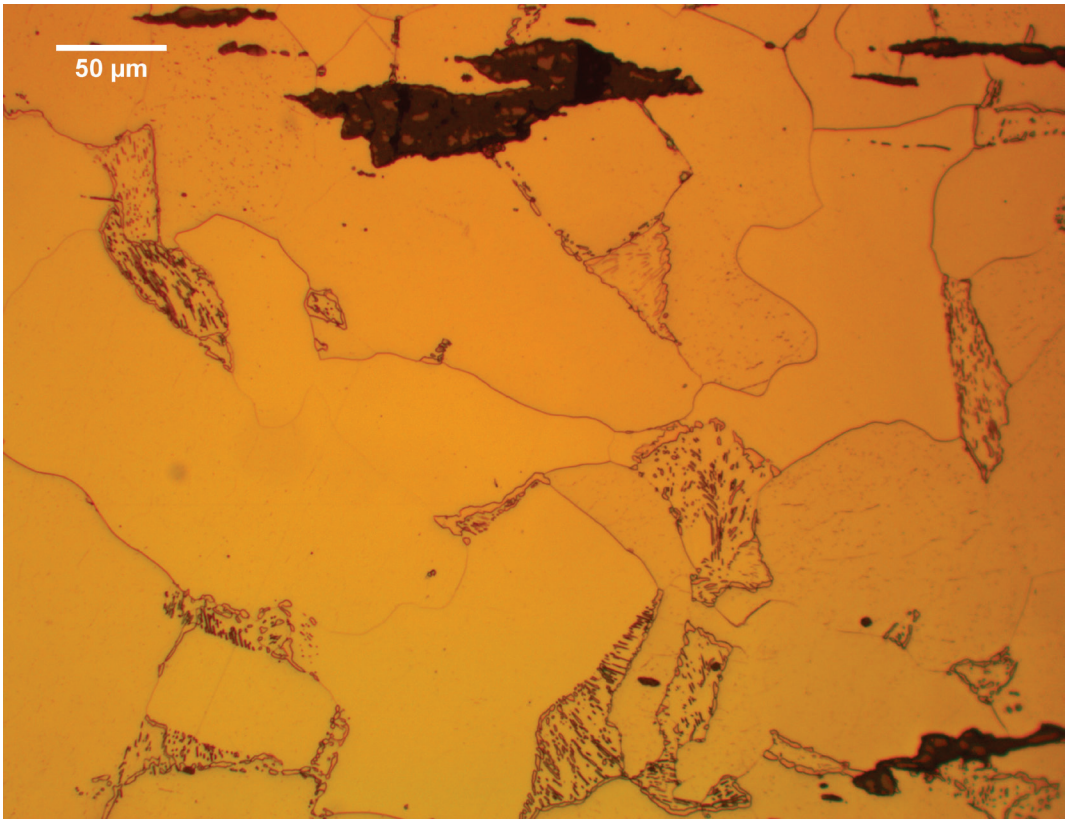

Figure 27.8. Light optical micrograph of globular carbide inclusions on grains and along grain boundaries, with dark slag inclusions with glassy and metal oxide phases; minimal lamellar pearlite phases can also be seen. MHA 2379.

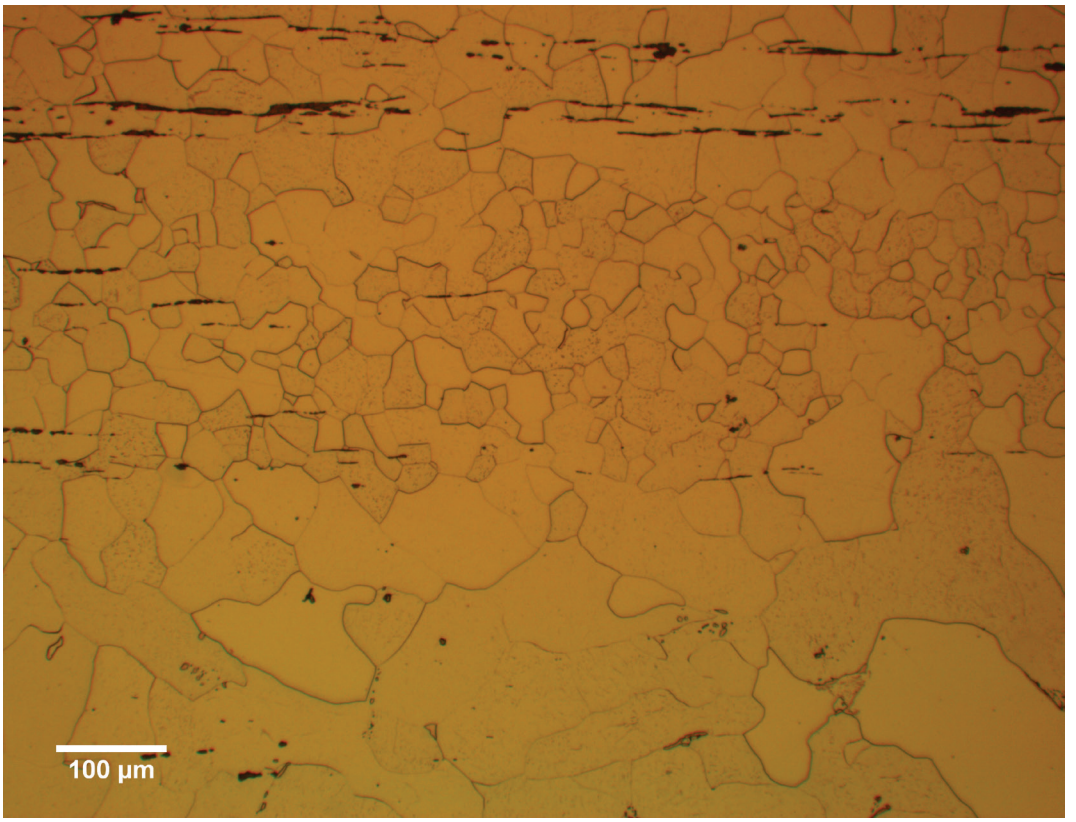

Figure 27.9. Light optical micrograph showing a weld of at least two pieces of iron seen through the large grains in the lower section, equi-axed grains in the middle, and a potential third upper piece with slag stringers. MHA 2379.

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her study of Medieval Scandinavian blacksmiths, Thålin-Bergman (1979:102) identifies five types: (1) the household smith who repaired simple objects, (2) the smith who practiced smithing as a supplement to his primary agricultural occupation, (3) the smith who practiced fairly specialized manufacture by taking advantage of locally available and high-quality raw materials, (4) the itinerant and specialized smith who practiced smithing full-time, and (5) the apprentice or assistant smith. From the historical sources, it is also apparent that monastic orders across twelfth- and thirteenth-century Europe often sponsored and executed ironworks on their properties (Pleiner 2000:276–277). The Domesday Book of 1086 recounts that bloomeries were ubiquitous in the southwest of England such as at Somerset, with iron smelting common elsewhere at locations in river valleys, such as Staunton and Aldford, where hydraulic systems were likely used to power the furnaces (Tylecote 1962:269–273).

Crusaders relied to a large extent on imported or prefabricated metals, brought from Europe or perhaps traded with local Near Eastern polities, including the various Islamic communities. During the Fourth Crusade (1202–1204 CE), the Venetians provided ironwork to the Templars (Boas 2011:xx; Pleiner 2000:280). There are archaeological indications that local copper mines were exploited by the Islamic polities in the Levant (Grattan et al. 2007; Hauptmann 2007, fig. 5.4b; Hunt et al. 2007; Jones et al. 2014).

Tylecote (1962) relates that a great deal of iron smelting and mining sites have been uncovered in the British Isles, at sites in Ireland (smelting slag and cinder at Downpatrick, thirteenth century; Tylecote 1962:263), Wales (ore and slag in domestic contexts at Gelligaer Common, thirteenth to fourteenth centuries; Tylecote 1962:265), Scotland (iron slag from a mote at Stirlingshire, 1200; Tylecote 1962:264), and England (tap slag and mill race at Kirkstall, 1220; slag, ores, and hearths in the area of Wealden, thirteenth to fifteenth centuries; smelting at High Bishopley, twelfth to thirteenth centuries; Kirkby Overblow, the name of which is derived from smelting operations from the eleventh to thirteenth centuries; twelfth-century cinder at Harthope Mill; Tylecote 1962:265–266, 284, 288). Later, blast furnaces became common in the production of cast iron (Craddock 2003:242–250). The Be'eri nails are consistent with the bloomery process and production of wrought iron with steel phases.

Steel, defined as iron with carbon content up to 2.1 wt%, is rare and not well documented for the Early to High Middle Ages (Pleiner 1969:484). But the production of steel itself is not surprising in this period when iron was still produced by the bloomery process, whereby each smelt resulted in a solid iron bloom that could be worked after extraction (Starley 1999; Tylecote 1987).

From the earliest evidence of ironworking, smiths understood that combining softer iron with harder steel could improve the properties of iron objects (Carpenter and Robertson 1930a, 1930b). In the Middle Ages, edged objects such as knives and swords were often made with a sharp and hard steel edge surrounded by more malleable wrought iron (McDonnell 1989; Ottaway 1992; Tylecote 1987:263). British steel metallurgy by the time of the Crusades demonstrated all of the layering, welding, and piling techniques described by Tylecote and Gilmour's Types 1 to 3 (1986:2–3, Table A3). Various iron and steel blades and tools, mostly knives, dating from the twelfth to fourteenth centuries at Winchester, Chingley/Kent, and Goltho/Lincolnshire, with some dating firmly to the thirteenth century CE, show evidence for production techniques such as homogeneous carbon steels, welding of iron to steel, alternate layering of ferrite and ferrite + pearlite phases, hardened martensite phases, and arsenic enrichment (Tylecote and Gilmour 1986:44–51, 84, 113). As this previous research illustrates, the data presented in the current study provide underrepresented Crusader metallurgical data in the otherwise well-researched field of Medieval European metallurgy (Bjorkenstam 1985; Brewer 1976, 1981; Coghlan and Tylecote 1978; Hayes 1978; Rose et al. 1990; Tholander 1975; Wärmländer et al. 2010).

Technological advances in the Late Middle Ages, such as water-powered smithing and the blast furnace, ramped up the production scale of iron and steel to fill increased demand associated with expanding urbanization (Hoffeld 1969:162; Starley 1999:1127). But until then, it remained more difficult to produce steel, and we might imagine it being reserved for objects requiring strength or the ability to hold a sharp edge. Our data appear to suggest that by the early thirteenth century CE, steel production was ubiquitous enough that it was used to produce more common items such as ship nails. The Jaffa Be'eri nails contribute technological dimensions to what we know historically and archaeologically regarding contemporary trends in metal production and consumption.

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Historical and Cultural Context

Northern European Ships in the Mediterranean

The nails from Jaffa provide the earliest archaeological information of which we are aware that attests to the presence in the Mediterranean of ships built in the northern European tradition. Historical sources record a limited number of instances in the Early Middle Ages (ca. 500–1000 CE) and the High Middle Ages (ca. 1000–1300 CE) when northern European ships entered the Mediterranean. The hybridization of the northern European and Mediterranean ships has long been identified as a key element in the culmination of European ship-building represented by the caravel ship that facilitated the Age of Exploration (e.g., Kreutz 1976:79–81). The Crusades, beginning in the final years of the eleventh century CE, played a role in this hybridization, bringing an exponentially greater number of vessels from northern Europe into the Mediterranean. Below, we review the early textual evidence of northern ships in the Mediterranean, coming mostly from the seafaring Viking Age culture of Scandinavia. These voyages preceded the twelfth- and thirteenth-century Crusader movements from northern Europe and predate the deposition of the nails at Be'eri by at least 100 years. King Richard I of England later followed the route of the earlier Scandinavian fleets when he sailed to the Holy Land in the Third Crusade. Of the northern European fleets that are historically recorded to have entered the Mediterranean, Richard's expedition, which docked at Jaffa at the end of the twelfth century, comes closest in date to the deposition of the Be'eri nails.

Starting in the Viking Age, Scandinavians periodically entered the Mediterranean with ships constructed in the northern European tradition. Some sailed from the Baltic Sea, navigating through the large Polish and Russian rivers, such as the Dvina, the Dniepr, and the Dniester, and into the Black Sea, or via the Volga into the Caspian Sea (Jones 1984:241–268). Less commonly, Vikings and later Medieval Scandinavians sailed around France and the Iberian Peninsula, through the Straits of Gibraltar and into the Mediterranean. The Viking chieftains Hásteinn (Hasting) and Björn Járnsiða (Bjorn Ironside) made a memorable expedition in the 850s that raided the shores of Iberia, North Africa, France, and Italy. The raiding party, consisting of 62 ships, culminated in the sack of what the Vikings believed to be Rome but instead turned out to be the Italian town of Luna. The story of this journey is told by the eleventh-century Norman historian Dudo of St. Quentin and is recorded in the Frankish *Annals of St. Bertin*. Sources from Muslim Spain confirm this audacious raiding trip (Stefánsson 1909). Such Viking raids into the Mediterranean were not common. In fact, Hasting and Bjorn's voyage was widely remembered particularly because it was unusual. These stories do indicate, however, that ships of the independent northern European ship-building tradition were periodically entering the Mediterranean by the ninth century, well before the onset of the Crusades.

Later Scandinavian pilgrims and seafaring warrior kings made journeys further into the Eastern Mediterranean, arriving in the Levant and even docking at Jaffa. Haraldr Hardráði (Harald "the Hard-ruler") served in the Varangian Guard of the Byzantine emperors Michael IV and Michael V from ca. 1034 to 1043 CE. According to his saga in *Heimskringla*, an Icelandic source dating from the early thirteenth century, he was involved in battles in Asia Minor and Sicily and made a pilgrimage to Jerusalem, during which he rid the road of robbers. Contemporary Byzantine sources, including *The Emperor's Counsel*, confirm that Harald was active in the eastern Mediterranean as a leader in the Varangian Guard (Benedikz 1981). When in 1103 CE, King Erik I of Denmark became the first European king to go on a pilgrimage to the Holy Land after its conquest by the Muslim caliphate, he also followed the eastern route, traveling via the Russian rivers to Constantinople. He brought his ships into the Mediterranean, but only as far as Cyprus, where he died of illness. Other Scandinavians used the western route through the Straits of Gibraltar. By 1075 CE, the sea route to the Holy Land from Scandinavia was becoming popular enough for the cleric Adam of Bremen to record sailing directions from Denmark to Acre (Akko; Morcken 1989:56–57, 73–74).

In 1107–1110 CE, Norwegian King Sigurðr Jórsalafari (Sigurd the "Jerusalem-farer" or "Crusader") was the first European king to join the Crusades. *Heimskringla* recounts Sigurd's journey with his Viking-style northern European fleet of 60 ships that carried his Norwegian army via Lisbon and Sicily to Jerusalem, where he joined forces with King Baldwin I (Sturluson 1964:688–699). The two kings met at Jaffa (Morcken 1989:55), indicating that a fleet of northern European-style ships was docked in the Jaffa harbor in the first years of the twelfth century, a century earlier than the nails were deposited at Be'eri. In his pilgrimage account from the 1150s, the Icelandic monk Nikolas Bergsson attributes the Christianization of Jaffa to the joint efforts of Sigurd and Baldwin (Bergsson 2014:420–421). Together,

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the two kings conquered Sidon from the Fatimids in 1110 CE before Sigurd departed again for Cyprus and Constantinople (Asbridge 2010:125). For the purposes of this chapter, it is noteworthy that he gave his ships to the Byzantine emperor, who in return gave Sigurd horses for his overland journey home. *Heimskringla* states that many of Sigurd's Norwegian Crusaders stayed in Constantinople to serve in the emperor's Varangian Guard.

The Third Crusade (1189–1192 CE) saw an unprecedented number of northern European ships enter the Mediterranean. Most northern European Crusaders, with the exception of King Sigurd of Norway, had previously followed the land route to the Mediterranean, where they frequently sought passage to the Holy Land on Italian ships. Richard the Lionheart's Third Crusade fleet included about one hundred ships from England, Normandy, Brittany, and Aquitaine (Asbridge 2010:388). These ships followed the route of earlier northern European fleets. They navigated along the western coast of France and Iberia, passed through the Straits of Gibraltar, and then followed along the northern coast of the Mediterranean, making stops on Sicily and Cyprus. Richard first laid siege to Acre (Akko), before moving a dual land- and sea-based army down the coast to Jaffa. During the Third Crusade, *Itinerarium Peregrinorum et Gesta Regis Ricardi* recounts that "ships came and went freely from Joppa to Acre [Akko] and back, carrying provisions and the other things which an army needs. The Turks were very much distressed because they could not prevent their sailing" (Nicholson 1997:263). As we discussed, the Be'eri nails are typologically consistent with ship nails produced in southern England. Richard's ships, which docked in the Jaffa harbor in 1191/1192 CE, likely would have been constructed with nails that typologically match the Be'eri nails.

The Crusaders of the early to mid-thirteenth century followed the land route to the Mediterranean. These Crusaders of the Fourth (1202–1204 CE), Fifth (1217–1221 CE), Sixth (1228–1229 CE), and Seventh (1248–1254 CE) Crusades all set sail from ports on the Mediterranean coasts of modern-day France, Italy, and Croatia. None of the large historically recorded Crusader expeditions using northern European ships can be precisely correlated with the deposition date of the nails at Be'eri, presenting us with a reminder that the movements of a great many people of the Early and High Middle Ages were not recorded in texts. In addition to the historical examples presented here, there were no doubt countless other travelers, merchants, and pilgrims who entered the Mediterranean with northern European-style ships. The ship nails from Be'eri may just as well be linked to these unnamed people, a mute testament to the oceanic mobility increasingly linking northern Europe with the far reaches of the Mediterranean.

Jaffa in the Crusader Period

Jaffa's small natural harbor on the Mediterranean coast played a disproportionately large role in the Crusades because of its proximity to Jerusalem. The history of Jaffa as a Crusader port begins with the conquest of the town by the First Crusaders in 1099 CE and lasts for roughly 170 years, until the final reconquest by Egyptian Mamluks in 1268 CE (Boas 2011:124). During this period, the city saw multiple invasions and switched hands between Muslim and Christian forces several times.

Soon after the initial conquest in 1099 CE, Jaffa became the first Crusader harbor and a major center for import and export of goods. The city was a gateway for European pilgrims and Crusaders to the Holy Land, who were often ferried there by Italian ships. The role of the Italian cities can be traced back to the initial conquest in 1099 when Genoese and Pisan ships anchored in Jaffa provided support to the First Crusade. Ships and supplies from the Italian city-states contributed to the sustainability and defense of Jaffa. From its first days as a Crusader port, ships were scuttled to provide critical resources for the invading forces. Genoese ship parts from Jaffa, including timber and nails, were reused to construct siege towers for the First Crusade's attack on Jerusalem (Boas 2011 and citations therein of Raymond d'Aguilers, who wrote his firsthand account just after the First Crusade, and William of Tyre, a chronicler writing in the mid-twelfth century). The archaeological recovery of curated ship-related artifacts is therefore consistent with the textual record.

Pilgrims from diverse regions of Europe arrived by ship at Jaffa to start their pilgrimage in the Holy Land, as witnessed in the accounts of the Anglo-Saxon pilgrim Saewulf and the Russian abbot Daniel (Boas 2011:122). Jaffa's location brought it to prominence. However, Jaffa was a small, rocky, and at times dangerous harbor (see Chapter 6, this volume). As a consequence, the ports of Acre (Akko) and Tyre began to see more traffic than Jaffa as the Crusades progressed. Throughout the Middle Ages, Jaffa nevertheless remained a strategic staging point for Crusader armies,

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such as Baldwin I's counteroffensives against the Fatimid Egyptian invasions in 1101 and 1102 CE. After a defeat in the plains of Ramla in 1102 CE, the Crusaders held out behind the walls of Jaffa until Baldwin arrived on a commandeered English pirate ship from Arsuf (Asbridge 2010:132). This textual record of an English pirate vessel indicates the presence of northern European—and more specifically English—ships in the Jaffa harbor in the early twelfth century.

Jaffa was the destination of Richard the Lionheart's fleet during the Third Crusade's march from Acre (Akko) to Jaffa. At Jaffa, the Third Crusaders turned east in pursuit of their goal of conquering Jerusalem. After Richard's unsuccessful approach on Jerusalem, he returned to Jaffa and rebuilt the harbor and fortifications. Saladin (Salāh ad-Dīn) had destroyed the harbor and fortifications as part of the scorched earth policy enacted after his conquest of Jaffa in 1187 CE and in advance of the Third Crusade. The Third Crusade ended in a stalemate, but before Richard set sail from Jaffa on his return to England, he signed the Treaty of Jaffa with Saladin, securing the harbor and a coastal strip from Jaffa north to Tyre for the Crusader states (Asbridge 2010:512). Saladin's Ayyubid forces retook Jaffa in 1197 CE and held it until 1204 CE, when it was returned to the European Crusaders.

In the early thirteenth century, during the period from which the nails from Be'eri derive, the harbor changed hands several times between Crusaders and the Ayyubid heirs of Saladin, before finally being conquered by the Egyptian Mamluk Sultanate in 1268 CE. The city went through a period of rejuvenation during the Sixth Crusade after the arrival of Emperor Frederick II, who restored the town's fortifications in 1229 CE (Boas 2011:124). The date of MHAN 252 (see Figure 26.16), a coin recovered with the nails (ca. 1210 to 1225 CE), could place the deposition around the period of Frederick II's major construction works. The fluid and pragmatic aspect of trading and commodities exchange in the thirteenth century is indicated by a trade agreement between the Mamluk Sultan Baybars and John of Ibelin, the count of Jaffa, which gained peace for Jaffa in exchange for the right of the Mamluks to import grain to Muslim Syria through the port of Jaffa. This attests to the mosaic of international and mixed maritime influences at Crusader harbors, but it should also caution against uncritically associating maritime-related archaeological finds from this period with European vessels alone.

Conclusion

The nails recovered from the infilled Roman period tomb excavated at Be'eri along with a Crusader coin from the first quarter of the thirteenth century appear to belong to the Medieval European occupation of Jaffa. The morphology of the clenched nails, which were bent back 45° for extraction, indicates that they were employed in ship construction and then removed for reuse. Typological analysis of the pointed, rounded-headed, and square-shanked nails indicates that they are consistent with English ship nails of the High Middle Ages. A limited number of historical texts recount maritime travels of Europeans in northern European vessels entering the Mediterranean from at least the ninth century CE. The archaeological recovery of ship nails that appear to match the northern European tradition is therefore not completely unexpected from Crusader period Jaffa. The nails are noteworthy in that they provide the earliest archaeological evidence for the presence in the Mediterranean of ships constructed in the northern European ship-building tradition.

The ship from which the Be'eri nails were extracted does not require its having been constructed in northern Europe. Although we consider this the most likely scenario, alternative explanations are imaginable. For instance, northern European ship builders could have accompanied the Crusaders to the Levant and built the ship there. Local inhabitants of the Levant could also have been trained in the northern European ship-building tradition by visiting Crusaders. Conceivably, the nails could also represent an early example of the hybridization of ship-building traditions that takes off after 1300 CE. In this case, the nails could have been employed in a Mediterranean-style ship that featured northern European-style hardware. As noted above, however, in the context of intercultural technology transfers, external styles are usually more quickly adopted than underlying construction techniques. We consider the choice of nail style in ship construction to belong to the realm of underlying construction techniques that tend to be more conservative, especially in light of the deep historical traditions of regionalization in European ship-building.

The nails recovered at Be'eri were extracted from a ship and curated for future use. The nails do not, however, appear to have been successfully reused before they ended up on the floor of the excavated feature. The character of the Be'eri recovery site and the distance from the sea make it unlikely that the nails were removed and discarded during

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normal ship repair. A possible textual analogy accounting for the presence of the salvaged ship nails at Be'eri can be found in records concerning Crusader period Jaffa. Raymond d'Aguilers (1969:147) describes how Genoese sailors who aided in the First Crusade siege of Jerusalem curated and reused material and hardware from their ships. They scuttled their ships to provide nails, ropes, hammers, and other tools and used them to construct three siege towers (Boas 2011:127). The analogy is not direct, of course, as the First Crusade took place over a century before the nails were deposited at Be'eri. Although the intended purpose of the curated nails uncovered at Be'eri is likely to remain unknown, their presence in this somewhat atypical context suggests that the demand for iron/steel in Jaffa in the thirteenth century continued to outstrip the local supply, thereby necessitating the pilfering of ships for raw materials consistent with the kinds of events described during the First Crusade.

The ubiquitous steel phases in the nails begs the question of whether the curators were specifically seeking steel. We do not yet have metallographic analysis of sufficient ship nails from this period in any area of Europe to know how commonly nails were made from steeled iron as opposed to wrought iron. We also do not have local, contemporary nails with which to compare the Be'eri nails from typological or metallurgical perspectives. Alloys with alternating phases of malleable wrought iron and hard and strong steel would probably have been appropriate as clenched nails for wooden seagoing ships. But to what extent they were thought to be necessary in all portions of the ship is unknown. Steel nails might be intended for a specific function in ship construction, whereas wrought iron might have been thought to be acceptable for other parts of the ship. The answers to these questions have implications for our understanding of the local curation processes of the Be'eri nails as well as for our understanding of Crusader ship construction. Metallographic analyses of additional examples of ship nails will help to answer these questions.

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Notes

1. *Editor's note:* This is in contrast to nails recovered from burials in the Postal Compound, which were associated with coffins. Those nails do not evince clenching, as is distinctive to the Crusader nails (see Figure 15.33).

2. One major limitation of the texts is that they were usually written by accountants or historians, not smiths (Tylecote 1962:269). The scarcity and nature of the historical documents on the metallurgy in Medieval Europe leave archaeology as the major source of information.

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CHAPTER 28

BRONZE AND IRON AGE FIGURINES AND ZOOMORPHIC VESSELS FROM JAFFA, 1955–1974

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At least seven figurine fragments and two zoomorphic vessel fragments have been identified from Jacob Kaplan's excavations in Jaffa from 1955 to 1974. Together they comprise the earliest corpus of figurines from Jaffa, dating to the Bronze and Iron Ages.

Seven figurines and two zoomorphic vessel fragments were excavated from Bronze and Iron Age levels during Jacob Kaplan's excavations in Jaffa between 1955 and 1974. The full reports on the contexts of these finds from Areas A and Y are in preparation, while the excavations of Area B are described in Chapter 25 of the present volume. Although the collection is small, it is not insignificant given that the primary contexts are not domestic or expressly cultic but include Middle Bronze Age burials in Area Y, the Late Bronze Age gate complex in Area A, and deposits within the successive layers of the fortifications in Area B (Figure 28.1). This collection of figurines therefore constitutes the earliest corpus of figurines from Jaffa.[1]

Late Bronze Age Figurines

Nos. 1 and 2 can be dated typologically to the Late Bronze Age (Figure 28.2:1–2). No. 1 is the fragment of a head belonging to a type commonly found in the northern part of the country and recently discussed by Kletter et al. (2010; see their table 1 for a detailed catalogue). It is concentrated in the Jezreel Valley, particularly at Megiddo and Ta'anach, but found elsewhere in the northern part of the country, including the northern hill country as well as at Tell Abu Hawam. The figurine type has typically been interpreted as the product of a double mold, which would be unique for the Late Bronze Age (e.g., May 1935:pl. 31; Tadmor 2003:387, 391; Guzowska and Yasur-Landau 2009:391). In their detailed study of this type, however, Kletter et al. (2010) have concluded that it is instead a double use of a single mold.

No. 2 is the upper half of a plaque figurine, of a general type common in the Shephelah, known as the "Qudshu" (or Qadesh or Qedeshet) type (Albright 1939:118–119; Cornelius 2004:52–57, 134–142, nos. 5.32–5.61a; Pritchard 1943:6–9, 32–42).[2] The figurine is lost, but it is still possible to make significant typological observations based on the photographs and publications (Kaplan 1959:pl. 12; Kaplan 1972:81, fig. 9; Kaplan and Kaplan 1976:534; Kaplan and Ritter-Kaplan 1993:656), as well as the copy currently in the Jaffa Museum.[3] This type is usually about 10-12 cm high and 3-5 cm wide. The figurine displays a somewhat unusual combination of themes: the woman wears the scroll wig and is associated with lotus flowers, both motifs typical of the Qudshu type. However, in the

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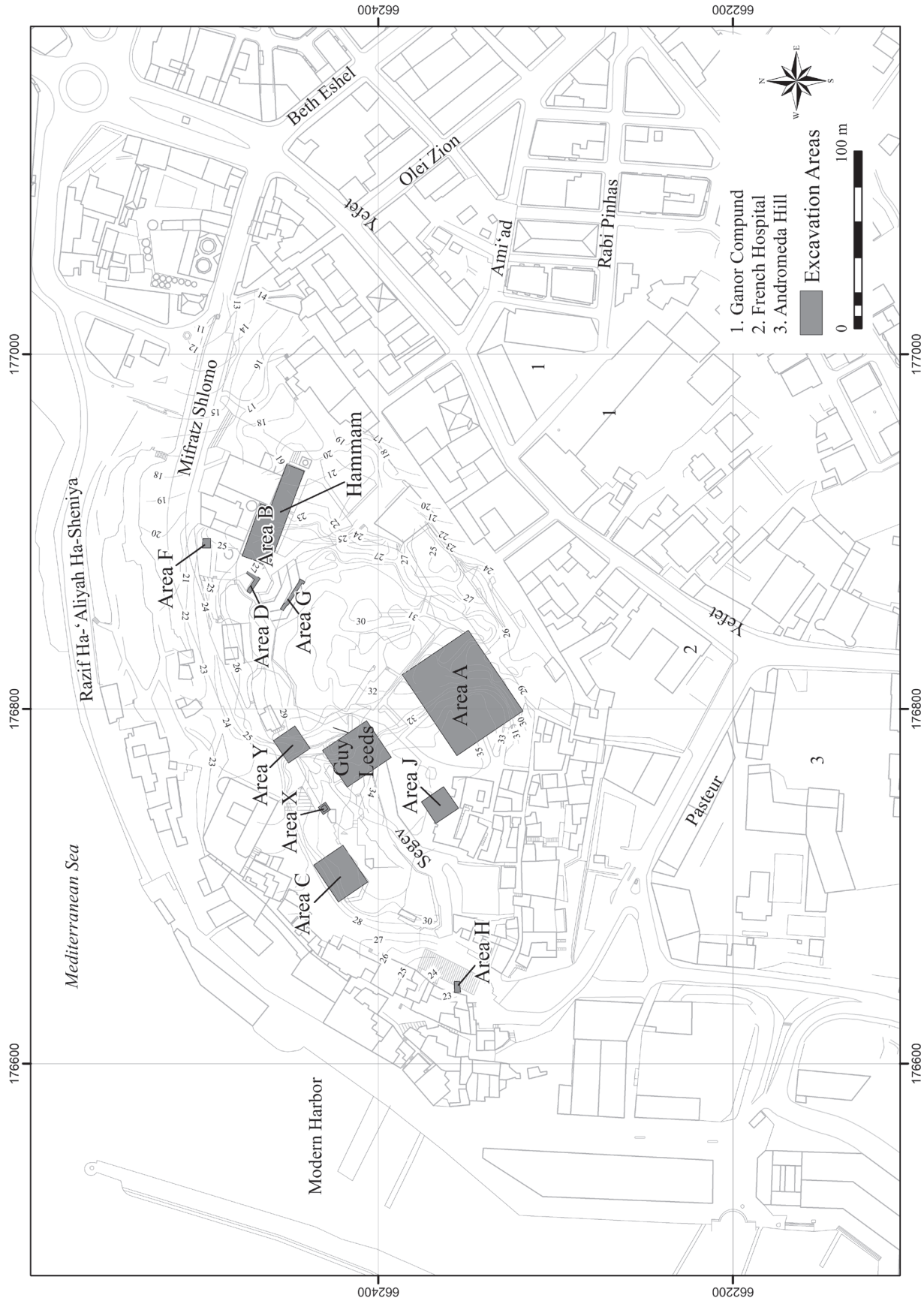

Figure 28.1. Map showing excavation areas mentioned in text. *Map by Krister Kowalski.*

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Qudshu type, the woman typically holds the flowers in her hands; here, the stems frame her body and the flowers meet at the top of the plaque. Instead, the woman holds her breasts, the typical gesture of the "Astarte" type (see Albright 1939; Pritchard 1943).

The Jaffa plaque, then, is essentially a combination of these two basic types. Such a hybrid is not unprecedented. Some examples are known from Gezer (e.g., Macalister 1912:pls. 220:21, 221:5) and Aphek (Guzowska and Yasur-Landau 2009:388–389, no. F3). In fact, a complete plaque from the Ashmolean Museum (Moorey 2004:189, no. 300)—said to have been picked up on the surface of Gezer around the time of Macalister's excavations—is clearly not only the same basic type but was possibly made from the same mold as the Jaffa plaque, measuring 12 cm high by 4.9 cm wide. Identical details of the two plaques include the angle at which the lotus flowers meet at the top of the plaque and the shape, proportions, and depth of relief of the facial features. The two examples noted above from Macalister's excavations at Gezer may also be from the same mold, but it is impossible to tell based on the published drawings alone; similarly, the Aphek example may also have been made in this mold (note the angle of the flowers), but is too worn for certainty.

The Ashmolean figurine is also the key to relate this figurine to the lower part of a plaque found at Tel Batash (A. Mazar 2006:252–253, photo 106). Mazar speculated that this figurine, showing a woman's upper legs with lotus stalks on the sides with two flowers at her hips, represented a hybrid type of the woman holding flowers and the woman holding her breasts. He did not, however, rely on the Ashmolean example or the other Gezer figurines, which not only demonstrate that Mazar is correct but also clearly show that the Batash example was made from the same mold as the Ashmolean plaque (based on details such as the shape and depth of the curving line separating the legs). Thus, as with the more general Qudshu type, this hybrid subtype is concentrated in the northern Shephelah, most commonly represented at Gezer but also found at Batash.

It is difficult to draw definite conclusions about the LB assemblage at Jaffa based on only two figurines. Nevertheless, I would use observations based on the data to formulate a working hypothesis concerning this assemblage. Each figurine is a type characteristic of a different region of Palestine: No. 1 is typical of the Jezreel, while No. 2 is characteristic of the Shephelah and Coastal Plain. This combination of figurines characteristic of different regions is found at certain sites with large assemblages: Gezer has perhaps two examples of Jezreel-type figurines (Macalister 1912:pl. 220:6–7), and there are occasional examples of Qudshu subtypes at Megiddo (e.g., Schumacher 1908:Abb. 86). It is more remarkable, however, that Jaffa—with only two known LB figurines—displays this same range. In this respect, the Jaffa group is perhaps closest to that of Aphek: a relatively small LB assemblage (seven plaque figurines; Guzowska and Yasur-Landau 2009:388–391, Nos. F2-F8), displaying both Shephelah (at least three, Nos. F3, F6, and F8) and Jezreel (at least one, No. F7) types, along with one of a type characteristic of the southern coastal plain (No. F4).[3] Jaffa and Aphek, therefore, may belong to a central region of the country where material from multiple regions came together in the LB, as a border area; alternatively, the material is perhaps related to Jaffa's function as a port. This conclusion is far from definite but awaits the discovery of further figurines from Jaffa for confirmation.

Iron Age Figurines

Five figurines have been identified as Iron Age in date (Figure 28.2:3–7). No. 3 is an unusual handmade head. Based on the pinched nose and use of depressions with incised central dot for the eyes, its closest parallels would appear to be Philistine figurines of Mycenaean derivation (e.g., Ben-Shlomo and Press 2009:fig. 10.3; Press 2007:cat. no. 15, fig. 3.5; Press 2012:cat. No. 15). This would mark Jaffa as roughly the northern end of the distribution of these figurines on the coast of Palestine. However, it is important to note that the headdress or top of the head is not flattened or concave, as typical of Mycenaean and Philistine figurines; instead, it comes to a rounded ridge on top and quickly descends to a vertical back. This type of headdress is more typical of Cypriot figurines with upraised arms (e.g., Karageorghis 1993:58–61, pl. 27, Type Gai), but the other characteristics of the figurine are not clearly associated with this type, nor is this type otherwise known from Palestine. As a result, it is safest to attribute this figurine to a Philistine standing figurine type like the Psi.

Nos. 4 to 7 all appear to be Phoenician figurines. No. 4 is a fragment of a female bell-shaped body, a type well known in Phoenicia from sites such as Achziv (e.g., Dayagi-Mendels 2002:145–150, figs. 7.1–7.5, 7.7, 7.9), Keisan (Paraire 1980:333–335, pls. 102:2, 5, 103:16–18), and

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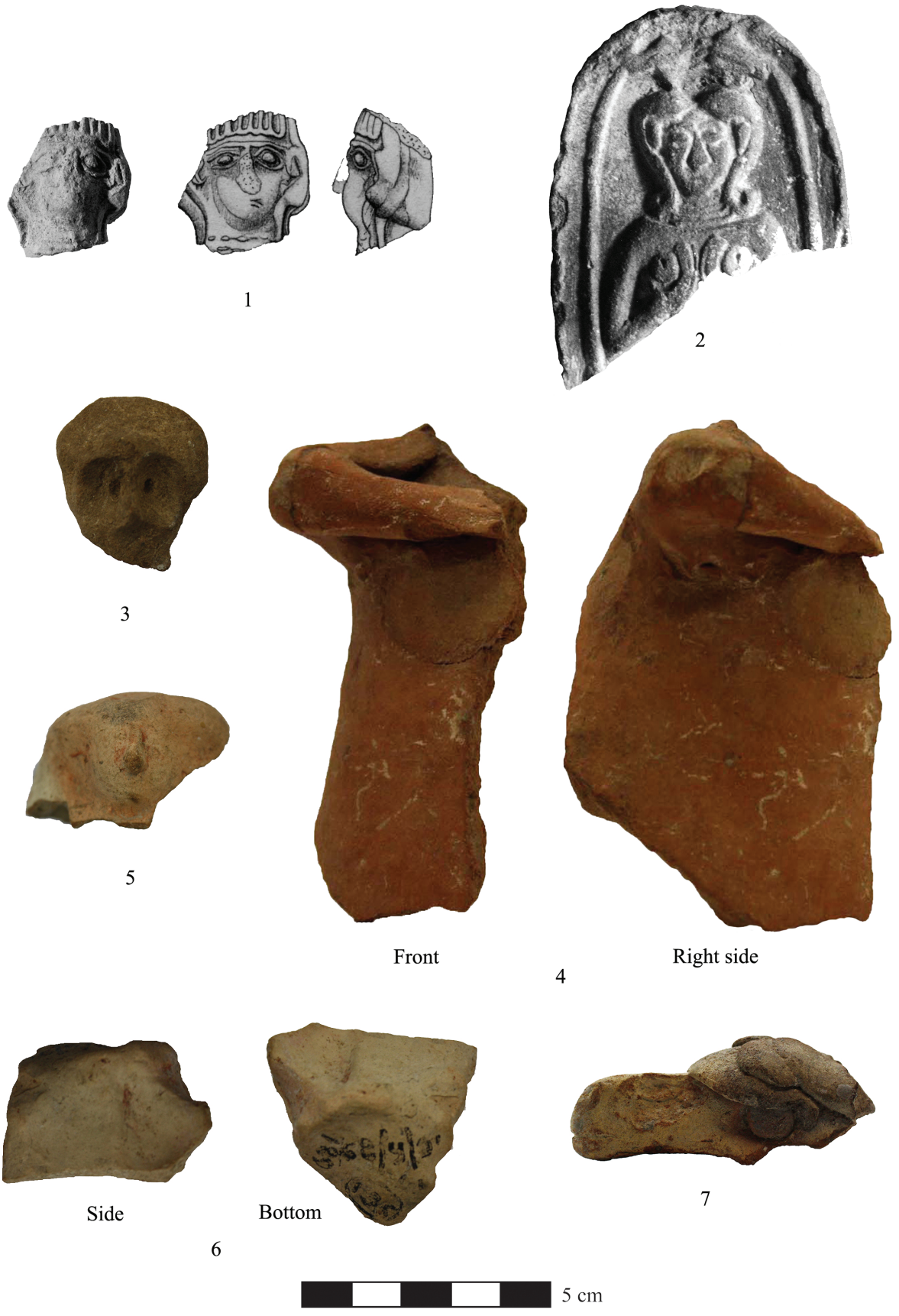

Figure 28.2. Bronze and Iron Age figurines from Kaplan's excavations in Areas A, B, and Y. Number 2, artifact lost, size unknown.

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No.	Form	Style Date	Reg. No.	Description
1	Female figurine, mold-made	Late Bronze Age	MHA 2261	Fabric: very pale brown (7.5YR 8/4); core: gray
2	Plaque figurine, Qudshu type	Late Bronze II–III	MHA 5135	––
3	Human figurine	LB III–Iron I	MHA 2362	Fabric: brown (7.5YR 4/3); core: clay colored; ext: incised dots as eyes
4	Human figurine, bell-shaped body	Iron II	MHA 4692	Fabric: light reddish-brown (5YR 6/4); core: pink
5	Figurine ("dea gravida"), hollow mold-made	Iron II	MHA 3003	Fabric: pale yellow (2.5Y 8/2); core: light gray
6	Figurine ("dea gravida"), hollow mold-made	Iron II	MHA 3341	Fabric: pink (.5YR 8/3); core: clay colored
7	Horse figurine	Iron II	MHA 3340	Fabric: pinkish white (2.5YR 8/2); core: reddish-brown

Sarepta (Pritchard 1988:31–36, figs. 10.3–5, 7, 9, 12, 13, 19, 11.24–27). This is a composite figurine type, which would have had a separate, mold-made head inserted into the hollow body. The Jaffa example appears to have held a disc parallel to the body (judging by the preserved right arm, extended across the body, and a circular scar in the center of the body below the arm). This type, distinct from the common frame-drum player (where the disc is perpendicular to the body; see Meyers 1987), is known from Akko (e.g., Conrad 1997:fig. 9, although the disc is smaller).

Nos. 5 and 6 are fragments of the hollow mold-made "dea gravida" type, representing a seated pregnant woman. This type is characteristic of the Phoenician coast from northern Israel to northern Lebanon but is also found elsewhere in Israel and on Cyprus (see Culican 1969). No. 7 is a typical Phoenician horse head, characteristic in particular of southern Phoenicia: parallels are known especially from Achziv (Dayagi-Mendels 2002:153, fig. 7.15; E. Mazar 2001:figs. 55–57) and Keisan (Paraire 1980:337–338, pl. 104:28–33). Examples are known as far south as Ashkelon, where an imported head was found in a seventh-century BCE context (see Press 2007, 2012:cat. No. 175). The "turban" on top of the head possibly represents armor. While found in a variety of contexts, in both Phoenicia and Cyprus, all of these types—the composite female, the dea gravida, and the horse and rider—appear to have been popular representations of human votaries in sanctuaries (e.g., at Sarepta [Pritchard 1988:31–36]; Kition [Karageorghis 1999, 2005]; Ayia Irini [Gjerstad et al. 1935]).

The Phoenician horse and bell-shaped figurines are types that appear at some point in the eighth century BCE and continue into at least the early sixth century (and perhaps into the early Persian period), from the northern Israeli coast up to northern Lebanon (see Press 2007:227–232, 280–281; 2012:171–173, 198). The introduction of the "dea gravida" type is more unclear, but it clearly must have been introduced before the end of the seventh century, based on finds at Ashkelon, Kabri, Sarepta, Kition, and other sites (e.g., Press 2007:285–286; 2012:199–200). The type flourished in the late seventh and sixth centuries BCE but may well have continued in use into the fifth century; the exact end of its life span is unclear. As a result, while all of these figurines are characteristic of late Iron Age Phoenicia, some (if not all) could belong to the early Persian period as well. Thus, we can say little more typologically than attributing them to the Iron IIC/Persian transition. As a result, the contexts might help to provide a narrower range for the Jaffa examples. No. 4 was associated with a wall dated by the pottery to Iron II. Meanwhile, Nos. 5 to 7 come from Area Y, which contains Persian material directly on top of material dating to the MB. What is perhaps most interesting is that the figurine assemblage of this period is entirely Phoenician: there are no examples of types common in Philistia or Judah, such as the well-known Judean Pillar Figurines (Kletter 1996).

Zoomorphic Vessels

These two objects are significant in that they appear to represent rare examples of MB zoomorphic vessels (Figure 28.3). The well-preserved body of No. 8 has horizontal painted stripes that might indicate part of the harnessing of the animal, probably a bull (ox). No. 9, meanwhile, is more problematic based on the preserved portion of the leg, as the bumps on the back of the foot make identification of the animal difficult.

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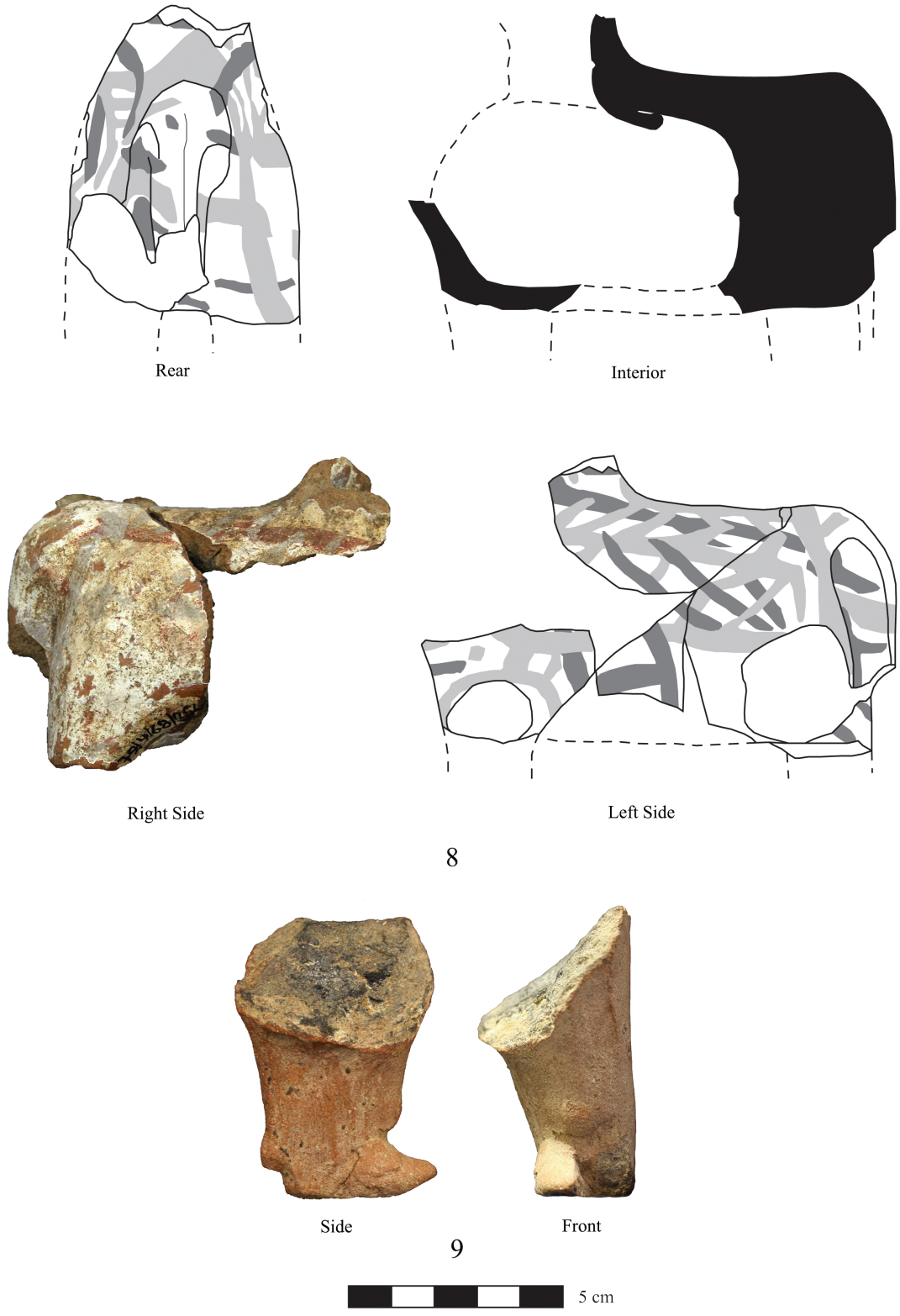

No.	Form	Style Date	Reg. No.	Description
8	Zoomorphic vessel	MB II–III	MHA 3233	Fabric: light reddish-brown (2.5YR 7/3); core: reddish-gray; ext: white paint; red painted lines; blue-gray painted lines
9	Zoomorphic vessel(?)	MB II–III	MHA 3360	Fabric: light reddish-brown (2.5YR 6/4); core: dark gray; ext: red slip; vertical burnishing

Figure 28.3. Zoomorphic vessels from Area Y.

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Zoomorphic vessels, while common in later periods (such as the Iron Age), are rare in Palestine in this period. Both objects are from MB contexts in Area Y, where Middle Bronze levels lie directly below material dating to the Persian period. As a result, they are unlikely to be intrusive. In fact, parallels for both vessels exist among the small corpus of MB zoomorphic vessels found in Palestine. This group has been discussed in some detail by Brandl (1993:226–227). To his catalogue can be added part of a bull spout from Beth-Shean (A. Mazar 2007:573, fig. 7.2:1, photo 7.3), as well as an example from an early MB IIA context from Ashkelon (Philip Johnston, personal communication, 2014).

The Jaffa examples form an important addition to this fairly limited corpus. The white slip and red painting on No. 1 relate it particularly closely to the example from Shiloh published by Brandl (1993:224–226, figs. 9.2–9.3), clearly depicting a bull; in fact, most of the parallels cited by Brandl, as well as the more recently published examples from Beth-Shean and Ashkelon, appear to be bulls. As Brandl (1993:227) suggests, the white slip and red-brown paint on some examples might be related to "Chocolate on White" ware. Meanwhile, the use of red slip and burnishing on No. 2 relate it to a complete MB zoomorphic vessel, also representing a bull, from Tel Nagila (Amiran and Eitan 1965:121, fig. 9). Similarities to zoomorphic vessels with an opening on the top of the back from Anatolia have led several scholars to suggest that the vessels from sites in Palestine indicate northern connections in the MB (e.g., Amiran and Eitan 1965:121; Brandl 1993:227). These vessels are typically assumed to be cultic in function (e.g., Brandl 1993:227), but (for the Levant at least) we lack clear evidence from archaeological contexts or textual evidence.

Catalogue

Figurines

No. 1 MHA 2261 (Figure 28.2:1)
Museum Reg. No. 79/A/58/089
Context: Area A, Sq. G6, PB 1958.10.07 (44.8); LB
h. 2.6 cm; *w.* 2.4 cm; *th.* 1.8 cm
7.5YR 8/4; very pale brown clay; gray core; white grits, 0.1–0.2 cm
The head of a mold-made female figurine. The figure wears a rilled headdress, only partially preserved; the bottom of the nose and the mouth are worn off; the eyes, eyebrows, and ears are outlined, raised features on the face.

No. 2 MHA 5135 (Figure 28.2:2)
No registration numbers known. MHA no. assigned by JCHP.
Item lost.
Context: Area A, Level IVA/Phase RG-3b, L.3020 (gray bricks); LB III; LB II-III
The upper half of a plaque figurine (lower half is restored): the head along with part of the torso and the arms of a nude female, cupping her breasts. She wears the Egyptian scroll wig and has a series of necklaces. Her body is framed by a lotus stalk on each side, close to the edge of the plaque, ending in flowers facing each other above her head.

No. 3 MHA 2362 (Figure 28.2:3)
Museum Reg. No. 79/B/60/018
Context: Area B, L.9 PB 1960.007; Iron II?
h. 3.3 cm; *w.* 3.0 cm; *th.* 1.9 cm
7.5YR 4/3; brown clay; clay colored core; white grits, 0.05–0.15 cm
The handmade head of a human figurine. The face has a pinched nose with depressions around the eyes and incised dots indicating the eyes. The headdress is rounded at the top and straight-sided along the back.

No. 4 MHA 4692 (Figure 28.2:4)
Museum Reg. No. 79/A/73/166
Context: Area A, Sq. J1, W.973, PB 1973.629, Iron II
h. 11.0 cm; *w.* 5.2 cm; *th.* 6.2 cm
5YR 6/4 (light reddish-brown clay); pink core; white grits, 0.1–0.2 cm
Fragment of a probable Phoenician bell-shaped body: a woman holding a disc parallel to body. The right side of the body is preserved, with the right arm along the torso. The disc is not preserved but is indicated by a scar on the front of the body. There are apparent remains of applied hair on the right side of the neck. The body appears to be handmade, with marks on the inside possibly indicating coil marks.

No. 5 MHA 3003 (Figure 28.2:5)
Museum Reg. No. 79/Y/62/024
Kaplan Reg. No.: YF/62/Y/115
Context: Area Y, Water Channel, PB 1962.25 (27.9.1962)
h. 2.9 cm; *w.* 4.3 cm; *th.* 4.2 cm
2.5Y 8/2 (pale yellow clay); light gray core; white grits, 0.05–0.10 cm

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The head of a hollow mold-made figurine ("dea gravida"), with wide headdress. No facial features are indicated except the nose. There are traces of red paint around the nose and the exterior of the face. A flattened circular area is visible on top of the forehead above the nose, probably pressed by a finger. There are traces of burning on the forehead and top of the face.

No. 6 MHA 3341 (Figure 28.2:6)
Museum Reg. No. 79/Y/68/362
Kaplan Reg. No. YF/68/Y/643
Context: Area Y, Sq. X12, L.1, PB 1968.135; Persian
h. 4.1 cm; *w.* 3.0 cm; *th.* 2.7 cm
7.5YR 8/3 (pink clay); clay colored core; white grits (few), 0.05 cm
A foot and partial base of a hollow mold-made figurine (probable "dea gravida"). The sides and interior of the base were flattened and formed by hand. There are traces of red paint on the foot.

No. 7 MHA 3340 (Figure 28.2:7)
Museum Reg. No. 79/Y/68/361
Kaplan Reg. No. YF/68/Y/641
Context: Area Y, Sq. Z14, L.29, PB 1968.199; Persian/Hellenistic?
h. 2.7 cm; *w.* 2.5 cm; *l.* 6.4 cm
2.5YR 8/2 (pinkish white clay); reddish-brown core; white grits, 0.05–0.10 cm
The head of a horse figurine. The eyes consist of applied pellets. The muzzle is modeled, with the snout thickening toward the nose and mouth; there are slight depressions for the nostrils and an incision for the mouth. On top of the head is a "turban," with ears above it lying flat. The head is handmade, with each side of the face formed by a separate ridge of clay.

Zoomorphic Vessels

No. 8 MHA 3233 (Figure 28.3:8)
Museum Reg. No. 79/A/68/254
Kaplan Reg. No. YF/68/Y/643
Context description: Area Y, Sq. Z14, L.28, PB 1968.213; (b) MB
Dimensions of main fragment: *h.* 5.7 cm; *w.* 5.2 cm; *l.* 7.7 cm
Dimensions of second fragment: 5.1 × 2.8 × 2.2 cm
2.5YR 7/3 (light reddish-brown clay); reddish-gray core; white grits (few), 0.05 cm
The body of a zoomorphic vessel: the hindquarters are preserved, with scars for the two rear legs and a tail along the rear of the body between the legs. The upper part of the body is preserved up to a vessel neck. A second fragment from the forequarters with a leg scar was also found. White paint is preserved over the entire body, with red painted lines and dots along the sides and blue-gray painted lines on the top and sides, forming a crosshatch pattern.

No. 9 MHA 3360 (Figure 28.3:9)
Museum Reg. No. 79/Y/68/381
Kaplan Reg. No. YF/Y/68/652
Context description: Area Y, Sq. Y13, L.27, PB 1968.179; MB
h: 6.3 cm; *w:* 3.5 cm; *l*: 4.2 cm
Color: 2.5YR 6/4 (light reddish-brown clay); dark gray core; white and brown grits (many), 0.1–0.2 cm
The leg and foot of a zoomorphic body, probably a vessel. The leg is probably a left leg, with the right half of the foot preserved. Note one bump on each side of the rear of the leg. The fragment is broken as it widens into the body; it is apparently smoothed on the interior at the join of the body and the leg, separately made. Red slip and vertical burnishing are visible on parts of the leg.

Acknowledgments

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Notes

1. *Editor's note:* Contexts for all of the Bronze and Iron Age figurines were entirely secondary. These will be discussed in full in the final report for Kaplan's excavations to be published by A. Burke and M. Peilstöcker. Figurines from the Persian to Byzantine periods will be published by Adi Erlich in a volume on the later remains excavated by Jacob Kaplan, edited by Orit Tsuf.

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2. For context of MHA 5135, see Burke et al 2017:99.

3. Note, however, that only the upper half of the object in these photographs is original. The lower half was restored, incorrectly, as will be demonstrated here: the flower stems would not have extended to the bottom of the plaque but would have risen out of a second pair of lotus flowers at the woman's hips.

4. This is the type best known from a complete example collected from the surface at Kibbutz Revadim but with fragments also known from Aphek, Tel Ḥarasim, and Ashkelon (for recent discussions and references, see Press 2012:179, no. 69; 2007:240–241; Ornan 2007).

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Area A, Ramesses Gate, during 2013 excavations. *Photo by Aaron A. Burke.*

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