RAMAT RAḤEL VI

The Renewed Excavations by the Tel Aviv–Heidelberg Expedition (2005-2010)

The Babylonian-Persian Pit

Oded Lipschits, Liora Freud, Manfred Oeming
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Monograph Series 40

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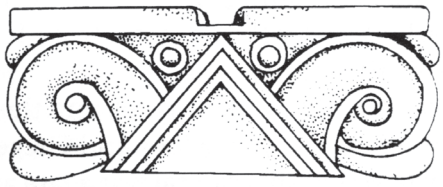

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PREFACE

This book is a focused publication of the finds recovered from one pit (Locus 13174) in Area D1, in the southeastern corner of the site of Ramat Raḥel. It was excavated for three seasons (2008–2010), as well as for one focused week of excavations (2011) aimed at collecting additional samples for residue analysis. The "Babylonian-Persian Pit," as it has become known, is one of the most dramatic find-spots at Ramat Raḥel. Its rich assemblage of pottery vessels and dozens of *yhwd*, lion and 6th-century "private" stamp impressions, including, for the first time ever, complete restored stamped jars, jars bearing two handles stamped with different *yhwd* impressions, and jars bearing both lion and "private" stamp impressions on their bodies, offers an optimal window for understanding the pottery of the Babylonian and the Early Persian periods (6th–5th centuries BCE). These findings also allow thorough and well-established study of the development of this period's stamped-jar administration and the economy and the place of Ramat Raḥel in the Babylonian and Persian rule in the province of Yehud.

In many respects, the Babylonian-Persian Pit is the archaeological key that may fill lacunae in our knowledge and understanding of the material culture of Judah in the 6th century BCE. It provides the "missing link" between the material culture of the Iron Age and that of the Persian period. This presentation of the pottery assemblage (Fig. 1) and finds from this pit offers the first indications for this period in the material culture of Judah and may serve as a basis for future studies when this material culture is identified at other sites in Judah.

The finds from the rest of Area D1 are published, along with the many other finds uncovered in the excavations at Ramat Raḥel, in the final reports of the Renewed Excavations: *Ramat Raḥel* IV and *Ramat Raḥel* V. The current report is dedicated to the finds from the Babylonian-Persian Pit and to their significance in their broadest context. We hope that this focused discussion will shed light upon the dark age of the 6th and 5th centuries BCE and will pave the way to many further archaeological, historical and even biblical studies on this important period in the history of Judah.

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We would like to thank the Manfred Lautenschläger Stiftung and the many students and volunteers from around the world—from Israel, Germany, Australia, Argentina, Canada, the United States, Scandinavian countries, the Netherlands, France, England, Poland, the Czech Republic, Italy, Spain, Tunisia, India, Korea and Japan—who participated in the excavations.

Efrat Bocher, Lisa Yehuda and Veronica Zltakovski supervised the excavations in Area D1 in the various seasons between 2005 and 2010. Boris Babaiev, David Dunn, Dana Katz, Yoav Tsur and Jacob Wright served as assistant area supervisors during these years.

Thanks are due to Prof. Israel Finkelstein and Prof. Steve Weiner, directors of the "Reconstructing Ancient Israel: The Exact and Life Sciences Perspective," for their cooperation in the residue analyses of many of the pottery vessels excavated in the pit. The study was supported by the European Research Council. Our gratitude is extended to Boaz Gross and Larisa Goldenberg for their help in this project.

Restoration of the pottery vessels was carried out in the laboratory of the Sonia and Marco Nadler Institute of Archaeology, Tel Aviv University, by Rachel Pelta, Yafit Wiener and Shimrit Salem. Photographs in the field and of most of the pottery vessels and stamp impressions are by Pavel Shrago,

the photographer of the Institute of Archaeology during the excavations at Ramat Raḥel. Some of the stamp impressions were prepared for print by Sasha Flit, the current photographer of the Institute of Archaeology.

Most of the complete vessels were scanned by Avshalom Karasik; others were drawn in the Institute's studio by Yulia Gottlieb, Itamar Ben-Ezra and Ada Perry. The stamp impressions were drawn by Rodica Penchas and Yulia Gottlieb, and all the figures were arranged by Yulia Gottlieb. The plans were prepared by Shatil Emanuelov. We appreciate their dedicated work.

We are grateful to Myrna Pollak for her work on the volume. Noa Evron is responsible for the graphic design, and Tsipi Kuper-Blau oversaw publication of the volume. We extend our thanks to them all.

Fig. 1: *yhwd* storage jars and other vessels from the Babylonian-Persian Pit.

INTRODUCTION

THE "RIDDLE OF RAMAT RAḤEL" AND THE PROBLEM OF IDENTIFYING THE MATERIAL CULTURE OF THE BABYLONIAN AND EARLY PERSIAN PERIODS

Oded Lipschits

From the very beginning of the excavations at Ramat Raḥel there was a contradiction between the dating of the palatial compound to the Iron Age, with its destruction in 586 BCE, and the presence of hundreds of lion- and *yhwd*-stamped jar handles, together with many other finds, dated mainly to the 6th–3rd centuries BCE, with no apparent architectural context. This is the well-known "Riddle of Ramat Raḥel" (Lipschits, Gadot and Langgut 2012).

Yohanan Aharoni, the first excavator at Ramat Raḥel, noted the many finds from the Persian period but expressed frustration at his inability to relate them to any notable architecture (Aharoni 1962: 4–10, 27–34; 1964: 17–23, 42–48). In his final conclusions he stated (1964: 120):

> This latter citadel and its date are still extremely problematic. The main evidence for its existence is the unusually high number of seal-impressions from this period, including stamps of the governors of the province of Yehud. It is clear that the original inner citadel was left in ruins and was apparently used as a dump for the refuse from the Persian citadel. This seems to have been built further to the south, but we were not able to come to any certain conclusions about it.

Thus, from the very first excavations at Ramat Raḥel and from the earliest publications written about the site, the "riddle of Ramat Raḥel" was lurking in the background. No one, however, verbalized this riddle, and consequently, no solutions were ever posited. It was only with the study and republication of Aharoni's excavations and the Renewed Excavations project at the site that this question was made explicit.

The renewed excavations, conducted by Tel Aviv University and the University of Heidelberg, and the final publication of the architecture and finds from Aharoni's excavations have made it possible to reevaluate the archaeology of the site and its significance vis-à-vis the political history of Judah for the roughly six centuries during which it was under the rule of great empires—first as an Assyrian, then Egyptian and later Babylonian vassal kingdom (from 732 to 586 BCE), and following that as a Babylonian, Persian, Ptolemaic and Seleucid province successively (from 586 until the mid-2nd century BCE, when the Hasmonaean state was established) (Lipschits 2011a; 2011b; 2018). Research has demonstrated how Ramat Raḥel reached its zenith during the Persian period, serving as an imperial administrative center and probably also as the residence of the governor of the province (Lipschits 2015: 248–250, 257–258; Lipschits *et al.* 2017: 98–117).

Furthermore, the characteristics of the pottery from the end of the Iron Age in Judah are well known and clearly defined, having been recovered at Lachish Level II, City of David Stratum 10, Tell Beit Mirsim Stratum A3, Tel Arad Strata VII–VI, Tel ʿIra Stratum VI and En-Gedi (Tel Goren) Stratum V, and usually dated to the period between the mid-7th and the early 6th centuries BCE. The Judahite pottery assemblage from the Persian period—as known from En-Gedi Stratum IV, the City of David

Area E Stratum 9, Jabel Nimra and sites in the region of Benjamin—is also well known and defined, and most scholars agree that the distinctive shapes and characteristics of the Persian period were already present by the mid-5th century BCE (Lipschits 2005: 192–206). There is a gap of 150 years between the destruction levels from which the typical pottery vessels of the late Iron Age were excavated and the appearance of the pottery vessels typical of the Persian period. The material culture from this intermediate period—which, from the historical perspective, includes the "Babylonian exile" and the first decades of the "return to Judah"—has never been defined or recognized as a distinct episode—even if scholars discerned an uninterrupted tradition of pottery production in Judah from the end of the 7th to the 5th and 4th centuries BCE (Stern 1982: 103; 1994; Lipschits 2005: 192–206, with further literature). Until now, there has been no clear-cut definition of the characteristics of the "post-586 BCE" material culture, its connection to the preceding late Iron Age material culture, or the development of the pottery types, stamp impressions and other aspects of material culture that are so familiar in the Persian period.[1]

In my 1997 Ph.D. dissertation, as well as in my 2004 (Hebrew) and 2005 (English) books titled *The Fall and Rise of Jerusalem*, I claimed that following the 586 BCE destruction of Jerusalem, a large rural Judean population remained in the north Judean highlands and in the Benjamin region in the close periphery to the north and south of Jerusalem. This population continued to preserve the nature of its material culture—and therein lies the great difficulty posed to archaeological research in discerning this culture and defining it. I have argued for continuity between the pottery assemblages familiar to us from the end of the Iron Age and those of the Persian period and have demonstrated that most vessel types characteristic of local manufacture in Judah during the Persian period are in fact a development of typical Iron Age forms. Furthermore, I have suggested that this theoretical discussion could be harnessed to support the continued existence of pottery traditions between the end of the Iron Age and the Persian period.[2]

This notion has remained a theoretical one since no clear stratified assemblage of pottery could be used to prove it; until now there has been no archaeological means to differentiate between the pre-586 BCE and post-586 BCE material culture in Judah. In many respects, since archaeologists never expected to find material culture from the 6th century BCE, this material culture was not discovered, located, or identified. To a certain extent, this stems from its close similarity to the pottery assemblages that preceded and followed it. Another factor, however, may be that scholars assumed that life ceased to exist in Judah during the "exilic period" and hence that pottery production and other manifestations of economy and administration could not have developed in Judah during this period (Lipschits 2011b: 64–66). This underlying assumption led archaeologists to identify the "intermediate" material culture of the 6th century BCE as representing the late Iron Age, even in places where there was a scholarly consensus that life continued in Judah in the 6th century BCE (Magen and Finkelstein 1993: 27).

Barkay (1998) was right to claim that "it seems that the destruction of the Temple and the fall of Jerusalem influenced modern scholarship, which fixed the date of the end of the Iron Age according to a historical fact and not on the basis of the archaeological picture." Indeed, it would appear that scholars in general and archaeologists in particular adopted the clear-cut biblical description of the "Empty Land" after the destruction of Jerusalem by the Babylonians and the notion of a "Mass Return" during the early Persian period. Consequently, they viewed the material culture of these two periods as disconnected, while dismissing the possibility of a strong and well-established culture in Judah during the 6th century BCE.

1 The first description and analysis of this material culture in Judah was conducted by Freud (2018); see also below, Chapter 4.

2 Other scholars, such as Stern (2001: 516), Lapp (2008: 29–30), Berlin (2012: 7) and Bar-Nathan (2002: 22–23) have demonstrated this continuity (and see below, Chapter 4), but none have characterized or defined the material culture of this intermediate period.

A direct link can be drawn from Albright's 1949 statement that "there is not a single known case where a town of Judah was continuously occupied through the exilic period" (1949: 142) to the assessments of Jamieson-Drake (1991: 75, 146) concerning "a complete societal collapse" and "almost complete dissolution" and to the title of Stern's 2000 and 2004 papers, dealing with "the Babylonian Gap," and the title of Faust's 2012 book dealing with the "archaeology of desolation." Further evidence of this approach can be seen in Stern's conclusion in the chapter on the Babylonian period in his 2001 book: "A review of the archaeological evidence from sixth-century BCE Judah clearly reflects the literary (i.e., biblical) evidence for the complete destruction of all the settlements and fortified towns by Nebuchadnezzar II's armies in 586 BCE" (Stern 2001: 323).

Archaeologists have claimed that "this view is based upon purely archaeological considerations and is not motivated by hidden ideological considerations" (Stern 2004: 273) and commonly used these archaeological "facts" as grounds for a historical reconstruction of the "Babylonian Gap" and the "Empty Land" during the 6th century BCE (cf. Faust 2012). It seems to me, however, that the archaeological "fact" of total destruction at the beginning of the 6th century BCE is in fact the outcome of historical preconceptions about this period, based on a traditional interpretation of the biblical description.[3] Furthermore, no archaeologist has been able to, or even tried to, demonstrate from the archaeological perspective any kind of "Mass Return" at the beginning of the Persian period, as described in the first chapters of the book of Ezra. One would expect this "Mass Return" to be well attested in the archaeological record in the event of a "Mass Deportation" and an "Empty Land," as suggested by the claim made in Ezra 1–6 for the return of some 40,000 exiles to Judah at the very beginning of the Persian period with the support of the imperial authorities.

The indications of continuity in material culture, economy and administration, not only from the late Iron Age to the "exilic period" but to the Persian period as well (Lipschits 2011b), compel us to view the 6th century BCE as a period when Judahite life continued in Judah, and in many aspects continued in a manner very similar to prior to the 586 BCE destruction—despite the destructions and deportations, despite the gap in the history of Jerusalem and the Temple, and despite the move of the social and religious center of gravity from Judah to Babylon.

Formulating an historical picture that is independent of the Bible and is as unfettered as possible by historiographical and theological preconceptions is a privilege of modern research and is of prime importance even for an examination of the biblical descriptions themselves. The archaeological record may release us from religious, political and ideological conceptions that characterize the research of the biblical period in general and the exilic and post-exilic periods in particular, and may pave the way for new questions and put us on a firm footing for understanding this period in a much more neutral way. The archaeological finds from the Babylonian-Persian Pit at Ramat Raḥel are of major importance in the historical, administrative, economic and even biblical perspectives of this formative period in the history of the land.

3 See, e.g., Stern 1994: 56–58; 2001: 353, 581; Oded 2003: 59−66. Oded was correct in claiming that scholars supporting the "Myth of the Empty Land" as a byproduct of the thesis of "mythical ancient Israel" have common presumptions, especially regarding the reliability of the biblical description concerning the destruction and deportation, which is part of a late myth, invented as a political claim (2003: 57−58). He is right in his attempt to demonstrate to what extent their thesis on the creation of the "myth" is unacceptable and ill founded—both on archaeological grounds and even on biblical grounds. However, it seems to me that just as in the case of the different emphases in 2 Kings 25:12 and 22 on the "empty land" and on the "people who remained," the "school" of scholars supporting the "Babylonian Gap" and reconstructing a "real" empty land in Judah during the "exilic period" are doing the same thing—they are studying the archaeological finds and interpreting the texts with common presuppositions, focusing on the general political-theological-polemic statements made by exiles and returnees in order to base their right on the land, rather than using the more nuanced research on the various voices and descriptions of this period.

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CHAPTER 1

A SHORT HISTORY OF THE SITE AND ITS EXCAVATIONS

Oded Lipschits, Yuval Gadot and Manfred Oeming

The site of Ramat Raḥel is located midway between two of the country's most celebrated cities—Jerusalem and Bethlehem. It is prominently perched on a peak at the crossroads of the ancient highway that led from Hebron to Beer-Sheba in the south and from Jerusalem to Beth Shemesh in the west, commanding traffic, trade and administrative tariffs throughout the land (Lipschits, Gadot and Oeming 2020c: 3–4).

In the summer of 1954, a very young Kibbutz Ramat Raḥel, established just below the ancient site, was about to embark upon one of its early engineering projects: construction of a water reservoir (Lipschits, Gadot and Oeming 2020b: 14–16). Little did anyone realize at the time that they were treading on an historical goldmine: archaeological excavations would soon reveal that buried under their feet was a Judahite administrative center that had been ruled by three successive empires—Assyrian, Egyptian and Babylonian; when the site reached its zenith in the Persian period, it served not only as an administrative center, but as the residency of the Persian governor. Toward the end of the Persian period, the site declined, only to regain importance toward the later part of the Hellenistic period (Lipschits *et al*. 2017: 98−116; Lipschits, Gadot and Oeming 2020a).

Before the kibbutz could proceed with its reservoir project, government legislation required that a salvage excavation be conducted. Yohanan Aharoni, then a young archaeologist, was asked to direct the excavations. Between August and November 1954, a team of archaeologists set to work on a salvage excavation at the summit of the hill just above Kibbutz Ramat Raḥel, at the location designated for the water reservoir. The most important find was a 35 m long segment of a casemate wall, oriented from east to west, with a central section composed of high-quality ashlars. An ornamental volute stone capital found close to the casemate wall and an additional capital, uncovered nearby, facilitated Aharoni's understanding of the grandeur and importance of the site. Sixty-nine stamped jar handles, dating from the Iron Age and the Persian and Hellenistic periods, were found and recorded in his first season of excavations—evidence of Ramat Raḥel's importance and administrative status (Lipschits, Gadot and Oeming 2020b: 14–16). Aharoni highlighted the site's significance in the Iron Age, pointing to the royal architecture, and already in this salvage operation he noted the discovery of pottery and stamp impressions from the Persian period (Aharoni 1955: 147−155).

Between 1959 and 1962 Aharoni conducted four large-scale excavation seasons at Ramat Raḥel, under the joint auspices of the Hebrew University of Jerusalem and Sapienza Università di Roma (Aharoni 1962; 1964; Lipschits, Gadot and Freud 2016; Lipschits, Gadot and Oeming 2020b: 16−18). The main finds from these excavations were the royal edifice and palatial architecture that Aharoni attributed to Stratum VA. He assumed that it had been built by King Jehoiakim and insisted that the palace, being Judahite, was destroyed only a few years later by the Babylonians (Aharoni 1964: 120). In his summary of each season, Aharoni noted that many finds were dated to the Persian period and expressed frustration at his inability to relate these finds to any notable architecture (Aharoni 1962: 4−10, 27−34; 1964: 17−23, 42−48).

It is clear that Aharoni's stratigraphic and chronological paradigm for the site was problematic. On the one hand, he dated the palatial compound to the final two decades of the Iron Age. On the other

hand, the presence of dozens of *yhwd*-stamped handles and many other finds from the Persian and Early Hellenistic periods had no apparent architectural context. Furthermore, Aharoni dated Stratum IVB, which included segmented and poorly built walls, as well as some installations, to the Persian–Early Hellenistic periods (Aharoni 1964: Fig. 2). It is clear that the walls of Aharoni's Stratum IVB cannot be related to such significant administrative activity. Thus, from the very first excavations at Ramat Raḥel and from the earliest publications written about the site, the "riddle of Ramat Raḥel" was always there, in the background (Lipschits *et al.* 2011; Lipschits, Gadot and Langgut 2012; and see above, Introduction).

THE RENEWED EXCAVATIONS

The renewed excavations at the site (2005−2010), a joint endeavor of the Institute of Archeology of Tel Aviv University and the Theological Seminary (Wissenschaftlich-Theologisches Seminar) at Heidelberg University (Gadot *et al*. 2020), and the final publication of these finds (Lipschits, Oeming and Gadot 2020), along with the final publication of the architecture and finds from Aharoni's excavations (Lipschits, Gadot and Freud 2016), have made it possible to reevaluate the archaeology of the site and its significance for the political history of Judah as a vassal kingdom of the Assyrian, Egyptian and Babylonian empires and as a province under successive Babylonian, Achaemenid, Ptolemaic and Seleucid rule.

The chronological and stratigraphic picture exposed during the renewed excavations at Ramat Raḥel consists of nine distinct phases of construction and development and additional phases of destruction and desolation (Table 1.1).

A meticulous study of the architecture and all the associated finds demonstrates that the earliest building phase (Phase I) at Ramat Raḥel should be dated to the late 8th or early 7th century BCE (Fig. 1.1; Lipschits *et al.* 2017: 36−56; Lipschits, Gadot and Oeming 2020a: 476−477). The western tower was built at the top of the hill as a tower fortress, controlling the main roads leading to Jerusalem. To the

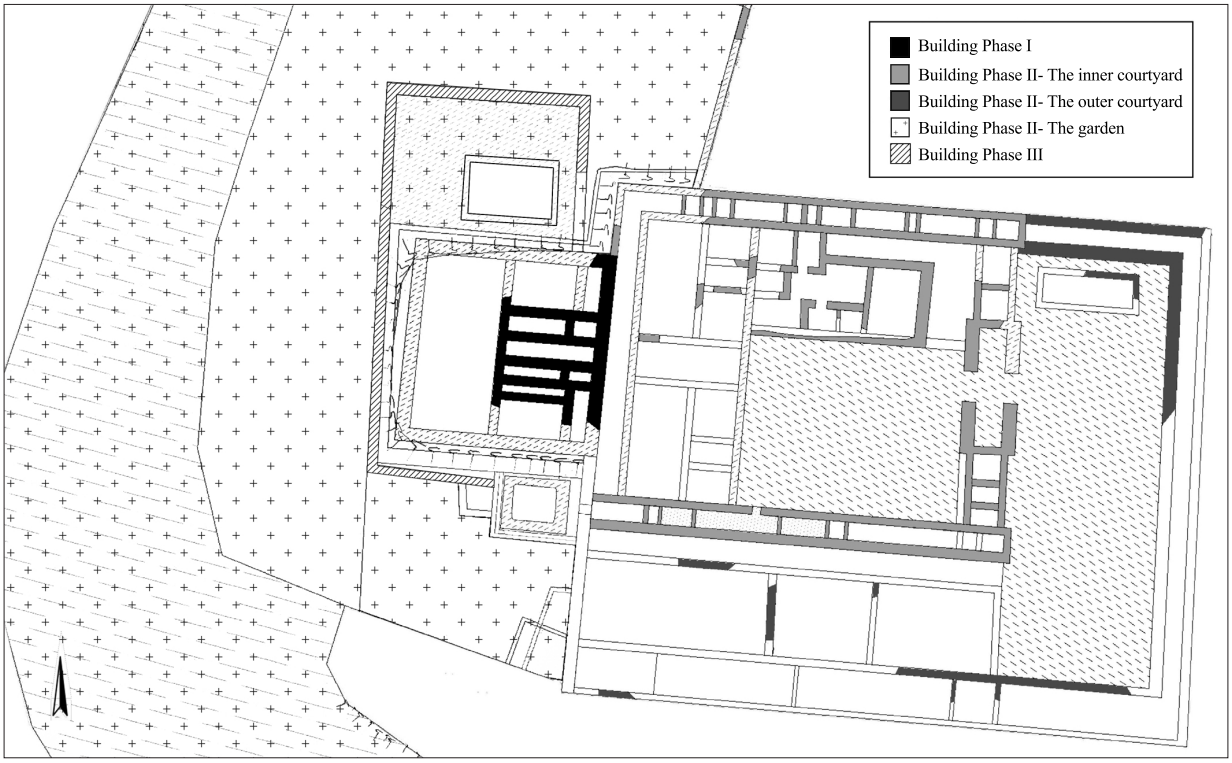

Fig. 1.1: General plan of Ramat Raḥel: Building Phases I–III.

east of the tower, other structures were built along the moderate slopes, but they were later integrated into the complex of buildings that comprised the Building Phase II edifice or were dismantled to their foundations. The numerous pottery sherds discovered in the fill levels beneath the Phase II floors are mostly dated to the 7th century BCE. These sherds were found together with 19 jar handles stamped with "private" impressions and 225 with *lmlk* impressions, a third of which derive from clear stratigraphic contexts beneath the floors of Building Phase II. The stamp impressions include representatives of all the known varieties and therefore reflect the entire chronological span of the administrative system to which these stamp impressions belonged, until at least the middle, and perhaps even the last third, of the 7th century BCE (Lipschits, Sergi and Koch 2010; Lipschits, forthcoming).

Some of the architectural features uncovered are unique to Ramat Raḥel, indicating that even in this early phase, the site served as an administrative and governmental center. The many volute capitals (so-called "proto-Aeolic" capitals; see Lipschits 2011), as well as a series of small carved stone columns with tiny palmette capitals that came from a window balustrade, similar to those that appear in the reliefs known as "the woman in the window," are all part of the same architectural assemblage (Lipschits and Ras 2016).

Table 1.1: Building Phases and Destructions at Ramat Raḥel

Building Phase	*Stratum according to Aharoni*	*Period*	*From*	*To*
Building Phase I: Royal administrative center under Imperial hegemony	VB	Iron II	Late 8th or early 7th century BCE	Second half of 7th century BCE
Building Phase II: Royal administrative center under Imperial hegemony, enclosed by garden	VA	Iron II–Persian	Second half of 7th century BCE	Late 4th century BCE
Building Phase III: Extending construction		Persian	Late 6th or early 5th century BCE	Late 4th century BCE
Building Phase IV: Imperial administrative center?	IVB	Early Hellenistic	3rd century BCE	2nd century BCE
Destruction and Robbery of the Site				
Building Phase V: Village	IVA	Late Hellenistic–Early Roman	Late 2nd or early 1st century BCE	1st century CE (Great Revolt)
Destruction (?)				
Building Phase VI: Village	III	Late Roman	Mid-2nd century CE (?)	Uninterrupted continuation to Building Phase VIII
Building Phase VII: Village	IIB	Early Byzantine	5th century CE	Uninterrupted continuation to Building Phase VIII
Building Phase VIII: Village, construction of church	IIA	Late Byzantine–Umayyad	6th century CE	Mid-9th century CE
Building Phase IX: Farm with agricultural installations	I	Abbasid	9th century CE	11th century CE
Agricultural zone with installations		Fatimid–Ottoman	12th century CE	19th century CE
Military fortifications and communication trenches		Modern	1947/1948, 1954	1967

Even at this early stage, the edifice at Ramat Raḥel was of unparalleled beauty in the Kingdom of Judah. The profusion of stamped jar handles uncovered testifies to the site's role as the Judahite administrative center for the collection of agricultural produce, probably paid as tribute to the Assyrian empire. This administrative role would grow in importance in subsequent stages of the site's existence, even after the destruction of Jerusalem, when Judah was transformed from a vassal kingdom into a province.

In Building Phase II, dated to the last third of the 7th into the 6th century BCE, an imposing edifice was built on top of the mound. This structure was in continuous use during the 6th–5th centuries BCE and was even expanded during the Persian period (Lipschits *et al.* 2011: 20–34; Lipschits *et al.* 2017: 60–94; Lipschits, Gadot and Oeming 2020a: 478–481).

The palatial compound of Building Phase II contained a monumental structure, built of ashlar blocks and decorated with volute capitals, with magnificent window balustrades, small limestone, stepped pyramid-shaped stones, and other stone ornaments, most of which were reused from the earlier building phase. It was surrounded by a magnificent garden, well built on artificially flattened bedrock, with large pools, tunnels, channels, gutters and other water installations (Lipschits *et al.* 2017: 65–74; Gross, Gadot and Lipschits 2020). It was this building phase that gave Ramat Raḥel its hallmark monumental plan and a grandeur unparalleled in Judah.

In Building Phase II the edifice was landscaped with a royal garden on the west, and the structure, including its courtyards and walls, extended along the sloping eastern side of the hill all the way to the fortress tower that already dominated that part of the summit (Fig. 1.1). The large quantity of material extracted from the quarrying of the natural hill and the material removed for the creation of a garden sunk into the bedrock on the western side were intended for use as fill and were poured over the eastern slope. This fill created a large level base upon which the units and courtyards of the edifice were constructed. The tower fortress of the first phase was integrated into the new, enlarged plan. In Building Phase II, as part of the construction of the sunken garden, the fortress was isolated on three sides—the south, west and north—and stood upon a prominent rock cube projecting westward out of the edifice complex (Lipschits, Gadot and Oeming 2020a: 478–481).

The garden extended around the western tower on its northern, western and southern sides, covering five dunams (0.5 hectare) and possibly more. The quarrying and removal of *Nari* stone from the natural surface created a lowered, leveled and unified rock surface, upon which a 45 cm deep layer of unified brown garden soil, free of stones and sherds, was laid for the garden. Several water installations were incorporated into the leveled area, including at least two, and possibly three, plastered pools, two rock-cut roofed tunnels and two exceptionally well-built drains.

The timespan of the edifice and garden of Building Phase II has already been discussed (Lipschits *et al*. 2009; Lipschits, Gadot and Langgut 2012; Lipschits *et al*. 2017: 81–84; cf. Lipschits, Gadot and Oeming 2020a: 481). Its construction began no later than the early last third of the 7th century BCE. There is no evidence that it was destroyed in the early 6th century BCE, and it seems that the entire edifice was used continuously from the 6th to the late 4th century BCE.

The abundance of artifacts found at Ramat Raḥel demonstrates a significant presence at the site during the Persian and Early Hellenistic periods. Of a total of some 647 *yhwd* stamp impressions known to us, dated to a 400-year period between the late 6th and late 2nd centuries BCE, 372 (ca. 60%) were uncovered at Ramat Raḥel (Lipschits and Vanderhooft 2020). Of the early types of *yhwd* impressions, dating from the Early Persian period, 127 were uncovered at Ramat Raḥel—77% of the 165 impressions found in total. Of the middle types, dating from the Late Persian and Early Hellenistic periods, 212 were uncovered at Ramat Raḥel—63% of the 338 impressions of these types found in total, demonstrating a clear decline in status. As for the late types, the 33 stamp impressions uncovered at Ramat Raḥel represent only 23% of the 144 stamp impressions of these types found in total, and moreover, mainly two types were uncovered at the site: Type XVI is represented at Ramat Raḥel with only three stamped handles, and

Type XVII with 30. The data clearly indicates that during the Persian and Early Hellenistic periods the edifice at Ramat Raḥel was used in an administrative/governmental capacity for collecting storage jars full of wine and oil in Judah, probably as a levy. It is further evident that Ramat Raḥel's centrality and importance in the storage-jar administration declined from the Early Persian to the Late Persian and Early Hellenistic periods, coming to an end in the 2nd century BCE (Lipschits and Vanderhooft 2020).

Until now it was not possible to reconstruct the architectural character of the Persian period edifice at Ramat Raḥel with any confidence. The renewed excavations, however, have uncovered surprising evidence that sheds new light on this phase (Lipschits *et al.* 2017: 98–116; Lipschits, Gadot and Oeming 2020a: 481–483). The main addition to the Iron Age edifice in Building Phase III, which is securely dated to the Persian period, was a large and sturdy rectangular structure, covering an area of ca. 600 m^2. It was built on the northwestern side of Phase II, in an area taken from the royal garden by removing the garden soil and cutting deep wide foundation trenches into the flattened bedrock. It was built as a new wing to the existing complex—an expansion northward of the fortress tower extending west of the line of the edifice. This structure continued to be in use until the end of the Persian period.

Another sub-phase of building activity at Ramat Raḥel belongs to the final phase of the Persian period; it took place within the garden enclosure and south of the western tower (Area C1; Lipschits *et al*. 2017: 104–105; Shalom and Gross 2020). This sub-phase marks the decline of the edifice and was possibly when parts of the garden were taken over for more "functional" purposes. It includes Building 824 of an architectural unit in the southeastern part of the enclosure. The eastern and southern escarpments were used as walls of this unit. Large ashlars were robbed from nearby structures and placed against the escarpment to prevent its collapse. The northern and western walls of the unit were built of similar ashlars in secondary use. The floor was laid over Channel E of the garden after the cover stones of this channel had been robbed, indicating that the channel was already out of use at the time of construction (Lipschits, Gadot and Langgut 2012: 73–74). The northern wall cuts through the garden soil and is therefore later.

The architectural unit was violently destroyed, and a few pottery vessels, dated to the Late Persian period, were found on its floor. This assemblage helped date the construction of this unit to the later part of the Persian period, when the garden—which should be dated to the late 7th to 5th–4th centuries BCE (Building Phases II and III)—went out of use (Lipschits, Gadot and Oeming 2020a: 481–483).

The Persian period finds suggest a surprising development in the settlement history of Ramat Raḥel. The administrative center, which was founded by the central government of the Kingdom of Judah, while still under the yoke of the Assyrian empire, and which continued to flourish under (Egyptian[?] and) Babylonian rule, was not destroyed with the fall of the kingdom, but continued to serve the same function during the 6th century BCE, further developing and flourishing under the rule of the Persian kings. Furthermore, it appears that during the existence of the province of Yehud, Ramat Raḥel had become one of the central government's most important administrative tax-collection centers—if not *the* most important. This is the only possible explanation for the exceptionally large concentration of jar handles stamped with *yhwd* impressions found there. The involvement of the central Achaemenid Persian government is evident in the intensive construction activity at the site and in the unusual addition of a wing to an existing edifice in a style unparalleled in the area during that period (Lipschits, Gadot and Oeming 2020a: 481–483).

After the Persian period came to an end, Ramat Raḥel lost its prominence. Its status in the Early Hellenistic period is shrouded in obscurity, but it seems to have regained its standing as an administrative center at the beginning of the 2nd century BCE (Lipschits, Gadot and Oeming 2020a: 483). This is evident mainly in the distribution of handles bearing administrative stamp impressions, the continuation of a tradition that began in the Iron Age and was maintained throughout the Persian period. Of 145 *yhwd* stamp impressions dated to the 2nd century BCE (Lipschits and Vanderhooft 2011: 11–22; 2020), 34

(23.5%) were found at Ramat Raḥel, but 31 of these are Type XVII, indicating a short period of recovery in the site's status and importance. Of 111 *yršlm* stamp impressions dated to the 2nd century BCE, 34 (33%) were found at Ramat Raḥel (Bocher and Lipschits 2013: 103). Thus far, no structures have been found whose construction can be dated with certainty to this time period. On the eastern edge of the site, Aharoni documented a wall that he dated to the Early Hellenistic period (Stratum IVB). In our opinion, this was a fortifying wall built on the eastern fortifying wall of the former complex, which was partially robbed (Lipschits, Gadot and Oeming 2020a: 483). We also managed to follow this wall northward for a further 25 meters. We can say with some probability that this wall should be dated to the Early Hellenistic period. However, a floor that reached the base of the wall from the eastern side shows that it did not border the site from that direction and that during this period additional buildings existed to the east of the citadel (Gadot and Lipschits 2016: 721).

The next architectural development, in the Late Hellenistic period, shows a drastic change in the history of Ramat Raḥel. The fortified edifice of Building Phases I–III, which had served for centuries as a mighty administrative and political center, was completely obliterated. The walls of the entire complex, especially on the western side, were robbed, and the stones were removed from the foundation trenches that had been cut into the bedrock. The open trenches that remained after the robbing of the foundation stones were then filled with earth mixed with stones of various sizes, including fragments of volute capitals and crenellations (Lipschits, Gadot and Oeming 2020a: 484–486). Examination of the pottery sherds, coins, stamp impressions and other artifacts from inside the fill has revealed that the latest finds date to the Late Hellenistic period. Refuse and land fill were also found above the sunken garden south of the tower. The fill, ca. 2 m deep, leveled the hill anew, obliterating the entire area that had been artificially sunken. This yielded a profusion of sherds, architectural elements, coins and stamped jar handles, and here too, the latest items are no later than the Late Hellenistic period. Nowhere in these areas was there any evidence of construction work carried out on top of the fill. It was, therefore, obvious that these were not construction fills intended for use as base platforms, but must have served a different function. The thoroughness with which the stones had been excised from the foundation channels, the furnaces constructed in the southern section of the garden, and the covering of the entire area with fill suggest that this was an intentional act of annihilation carried out in order to eradicate the ancient garden and the buildings at the western front of the site. Demolishing the royal complex in this way was intended to obliterate it from the landscape, thus eradicating from the collective memory any reminder of the administrative base that for centuries had served as the nerve center of Imperial rule in Judea (Lipschits, Gadot and Oeming 2020a: 484–486).

During the Late Hellenistic and Early Roman periods (late 2nd–1st centuries BCE and until the Great Revolt in 66 CE), a Jewish village existed at the site (Building Phase V; see Table 1.1); 13 ritual baths (*miqwaʾot*) and two columbaria were discovered. As a direct result of the suppression of the Judean rebellion and the destruction of Jerusalem, Ramat Raḥel, like other villages in the Jerusalem area, ceased to exist. Evidence to suggest a Judean settlement or activity at the site in the period between the two Judean revolts is conspicuous in its absence (Lipschits, Gadot and Oeming 2020a: 486).

In the second half of the 2nd century or in the early 3rd century CE, the site was reoccupied as a Roman village, part of a new settlement model that developed in the area south of Jerusalem and was based on an array of private estates. A Roman *villa rustica*, equipped with a typical bathhouse, was discovered; it probably served as the private estate of a high official of provincial rule or a Roman veteran. The process of Christianization of the Roman Empire had a profound effect on Ramat Raḥel, manifest in the appearance of a simple rural church within the plan of the existing settlement. The church had been "planted" on the northeastern outskirts of the settled area in the 6th or possibly 7th century CE, above earlier industrial facilities and dwellings (Lipschits, Gadot and Oeming 2020a: 486–487). It may be assumed that the Christian village that existed at the site during the Byzantine period continued with no significant interruption even during the Umayyad period, under early Islamic rule (first half of the

8th century), and was destroyed by a sudden catastrophe—possibly the earthquake of 749 CE. It is not clear whether the settlement was temporarily abandoned following its apparent destruction in the mid-8th century or remained occupied for an unknown period. In any case, the next stage in the history of Ramat Raḥel is from the late 8th to early 9th century (the early Abbasid period), when a large farmhouse was built on the top of the mound. This phase came to an end in a destruction that should be dated to the 11th century (i.e., in the Fatimid period; Taxel 2017). Afterwards, only some scattered remains were located from the Mamluk period, suggesting that Ramat Raḥel was either a small settlement reoccupied by sedentary or seasonal peasants or was used as a resting place for passersby. From then onward—until the establishment of the kibbutz in the 1930s—the site of Ramat Raḥel was most probably no more than a forgotten ruin, visited from time to time by shepherds.

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CHAPTER 2

THE EXCAVATION OF THE PIT

Oded Lipschits, Yuval Gadot, Liora Freud and Manfred Oeming

Pit 13174, known as "the Babylonian-Persian Pit," was perhaps the most dramatic find spot at Ramat Raḥel. Located in Area D1, in the southeastern part of the site, south of the modern water pool (Fig. 2.1), it was excavated in three consecutive four-week excavation seasons between 2008 and 2010 and in a focused one-week complementary study in 2011 (Bocher and Yehuda 2020: 183–188; Lipschits, Gadot and Oeming 2020: 481–483).[1]

We first took notice of the pit in 2008, when we exposed Wall D12 (Fig. 2.2). As we began investigating the wall, we noticed that foundation Trench 13220 was filled with crushed vessels and ash (Bocher and Yehuda 2020: 178–179 and Figs. 9.10, 9.12, 9.14, 9.23). At first we thought that the wall cut into a destruction layer, and so we expanded our excavation to the north. While we found more pottery sherds, none of the pieces seemed to form complete vessels, and the soil and ash were too soft to be considered a floor. We then suspected that the wall was built above and into the content of a pit. When we exposed a section to the east of the excavated area it became clear that what we were seeing were indeed layers of a large pit and that the pit was filled with broken pottery (Fig. 2.3). Five *yhwd*-stamped jar handles were found during this season, a small harbinger of what was to come.

In the 2009 season, we continued to excavate the contents of the pit and attempted to reach its base. Since the rock surface at the bottom of the pit sloped sharply from north to south, this was a very time-consuming endeavor. The number of sherds collected in the pit was overwhelming, with dozens of pottery-filled buckets recorded every day. We noted that most sherds belonged to storage jars. The discovery of 13 additional *yhwd*-stamped jar handles dating from the earlier parts of the Persian period kindled our hopes that some could be restored to their complete vessels and that for the first time we would have a complete storage jar with a *yhwd* stamp impression on its handle.

One of the great mysteries of Persian period archaeology of Judah is the physical appearance of storage jars with *yhwd* stamp impressions on their handles. In total, 647 *yhwd* stamp impressions have been uncovered to date (Lipschits and Vanderhooft 2011; 2020). However, although impressions have been found on body sherds and not only on handles, we have never found a complete *yhwd*-stamped storage jar and have never had even moderate success in restoring such a jar. Even at Ramat Raḥel, where 372 such impressions were found in a variety of contexts, no complete or almost complete storage jar was ever reported.[2] The study of the typology of storage jars bearing *lmlk* and rosette stamp impressions and of their chronological and geographical distribution has greatly advanced our knowledge of the administrative system of Judah.[3] When it comes to the Yehud economic and administrative systems,

1 During the 2008–2009 seasons, the area was supervised by Lisa Yehuda, with the assistance of Efrat Bocher. The latter supervised the area during the 2010 season, assisted by Yoav Tsur. The small-scale complementary season conducted in 2011 was headed by Boaz Gross, in cooperation with Dvory Namdar (The Weizmann Institute of Science, Rehovot).

2 See, however, the semi-complete jar that was published by Aharoni (1964: Fig. 11:14).

3 See, e.g., Lipschits, Sergi and Koch 2010; 2011; Sergi *et al*. 2012; Koch and Lipschits 2013.

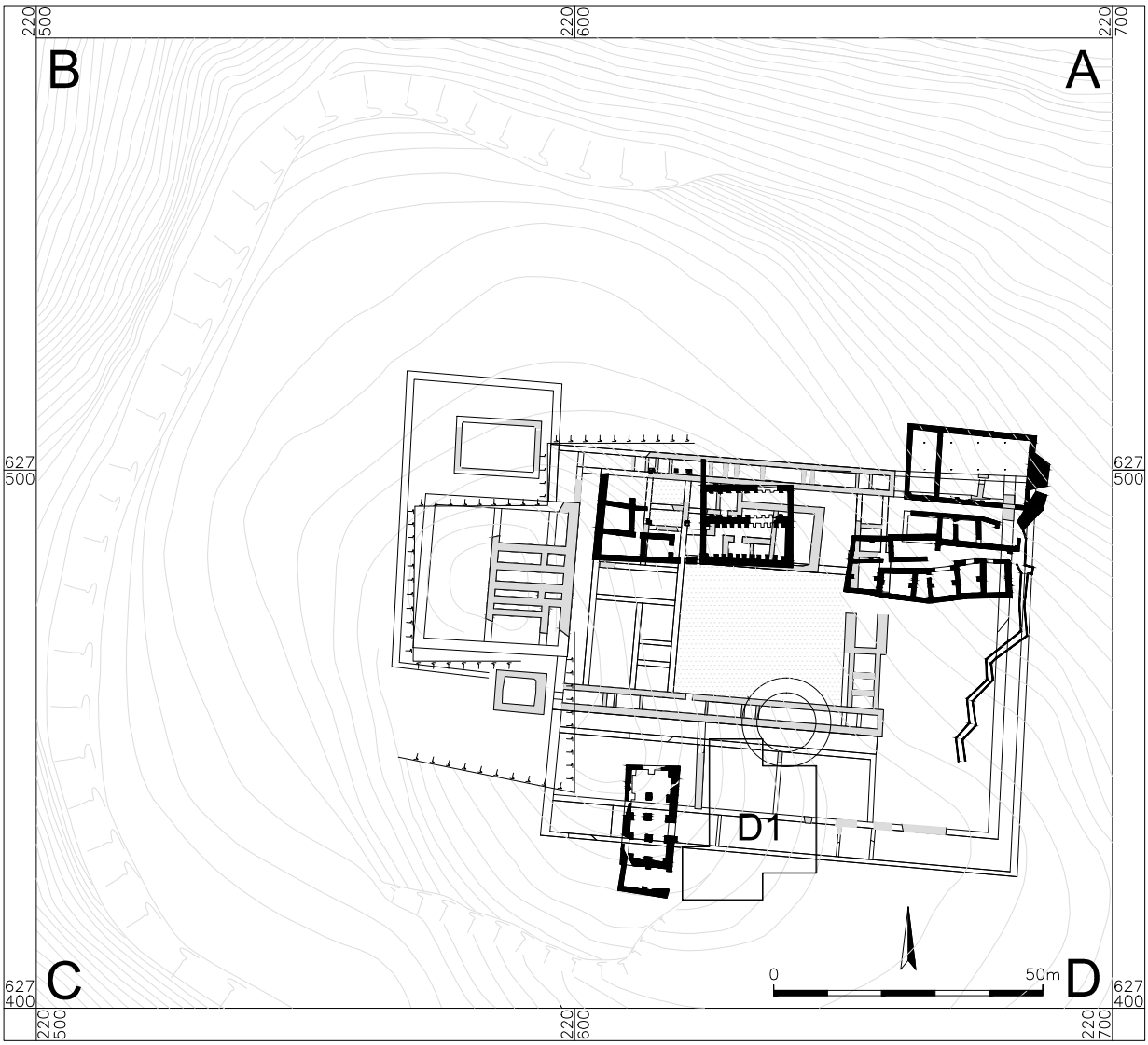

Fig. 2.1: Plan showing location of Area D1.

however, studies have been limited to the handles and the stamp impressions alone (Lipschits and Vanderhooft 2011).

By the end of the 2009 season it had become clear that the western portion of the pit lay still unexcavated under Wall D10 of the Abbasid period and that in order to collect the necessary sherds to realize our hope of restoring vessels, that part of the pit had to be excavated as well. During the 2010 season, therefore, we dismantled Wall D10 and excavated what we believed to be the western portion of the pit (Fig. 2.4). It soon became apparent, however, that the pit continued farther to the west, below the foundations of Wall D9 (Chapter 3). In 2010, we found 11 additional *yhwd*-stamped jar handles.

By now we were eager to see the profile of the storage jar and to determine whether the stamped handles could indeed be connected to the jars. Immediately after the 2010 season the assemblage was taken to the restoration laboratory of Tel Aviv University's Institute of Archaeology. Rachel Pelta and Shimrit Salem devoted over half a year to the task, painstakingly piecing together 11 storage jars of the type that we were already calling "*yhwd* storage jars"—thus named because some of them, as we had suspected in the field, bore *yhwd* stamp impressions on their handles (Fig. 2.5). In one case, two handles

Fig. 2.2: The area of the pit at the end of the 2008 season.

Fig. 2.3: Smashed pottery vessels inside the pit.

of the same jar were stamped with two different *yhwd* impressions—an unexpected case, presenting a challenge to the typology and understanding of the *yhwd* system that was published by Lipschits and Vanderhooft (2011). The restorers noticed that the stamp impressions occurred on the bodies—not only the handles—of the jars. This discovery was a great surprise: it was unparalleled at any other contemporary site and was not noted in Iron Age stamped jars, such as those bearing *lmlk* or rosette stamp impressions. Moreover, only a few *yhwd* stamp-impression types—and only of the early types—were known to have been stamped on jar bodies (Lipschits and Vanderhooft 2011: 81–252).

In addition to the *yhwd* storage jars, the pit contained other vessel types: bag-shaped storage jars, jugs, juglets, cooking pots, kraters, bowls and oil lamps (Chapter 4). The restoration process also gave us insights into how the pit's assemblage was formed: sherds were found scattered all over, a clear indication that the pit had been filled in a single event, during which vessels—mainly storage jars—were probably taken *en masse* from nearby buildings or storage houses and dumped there (Bocher and Yehuda 2020: 185–187).

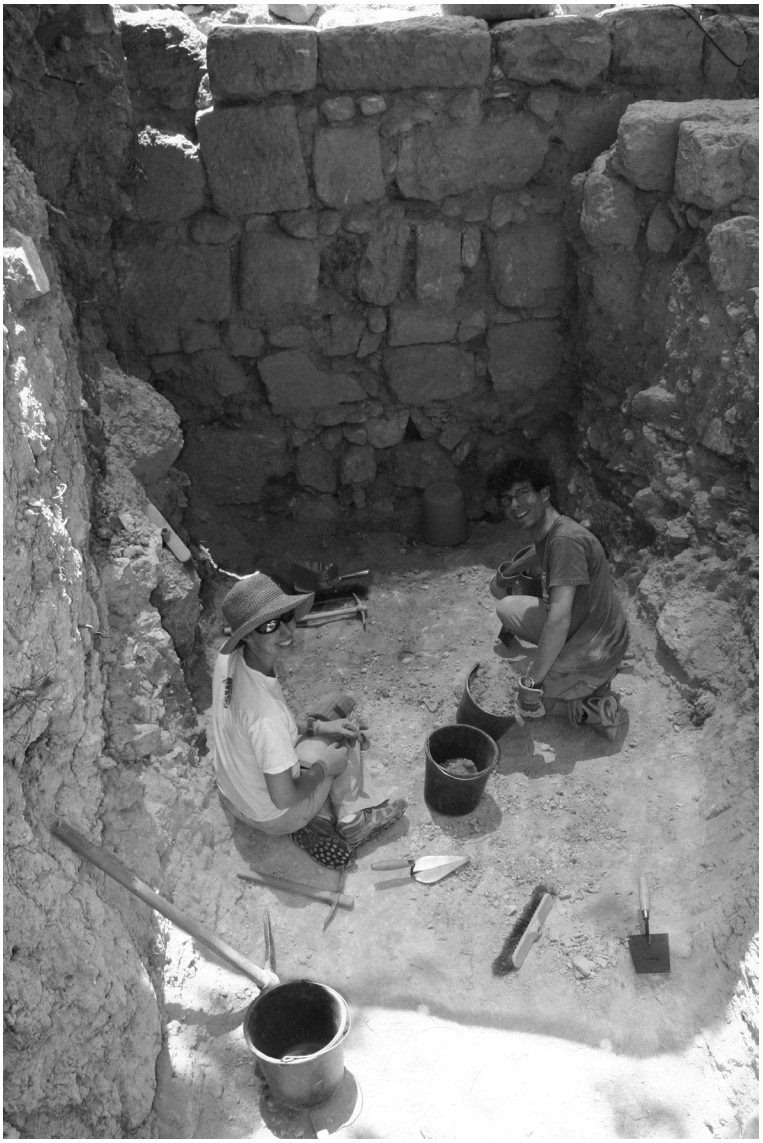

Fig. 2.4: The 2010 excavations of the pit.

Fig. 2.5: Restoration of the vessels from the pit.

The importance of the assemblage—especially the group of complete jars bearing stamp impressions—was obvious. At the time, Dvory Namdar was conducting residue analysis research within the framework of a project titled "Reconstructing Ancient Israel: The Exact and Life Sciences Perspective," supported by the European Research Council. Eager to learn as much as possible about the history of our jars, we asked her to sample our sherds in her lab. Residue analysis is generally conducted on vessels that have not been washed and certainly not glued—and our sherds were both washed and glued. However, given the uniqueness of the jars, everyone was convinced that we should at least make an effort. Fortunately, sufficient molecules that had been absorbed into the clay were discovered in the restored jars. Following consultation with Prof. Israel Finkelstein and Prof. Steve Weiner, the heads of the "Reconstructing Ancient Israel" project, a decision was made to return to the field and excavate the eastern and western sections of the pit in order to collect "fresh" sherds of storage jars that could also be sampled for residue analysis.

Dvory Namdar and Larisa Goldenberg joined Boaz Gross for a week-long excavation at the site in the summer of 2011. The dig focused directly on obtaining reliable samples of pottery fragments and soil samples in order to analyze the contents of the jars.[4] Three additional *yhwd* stamp impressions were found during this week, together with three sherds of Attic vessels—an important addition to the single sherd found in the 2010 season (Chapter 5). All the new finds were sent to the restoration laboratory to be added to existing restored jars or for the restoration of new vessels, so we could establish exactly how many vessels were restored and sampled for residue analysis.

The restoration work, the research in the laboratory, and the study of the various types of stamp impressions were only the beginning of the process of analyzing the finds and understanding the importance of the pit. Much like King Tutankhamun's tomb, the Babylonian-Persian Pit is a major archaeological find: it enables us to enter an ancient world in a pristine state, untouched for millennia. This volume integrates data and analyses of the pit; it presents the discoveries and provides a variety of perspectives and interpretations.

4 For this purpose, we developed a special procedure, described in detail in Chapter 10.

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CHAPTER 3

STRATIGRAPHY

Efrat Bocher, Yuval Gadot and Oded Lipschits

Area D1, in the southeastern corner of Ramat Raḥel (Fig. 2.1), was selected for excavation because prior to the renewed excavations, it was one of the few as yet unexcavated parts of the site where it was hoped that a full stratigraphic sequence could be achieved.[1]

Nine architectural phases, dating from periods as late as the Early Islamic era and as early as the Iron II, were discovered in the area. In contrast to the "classic" tell formation process, in the case of Area D1 all the remains were found one inside the other and older walls were, in most cases, incorporated into the new building plan. Moreover, the foundations of all the walls, from every phase of construction, were built on or even into the rock surface, thereby hindering any attempt to produce a coherent stratigraphic sequence. Consequently, our ability to reconstruct the building operations that took place and to identify all stages of architectural development was limited.

Stratigraphically, Pit L13174[2] belongs to Phase D1-8, equivalent to Building Phase III (Table 3.1; Lipschits *et al.* 2017: 105−108; Lipschits, Gadot and Oeming 2020: 481–483). This is a refuse pit that utilized the lowered rock surface of a subterranean room, rock-cut and built in Phase D1-9 (Fig. 3.1). Construction during this phase was enabled by the cutting, smoothing and, in some cases, lowering of the rock surface. The investment needed for such an operation and the size of the walls suggest that in Phase D1-9 the area was the site of a public building (Bocher and Yehuda 2020: 183).

The walls of the earlier room were not detected, although two walls could be reconstructed by their foundation trenches (13185 and 13220) and a third wall by reshaping the rock and the rock scarp. Although the floor was not found, the rock surface was flattened at 816.20 m, and this is probably the level at which the floor was laid (Figs. 3.2–3.3). It was apparently at least 1.20 m lower than the level of the surrounding flattened bedrock. The walls of the room also served as terraces supporting the face of the rock scarp from at least two (and possibly three) sides (Bocher and Yehuda 2020: 178−179). After the room fell out of use and its walls were robbed, the depression it had made in the rock was used for disposal of pottery vessels and was consequently refilled.

The pit extends over Square D248 in its entirety and continues westward under Wall D10 into Square D247 (Bocher and Yehuda 2020: 183). It is irregular in shape. The fill was packed with earth and was rich in organic material (Fig. 3.4). The pottery vessels were found completely mixed, and their profile was understood only after restoration.

Stratigraphically, the pit was found to cut into features of Phase D1-9, such as Foundation Trenches 13185 and 13220 and Fill 13186, and to be sealed by Floor 13013 and its makeup (Locus 13036), as

1 This chapter is a summary of the full report dealing with the complete stratigraphy of Area D1 (and see Bocher and Yehuda 2020).

2 Locus 13174 is the final locus number of the pit. For details and description of the complete stratigraphic picture, see Bocher and Yehuda 2020. For the complete list and location of loci combined in Final Locus 13174, see below, Table 3.2 and Figs 3.9–3.10; and Lipschits, Oeming and Gadot 2020: List of Loci.

Table 3.1: The Stratigraphic Sequence of Area D1

Phase	*Main Features*	*Building Phase*	*Period*	*Aharoni's Stratigraphy*
D1-1	Scant remains	–	Fatimid and later (end of 10th–end of 11th centuries CE)	–
D1-2	Farmhouse	IX	Abbasid (mid-8th–end of 10th centuries CE)	–
D1-3a and D1-3b	Insula	VIII	Byzantine-Umayyad (7th–mid-8th centuries CE)	I (AES3-1)
D1-4a	Insula	VII	Byzantine (6th–early 7th centuries CE)	IIA (AES3-2)
D1-4b?	Scant remains, possibly part of Phase D1-4a	VII	Byzantine (5th–6th centuries CE)	IIB (AES3-3)
D1-5	Walls, floors	V	Early Roman	IVA (AES3-4)
D1-6	Rock-cut installations	V	Early Roman	IVA (AES3-4)
D1-7	Floors	V	Late Hellenistic	IVB? (AES3-4)
D1-8	Pit	III	Early Persian	–
D1-9	Public architecture	II	Iron IIC and 6th century BCE	V

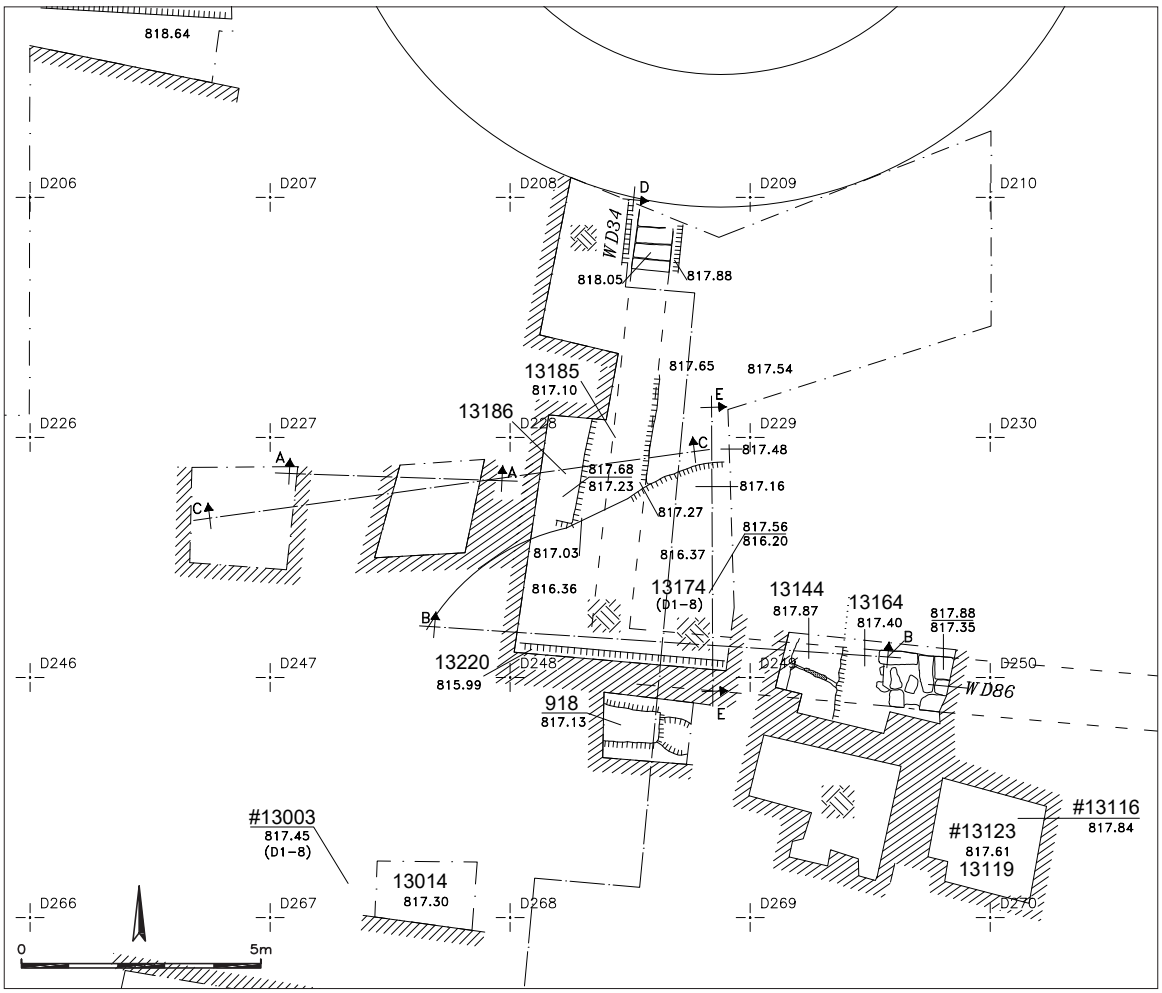

Fig. 3.1: Plan of the area of the pit, Phase D1-9.

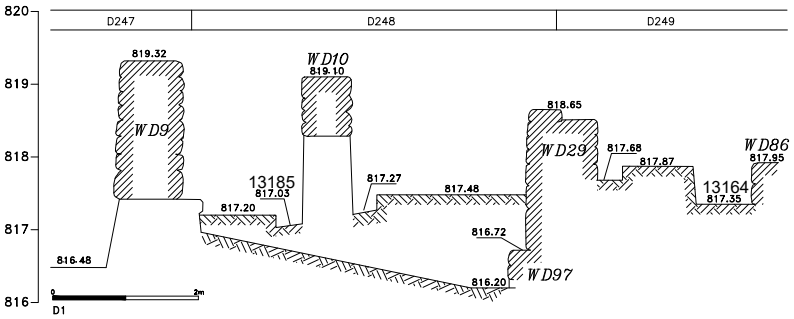

Fig. 3.2: Section B–B, a west–east section of the pit.

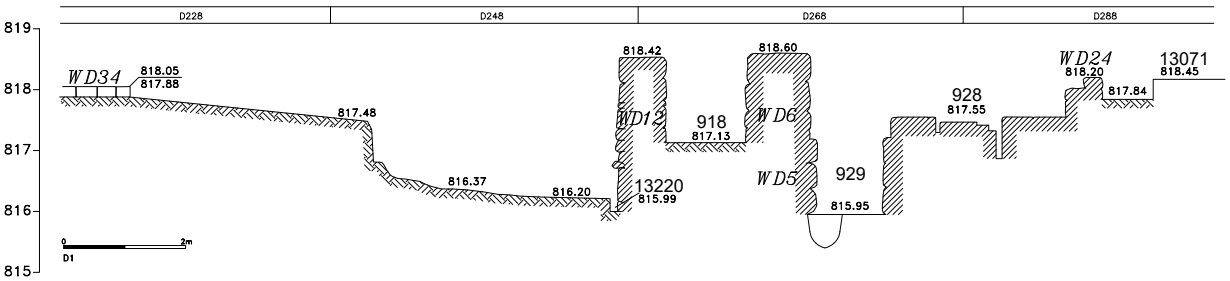

Fig. 3.3: Section D–D, a north–south section into the pit.

evident in Section E–E (Fig. 3.5). This floor, which belongs to Phase D1-7, contains mostly Persian, Late Hellenistic and Early Roman sherds. The section also shows that Pits 13151 and 13044 cut into Pit 13174. All the built walls of the later phases were either placed on the earth fill inside the pit (Walls D9, D10 and D29), or cut into it (D12 and D97) (Figs. 3.2–3.3, 3.6–3.10; Lipschits, Gadot and Oeming 2020: 481−483).

Thus far, architectural remains connected to Phase D1-8 are missing (Bocher and Yehuda 2020: 183–187). We do not know where the contents of the pit came from and to which floor horizon they should be associated (Fig. 3.1). It would seem that this represents a one-time event during which buildings were emptied and their contents thrown into the pit. If so, the contents of the pit belong to an earlier phase than the act of dumping. It could very well be that the fill was dumped intentionally in order to level off the subterranean room and create an even surface for the establishment of floors in Phase D1-7. We know when these floors were last in use, but we do not know when they were constructed.

We may summarize this brief stratigraphic discussion as follows:[3]

1. Pit 13174 is a lowered rock-cut space that was built during the Iron Age. After it went out of use, its walls were robbed and it was filled up.
2. A floor placed above the pit had Late Hellenistic/Early Roman period pottery resting on it.
3. Restoration of vessels from the pit shows that this was not a gradual accumulation but a single event, in which the storage jars and other vessels—many of which could be completely restored—were brought from an unknown place of use and thrown into the pit.

3 For detailed discussion, see Bocher and Yehuda 2020: 176−187.

Fig. 3.4: Western section of the pit; the bottom of the pit was not reached at this sector of the dig.

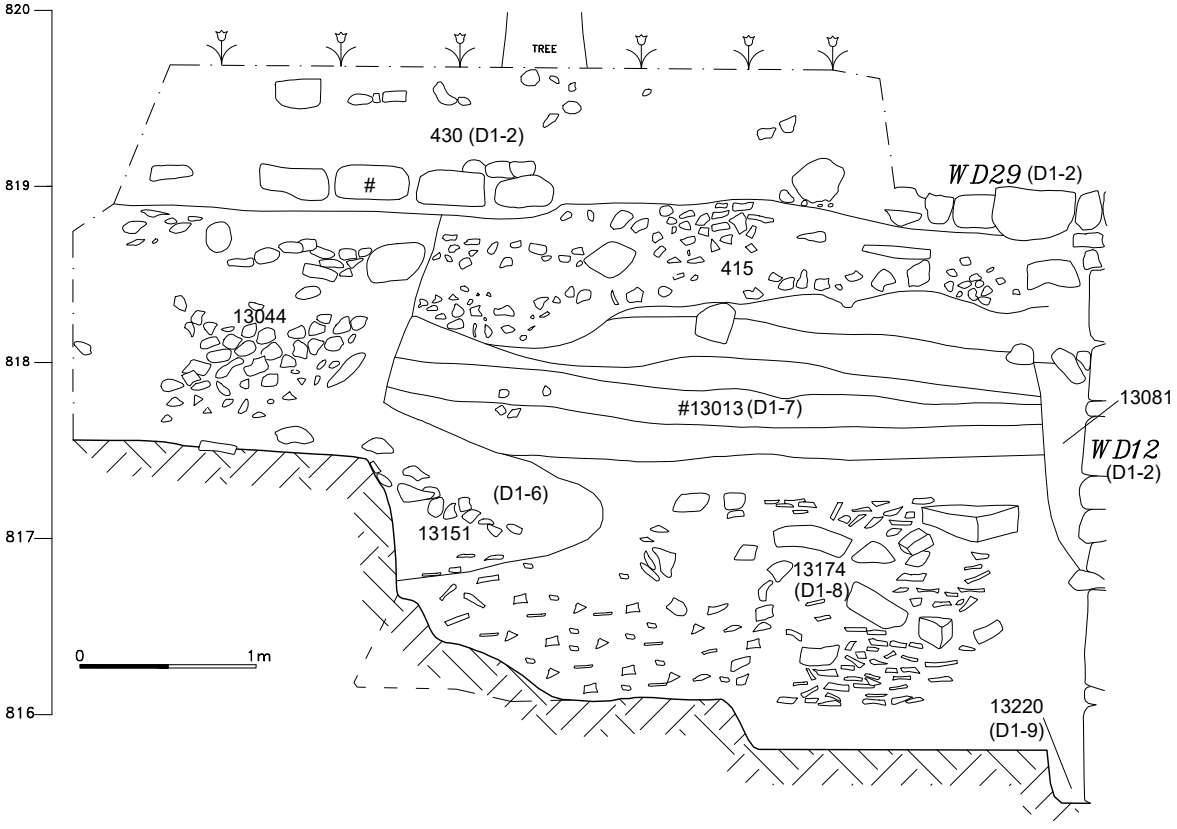

Fig. 3.5: Section E–E and Floor 13013 above the pit.

Fig. 3.6: Wall WD12 (Phase D1-2) built into the southern edge of the pit; note Foundation Trench 13220 (Phase D1-9).

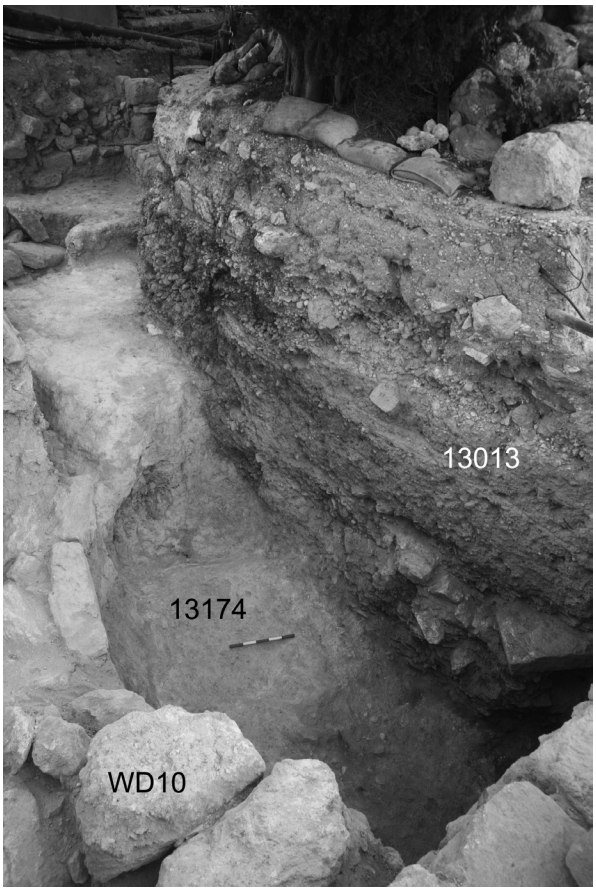

Fig. 3.7: Rock surface at the bottom of the pit, sloping sharply from north to south, looking northeast.

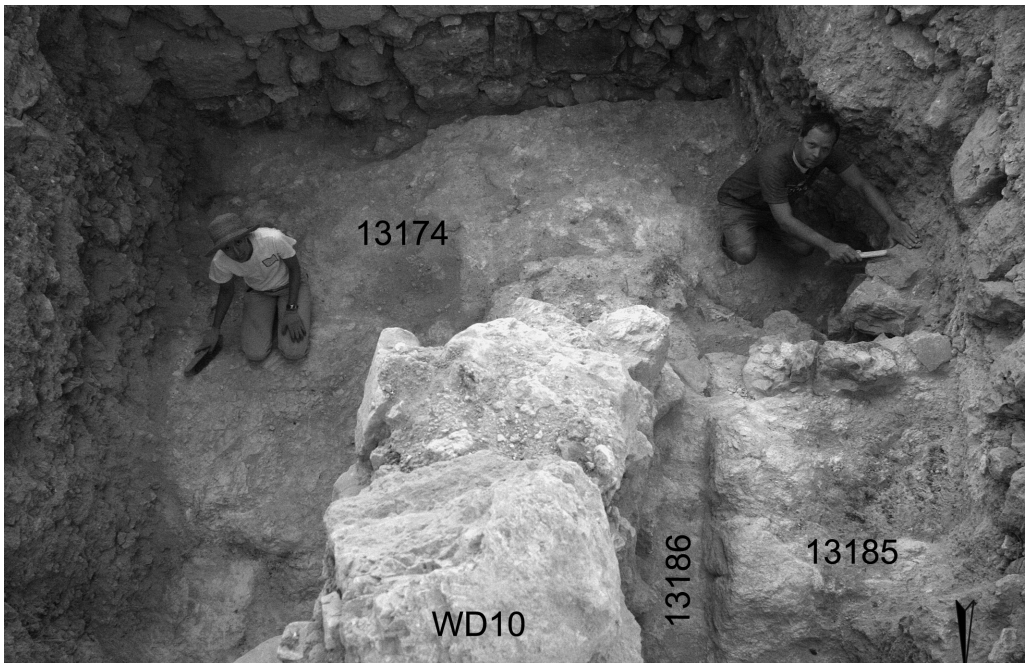

Fig. 3.8: Dismantled wall WD10 (Phase D1-2) and the western portion of the pit.

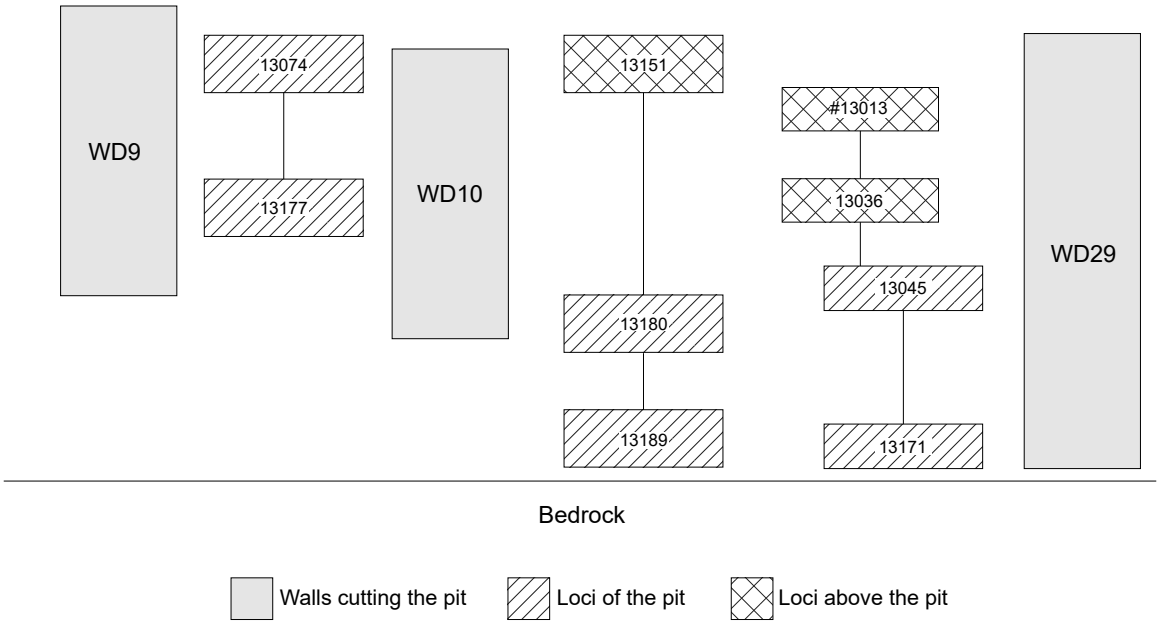

Fig. 3.9: Schematic diagram showing the loci in the southern part of the pit.

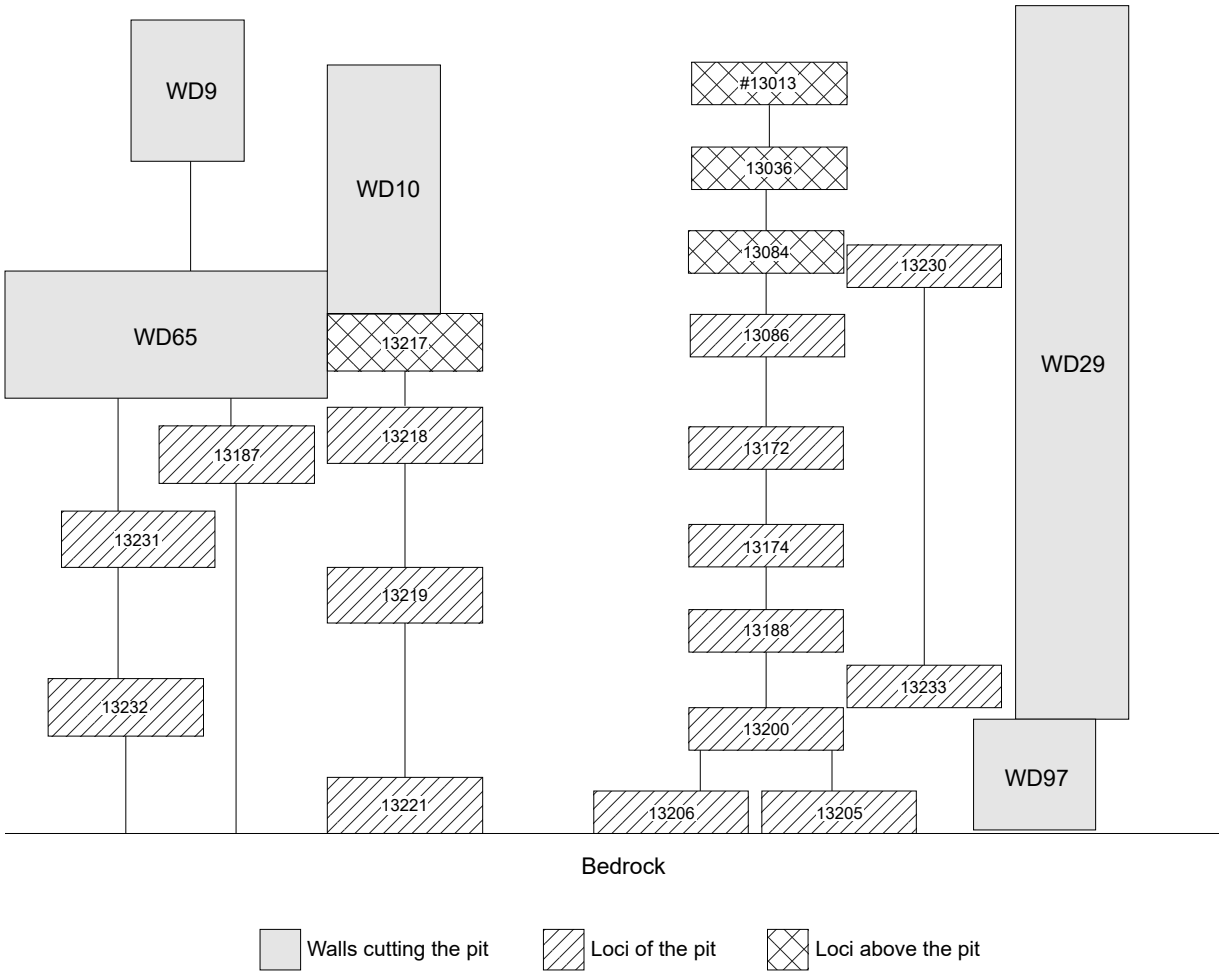

Fig. 3.10: Schematic diagram showing the loci in the northern part of the pit.

Table 3.2: List of Loci from the Babylonian-Persian Pit (Final Locus 13174)

Locus No.	*Square*	*Loci Above*	*Loci Below*	*Elevations*	*Season*
13045	D248	13036, 13092	13094	817.42–817.22	2008
13086	D248	13084	13172	817.60–816.64	2008
13094	D248	13045	13171	817.22–817.13	2008
13171	D248	13094	13207	817.13–816.84	2009
13172	D248	13086	13174	817.13 –816.89	2009
13174	D248	13172	13188	818.96–816.70	2009
13177	D228–D248	13074	Bedrock	817.65–817.23	2009
13180	D248	13151	13189	816.68–816.16	2009
13187	D228–D248	WD065		817.83–816.65	2009
13188	D248	13174	13200	816.70–816.27 (west)	2009
13189	D248	13151 13180	Bedrock	816.84–816.37	2009
13200	D248	13188	13205 13206	816.27–816.08	2010
13205	D248	13200	Bedrock	816.36–815.90	2010
13206	D248	13200	Bedrock	816.28–815.87	2010
13207	D248	13171	Bedrock	816.84–816.26	2010
13217	D247	WD 65/WD10	13218	817.62–817.51	2010
13218	D247	13217	13219	817.51–817.23	2010
13219	D247	13218	13221	817.23–816.58	2010
13221	D247	13219	Bedrock	816.58–816.24	2010
13222	D248	Cleaning the eastern section at the end of the season			2010
13230	D248	13228	13233	817.84–816.35	2011
13231	D248	13229	13232	817.03–816.64	2011
13232	D248	13231	Bedrock?	816.85–816.48	2011
13233	D248	13230	13207?	816.35–816.01	2011

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CHAPTER 4

THE POTTERY ASSEMBLAGE

Liora Freud

This chapter presents and discusses all the complete vessels and most of the complete profiles of vessels found in Pit 13174. Although this assemblage may at first appear domestic in nature—it includes bowls, kraters, cooking pots, jugs, juglets, lamps and jars (Figs. 4.1–4.12)—a tremendous number of four-handled *yhwd* jars was uncovered (Figs. 4.12–4.19), suggesting, perhaps, that the pit contained discarded vessels from a storeroom (see also below, Appendix 4.1, which lists all the incomplete and unrestored vessels from the pit).

The lengthy process of restoration (Chapter 2) revealed that the fragments of each of the large storage jars and of some of the smaller vessels were dispersed throughout the pit—both spatially and in terms of elevation. This can be clearly seen from the many loci appearing in the locus columns in the tables attached to Figs. 4.11, 4.15 and 4.17, as well as in Appendix 4.1. Figs. 3.9 and 3.10 (Chapter 3) show where these loci are situated in the pit. The wide dispersal of sherds for each storage jar suggests that whole vessels were thrown into the pit and that the accumulation is the outcome of a single event, rather than a gradual build-up.

Pottery from sites in Jerusalem and its hinterland were chosen for parallels (Table 4.1)—the City of David Area E, Stratum 9 (Zuckerman 2012), the Summit of the City of David (Mazar 2015),[1] Ketef Hinnom (Barkay 1985), Khirbat er-Ras (Gadot 2015) and the assemblage from Cave 2 at the Holyland (Ben-Arieh 2000), which contained many pottery types similar to those found in the pit. Parallels from En-Gedi Stratum IV (Stern 2007) are also included, since this is the only assemblage in the area deriving from a well-stratified structure (although the report does not distinguish between the Early and the Late Persian period). In the Benjamin area, parallels are given from Khirbet el-Burj (Weinberger-Stern 2015) and Khirbet Nisya (Livingston 2003), in addition to sites excavated long ago, including Tell el-Ful (Lapp 1981), Tell en-Naṣbeh (Mizpah) (Wampler 1947) and el-Jib (Gibeon) (Pritchard 1964), all of which are stratigraphically problematic. Close parallels were also found in the Samaria area, mainly at Shechem Stratum V (Lapp 2008) and Qadum (Stern and Magen 1984). Other sites, such as Ḥorvat Dir Baʿal (Har-Even and Skolnik 2018), ʿAin ʿArrub (Stern 1971) and Jabel Nimra (Hizmi and Shabtai 1993) in the Hebron area and Tell el-Ḥesi (Bennett and Blakely 1989) in the Shephelah, are presented when they are important chronologically or as parallels for unique vessels. An attempt was made to connect the typology of the vessels from the pit with Stern's typology (1982; 2015b); this was not always successful because Stern's work dealt with the entire region and is more inclusive, while the pottery found in Judah differs significantly from pottery typical of the coast and other areas.[2]

1 Mazar's (2015) publication contained pottery from the dumps on the Summit of the City of David (Yezerski and Mazar 2015; Shalev 2015; Freud 2018: 74–74, 232–235). This is the same layer that was exposed by Kenyon (Franken and Steiner 1990). I prefer to cite Mazar's excavations, which are more accurate and updated.

2 On the diversity of Persian period vessels and the difficulty in developing their typology, see Stern 1982: 94; Lapp 1985: 22; 2008: 24.

Table 4.1: Main Parallel Sites

Period	*Dates*	*Ramat Raḥel, Area D1*	*City of David, Area E (De Groot and Bernick-Greenberg 2012a: XVI)*	*Summit of the City of David (Mazar 2015: 17)*	*En-Gedi (Stern 2007: 198–227)*	*Tell el-Ful (Lapp 1981: 79–101)*	*Shechem (Lapp 2008: 1)*
Late Hellenistic	332 BCE–2nd century BCE	D1-7	8			II	IV
Late Persian	450?–332 BCE		9	9 (Phases 9.11–9.1)	IV		
Early Persian	538–450? BCE	D1-8, Pit 13174					V
Babylonian	586–538 BCE			9/10		IIIB	
Iron IIC	701–586 BCE	D1-9	10	10	V	IIIA	VI

The fabric of the vessels from the pit was examined visually.[3] A few sherds, mainly from the storage jars, were subjected to petrographic analysis (Boness and Goren, forthcoming). Compared to the late Iron pottery that preceded it, the ware of the vessels from the pit is easy to define. It is identical to the fabric of vessels from the Persian period, as observed by Gorzalczany (2012),[4] containing large quantities of small white inclusions, associated with dolomite sand from the Aminadav and Moẓa formations (Boness and Goren, forthcoming). All the jars, most of the jugs, stands, oil lamps and bowls and some of the cooking pots from the pit are made of this type of ware.

Many of the vessels from the pit are characterized by air bubbles on the walls or by crushed surfaces as a result of large inclusions. Many vessels are asymmetrical and clumsily formed. The decline in the quality of vessel production at the beginning of the Persian period is well known and documented (Stern 2001: 514; Lipschits 2005: 192–197). Toward the end of the period the quality improved, and it is difficult to distinguish between the pottery of the Late Persian and the Early Hellenistic periods (Stern 1982: xviii; Sandhaus 2009: 224).

In the discussion below, each family of vessels is divided into types—from small open to large closed vessels. The notation for each type (B26, CP4, SJ5, etc.) follows the notation given to them in the Ramat Raḥel typological report (Freud, forthcoming).

BOWLS (FIGS. 4.1– 4.2)

Although only a few bowls were found in the pit, the variety of types is significant.[5] They can be divided into two main groups: one continuing stylistic and production techniques from the Iron Age and the other consisting mainly of new types. In addition, several vessels were found that no longer reflect Iron IIC traditions, but are not common in the Persian period. The first group includes small and medium-sized bowls with thin even walls and some of the large bowls. Even though there is a decline in surface treatment,

3 See Mazar and Panitz-Cohen (2001: 15–24) on visual examination and the defining of the fabric.

4 On the increased use of the Moẓa dolomite clay at the end of the Iron Age and during the transition to the Persian period, see Franken (2005), who worked on sherds from Kenyon's excavations. Franken (2005: 198) showed that dolomite clay dominates pottery production in the Persian period. It increases from 5% before the exile to 80% in post-exilic times. There is also more use of quartz sand, which had practically disappeared in the 7th century BCE yet is a normal feature in the post-exilic period. See also Gorzalczany 2012; Boness and Goren, forthcoming.

5 Some 50 rim sherds, in addition to the ones published here, were uncovered.

evident, for example, in the disappearance of the red slip/pinkish wash and burnish, it seems that the general shape and finishing technique were maintained (e.g., Fig. 4.1:1–7, Types B25, B29 and B14.2). The other main group includes primarily new types that did not appear in 586 BCE destruction layers or types that developed to the point that their shape no longer resembles the Iron Age type. (e.g., Fig. 4.1:8–22, Types B16, B18). Some have an undulating interior wall, with no sign of external surface treatment or with light burnish of a transparent hue. The rims are thickened or plain, with leftover smeared clay, the bases are coarse and unshaped, and there are potters' fingerprints and surplus clay after cutting from the wheel,

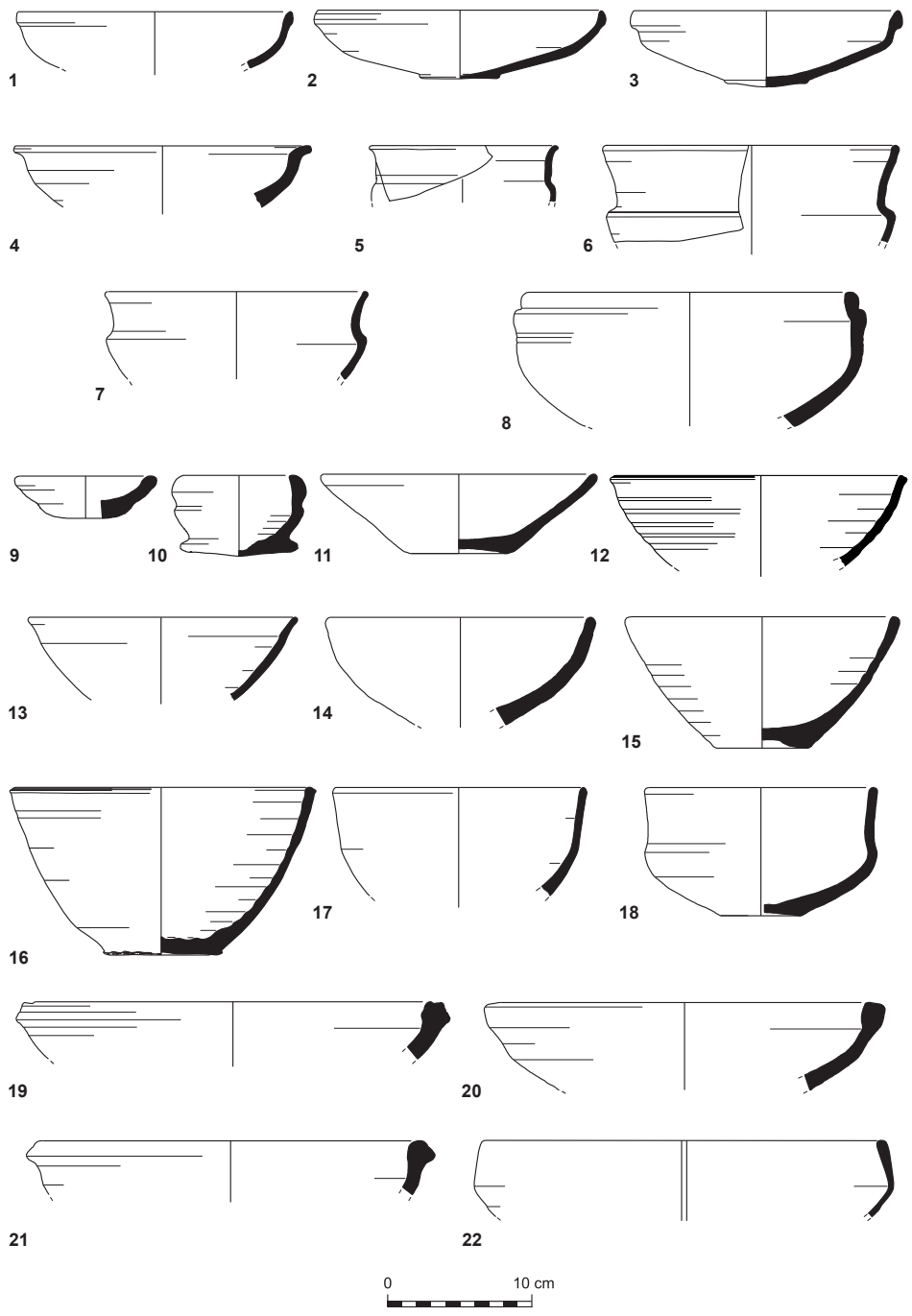

Fig. 4.1: Bowls.

which have not been smoothed or flattened. Some of the bowls are asymmetrical and seem to have been made by unskilled hands. Some lamps apparently also belong to this group; they too have unsmoothed clay attached to their bases. Other bowls, more common in the second half of the Persian period, are of better quality and represent a more specialized production that continued into the Hellenistic period.

Fig. 4.1: Bowls*

No.	*Object*	*Reg. No.*	*Locus*	*Type*	*Elevation*	*Description*	*Photo*
1	Bowl	9779/4	13222	B25	816.24	Light brown clay, gray core, grits	
2	Bowl	9661/5	13174	B25	816.41	Brown clay, gray core, ash traces	
3	Bowl	9644/1	13174	B25	816.70	Brown clay, many white grits	
4	Bowl	9736/4	13219	B29	816.95	Light brown-gray clay, gray core, large white and many very small white grits	
5	Bowl	9648/1	13187	B14.2	816.83	Gray clay, very thin wall	
6	Bowl	9345/7	13086	B14.2	816.64	Reddish brown clay, gray core, many white grits	
7	Bowl	9618/3	13174	B14.2	816.94	Light brown clay, gray core	
8	Bowl	9345/2	13086, 13218	B28	816.64	Reddish brown clay, gray surface inside, gray core, a few burnish lines outside	
9	Bowl	9568/1	13172	Misc. B35	816.89	Light brown clay, gray core, unshaped outside	
10	Bowl/ cup	9739/1	13219, 13171, 13174	Misc. B36	816.95–816.84	Brown clay, partly with ash signs	Fig. 4.2:4
11	Bowl	9628/3	13174	B22	816.70	Brown clay, orange brown inside, coarse unshaped base	Fig. 4.2:1
12	Bowl	9345/9	13086	B18	816.64	Light brown clay outside, reddish inside, few white grits, slightly ribbed inside	Fig. 4.2:2
13	Bowl	9637/6	13174	B18	816.70	Light reddish brown clay, gray core, many small white grits, few large white grits	
14	Bowl	9601/1	13174	B18	816.94	Reddish brown clay, gray core, large white grits	
15	Bowl	9618/4	13174	B18	816.94	Reddish brown clay, white large grits, unshaped base	
16	Bowl	9345/6	13086	B18	816.64	Light brown clay, asymmetric wall	Fig. 4.2.3
17	Bowl	9747/4	13219	B18	816.75	Light brown clay, gray core, large white grits	
18	Bowl	9618/2	13174	B14.3	816.94–816.64	Light brown clay, flat base	
19	Bowl	9749/1	13219	B16	816.75	Brown clay, gray core, white grits	
20	Bowl	9628/5	13174	B16	816.70	Light brown clay, gray core, large and many small white grits	
21	Bowl	9375/3	13045	B16	817.13	Gray clay outside, gray core brown clay inside, many tiny white grits	
22	Bowl	9813/4	13231	B31	816.64	Gray surface outside, brown clay, gray core, white grits (ERC residue sample No. 2412)	

* See Figs. 3.9–3.10 for the location of loci within Final Locus 13174.

In addition to the locally produced bowls, four small sherds of imported Attic cups and skyphoi (described and discussed in detail in Chapter 5) were found in the pit. They are dated to the beginning of the 5th century BCE, supporting the dating of the assemblage to this period.

Bowl with Outfolded Rim (B25; Fig. 4.1:1–3)

This is a delicate open bowl, with a smooth outfolded rim tightly pressed to the wall, a slightly carinated wall and a small disc base. The bowl is similar in shape and diameter to the outfolded rim bowl typical of the last part of the Iron IIC, but without the external treatment of red slip or self-wash and burnish, and it is slightly more open and flat (Freud 2016: Table 16.1: B5).[6] These bowls are made of light yellowish clay, sometimes with a few clear burnish lines. The *chaine opératoire* of these bowls is identical to the common bowl types of the later part of the Iron IIC. The main difference lies in the type of clay; while bowls of this type are made of Moẓa clay, the Iron IIC bowls are made of clay that originated from *terra rossa* and *terra rossa–rendzina* soils (Boness and Goren, forthcoming; Freud 2018: Appendix 2).

Parallels: At Ramat Raḥel (Freud 2018: Figs. 18:13–14, 19:23, 21:6, 23:3–4, 24:7,9, 25:2, 29:6–7, from Tunnel 4, Area B2, and in the garden soil in Area C); on the Summit of the City of David, Stratum 10-1 (Yezerski and Mazar 2015: Fig. 5.5:62); Babylonian Stratum 9/10 (Freud 2018: Figs. 58:18,29, 60:18,20,24,30,39); Bet Ha-Kerem (Freud 2018: Figs. 64:8, 66:1–3,6–7); and ʿAlmit (Dinur and Lipovitz 1988: Fig. 2:3). In all the above parallels, these bowls were found together with vessel types that belong to the later part of the Iron IIC (Freud 2018: 281–293). Such bowls are also known in Early Persian period assemblages as in the City of David, Area E, Stratum 9 (Zuckerman 2012: Fig. 3.1:19–22); the Summit of the City of David (Shalev 2015: Fig. 4.7:2–3);[7] Armenian Garden (Tushingham 1985: Fig. 13:13); En-Gedi Stratum IV (Stern 2007: Pl.5.2.1:13), Khirbat er-Ras (Freud 2018: Figs. 72:1–2, 85:1); and the Malḥa ridge (Freud 2018: Fig. 111:5,9–10). It seems that this type, which was unknown in the 586 BCE destruction layers, replaced the common outfolded rim bowls (B5) and prevailed, although manufactured in small quantities and from a different type of clay during the 6th century BCE.

Bowl with Ledge Rim (B29; Fig. 4.1:4)

This is an open bowl with a ledge rim and a slightly carinated wall, sometimes with burnished lines of a yellowish hue inside. Bowls of this type were made of Moẓa clay.

Parallels: Ramat Raḥel (Freud 2018: Figs. 13:3, 23:5,16, 26:1, from the garden soil and Building 824); the City of David, Area E, Stratum 9 (Zuckerman 2012: Fig. 3.2:1–9); the Summit of the City of David, Stratum 9 (Shalev 2015: Fig. 4.1:14–21) and Stratum 9/10 (Freud 2018: Figs. 57:18,21, 58:25, 60:43, 61:49); Holyland (Ben-Arieh 2000: Fig. 6:1–3); En-Gedi Stratum IV (Stern 2007: Pl. 5.2.1:5–7,9–11); and Ḥorvat Dir Baʿal (Har-Even and Skolnik 2018: Pl. 1:1–4). Such bowls were widespread during the Persian period and considered to be among the bowls that continued the Iron Age tradition (Stern 1982: 94; 2015b: Pl. 5.1.1:4–5); they are similar to the carinated bowls typical of the Iron IIC (Freud 2016: Table 16.1: B8, B9) but made from different clay.

Deep Carinated Bowl (B14.2; Fig. 4.1:5–7)

These are deep small and medium-sized bowls with a plain rim, a thin wall and a sharp carination in the lower part. The upper part slants outward.

6 Already noted by Stern (2015b: 567), who considered the outfolded rim bowls to represent a continuation of the Iron Age tradition in the first half of the Persian period.

7 Shalev (2015: 204–205) showed the gradual change in ratio, with outfolded rims dropping from being the majority of rims in the earlier Persian layers to the minority in the later Persian layers in the fills in the Summit of the City of David. He also indicated that this type was a continuation from the Iron Age, but noted that in the Persian period they either bore the typical transparent Persian period burnish or had no burnish at all.

Parallels: At Ramat Raḥel, a bowl very similar to Fig. 4.1:5 was dated by Aharoni to Stratum V (1962: Fig. 11:15); City of David, Area E, Stratum 9 (Zuckerman 2012: Fig. 3.1:10); the Summit of the City of David, Babylonian Stratum 9/10 (Freud 2018: Fig. 57:14) and Stratum 9 (Shalev 2015: Fig. 4.12:13); Holyland Cave 2 (Ben-Arieh 2000: Fig. 6:13–14); Bet Ha-Kerem (Freud 2018: Fig. 66:11, 69:8); En-Gedi Stratum V (Yezerski 2007: Pl. 3:23) and Stratum IV (Stern 2007: Fig. 5.2.1:21–25); and Qadum (Stern and Magen 1984: Fig. 5:4–7).

These bowls are not common in Judah, but they appear in Iron IIB–C strata, where they are considered an imitation of Assyrian vessels (Stern 2015a: 534, Pl. 4.4.3:1–11). Such bowls are common in the Beer-sheba Valley and Transjordan, where they are recognized as Edomite pottery made under Assyrian influence.[8] In the mountain region, the type is more widespread and reaches its peak only at the beginning of the Persian period. They are among the vessels that continued the Iron Age tradition (Stern 1982: 95; 2015b: 566, Pl. 5.1.1:12–17). As it continued into the Persian period the type became larger and coarser (see B14.3, Fig. 4.1:18 below).

Bowl with Stepped Rim (B28; Fig. 4.1:8)

This is a large bowl with a slightly carinated wall and outfolded rim with a groove. It is clear from the side section that an upper band of clay was added to create the stepped rim. A few burnish signs appear on the outside.

Parallels: Ramat Raḥel (Freud 2018: Figs. 18:17, 23:20, 26:3,6); City of David, Area E, Stratum 9 (Zuckerman 2012: Fig. 3.3:4); Summit of the City of David, Stratum 10-1 (Yezerski and Mazar 2015: Fig. 5.3:1); Armenian Garden (Tushingham 1985: Fig. 14:17); Holyland (Ben-Arieh 2000: Fig. 6:4–6, Pl. 1:22); and En-Gedi Stratum IV (Stern 2007: Fig. 5.2.1:15). These bowls were included in Stern's Type B4.[9] The technique of adding a band of clay was not used in the Iron IIB–C and probably replaced the outfolded rim of the Iron IIC; it did not continue into the later part of the Persian period and is thus dated to the second half of the 6th century BCE.

Small Shallow Bowl (B35; Fig. 4.1:9)

This bowl has a thick base and an unshaped surface. A similar bowl from an unstratified context in Binyanei Haʾuma, Jerusalem, was dated to the Iron IIC (Lehmann 2005: Fig. 1:5). They may have been used as a lid as well.

B36: Bowl/Cup (Figs. 4.1:10, 4.2:4)

This bowl has a wide flat disc base protruding beyond the wall. It is made of coarse clay, with a thick and wavy wall. No parallel of this unusual shape has yet been found.

Straight-Sided Bowl (B22; Figs. 4.1:11, 4.2:1)

This bowl has a plain rim, a shallow straight wall and a slightly convex base. It is asymmetrical and clumsily made, with an unshaped base; either extra clay was added to strengthen the base, or else the base was not cleaned after the vessel was removed from the wheel. Such bowls are morphologically similar to the flat bowls of the Iron IIC (Freud 2016: Table 16.1: B2) and were made with the same technique, probably attempting to imitate their finish, but with none of the fastidiousness evident in them. These bowls under discussion differ from the Iron IIC type in their ware: they were made of Moẓa clay rather

8 See Arad Strata X–VI (Singer-Avitz 2002: 133, Fig. 11:B31); Naʾaman and Thareani-Sussely 2006; Singer-Avitz 2007; Freud 2015: 167–168 with additional references.

9 Stern (1982: 96) defined this type as "a continuation of a common Iron Age bowl," and he dates it "only to the first part of the Persian period." His parallel from Lachish (Tufnell 1953: Pl. 101:646) is included within Tufnell's Type B.13: the bowls with outfolded rims dated to the Iron Age.

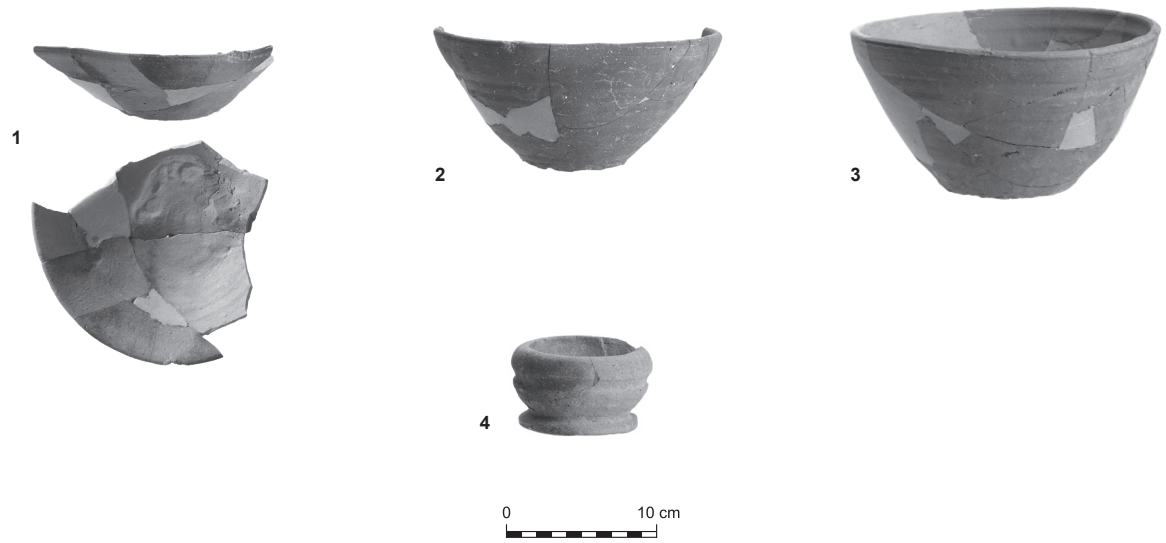

Fig. 4.2: Bowls: (1) Fig. 4.1:11; (2) Fig. 4.1:12; (3) Fig. 4.1:16; (4) Fig. 4.1:10.

than originating from *terra rossa/rendzina* soil. They were not found in 586 BCE destruction layers, but appeared in assemblages that included types typical of the destruction layers along with new types, such as Stratum 9/10 at the Summit of the City of David (Freud 2018: Figs. 58:6–7, 60:1,10). They were not common during the Persian period and should be dated to the 6th century BCE. The type was probably replaced by the deeper, straight-sided and rounded bowls discussed below B18.

Deep Bowl (B18; Figs. 4.1:12–17, 4.2:2–3)

These are small or medium-sized bowls with a simple unshaped or sharpened rim and a rounded U-shaped wall. They were carelessly made and are sometimes asymmetrical, with unshaped flat bases. Sometimes surplus clay was attached to the base after the vessel was removed from the wheel. They were made of light-colored Moẓa clay and did not receive any external treatment.

Parallels: City of David, Area E, Stratum 9 (Zuckerman 2012: Fig. 3.2:23–24, with rounded rims); Summit of the City of David, Stratum 9 (Shalev 2015: Fig. 4.1:5–7); En-Gedi Stratum IV (Stern 2007: Pl. 5.2.1:17–20, with a relatively wide base); Armenian Garden (Tushingham 1985: Fig. 13:30–33); and Qadum (Stern and Magen 1984: Fig. 5:2).

These bowls are not typical of the Iron Age and were not found in 586 BCE destruction layers. They do appear together with vessels of the very end of the Iron IIC or in the Babylonian period, for example, in Ramat Raḥel Area B, Tunnel 4 and the garden soil (Freud 2018: Figs. 18:15–16, 19:24–25, 21:1, 25:3, 29:11); the Summit of the City of David, Stratum 9/10 (Freud 2018: Figs. 57:13,15, 58:23,30,32–33, 60:40, 61:53); and Bet Ha-Kerem (Freud 2018: Fig. 64:9). This type is common during the Persian period; it is included in Stern's Type 4 (1982: 94; 2015b: Pl. 5.1.1:2).

Carinated Bowl (B14.3; Fig. 4.1:18)

This bowl has a thick wall, a gentle carination, an upper part turning upward, and a small disc base.

Parallels: City of David, Area E, Stratum 9 (Zuckerman 2012: Fig. 3.1:10–14); Armenian Garden (Tushingham 1985: Fig. 14:1–2); Holyland (Ben-Arieh 2000: Fig. 6:13–16,19); Khirbat er-Ras (Freud 2018: 75:7); En-Gedi Stratum IV (Stern 2007: Fig. 5.2.1:26); and Qadum (Stern and Magen 1984: Fig. 5:4–7). This is Stern's Type A5 (1982: 95). B14.3 is a coarse version of the former carinated bowl B14.2 (Fig. 4.1:5–7), becoming very common in the Persian period.

Bowl with Thickened Rim (B16; Fig. 4.1:19–21)

This is an open rounded bowl, medium-sized or large, with a thick wall. The rim is thickened, with a square or slightly stepped section.

Parallels: Ramat Raḥel: Aharoni published a few such bowls under and above floor 380, but their attribution to the Iron Age is probably incorrect; they should be dated to the Persian period, like the ones uncovered in Pit 484 (Aharoni 1964: Figs. 12:13–18, 20:1; Gadot *et al.* 2016: Figs. 8.20:8, 8.25:2); Jerusalem: City of David, Area E, Stratum 9 (Zuckerman 2012: Fig. 3.3:1–7); Summit of the City of David (Shalev 2015: Fig. 4.1:29–32); Armenian Garden (Tushingham 1985: Fig. 14:10–14); Binyanei Haʾuma (Lehmann 2005: Fig. 4:31); Holyland (Ben-Arieh 2000: Fig. 6:7); En-Gedi Stratum IV (Stern 2007: Fig. 5.2.1:4); Khirbat er-Ras (Feig 2016: 1–2; Gadot 2015: Fig. 6:4,7–8); Khirbet Nisya (Livingston 2003: Pl. 6.1:6,8,9); Ḥorvat Dir Baʿal (Har-Even and Skolnik 2018: Pl. 1:8–11); Jabel Nimra (Hizmi and Shabtai 1993: Pl. 1:7); Shechem Stratum V (Lapp 2008: Pl. 2.4:6). Such bowls are also called "heavy bowls" and are probably a local imitation of the imported "mortaria" (see below, Type K2 kraters, Fig. 4.3:2–4). They are made of local Moẓa clay. While this type exhibits great variety, they all share the same rough clay and thick rim and wall. The type was very common during the Persian period and continued into the Hellenistic period (Berlin 2015: Pl. 6.1.16:1–2).

Inward-Turning Carinated Bowl (B31; Fig. 4.1:22)

This bowl has a plain unshaped rim, slightly thickened at the top. The upper part of the wall turns inward.[10] It is made of Moẓa clay.

Parallels: City of David, Area E, Stratum 9 (Zuckerman 2012: Fig. 3.2:24–26); Summit of the City of David, Stratum 9 (Shalev 2015: Fig. 4.1:24) and Stratum 9/10 (Freud 2018: Fig. 61:57); Armenian Garden (Tushingham 1985: Fig. 13:32–34); Binyanei Haʾuma (Lehmann 2005: Fig. 4:29); En-Gedi Stratum IV, a funnel with a similar rim (Stern 2007: Fig. 5.2.9:5); Ḥorvat Dir Baʿal (Har-Even and Skolnik 2018: Pl. 1:6); Jabel Nimra (Hizmi and Shabtai 1993: Pl.1:5). This type of bowl first appeared in the Persian period and became more common toward the second half of the period.

KRATERS (FIGS. 4.3–4.4)

Deep Burnished Krater (K8; Figs. 4.3:1, 4.4:1)

This krater has a thickened rim, a wide mouth, a slightly inturned neck and a round elongated body, with no handles. It is similar in general shape to the K9 deep krater (Fig. 4.3:6–9; see below), but differs in its thickened rim, its inward-turned neck and its small shallow ring base. Its exterior is covered with horizontal burnish lines, giving it a yellowish hue. This same burnish appears on a jug (JG7, Fig. 4.7:5) and on some other sherds in the assemblage. The krater continues the Iron Age tradition of burnish, although without the red wash or slip beneath.[11]

The similarity of the deep burnished krater to the deep kraters of the end of the Iron Age in terms of shape, size and burnishing style indicate that typologically it was a transitional type between the late Iron Age kraters and those of the Persian period (K9, Fig. 4.3:6–9).[12] It should be dated to the 6th century BCE, or the Babylonian period, and has more in common with the Iron Age kraters than those of the Persian period.

10 Although the bowl does not have a base, it fits Stern's Type B1 (1982: 96) definition of a "sharply inverted rim," dated to the late 6th–4th centuries BCE.

11 Stern (1982: 136) attributed this kind of burnish to the Early Persian period on the grounds that it was not found on any 4th century BCE pottery. This, however, is inaccurate: such burnish is known in assemblages later than the Persian period, albeit in small quantities.

12 See Ramat Raḥel (Freud 2016: Table 16.1: K3); En-Gedi Stratum V (Yezerski 2007: Pl. 4.4:4–5); Lachish Levels II (Zimhoni 2004: Fig. 26.50: 2); Tel ʿIra Stratum VI (Freud 1999: Fig. 6.101:3); Ḥorvat ʿUza Stratum III (Freud 2007: Fig. 3.24:7).

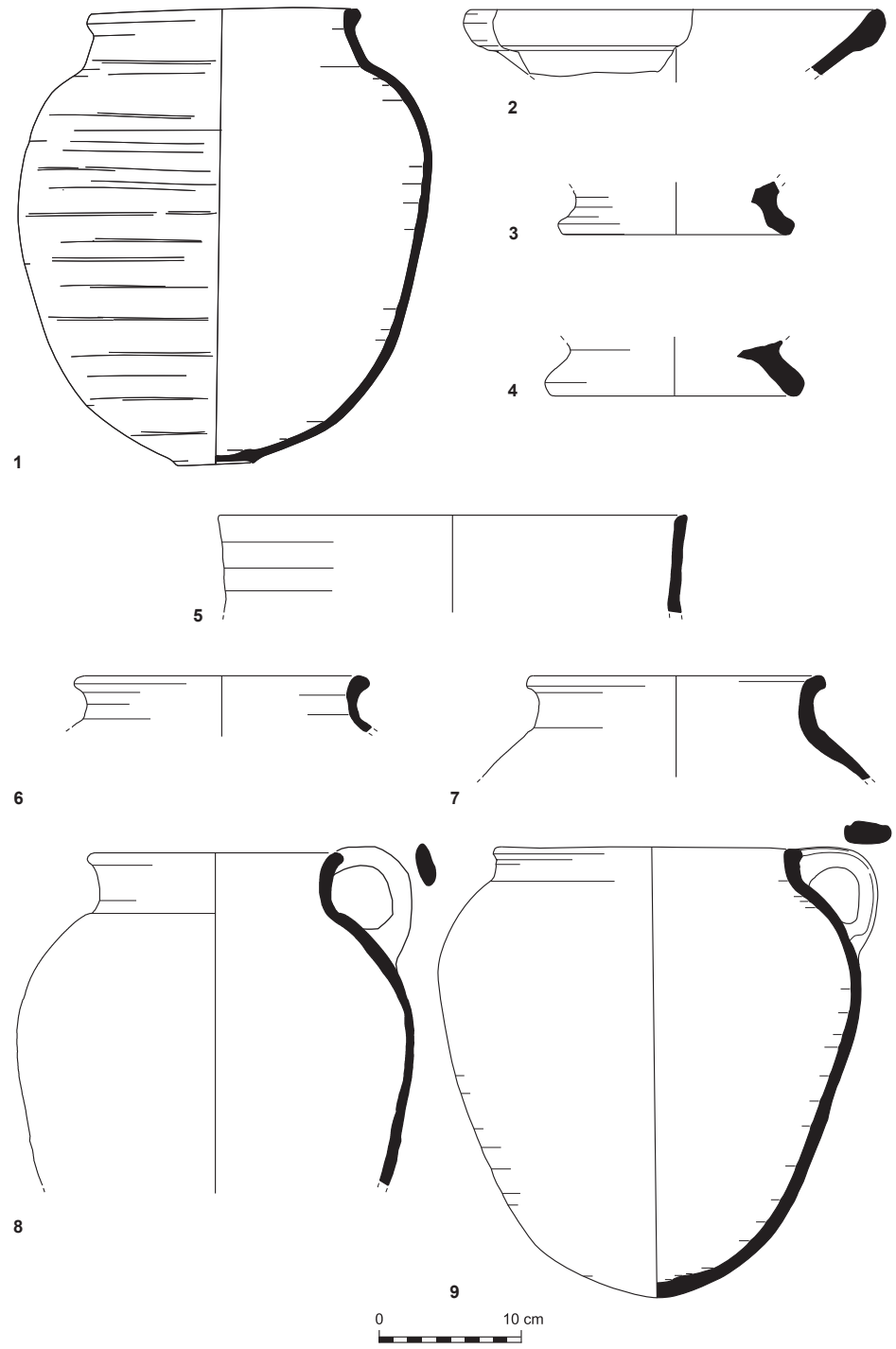

Fig. 4.3: Kraters and mortaria.

Parallels: Ramat Raḥel: Area B2, Tunnel 4 and Area D1, Iron IIC floors of Phase D1–9 (Freud 2018: Figs. 21:8, 29:12); Summit of the City of David, Stratum 9/10 (Freud 2018: Fig. 57:24). A krater found in front of a burial cave at Kh. Beit Lei is identical in size and shape to the krater under discussion, but its ware and external treatment are not mentioned (Naveh 1963: Fig. 2:5).[13]

13 It was found with a juglet dated to the Persian period, Stern's Type C (1982: 98). The burial cave has benches and is shaped like those of the Iron Age (Naveh 1963: 74–62).

Fig. 4.3: Kraters and Mortaria

No.	*Object*	*Reg. No.*	*Locus*	*Type*	*Elevation*	*Description*	*Photo*
1	Krater	9637/4	13174	K8	816.70	Light brown clay, yellow burnish lines	Fig. 4.4:1
2	Mortarium	9345/5	13086	K2	816.64	Yellow clay	
3	Mortarium	9723/1	13218	K2	817.27	White-yellowish clay, high-footed base	
4	Mortarium	9729/2	13218	K2	817.23	Light yellowish clay, grits	
5	Bowl	9345/3	13086, 13174	B32	816.64	Light brown, gray core	
6	Krater	9747/3	13219	K9	816.75	Light brown-orange clay, small white grits	
7	Krater	9628/4	13174, 13086, 13172	K9	816.70–816.64	Light brown and orange clay, gray core	
8	Krater	9568/2	13172	K9	816.89	Light brown clay	
9	Krater	9618/1	13174, 13086, 13171	K9	816.94–816.14	Light brown and light orange clay, many small white grits	Fig. 4.4:2

Heavy Bowls, Mortaria (K2; Fig. 4.3:2–4)

This is an open krater with thick elongated rim and a thick, sometimes wavy, wall. It is made of yellowish or greenish clay.

Three small sherds were found in the assemblage. The two bases are of the high ring base type, typical of the Persian period (Stern's Type B5b, widely discussed).[14] The yellowish clay of the mortarium sherds found in the pit points to a non-local production, as most of the kraters of this type were imports from Cyprus or the northeastern Mediterranean basin.[15]

Parallels: Ramat Raḥel (Aharoni 1962: Fig. 12:20–22; Gadot *et al*. 2016: Figs. 8.24:2, 8.27:1; Freud 2018: Fig. 23:6 from the garden soil, without base); City of David Area E, Stratum 9 (Zuckerman 2012: Fig. 3.4:1,3); Armenian Garden (Tushingham 1985: Fig. 14:22); Holyland Cave 2 (Ben-Arieh 2000: Fig. 6:12); En-Gedi Stratum IV (Stern 2007: 201, Type 5B, Fig. 5.2.2); Qadum (Stern and Magen 1984: Fig. 5:12,15); and Shechem Stratum V (Lapp 2008: Pl. 2.9, found mainly in fills of Stratum IV). The shift from the flat base typical of the Iron IIC to the high ring base typical of the Persian period probably occurred during the 6th century BCE. At a site excavated on the southwestern coast of the Sinai Peninsula, not far from the Suez Canal, on the road connecting Egypt with Israel, flat-based mortaria were found along with Egyptian, Greek and Phoenician vessels dated to the 6th century BCE (Oren 1984: Fig. 21:10). The excavators of Tell el-Ḥesi dated their appearance from the late 7th century BCE (possibly connected to the Assyrian withdrawal ca. 630 BCE) to the early 5th century BCE (Blakely and Bennett 1989: 59–60). As for their function, although footed mortaria have been linked to a military or other presence associated with the Persian takeover of the region (Blakely and Bennett 1989: 59–61), the fact that mortaria have been found in domestic assemblages precludes, in my opinion, such an interpretation. N. Lapp included the flat-based mortaria among the Early Persian period pottery types (Lapp 2008: Fig. 4.1:9) and the footed mortaria among the Hellenistic period types (Lapp 2008: Fig. 4.5:5). She suggested that the footed base was introduced during the 6th century and was in use throughout the 5th century BCE (Lapp 2008: 73–75). In the Persian period and especially the

14 See Stern 1982: 96–98, Type B5b; Mazar and Panitz-Cohen 2001: 51 BL30; Blakely and Bennett 1989: 45–65; Bennett and Blakely 1989: 196–203; Lehmann 1998; Lapp 2008: 28–29.

15 See petrographic research in Zuckerman and Ben-Shlomo (2011) with a review of the research; Gorzalczany 2003: 121–124; see Bennett and Blakely for the origin of such bowls at Tell el-Ḥesi (1989: 60–62, with additional references); and Stager, Master and Schloen (2011: 112–113) for such bowls from Ashkelon.

Fig. 4.4: Kraters: (1) Fig. 4.3:1; (2) Fig. 4.3:9.

Persian–Hellenistic transition, local production of heavy bowls imitating mortarium bowls began. At Tell el-Ḥesi the excavators considered the disappearance of the footed mortaria to be a chronological marker of the 5th–4th century BCE transition (Bennett and Blakely 1989: 203).

Large Bowl or Krater (B32; Fig. 4.3:5)

This is a wide straight-sided bowl with a thin wall and a plain unshaped rim. It is made of well-sifted clay.

Parallels: City of David Area E, Stratum 9 (Zuckerman 2012: Fig. 3.2:28); Armenian Garden (Tushingham 1985: Fig. 14:3); En-Gedi Stratum IV (Stern 2007: Fig. 5.2.3:5, a similar krater with a straight wall but with a handle); Kh. Qeiyafa, Stratum III, dated to the 4th century BCE (Sandhaus and Kreimerman 2015: Fig. 2:5); Tell el-Hesi, Stratum VD (Bennett and Blakely 1989: Figs. 149:3, 155:32). This type is more common during the later half of the Persian period.

Deep Krater (K9; Figs. 4.3:6–9, 4.4:2)

This type of krater, with wide neck and rounded outturned rim, belongs to Stern's Type D (Stern 1982: 99).[16]

The kraters represented in Figs. 4.3:8–9 and 4.4:2, have a short neck and rounded base, generally with one handle—but up to four—drawn from the rim to the shoulders, sometimes with a wedge decoration (Stern 2015b: Pl. 5.1.25:1; Ḥorvat Dir Baʿal (Har-Even and Skolnik 2018: Pl. 2:1). Fig. 4.3:8 has a high neck and a simple outturned rim. Fig. 4.3:9 has a slightly thickened flat rim and a short neck; the body narrows in its lower part and the rounded base is unshaped, with no external treatment.

Parallels: Ramat Raḥel (Aharoni 1964: Fig. 12:23–30, from Pit 484); City of David Area E, Stratum 9, (Zuckerman 2012: Fig. 3.3:13–22); Summit of the City of David, Stratum 9 (Shalev 2015: Pl. 4.2:1–4) and Stratum 9/10 (Freud 2018: Fig. 61:69–71); Armenian Garden (Tushingham 1985: Fig. 15:2,7,14); and Holyland (Ben-Arieh 2000: Fig. 7:1–3). Rims of similar kraters were found at Binyanei Haʾuma (Lehmann 2005: Fig. 5:3); Khirbat er-Ras (Freud 2018: Figs. 72:13, 85:6); En-Gedi Stratum IV (Stern 2007: Pl. 5.2.3:8–11); Tell en-Naṣbeh (Wampler 1947: Pl. 67:1512); Qadum (Stern and Magen 1984: Fig. 6:1,3); Shechem Stratum V (Lapp 2008: Pl. 2.5:1–10); and Tell el-Ḥesi Stratum Vd (Bennett and Blakely 1989: Fig. 141:1). These kraters, with two or four handles, are the most common krater type in the Persian period.

16 Stern, however, did not include a one-handled krater in his typology.

COOKING POTS (FIGS. 4.5–4.6)

Two main types were found: the cooking pot with no neck, a continuation of the 7th–6th-century type, and the Persian cooking pot, less common in the assemblage.

Neckless Cooking Pot (CP1; Figs. 4.5:1–6, 4.6)

The rim of this type turns outward, forming a kind of short "shelf" (ca. 15–20 cm in diameter). The vessel has a globular body and two handles drawn from the rim to the shoulder.

This is the most common type of cooking pot in the assemblage. It is almost identical in shape to the common late Iron Age cooking pot (7th–early 6th century BCE), but without the grooved rim that is typical in these vessels in the late Iron Age. The clay of some of these vessels looks different from that of the Iron IIC pots (see petrographic analyses in Boness and Goren forthcoming).

Parallels: Ramat Raḥel (Freud 2016: Table 16.1: CP1; 2018: Figs. 3:1–4, 7:20, 12:9, 15:8, 17:10,24, 18:19–20, 20:1–4, 22:4?, 23:7–9,21, 24:14, 28:11, 29:13, mainly from under Floor 380 and Area B2 Tunnel 4); City of David, Stratum 10, Area E (De Groot and Bernick-Greenberg 2012b: 68, CP8, Fig. 4.3:9–10); Area G, the House of the Bullae (Shiloh 1986: Fig. 6:9–10); Jewish Quarter (De Groot, Geva and Yezerski 2003: Pls. 1.12:10, 1.15:4); En-Gedi Stratum V (Yezerski 2007: Pl. 5:1–15,17–18); Lachish Level II (Zimhoni 2004: Fig. 26.54:14); and Timna/Tel Batash Stratum II (Mazar and Panitz-Cohen 2001: 87, CP 11, and Pl. 60:13). This type appeared in the Iron IIC and became one of the two common cooking-pot types in Judah, mainly during the second half of the period (Gitin 2015: 348, Pl. 3.3.3:6–8). The type continued with hardly any morphological changes to the 6th century BCE. At Ramat Raḥel this was the only type of cooking pot in Tunnel 4 (Freud 2018: Figs. 18:19–20, 20:1–4). As noted above, it was the most common type in the pit, along with a few typically Persian cooking pots. It was the most common type at Bet Ha-Kerem (Freud 2018: Figs. 64:16–19, 67:16–20, 70:10). It was also a popular type at the Summit of the City of David, Stratum 10 (Yezerski and Mazar 2015: Fig. 5.7:91–96) and the most common type in Stratum 9/10 (Freud 2018: Figs. 57:26–29, 58:38–42, 62:72–75). In Stratum 9, Shalev (2015: 208, CP-2, Fig. 4.2:13–15) noted that the type appears in all phases of the stratum, but was less frequently found in its late phases 9-5 to 9-2. This cooking pot was also common in Shechem Stratum V (Lapp 2008: Pl. 2.10:1–20), leading N. Lapp to date it to the 6th–early 5th centuries BCE, pointing to its continuity from the Iron IIC (2008: 29–30). She noted that some of the cooking pots are grooved on the rim, but are smaller and thinner than those of the Iron Age. In Gibeon such cooking pots were dated by P.W. Lapp to the 6th and early 5th centuries BCE (Lapp 1968: 391).

The cooking pot represented in Figs. 4.5:3 and 4.6 belongs typologically to the above type, but its ware is different. The clay is very coarse and contains large inclusions, and the wall is very thick. The vessel is either handmade, or else the lower part is made on a mold, and then scrubbed on the base (vessels of similar thick and heavy ware were found at Shechem Stratum V; Lapp 2008: Pl. 2.10:21–33).

From the above parallels and the fact that it is the most common type in the pit, it seems that this well-known and documented type of the late 7th–early 6th centuries BCE was also common in Jerusalem and the Benjamin areas throughout the 6th century (the Babylonian period) and can even be found in assemblages dated to the 5th century BCE (the Early Persian period). Small morphological changes, such as the thin rim and the less pronounced—or even non-existent—groove, differentiate the Iron Age cooking pot from the Persian type. The major difference, however, lies in the type of clay. While most late Iron Age cooking pots in the Jerusalem area are made of *terra rossa* soil, the variety of clay types is greater in the transition to the Persian period (and see Boness and Goren, forthcoming). Despite these differences, it is difficult to narrow down the date of such cooking pots within the above-mentioned timespan.

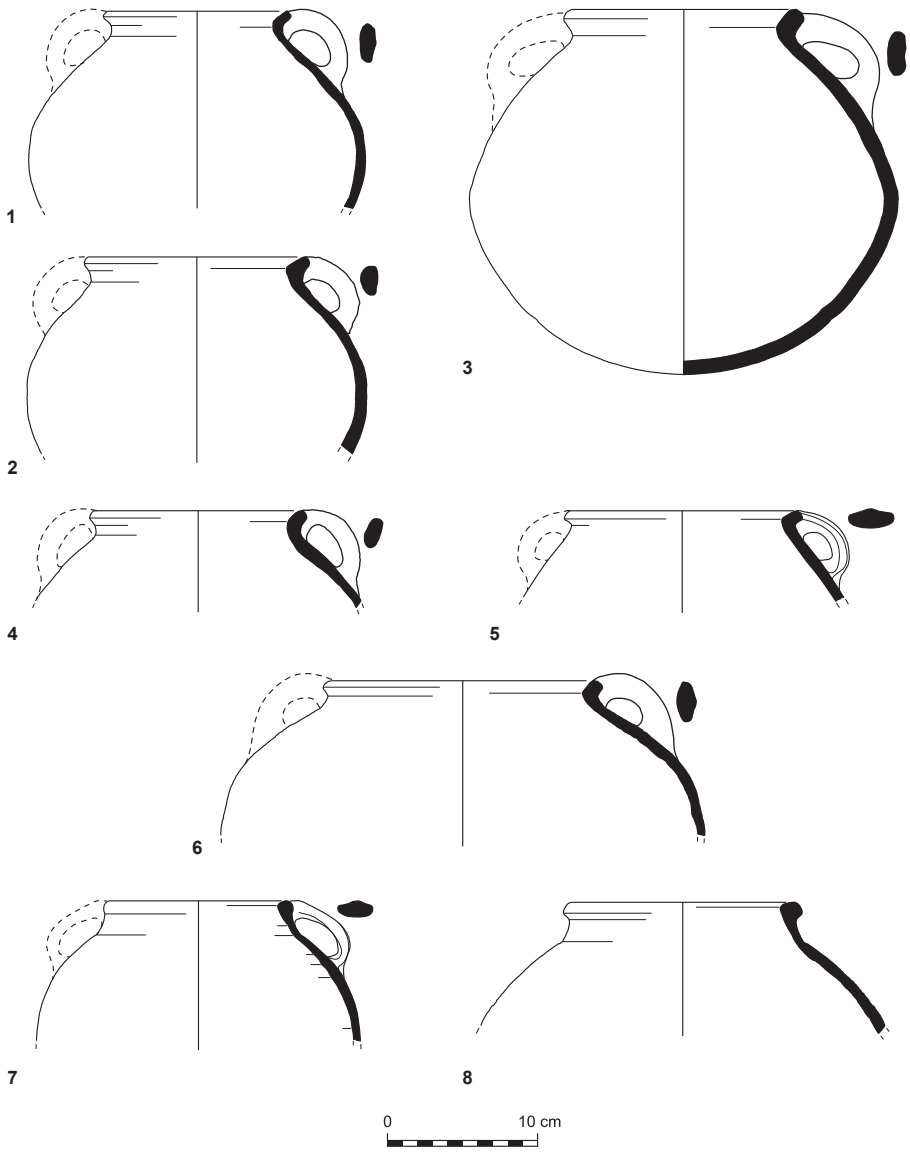

Fig. 4.5: Cooking Pots

No.	*Object*	*Reg. No.*	*Locus*	*Type*	*Elevation*	*Description*	*Photo*
1	Cooking pot	9609/1	13189, 13151	CP1	817.17–816.51	Dark brown clay outside, reddish clay inside, white grits	
2	Cooking pot	9641/2	13174, 13189	CP1	817.29–816.70	Dark brown clay, white grits	
3	Cooking pot	9779/2	13222, 13174	CP1	816.15–816.24	Reddish-brown clay, gray dark clay on base; very thick wall, scrubbed base, handmade or mold in its lower part	Fig. 4.6
4	Cooking pot	9375/2	13045, 13151	CP1	817.13	Reddish-brown clay, white grits	
5	Cooking pot	9814/3	13232	CP1	816.48	Dark brown clay, thick wall (ERC residue sample No. 2391)	
6	Cooking pot	9633/1	13177	CP1	817.10	Dark brown clay outside, reddish clay inside	
7	Cooking pot	9628/2	13174	CP4	816.70	Dark brown clay	
8	Cooking pot	9345/1	13086, 13218	CP4	817.23–816.64	Reddish-brown clay, white grits	

Fig. 4.6: Cooking pot (Fig. 4.5:3).

Closed Cooking Pot (CP4; Fig. 4.5:7–8)

This type has a thickened everted rim and a short inward-turning neck, a rounded body and two handles drawn from the rim to the shoulder. Only a few sherds of this type were found.

Parallels: City of David Area E, Stratum 9 (Zuckerman 2012: Fig. 3.4:10); Armenian Garden (Tushingham 1985: Fig. 17:4–6); Binyanei Haʾuma (Lehmann 2005: Fig. 5:34–38); Holyland Cave 2 (Ben-Arieh 2000: Figs. 10:1–4, 11:1–2); En-Gedi Stratum IV (Stern 2007: Fig. 5.2.4:6,8); Qadum (Stern and Magen 1984: Fig. 7:4); Shechem Stratum V (Lapp 1985: Fig. 7:8, similar but not identical); Khirbet Nisya (Livingston 2003: Pl. 6.1:4); and Tell el-Ḥesi Stratum Vc (Bennett and Blakely 1989: Fig. 151:34). The type is common mainly during the first part of the Persian period. It is included within Stern's Type A (1982: 100; 2015b: Pl. 5.1.6:2,8,11, Types 2 and 3).

JUGS (FIG. 4.7:1–6,17–18)

Jug with Trefoil Rim (JG3; Fig. 4.7:1,3)

This jug type generally has a thickened or plain pinched trefoil rim, a wide neck with a ridge in the middle, a swollen body, a handle drawn from rim to shoulder and a low ring base. Only the upper parts of such jugs were restored from the pit. They are made of light clay. The sherds shown in Fig. 4.7:17–18 should probably also be attributed to this type.

Parallels: Ramat Raḥel (Freud 2018: Figs. 3:17, 7:22, 12:4, 17:11, 20:5–6, 21:10, 26:11, mainly from fills under Floor 380 and Pit 14109)[17]; City of David, Area E, Strata 11–10 (De Groot and Bernick-Greenberg 2012b: 78–79, Type J3b, Fig. 4.23:1); Summit of the City of David, Stratum 10 (Yezerski and Mazar 2015: Fig. 5.9:120–122) and Stratum 9/10 (Freud 2018: Figs. 59:63, 62:81,85–86); En-Gedi Stratum V (Yezerski 2007: Pl. 6:30–31); Lachish Level II (Zimhoni 2004: Fig. 26.54:18); Shechem Stratum V (Lapp 2008: Pl. 2.3:1–10, unpinched rim?); Beth Shemesh, the water reservoir (Bunimovitz and Lederman 2016: 119–123, Figs. 5.57, 5.76), where it is very common; Tell el-Ful (Lapp 1981: Figs. 53–56, Cistern 30 C-1, Stratum IIIB); and Tell en-Naṣbeh (McCown 1947: Pl. 46:15–16, Cistern 127). It was a very common type in Judah during the Iron IIB–C (Mazar and Panitz-Cohen 2001: 120, JG 35; Gitin 2015: 350), and it continued to the 6th century BCE, as evident in the pit and the burial caves at Ketef Hinnom (Barkay 1985: 270, Fig. 126:12) and at ʿAlmit (Dinur and Lipovitz 1988: Fig. 3:2). The type continued to the Persian period with changes (see JG9, Fig. 4.7:2 below).

17 For Pit 14109, see Fulton *et al*. 2015: Fig. 3.

Jug (JG9; Fig. 4.7:2)

This jug has a pinched trefoil rim similar to a clover leaf. Such jugs are made of light Moẓa clay. The type is a later version of JG3 (Fig. 4.7:1,3), with greater flaring of the rim and a short neck. The ridge on the neck is either barely shaped or non-existent.

Parallels: Ramat Raḥel (Freud 2018: Fig. 26:8–10, from Building 824); Holyland (Ben-Arieh 2000: Fig. 12:1–4); and En-Gedi Stratum IV (Stern 2007: Fig. 5.2.6:3). The type was common during the

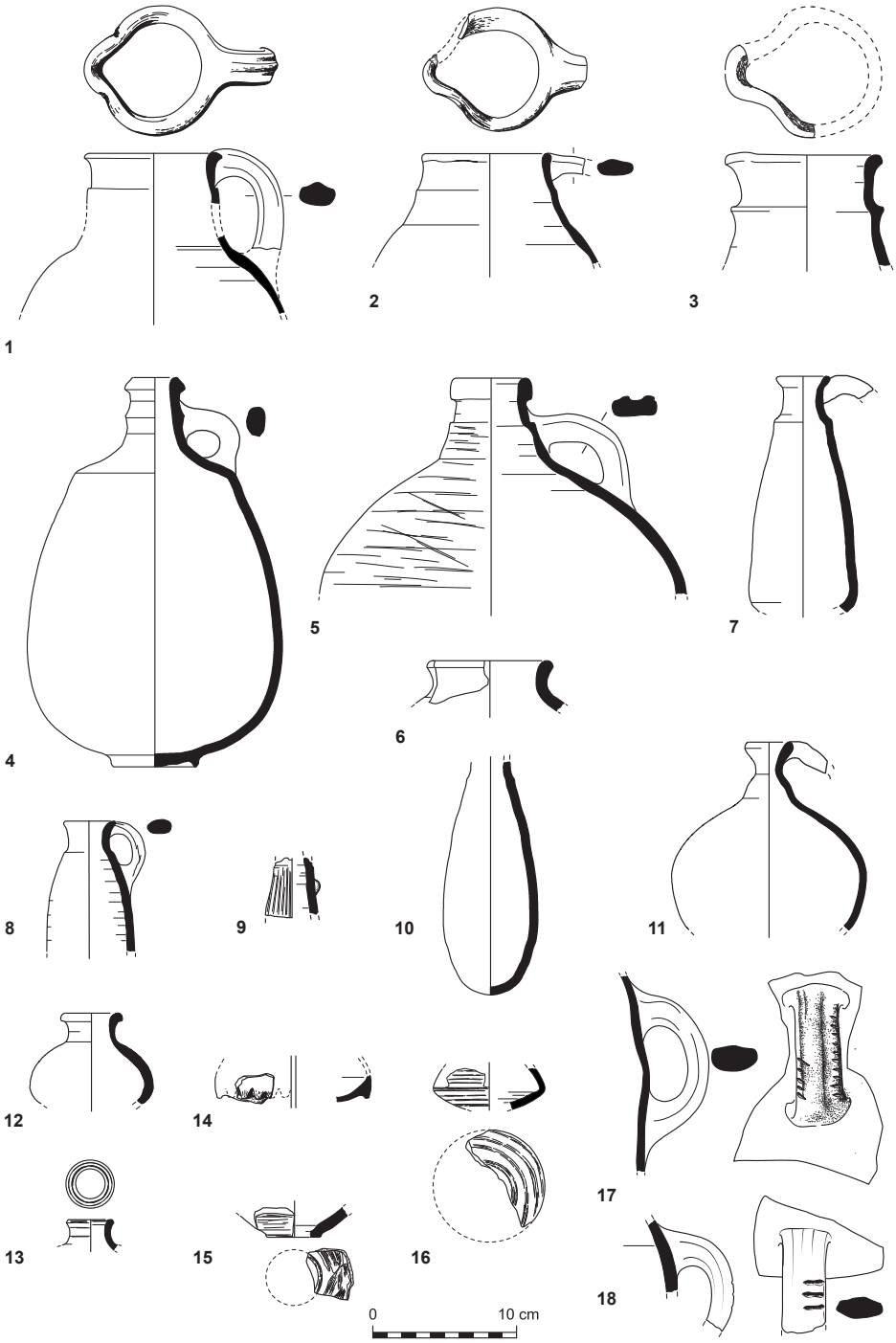

Fig. 4.7: Jugs and juglets.

Fig. 4.7: Jugs and Juglets

No.	*Object*	*Reg. No.*	*Locus*	*Type*	*Elevation*	*Description*	*Photo*
1	Jug	9754/3	13219	JG3	815.58	Light brown-beige clay, small dark grits	
2	Jug	9345/8	13086	JG9	816.64	Light brown pinkish clay, light gray surface, many small white grits	
3	Jug	9667/2	13174	JG3	816.15	Brown clay, dark brown core	
4	Jug	9648/2	13187	JG7	816.83	Dark brown clay	Fig. 4.8
5	Jug	9682/1	13200, 13206, 13219	JG7	816.28–815.58	Light brown clay, pinkish without any burnish	
6	Jug	9736/1	13219	JG8	816.95	Light brown clay, gray core, yellowish burnish lines	
7	Juglet	9734/4	13219, 13174	JT1	817.23–816.95	Brown-pink clay, gray core, many black and white grits	
8	Juglet	9632/1	13171	JT2	816.84	Light brown clay, orange inside	
9	Alabastron	9777/1	13222	JT3		Light brown clay outside, gray core, vertical burnish, small knob handle	
10	Juglet	9340/1	13086	JT9	817.09	Brown clay, many large dark and white grits	
11	Juglet	9580/1	13172	JT8	816.89	Light brown clay, gray core, white grits, surplus unsmoothed clay under rim	
12	Juglet	9618/5	13174	JT5	816.94	Light beige-white clay, scrubbed in lower part, large dark grits	
13	Juglet	9736/3	13219	JT5	816.95	Black clay, gray core, burnish outside	
14	Juglet	9736/2	13219	JT5	816.95	Black surface clay outside, gray clay, white small tiny grits	
15	Juglet	9738/1	13219	JT5	816.95	Black clay, gray core, burnish outside (might belong to No. 13 above)	
16	Juglet	9375/4	13045	JT5	817.13	Gray clay and core, black surface and concentric burnish lines outside (ca. 0.5 cm intervals)	
17	Jug handle	9568/3	13172	JG3/9?	816.89	Gray clay, gray brown surface inside, ten incised lines on one side of the handle and five lines on the other	
18	Jug handle	9360/1	13045	JG3/9?	817.09	Light brown-beige clay, three incised lines on a handle	

Persian period (Stern 2015b: Pl. 5.1.17:5) and continued to the Hellenistic period with straight neck and flaring rim (Berlin 2015: Pl. 6.1.17).

Jug or Decanter (JG7; Figs. 4.7:4–5, 4.8)

This jug, with straight thickened rim, a ridge in the middle of a narrow neck, an elongated body and a ring base, is a later version of the Judahite decanter of the end of the Iron Age (Gitin 2015: Pl. 3.3.7:1–5), but with different varieties of rim and sometimes an asymmetrical piriform body. Such rims are more typical of the jugs of the Persian period. Like some of the late Iron Age decanters, there is neither burnish nor any other external treatment (e.g., Fig. 4.7:4).[18] Alternatively, it may bear sparse transparent burnish, due to the Moẓa clay of which it was made (Fig. 4.7:5).

Parallels: Ramat Raḥel (Freud 2016: Table 16.1: JG2; 2018: Fig. 24:16 from the garden soil); City of David, Area E, Stratum 9 (Zuckerman 2012: Fig. 3.5:5); Summit of the City of David Stratum 9 (Shalev 2015: 210, JG-6, Fig. 4.3:23–25) and Stratum 9/10 (Freud 2018: Figs. 59:48,50, 62:94); Ketef Hinnom (Barkay 1985: Fig. 127:1–3,5–6, and Fig. 141:8 from Cave 34);[19] Holyland (Ben-Arieh 2000: Fig. 12:6–8); ʿAlmit (Dinur and Lipovitz 1988: Fig. 1:5,7–10); En-Gedi Stratum V (Yezerski 2007: Pl. 7:9) and Stratum IV (Stern 2007: Fig. 5.2.6:2); Tel ʿIra (Beit-Arieh, Freud and Baron 1999: Fig. 4.47:9); and Shechem Stratum V (Lapp 2008: Pl. 2.3:14).

Jug (JG8; Fig. 4.7:6)

This jug has a short neck, a rim that curves outside as a continuation of the wall. To the naked eye, jugs of this type seem to be made of Moẓa clay.

Parallels: Ramat Raḥel (Freud 2018: Figs. 18:23,25, 29:14–15, from Area B, Tunnel 4, and Area D1, fills of Building Phase I–II); City of David, Area E, Stratum 9 (Zuckerman 2012: Fig. 3.5:22–23); Summit of the City of David, from Stratum 10-1 (Yezerski and Mazar 2015: Figs. 5.9:134–135, 5.13); Stratum 9/10 (Freud 2018: Figs. 57:31–33, 59:47, 49, 51–53, 56–60, 62:87–89); Shechem Stratum V (Lapp 2008: Pl. 2.3:12–14). So far, only rims of this type have been uncovered; it is not found in 586 BCE destruction layers, and nor is it common in the Persian period.

JUGLETS (FIG. 4.7:7–16)

Small Degenerated Decanter (JT1; Fig. 4.7:7)

This vessel has a sharp carination on the shoulder and close to the base, and a thick wall with no external treatment. Such decanters are made of Moẓa clay.

Parallels: City of David, Area G, Stratum 10, the House of the Bullae (Shiloh 1986: Fig. 6:13–14); Ketef Hinnom (Barkay 1985: Fig. 127:10–13); En-Gedi Stratum V (Yezerski 2007: Pl. 6:17); Lachish Level II (Zimhoni 2004: Fig. 26.52:1–7); and Tell el-Ful (Lapp 1981: Fig. 60:11, Stratum IIIB). The type is more common during the Iron IIC and probably continued later, during the 6th century BCE.

Elongated Dipper Juglet (JT2; Fig. 4.7:8)

This vessel has a simple flaring rim, a rounded base and vertical burnish on the body.

18 Aharoni and Aharoni (1976: 86, Item 8) already noted that some of the Iron IIC decanters are non-burnished. See also at Meẓad Ḥashavyahu (Fantalkin 2001: Fig. 27:8); Arad Strata VII–VI (Singer-Avitz 2002: 155, J14); and Tel ʿIra Stratum VI (Freud 1999: Fig. 6.62:11). The process of change within the decanter type can already be traced in Stratum V at En-Gedi, where some decanters of this type (JG7) were found together with the Judean decanter (JG1) (Yezerski 2007: Pl. 7:9,16).

19 According to Barkay (1985: 274–275, 281), this is the most common of three sub-types in the repository (ca. 60) and there is an equal number of lamps; however, there is no detailed study showing how many items of each sub-type were found.

Fig. 4.8: Jug (Fig. 4.7:4).

Parallels: Ramat Raḥel (Freud 2016: Table 16.1: JT2; 2018: Figs. 12:2, 18:21–22, 20:8, 21:2); City of David, Area E, Stratum 10 (De Groot and Bernick-Greenberg 2012b: Fig. 4.4:2); Summit of the City of David, Stratum 9/10 (Freud 2018: Figs. 59:45, 62:95–96); Holyland Cave 2 (Ben-Arieh 2000: Fig. 11:3); Tell el-Ful (Lapp 1981: Fig. 60:1–6, Stratum IIIB); and En-Gedi Stratum V (Yezerski 2007: Pl. 6:13–15).

These juglets were common from the Iron IIB and continued to the Iron IIC with hardly any change (Herzog and Singer-Avitz 2015: 221, Pl. 2.4.17:5–8; Gitin 2015: 350, Pl. 3.3.7:8–10). At the beginning of the Persian period they are similar in shape to those of the Iron Age (Stern 2015b: Pl. 5.1.18:2–3; Ben-Arieh 2000: Fig. 11:3). As is evident in the juglet from this pit, the most prominent difference lies in the type of clay, which, to the naked eye, seems to have changed from *terra rossa* to Moẓa clay during the Babylonian–Early Persian period.

Alabastron (JT3; Fig. 4.7:9)

This is a cylindrical vessel with a narrow elongated body, a thickened rim, two knobs representing degenerated handles on the shoulder, thick walls and vertical burnish.

Parallels: Ramat Raḥel (Freud 2016: Table 16.1: JT3; 2018: Fig. 46:10); Summit of the City of David, Stratum 9/10 (Freud 2018: Fig. 57:42); Ketef Hinnom (Barkay 1985: 278–279, Fig. 129:1–5 with further references and research); Holyland (Ben-Arieh 2000: Fig. 11:13). It is not a common type, and complete vessels are not known from the 586 BCE destruction layers. The type, common mainly in Ammonite tombs in Transjordan, e.g., Tell el-Mazar (Yassine 1984: Fig. 3:11–16), was dated by Stern (1982: 125–126; 2015b: 576) to the 7th–5th centuries BCE as an imitation of Egyptian alabaster bottles. Such a bottle was found in a burial cave dated to the 5th century BCE at ʿEin ʿArrub (Stern 1971: Fig. 3:6). Barkay (1985: 278–279) defined the Ammon area and the region around Jerusalem as areas where this alabastron is common. He dated these vessels to the end of the Iron Age and the beginning of the 6th century BCE, and attributed their absence in the destruction layers to the fact that they were used mainly in tombs.[20]

Dipper Juglet (JT9; Fig. 4.7:10)

This type has an elongated drop-shaped body, a thick wall and a few vertical burnish lines. Juglets of this type are made of Moẓa clay.

20 Barkay's date is in keeping with the finding from Ramat Raḥel, although they are not from tombs. Fragments of an alabastron were found at Ramat Raḥel in Locus 477 of Aharoni's excavations, dated to the very end of the Iron IIC, the beginning of the 6th century BCE.

Parallels: En-Gedi Stratum IV (Stern 2007: Fig. 5.2.7:15); Tell el-Ful (Lapp 1981: Fig. 60:8, Stratum IIIB); Khirbet Nisya (Livingston 2003: Pl. 6.1:5); Tell en-Naṣbeh (McCown 1947: Pl. 46:26, Cistern 127). It is typical of the Early Persian period (Stern 2015b: Pl. 5.1.18:7).

Juglet (JT8; Fig. 4.7:11)

This juglet has an everted rim and a short funnel-shaped neck; the body is wide and oval. A handle is drawn from the rim to the shoulder.

Parallels: Ramat Raḥel (Aharoni 1964: Fig. 14:8–9 from Pit 484); City of David Area E, Stratum 9 (Zuckerman 2012: Fig. 3.5:13–14); Summit of the City of David Stratum 9 (Shalev 2015: Fig. 4.4:2); Ketef Hinnom (Barkay 1985: Fig. 126:10, large); Holyland (Ben-Arieh 2000: Fig. 12:5); En-Gedi Stratum IV (Stern 2007: Fig. 5.2.7:1); and Tell el-Ful (Lapp 1981: Fig. 61:1–5, Stratum IIIB).

This type appeared at the begining of the Persian period (Stern 1982: 120–121, Globular Juglet, Photo 181) and continued, in a more delicate version, to the Hellenistic period, e.g., from the Jewish Quarter, Area E, Stratum 5, dated to the 2nd century BCE (Geva and Hershkovitz 2006: Pl. 4.2:4). The funnel-shaped rim is a new type unknown in the Iron Age. In Persian and Hellenistic assemblages there are larger jugs of the same shape. Its coarse appearance in Pit 13174 at Ramat Raḥel and at Ketef Hinnom indicates that the type began in the late 6th–early 5th centuries BCE.

Pyxis (JT5; Fig. 4.7:12–16)

This small bottle has a flaring rim, a relatively wide neck, and a swollen globular body slightly flattened on the lower part. Small vessels of this kind are generally made of black clay and are burnished. The juglet represented in Fig. 4.7:12 is exceptional: it is made of whitish clay and is scrubbed in its lower part.

Parallels: Ramat Raḥel, Aharoni's excavations (Gadot and Tal 2016: Fig. 6.9:4–5); Ketef Hinnom (Barkay 1985: 275, Fig. 128:13–14, dated to the 6th century BCE after the destruction); Armenian Garden (Tushingham 1985: Fig. 16:13–14); ʿAin ʿArrub (Stern 1971: Fig. 3:9; 1982: 79, Photo 95). Among the sherds in Pit 13174 there is one with an attached decoration of a denticulate band tilted downward in the middle of the body (Fig. 4.7:14).

Stern included these pyxides among the widely distributed vessels of the 6th century BCE (2001: 343). He suggested (Stern 2015a: Pl. 4.4.6:18) that the type was influenced by Assyrian-style vessels. Hausleiter (2010: Pl. 115) dated such vessels from the 9th to the second part of the 7th centuries BCE. It seems that such juglets were introduced into the southern Levant toward the end of the Iron Age and during the 6th century BCE. The type is not common in the Persian period.

STANDS (FIG. 4.9)

These are hollow cylindrical vessels (Type ST2), smaller and lower than the stand that was common during the Iron IIB–C (Gitin 2015: 351, Pl. 3.3.8:1). The rim and base are similar to the Iron Age stand in shape; some have a narrow waist. The tip is thickened or unshaped. Stands of this type are made either of *terra rossa* or Moẓa clay.

Parallels: Ramat Raḥel (Freud 2016: Table 16.1: ST2, from Pit 484; 2018: Figs. 5:1–2, 8:1, 26:13–14, under Floor 380); Summit of the City of David, Stratum 9/10 (Freud 2018: Fig. 59:132); Holyland (Ben-Arieh 2000: Fig. 18:6); Moẓa Stratum IV (Greenhut and De Groot 2009: Fig. 3.25:2); and Tell el-Ful (Lapp 1981: Fig. 66:9–10, Stratum IIIB). The type probably started during the end of the Iron IIC and continued through the 6th century BCE. It was more common in the Persian period. In the Hellenistic period, a smaller and shorter version was more popular (e.g., stands connected with kilns in Binyanei Haʾuma; Berlin 2005: 43–45).

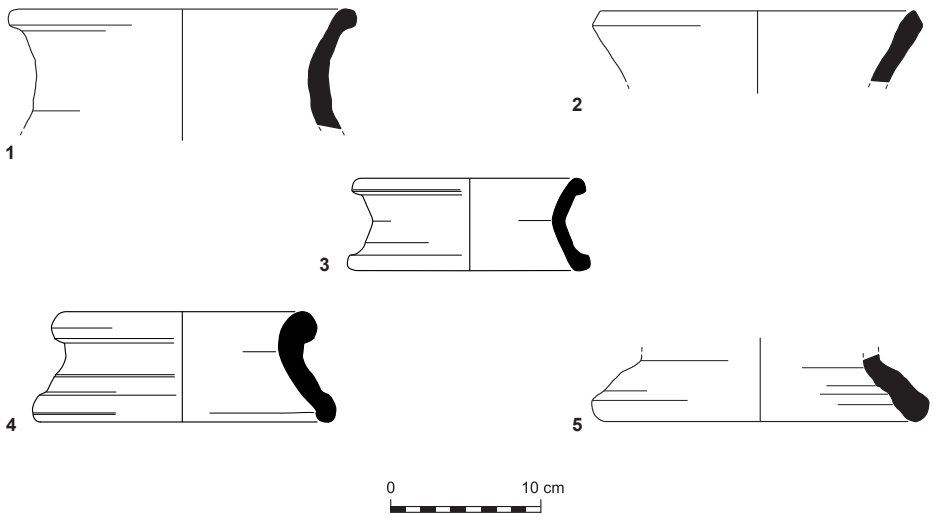

Fig. 4.9: Stands

No.	*Object*	*Reg. No.*	*Locus*	*Type*	*Elevation*	*Description*
1	Stand	9731/1	13219	ST1/2	817.27	Brown clay, dark clay inside, gray core
2	Stand	9661/3	13174	ST2	816.41	Light brown clay
3	Stand	9734/3	13219	ST2	817.23	Light brown clay, gray core, white grits
4	Stand	9334/1	13086	ST2	817.31	Brown-gray clay, gray core
5	Stand	9731/2	13219	ST2	817.27	Brown clay, dark inside, gray core

OIL LAMPS (FIG. 4.10)

All of the lamps, of the open pinched type (L3), are made of brown or light brown clay with white grits.[21] The bases are rounded, flattened, or with small disc bases.

Flat lamps were found at Ramat Raḥel (Freud 2016: Table 16.1: L3; 2018: Figs. 18:30, 20:13–14, 23:11–12, 26:15, in the garden soil, and in Building 824); Summit of the City of David Stratum 9/10 (Freud 2018: Fig. 62:97); Ketef Hinnom (Barkay 1985: Fig. 131:6–12); En-Gedi Stratum V (Yezerski 2007: Pl. 4.11:1–2); Stratum IV (Stern 2007: Pl. 5.2.10:5–8); the Moringa Cave (Shai *et al*. 2009: Fig. 11, dated to the 6th–4th centuries BCE); Tell el-Ful (Lapp 1981: Fig. 70, Stratum IIIB?); and Arad Stratum VI (Singer-Avitz 2002: 158, L3). Flat lamps are known during the end of the Iron Age in Judah, but they are not common as the lamps with the rounded and high bases.[22] They became more common at the beginning of the Persian period (Stern 2001: 343).[23]

The lamps represented in Fig. 4.10:1–2 have a rounded unworked base. The lamp represented in Fig. 4.10:2 has some clay attached to the external side of the base.

21 See Boness and Goren, forthcoming. A change in the lamps' ware was already noted by Franken (2005: 198) in Kenyon's excavations in Jerusalem: "Lamps were never made in clay B (dolomite sand) before the exile and afterwards it is the normal raw material for production of lamps."

22 See Gitin (2015: 351, Pl. 3.3.8:6) and Stratum II at Tel Batash (Mazar and Panitz-Cohen 2001: Figs. 50, 75). The type is more common in sites in the Beer-sheba Valley (Freud 2015: 228–229, L1).

23 Stern (2001: 343; 2015b: 577, Pl. 5.1.23:5–7) pointed to the flat lamp as reflecting Phoenician influence, but that is true only with regard to the very flat lamps of the coast and not the lamps from the mountain area made in the Judahite Iron Age tradition. Tushingham (1985: Fig. 17:14–16) dated such lamps to the second half of the 5th century BCE, but he did not differentiate those made in the Iron Age tradition from the flat wide lamps of the Persian period.

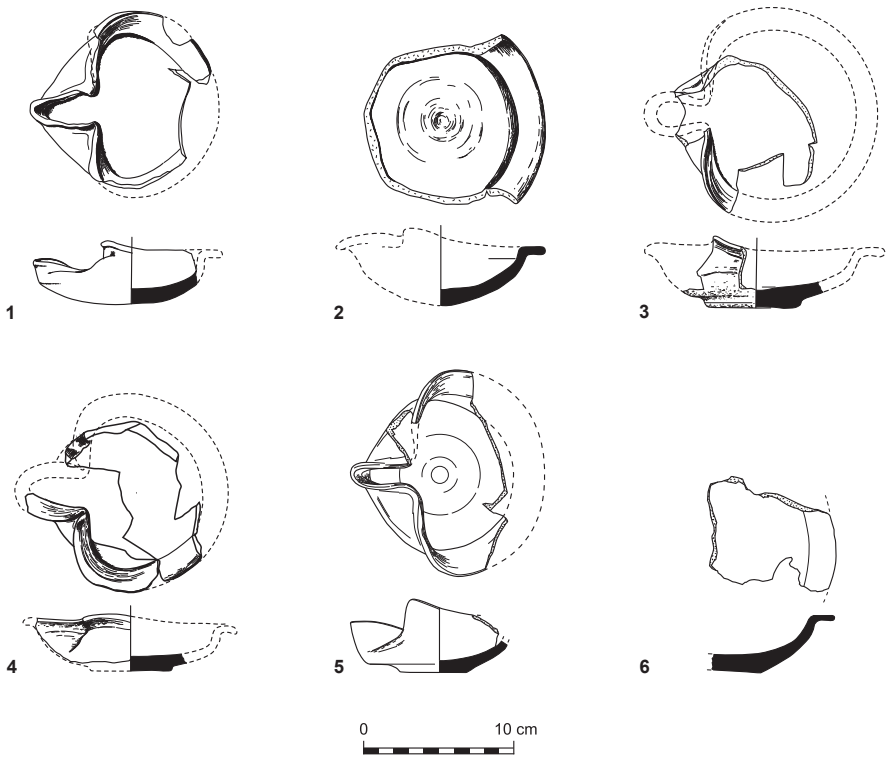

Fig. 4.10: Lamps

No.	*Object*	*Reg. No.*	*Locus*	*Type*	*Elevation*	*Description*
1	Lamp	9747/2	13219	L3	816.75	Light brown clay, dark clay inside, gray core, many small white grits
2	Lamp	9637/5	13174	L3	816.70	Light brown clay, white grits
3	Lamp	9749/2	13219	L3	816.75	Light brown clay, ash signs, large white grits
4	Lamp	9754/2	13219	L3	815.58	Light brown-pink clay, pink core, many small white grits
5	Lamp	9666/1	13174	L3	816.41	Orange and brown-gray clay (see also Chapter 11)
6	Lamp	9813/1	13231	L3	816.64	Reddish brown clay white grits (ERC residue sample No. 2416)

Parallels: Ramat Raḥel (Freud 2018: Fig. 26:15, from Building 824); Jerusalem, City of David, Area E, Stratum 9 (Zuckerman 2012: Fig. 3.7:2–3); Summit of the City of David Stratum 9 (Shalev 2015: Fig. 4.4:10) and Stratum 9/10 (Freud 2018: Fig. 62:97); Holyland Cave 2 (Ben-Arieh 2000: Fig. 18:5); En-Gedi Stratum IV (Stern 2007: Fig. 5.2.10:5,7); Jabel Nimra (Hizmi and Shabtai 1993: Pl. 2:14).

The lamps represented in Fig. 4.10:3–5 have a small disk base. **Parallel**: Jabel Nimra (Hizmi and Shabtai 1993: Pl. 2:12–13).

The lamp represented in Fig. 4.10:6 has a flat base. **Parallel**: Jabel Nimra (Hizmi and Shabtai 1993: Pl. 2:11).

STORAGE JARS (FIGS. 4.11–4.19)

Two main types of jars were found in the assemblage: small bag-shaped jars and the four-handled jars known as *yhwd* jars.[24]

24 As some of these jars bear *yhwd* and other stamp impressions on their handles or shoulder, we labeled them "*yhwd* jars"—analogous to the *lmlk* or rosette jars, thus named after the stamp impressions on their handles (see also Chapter 2).

Bag-Shaped Jars (SJ6 and SJ7; Figs. 4.11–4.12)

Four complete jars of this type were found in the pit. In three of them (SJ6) the Iron Age tradition is well recognized, while the fourth (SJ7) is similar to the Late Persian–Early Hellenistic jars.

The SJ6 bag-shaped jar (Figs. 4.7:1–3, 4.12) is similar to the bag-shaped jar of the Iron IIC (Gitin 2015: Pl. 3.3.5:1–3), but is generally smaller, with rounded rim or a rim nearly square in section, an inward-turning high neck, a body that widens toward the base, and two handles drawn from the shoulder. Since we mostly have only the rims, differentiating between SJ6 vessels and the Iron Age type is very difficult and is based mainly on clay type (Moẓa clay, from the 6th century BCE onward).

Parallels: City of David, Area E, Stratum 9 (Zuckerman 2012: Fig. 3.6:1–4,12); Summit of the City of David Stratum 9 (Shalev 2015: Fig. 4.3:1–4) and Stratum 9/10 (Freud 2018: Figs. 59:54–55, 62:80,82,90[?],106[?],108); Holyland (Ben-Arieh 2000: Figs. 15, 16:14); En-Gedi Stratum IV (Stern 2007: Fig. 5.2.5:1–3); Tel ʿIra from a burial cave dated to the 6th century BCE (Beit-Arieh, Freud and Baron 1999: Fig. 4.47:10); and Azekah, from a burial pit dated to the 5th–early 4th century BCE (Shatil 2016: Fig. 2:6).

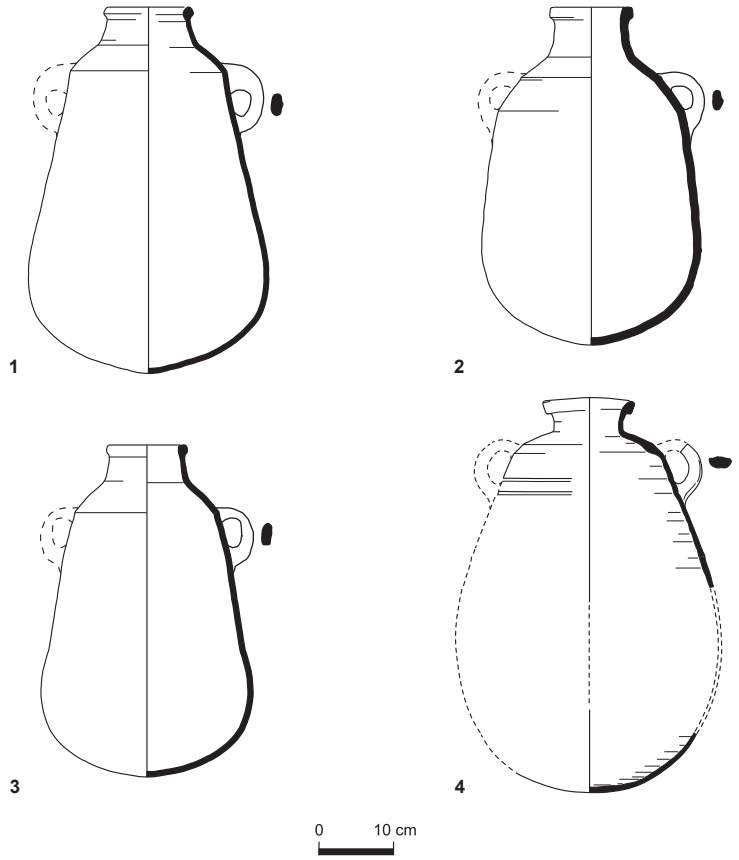

Fig. 4.11: Bag-Shaped Jars

No.	*Object*	*Reg. No.*	*Locus*	*Type*	*Elevation*	*Description*	*Photo*
1	Jar	9661/2	13174, 13222	SJ6	816.95−816.24	Gray clay, white grits	Fig. 4.12:1
2	Jar	9747/1	13219, 13174	SJ6	816.75−815.58	Light brown and beige clay, many white tiny grits	Fig. 4.12:2
3	Jar	9570/2	13171, 13174, 13222	SJ6	816.93−816.24	Brown light orange clay	Fig. 4.12:3
4	Jar	9637/3	13174	SJ7	816.70	Gray-brown clay	

Fig. 4.12: Bag-shaped jars: (1) Fig. 4.11:1; (2) Fig. 4.11:2; (3) Fig. 4.11:3.

The SJ7 bag-shaped jar (Fig. 4.11:4) has a rectangular- or rounded-section rim, an outward-curving short neck, a slightly carinated shoulder, and a swollen body without a waist. Jars of this type are made of Moẓa clay.

Parallels: Ramat Raḥel (Fig. 4.20:17, from fills under the floor above Pit 13174); City of David, Area E, Stratum 9 (Zuckerman 2012: Fig. 3.6:1) and Stratum 8 (Berlin 2012: Figs. 2.2:1–2, 2.3:11,14); the Jewish Quarter (Geva and Hershkovitz 2006: 97, Pl. 4.2:1); Holyland (Ben-Arieh 2000: Fig. 16:11–12); En-Gedi Stratum IV (Stern 2007: Fig. 5.2.5:1); Gibeon (Pritchard 1964: Fig. 32:4); Khirbet Nisya (Livingston 2003: Pl. 6.2:1); Tell en-Naṣbeh (Wampler 1947: Pl. 14:239, dated ca. 650 to Hellenistic); and Shechem Stratum IV (Lapp 2008: Pl. 3.2). The type, a continuation of SJ6, was common in the second half of the Persian period, in assemblages from the 4th century BCE until the Hellenistic period (Berlin 2015: Pl. 6.1.14:1; Stern 2015b: Pl. 5.1.8:5–7; Geva and Hershkovitz 2006: 97).

It may be concluded that the bag-shaped jar continued the common Judean bag-shaped jar of the late Iron Age.[25] It developed with minor changes during the Babylonian, Persian and Early Hellenistic periods (Stern 2015b: Pl. 5.1.8:5–8). The fact that three of the four complete bag-shaped jars from the pit are of the variant closer to the Iron IIC corroborates the notion of continuity in pottery production in Judah and supports a Babylonian–Early Persian time span for the pit.

yhwd Jars (SJ5; Figs. 4.13–4.19)

Eleven four-handled *yhwd* storage jars and the fragments of at least 50 others were found in Pit L13174 (Appendix 4.1). The ware, like that of other Persian period vessels, is very easy to define. It recalls the clay of storage jars stamped with *lmlk* and rosette stamp impressions (Goren and Halperin 2004: 2556), but unlike the *lmlk* and rosette jars, which originated in the Shephelah, the clay of the *yhwd* jars contains numerous very small white grits and can be recognized with the naked eye as belonging to the Moẓa clay and Aminadav sand formation (Boness and Goren, forthcoming; Goren and Halperin 2004: 2556–2557; Gorzalczany 2012). Some of these jars are poorly made, with air bubbles on the walls or with a crushed surface.

There is no doubt that the *yhwd* storage jars are the most numerous of all the vessel types found in the pit. They all share the same morphological features, such as four handles, an ovoid body narrowing at the bottom and a rounded or slightly pointed base. Some of the complete storage jars bear stamp impressions on their handles or on their body, and other stamp impressions have been connected to partly restored storage jars (Chapters 2, 6–9).

25 E.g., City of David Stratum 10 (De Groot and Bernick-Greenberg 2012b: Fig. 4.7:3; and p. 85 for more parallels); En-Gedi Stratum V (Yezerski 2007: Pl. 9:4–8).

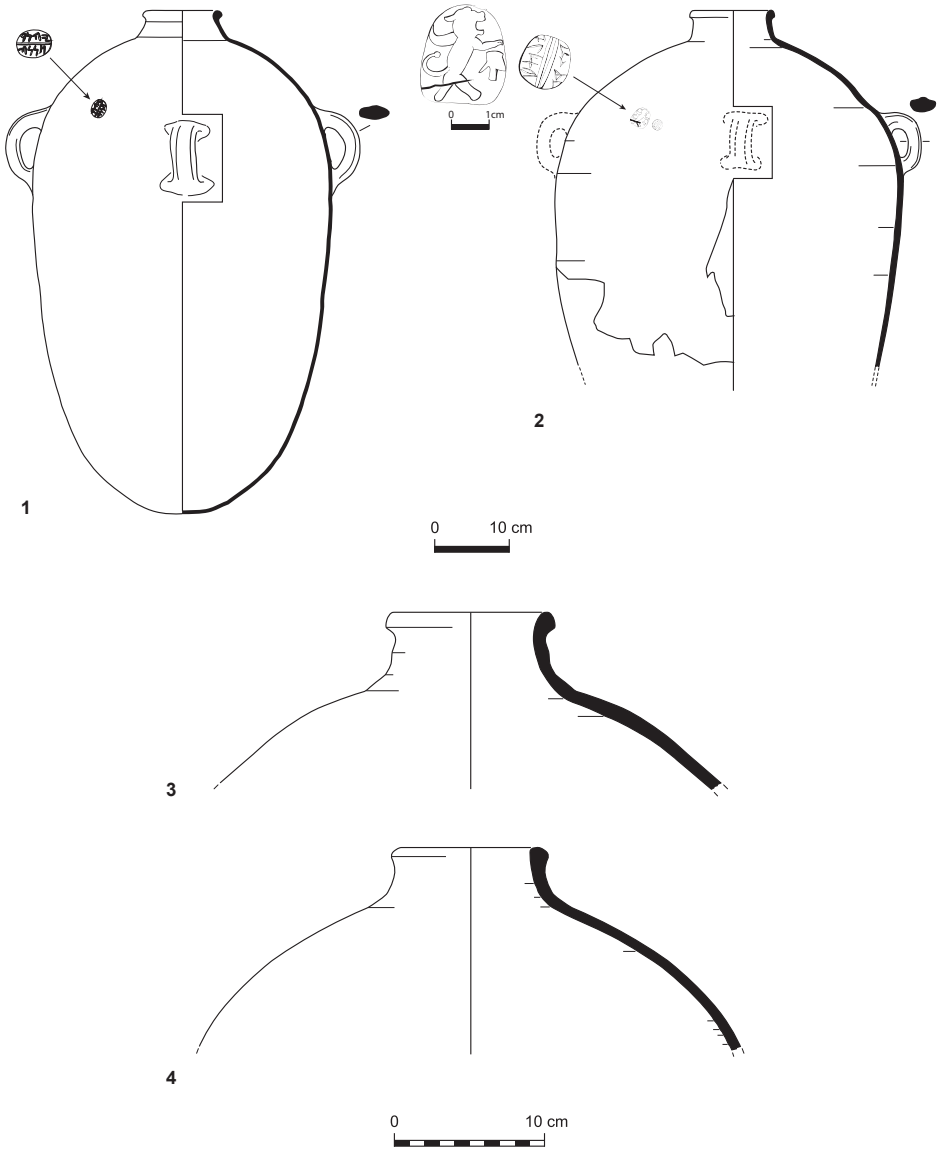

Fig. 4.13: Subtype A *yhwd* Jars

No.	*Object*	*Reg. No.*	*Locus*	*Type*	*Elevation*	*Description*	*Photo*
1	Jar	9628/1	13174, 13171	SJ5	817.24–816.70	Brown-orange clay inside, light brown, gray and red core, many very small white grits; stamp impression 9591/1 with *yhwd ḥnnh* on the shoulder (Chapter 8, No. 1)	Figs. 4.14:2, 4.19:1
2	Jar	9618/6	13174, 13086, 13174	SJ5	816.95–816.64	Light pinkish clay, well smoothed on the outside, very tiny white grits, gray core; except for upper part, two additional large body sherds and small pieces belong to this jar; lion and "private" stamp impression 9626/1 (Chapter 6, No. 3)	Fig. 4.14:1
3	Jar	9799/2	13230, 13045, 13230	SJ5	817.13–816.01	Gray clay and core, many small and few large grits; body sherds in parts not drawing (ERC residue samples Nos. 2418 and 2422)	
4	Jar	9807/1	13231	SJ5	816.95	Gray clay and core (ERC residue sample No. 2396)	

Five out of the seven complete restored vessels have a capacity of 45–48 liters; two others are smaller, with capacities of ca. 36 and 40 liters (Table 4.2). These jars are not as uniform as the *lmlk* and rosette jars. Some have wide shoulders like the *lmlk* jars, while others have more rounded narrow shoulders like the rosette jars. Their bases are more rounded, wider, or sharper toward the base.

The *yhwd* storage jars can be classified into two main subtypes:

Subtype A (SJ5.1; Figs. 4.13–4.14, 4.19.1): This is a small group of storage jars with thickened rim, a relatively high neck and a wide shoulder. Most of these vessels are made of clay that is better sifted and contains smaller grits than the Subtype B storage jars. The storage jar represented in Fig. 4.13:1 has a coarse clay composition that resembles Subtype B vessels to the naked eye.

Two of the restored Subtype A storage jars were stamped on their shoulders. One, shown in Figs. 4.13:1 and 4.14:2, bears a stamp impression on its shoulder that reads *yhwd ḥnnh* and is classified as

Fig. 4.14: Subtype A *yhwd* jars: (1) with lion and "private" stamp impression (Fig. 4.13:2); (2) with *yhwd ḥnnh* impression (Figs. 4.13:1, 4.19:1).

Type 4 according to Lipschits and Vanderhooft (2011: 118–125).[26] The other, shown in Figs. 4.13:2 and 4.14:1, bears two different stamp impressions on the shoulder, stamped next to one another. One is a lion stamp impression, and the other is a 6th-century BCE "private" stamp impression (Chapters 6 and 7).

Three additional fragments of Subtype A storage jars were uncovered with stamp impressions on their shoulder: a small sherd stamped with a lion impression (Chapter 6, No. 2); a small sherd with a "private" stamp impression and the beginning of a lion (?) impression (Chapter 6, No. 4); and a large body sherd (not illustrated) with an unclear stamp impression (Chapter 7, No. 3). Subtype A *yhwd* jars are the closest parallel to the former Judahite four-handled ovoid jar (*lmlk* and rosette storage jars).

Subtype B (SJ5.2; Figs. 4.15–4.19:2–8: Most of the storage jars found in the pit belong to this type, which is characterized by a slightly thickened and outturned rim, a very short neck and rounded and elongated shoulders.

Three of the most complete restored Subtype B storage jars (Figs. 4.15:2–4, 4.16) bear on their handles stamp impressions of the early types of *yhwd* and *yhwʿzr* (Chapter 8). Two of the restored jars bear potter's marks (Figs. 4.17:1, 4.18:1) and round reed impressions (Figs. 4.17:2, 4.18:2) on their handles (Chapter 9). At least six additional handles with stamp impressions of the early *yhwd* types were connected to large body sherds of storage jars (not drawn) (for the stamp impressions, see Chapter 8).

yhwd storage jars without stamp impressions were found mainly in Judah; they date from the 6th century BCE or the Early Persian period. Not surprisingly, these jars were defined by Stern and others as a type limited to Judah,[27] sharing morphological similarities with the Oval Storage Jar type of the 8th–7th centuries BCE, especially with the jars stamped with *lmlk* impressions. Furthermore, these storage jars were understood to be an example of the continuity of the pottery-production tradition in Judah after the destruction of the kingdom and into the Persian period (Stern 2001: 516; Lipschits 2005: 199).

Subtype A parallels: City of David, Area E, Stratum 8, dated to the Hellenistic period (Berlin 2012: 7, Fig. 2.2:3);[28] Holyland Cave 2, Early Persian period (Ben-Arieh 2000: Fig. 16:1,3); En-Gedi, Stratum IV (Stern 1982: 104, Photo 139; 2007: Fig. 5.2.5:5); and Jabel Nimra, Persian period (Hizmi and Shabtai 1993: Figs. 7, 9).[29]

Subtype B parallels: Ramat Raḥel, Building 824 and fills (Lipschits *et al.* 2011: 36, and photo of two jars in Fig. 38b; Freud 2018: Figs. 18:26–27, 20:10, 21:4,12, 27:1–6, 28:14). The storage jars from Building 824 are asymmetric (with a dent in the shoulder, probably the result of a defective drying process), some with a curving outer rim, with hardly any neck; they have a large shoulder and rounded or sharpened bases. Based on other pottery types found with them, they are dated to the second part of the Persian period (Freud 2018: 221). Other parallels are found at the City of David, Area E, Stratum 9 (Zuckerman 2012: Fig. 3.6:11); Summit of the City of David Stratum 9/10 (Freud 2018: Fig. 62:100–104) and Stratum 9 (Shalev 2015: Fig. 4.3:7–8,12–13); Holyland Cave 2, dated to the Early Persian period

26 All the other five specimens of this type of stamp impression appear on the shoulder of jars made with similar clay; see Lipschits and Vanderhooft 2011: 118.

27 Stern 1982: 103; 2001: 516; McCown 1947: 9, No. 40; Ben-Arieh 2000: 13; Mazar and Panitz-Cohen 2001: 187; Bar-Nathan 2002: 22–23; Berlin 2012: 7.

28 The jar was found in Locus 606 with other vessels that may be attributed to the Early Persian period. Berlin (2012: 7) has pointed out that it is a residual form, exhibiting a traditional form retained by Jerusalem's potters for various vessel types.

29 Note that one of the handles is attached lower than the others, just like in the *yhwd* storage jar represented in Fig. 4.13:1, with a stamp impression on its shoulder, and Fig. 4.15:1, with no stamp impression.

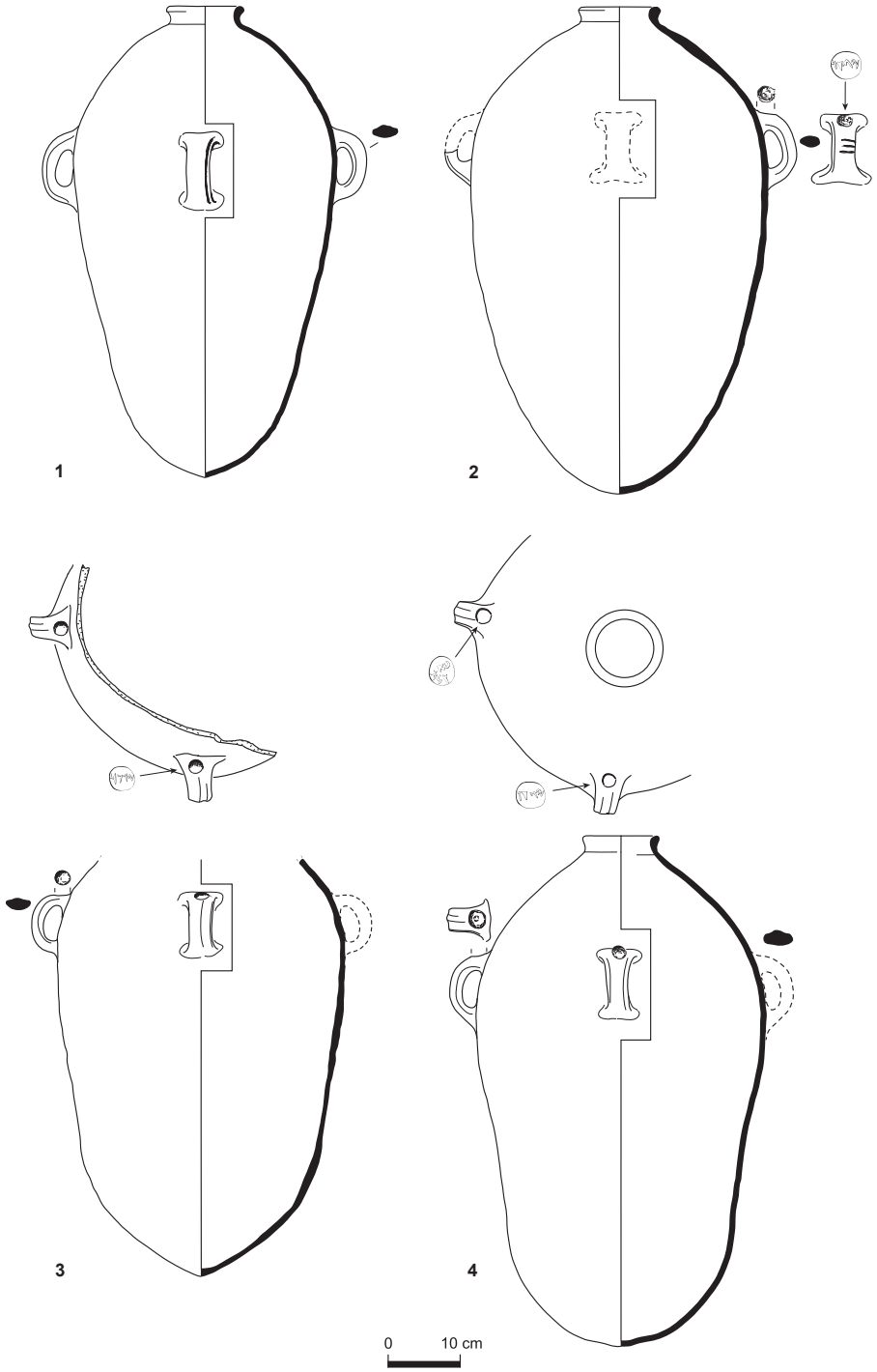

Fig. 4.15: Subtype B *yhwd* jars.

Fig. 4.15: Subtype B *yhwd* Jars

No.	*Object*	*Reg. No.*	*Locus*	*Type*	*Elevation*	*Description*	*Photo*
1	Jar	9570/1	13171, 13172, 13174	SJ5	816.93–816.70	Light brown clay, white grits	Fig. 4.19:2
2	Jar	9375/1	13045, 13086, 13172, 13174	SJ5	817.13–815.47	Light brown clay, yellowish surface, many very small and some large white grits, mending holes on the body; stamp impression No. 9621/1 (Chapter 8, No. 5) on one handle	Figs. 4.16:1, 4.19:3
3	Jar	9667/1	13174, 13205, 13222	SJ5	816.41–816.15	Gray and light brown-reddish clay *yhwd* stamp impressions 9646/2 and 9671/1 (Chapter 8, Nos. 15–16) on each of two handles	Figs. 4.16:2, 4.19:4
4	Jar	9641/1	13174, 13200	SJ5	816.70–816.28	Light brown and gray clay, many very small white grits; Stamp impressions 9631/1 *yhwd*; 9640/1 lyhʿzr (Chapter 8, Nos. 7, 22)	Figs 4.16:3, 4.19:5

Table 4.2: Capacity of *yhwd* Storage Jars (Measured with Computerized Scan Performed by Avshalom Karasik)

Fig. No.	*Reg. No.*	*Exterior Volume (liters)*	*Estimated Net Volume (liters)*	*Stamp Impression*
Fig. 4.15: 1	9570/1	41.28349509	36.02396412	None
Fig. 4.17: 3	9338/1	45.20783211	39.72635373	None
Fig. 4.15: 3	9667/1	50.66691656	45.07244459	*yhwd* and empty stamps
Fig. 4.13: 1	9628/1	53.048838	46.92780725	*yhwd ḥnnh*
Fig. 4.17: 1	9661/1	53.63690781	47.30474486	Potter's mark
Fig. 4.15: 2	9375/1	54.45833697	48.27889894	*yhwd*
Fig. 4.15: 4	9641/1	55.1632263	48.77480734	*yhwd* and *yhwʿzr*

(Ben-Arieh 2000: Figs. 14, 16:2); Khirbat er-Ras (Freud 2018: Fig. 77:8–9); Binyanei Haʾuma, late 7th–early 6th centuries BCE and Persian period (Lehmann 2005: Figs. 2:19, 5:44); Gibeon, cellars Pit D1, 6th–5th century BCE (Pritchard 1964: Fig. 32:8,11);[30] Tell el-Ful, Cistern 30 C-1, Stratum IIIB (Lapp 1981: Fig. 51:1–10); Tell en-Naṣbeh, ca. 600, Hellenistic (Wampler 1947: Pl. 14:240); Khirbet Nisya, Early Persian period (Livingston 2003: Pl. 6.1:2,10); Timnah (Tel Batash), Stratum I (Mazar and Panitz-Cohen 2001: 186–187, Pl. 77:1); Tell el-Ḥesi, Stratum Vd (Bennett and Blakely 1989: Fig. 143:11); Azekah (Shatil 2016: Figs. 11:1–5, 14:8–9); and Tel ʿIra, Stratum VI (Freud 1999: 223, Fig. 6.67:26).[31]

Note that Cave 2 at Holyland is the only place, other than the pit at Ramat Raḥel, where storage jars of both subtypes appeared together.

Typologically, Subtype A probably precedes Subtype B. The Subtype A storage jars share a greater number of similarities with ovoid storage jars dating from the Iron Age than Subtype B. The

30 Lapp assigned the storage jars and the cooking pots found with them to the Persian period (1968: 391).

31 The storage jar and a lamp (Freud 1999: Fig. 6.67:15,26) were mistakenly included in the Stratum VI assemblage. They are probably intrusive and should be separated from Locus 330 and assigned to Stratum V, dated to the Persian period.

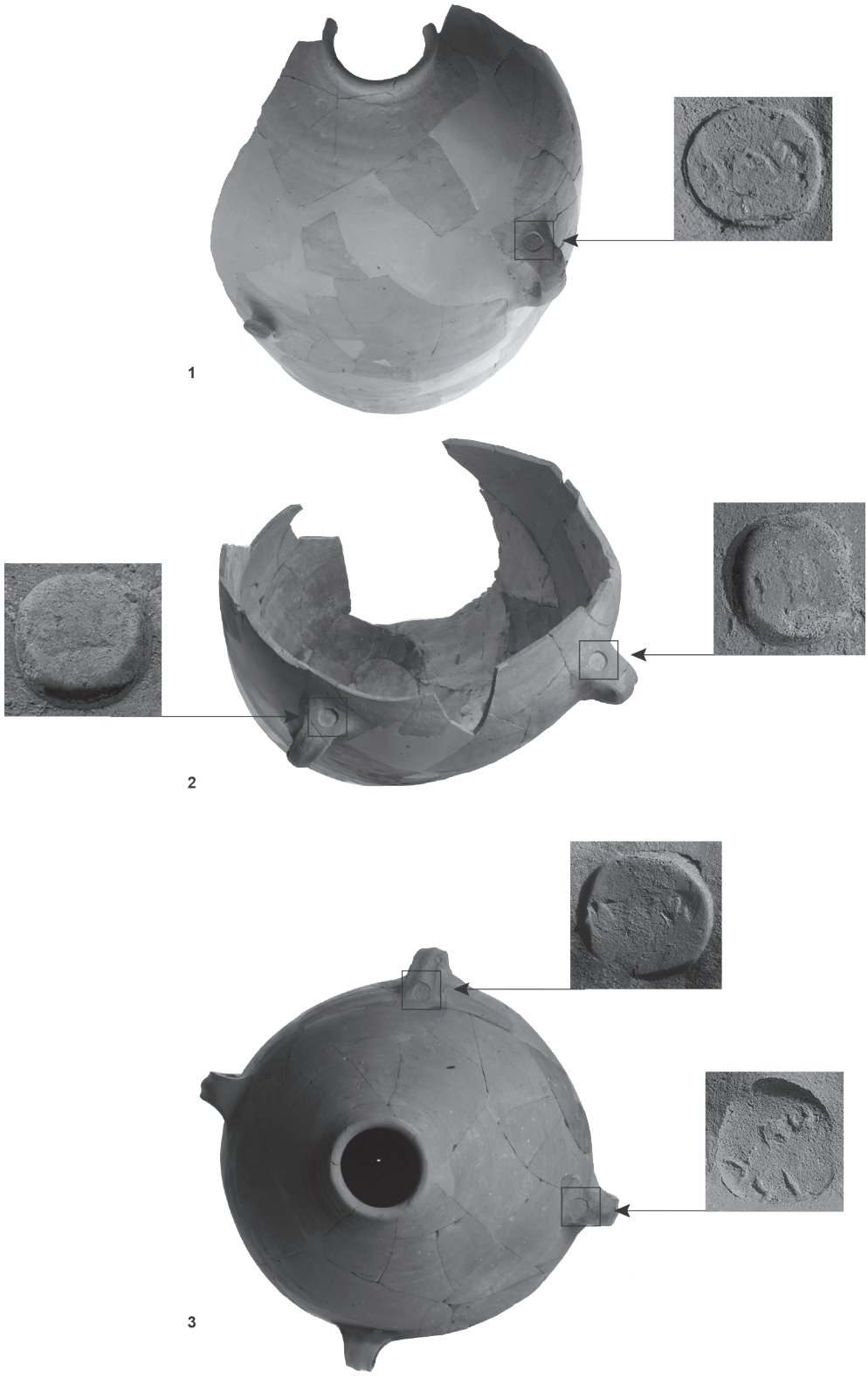

Fig. 4.16: Subtype B *yhwd* jars: (1) Figs. 4.15:2, 4.19:3; (2) Figs. 4.15:3, 4.19:4; (3) Figs. 4.15:4, 4.19:5.

outturned and short rim of Subtype B seems to be a later development, which took place during the Persian period and continued into the Hellenistic period. Interestingly four-handled storage jars dating from the Hellenistic period were found at Beth-Zur and Jericho, but they are larger and have a totally different rim.[32]

POTTERY FROM LOCI ABOVE THE BABYLONIAN-PERSIAN PIT (FIG. 4.20)

Loci above the Babylonian-Persian Pit contained remains of a floor and floor makeup, as well as remains from other pits cutting into it from above (Chapter 3).

Locus 13013 is a floor sealing the pit. The floor and its makeup (Locus 13156) contained sherds from a variety of periods, including a few Iron Age sherds, many Persian sherds (Fig. 4.20:1–7, 17) and Late Hellenistic period sherds (Fig. 4.20:8–16). In addition, two stamp impressions were found: a *yhwd* stamp impression (Reg. No. 9166/1, Locus 13036; Lipschits and Vanderhooft, forthcoming) and a lion stamp impression (Reg. No. 9530/1, Locus 13156; Lipschits and Koch, forthcoming). It is clear that this is not a typical floor assemblage, but instead consists of small sherds that found their way to the floor by chance. Only the latest sherds can be used for dating this floor and consequently the sealing of the pit. Parallels are presented only for the types that do not appear in the pit assemblage described above.

Bowl (Fig. 4.20:1): A rounded bowl similar to bowls (Fig. 4.1:12–13) found in the pit, dated to the Babylonian–Early Persian period.

Bowls (Fig. 4.20:2–3): Identical to the bowls with the outfolded rim (Fig. 4.1:1–3), dated to the Babylonian–Early Persian period.

Bowl (Fig. 4.20:4): Identical in rim shape to the carinated bowl (Fig. 4.1:22), dated to the Persian period.

Mortarium (Fig. 4.20:5): Similar rim in the pit (Fig. 4.3:2), dated to the Persian period.

Krater (Fig. 4.20:6): Wedge decoration outside, under the rim. Similar to kraters without wedge decoration in the pit (Fig. 4.3:6–8). The wedge decoration was associated with the Mesopotamian region (Stern 2001: 516), due to the resemblance of the wedge and reed marks to cuneiform and to Achaemenid metalwork.[33] Such vessels with wedge decoration are generally assigned from the middle of the 6th century BCE to the earlier part of the Persian period (Stern 2001: 515; Zorn 2001). Lately, a wedge decoration on a similar krater was found at Ḥorvat Dir Baʿal (Har-Even and Skolnik 2018: Pl. 2:1), together with the wedged bowls which are more common in the Samaria region, dated to the Persian period (*ibid*.: Pl. 1:10–11).[34] Since the shape of the vessel is local and it is a development of the deep krater or small holemouth jar of the end of the Iron IIC, but already changed from the Iron Age form, I suggest that the wedge decoration found on such types should be dated to the end of the 6th–beginning of the 5th century BCE, the first part of the Persian period, and not to the Babylonian period.

Cooking pot (Fig. 4.20:7): Similar cooking pots were recovered from the pit (Fig. 4.5:1–5).

Cooking pot (Fig. 4.20:8): Dated to the 3rd century BCE (Berlin 2015: Pl. 6.1.7). Parallels: Shechem Stratum IV (Lapp 2008: Pl. 3.38:4, dated to the 3rd–2nd centuries BCE); Jericho (Bar-Nathan 2002: 170–171, J–CP1–2, 2nd century BCE).

32 For the Beth-Zur storage jar, see Lapp and Lapp 1968: Fig. 29:1, Pl. 35a. For the storage jars discovered at the Hasmonean palaces at Jericho, see Bar-Nathan 2002: 22–23, Pl. 1, No. 1, dated to the 2nd century BCE, but indicating its Iron Age tradition. At Ramat Raḥel a large storage jar, similar to the above Jericho and Beth-Zur jars, was found in the fills of columbarium Ug7.

33 Zorn's suggestion (2001) that the wedge decoration originated in the Arabian peninsula is hard to accept. Such decoration was not widespread in Arabia, nor was the shape of the vessel. In Judah it was very common.

34 On the wedged bowls, see Itach, Aster and Ben-Shlomo 2017 (with research overview).

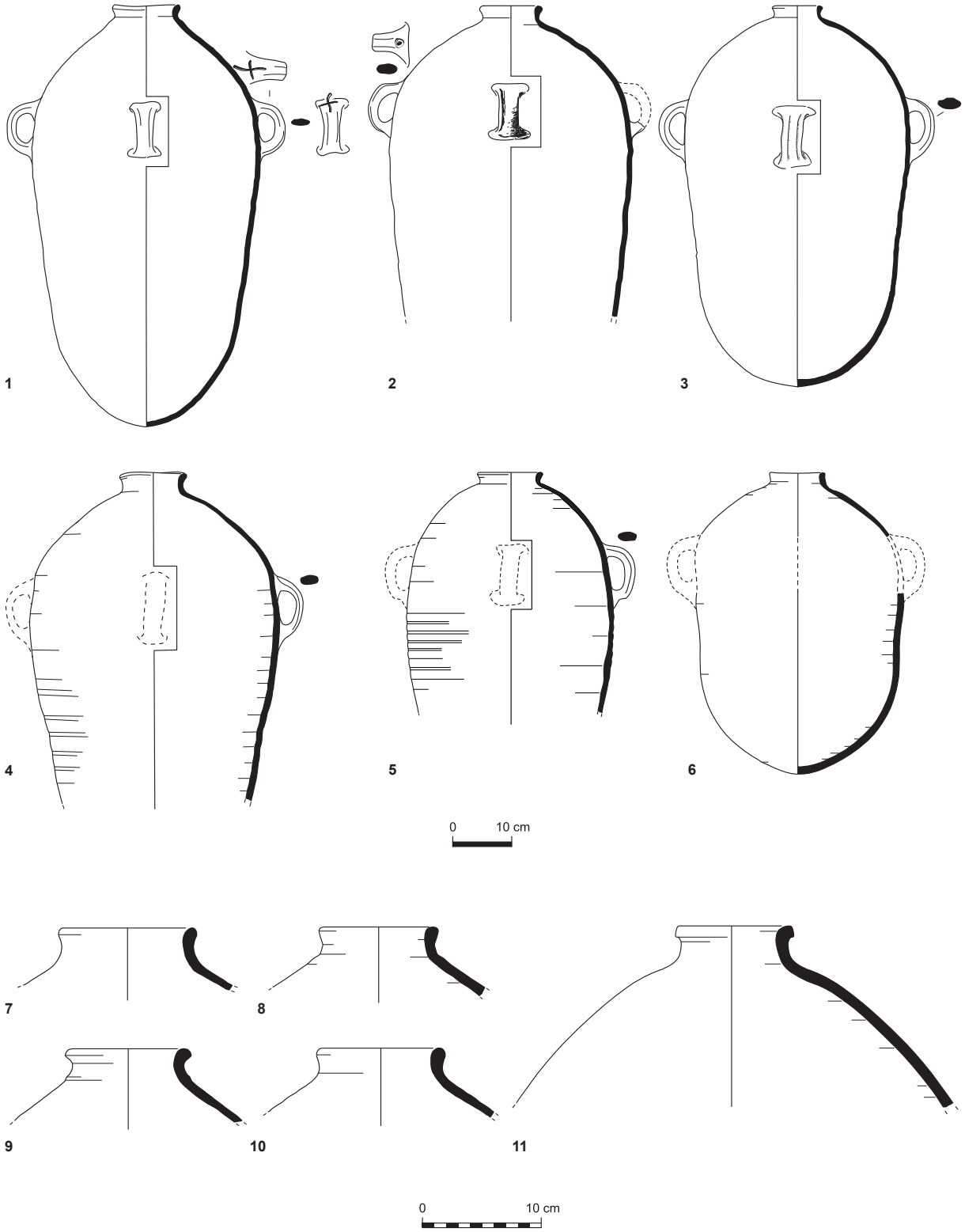

Fig. 4.17: Subtype B *yhwd* jars.

Fig. 4.17: Subtype B *yhwd* Jars

No.	*Object*	*Reg. No.*	*Locus*	*Type*	*Elevation*	*Description*	*Photo*
1	Jar	9661/1	13174, 13205	SJ5	816.41–816.15	Orange brown clay inside, brown gray surface outside, uneven wall on part of the body; potter's mark on one handle (Chapter 9, Fig. 9.1:4)	Figs. 4.18:1, 4.19:6
2	Jar	9646/4	13174	SJ5	816.70–816.41	Gray clay, many white grits; rounded incision 9655/1 (Chapter 9, Fig. 9.1:5) on handle (see also Chapter 11)	Figs. 4.18:2, 4.19:7
3	Jar	9338/1	13086	SJ5	817.40–816.64	Light brown clay, many small white grits	Fig. 4.19:8
4	Jar	9637/7	13174, 13086, 13222	SJ5	817.06–816.24	Light brown clay, brown core, a few large white grits and many small ones	
5	Jar	9345/10	13086, 13172, 13174	SJ5	816.94–816.64	Light brown and orange clay, many small and some large white grits, gray clay	
6	Jar	9811/1	13231, 13219	SJ5	817.03–815.58	Reddish brown clay, light brown core, many very small white grits (ERC residue sample No. 2409)	
7	Jar	9637/2	13174	SJ5	816.70	Light brown clay outside, reddish clay inside, white small grits	
8	Jar	9813/2	13231	SJ5	816.64	Light brown clay outside, gray and gray core inside, white grits (ERC residue sample No. 2415)	
9	Jar	9779/3	13222, 13174, 13222	SJ5	816.94–816.24	Reddish-brown clay, body and base in parts (not drawn)	
10	Jar	9661/4	13174, 13171	SJ5	816.84–816.41	Brown clay, many white grits, gray core	
11	Jar	9598/1	13171	SJ5	816.84	Orange-light brown clay, orange-reddish core, few large white grits	

Jug (Fig. 4.20:9): Short ledge rim, long wide neck. Parallels: Similar rim to an amphora from Tel Michal (Stern 2015b: Pl. 5.1.15:4).

Flask or jug (Fig. 4.20:10) and jug (Fig. 4.20:11): These are of the degenerated decanter type of the Persian period (Fig. 4.7:4–5).

Ungentarium (Fig. 4.20:12). Parallels: Shechem. Lapp (2008: 54, Pl. 3.26) noted that the slender and tall form was common by the 2nd century BCE, but there are already stratified specimens from the late 4th and 3rd centuries BCE.

Jar (Fig. 4.20:13): Similar to the rims of the *yhwd* jar Subtype B (Fig. 4.17:8); City of David Area E, Stratum 9 (Zuckerman 2012: Fig. 3.6:3–4).

Storage jar (Fig. 4.20:14): similar to the bag-shaped jar (Fig. 4.11:3). Parallels: City of David, Area E, Stratum 9 (Zuckerman 2012: Fig. 3.6:10).

Storage jar with short collar rim (Fig. 4.20:15–16). Parallels: Jewish Quarter (Geva 2003: Fig. 5.1:SJ3a, most common in the second part of the 2nd century BCE.); Shechem Strata IIIA–II (Lapp

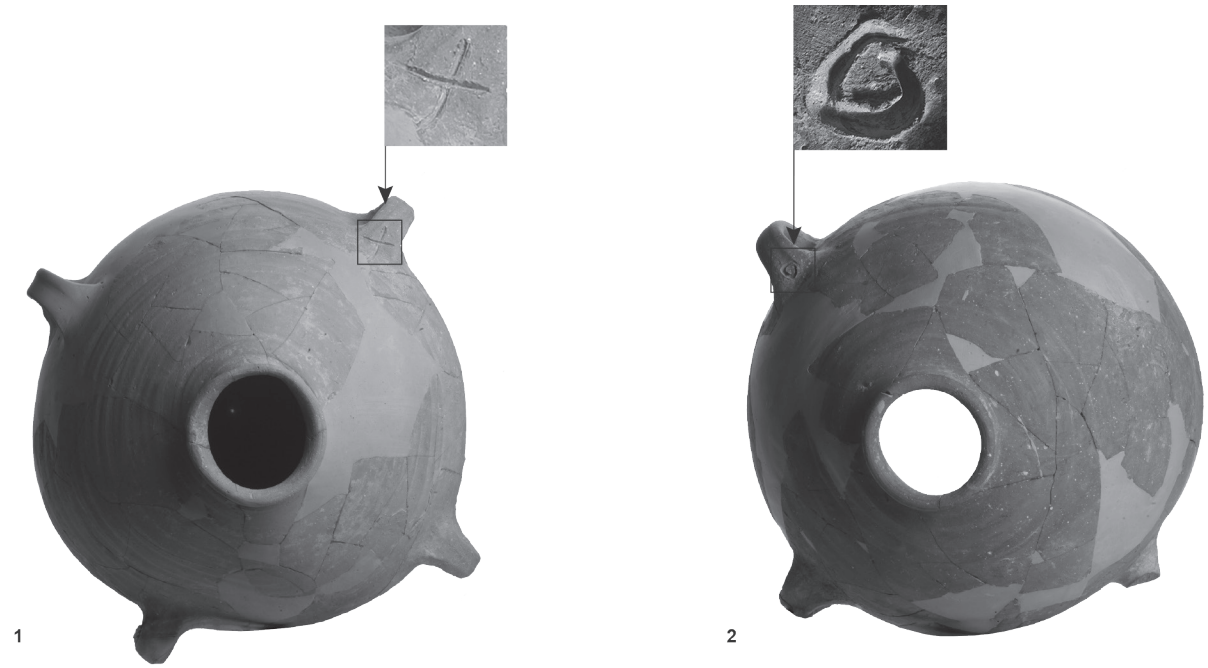

Fig. 4.18: Incised *yhwd* jars: (1) Figs. 4.17:1, 4.19:6; (2) Figs. 4.17:2, 4.19:7.

2008: Pl. 3.10:3,11, end of 3rd–2nd centuries BCE); see also Berlin 2015: Pl. 6.1.14:2 from Stratum IVB at Tell el-Ful.

Jar (Fig. 4.20:17), similar to Fig. 4.11:4. Parallels: City of David, Area E, Stratum 9 (Zuckerman 2012: Fig. 3.6:1) and Stratum 8 (Berlin 2012: Fig. 2.3:11,14); Jewish Quarter, Areas W and X-2 (Geva 2003: Fig. 5.1: Type SJ1b, dated to the 2nd century BCE, but belonging to the group of vessels that continue from the Early Hellenistic); and Area E, Stratum V (Geva and Hershkovitz 2006: 97, Pl. 4.2:1, where they "reflect an earlier tradition common in the Late Persian–Early Hellenistic period"); and Shechem Stratum IV, where Lapp (2008: Pl. 3.2) described it as the earliest Hellenistic type, which had its beginnings late in the Persian period.

The latest sherds scattered on this floor are dated to the Late Hellenistic period. We may conclude, therefore, on the basis of the material from the floors and the makeup beneath it, that the pit was sealed sometime between the end of the Persian period and the Hellenistic period. This conclusion is in keeping with the fact that no sherds later than the Persian period were found in the pit.

DISCUSSION

With the exception of the cooking pots (CP1, Fig. 4.5:1–6), not a single vessel known from the 586 BCE destruction layers was found among the complete vessels in the pit. Nonetheless, petrographic analyses have shown that such cooking pots from the pit were made of a different type of clay than those found, for example, under Floor 380 of the courtyard at Ramat Raḥel. Among the bowl assemblage, the flat ones, the bowls with outfolded rim and those with a band attached beneath the rim (Figs. 4.1:1–3,8,11) are clearly of late Iron Age tradition and shape and are typical of the 6th century BCE. Most of the types recovered from the pit are carinated bowls, straight-sided bowls, bowls with ledge rim, and bowls with thick rim and wall (Fig. 4.1:4–7,12–21). Some appeared already in the 6th century BCE, but they are well known during the Persian period. The few bowls with inward-turned rim found here (Fig. 4.1:22) are more common during the second part of the Persian period. Among the kraters, one (Fig. 4.3:1) was dated

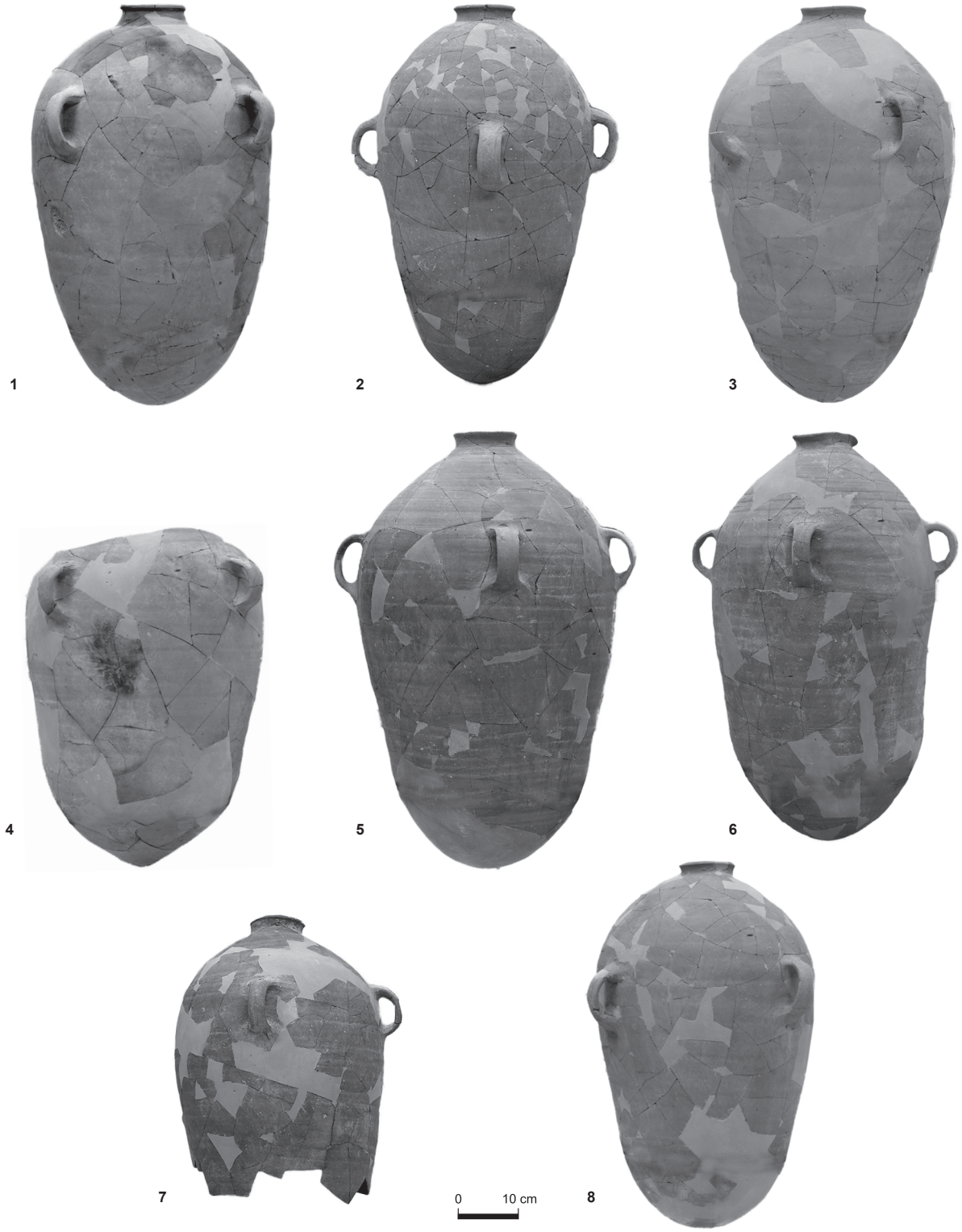

Fig. 4.19: *yhwd* jars: (1) Figs. 4.13:1, 4.14:2; (2) Fig. 4.15:1; (3) Figs. 4.15:2, 4.16:1; (4) Figs. 4.15:3, 4.16:2; (5) Figs. 4.15:4, 4.16:3; (6) Figs. 4.17:1, 4.18:1; (7) Figs. 4.17:2, 4.18:2; (8) Fig. 4.17:3.

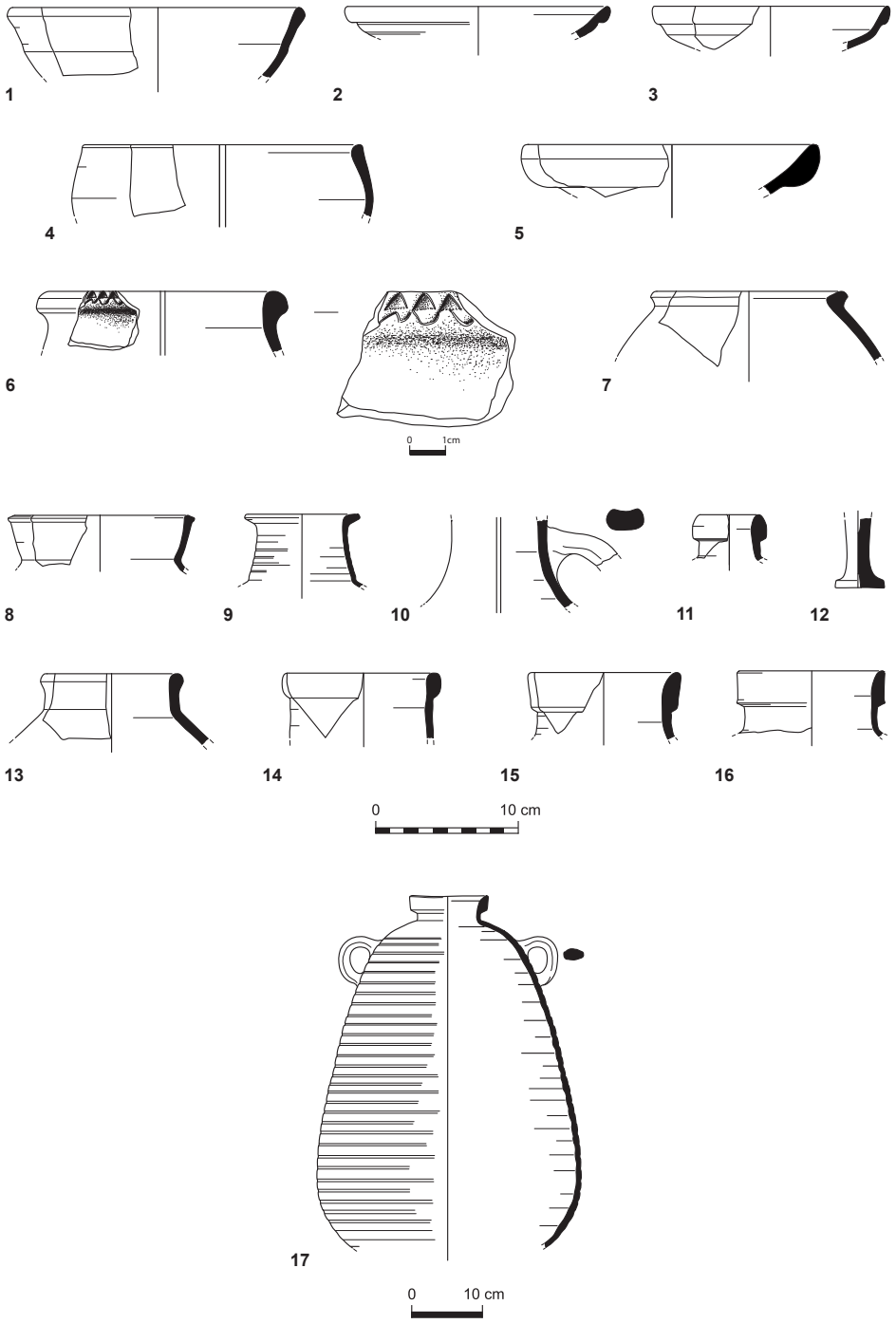

Fig. 4.20: Pottery from floor above the Babylonian-Persian Pit: Phase D1-7, Final Locus 13013 (13008, 13084, 13156) and floor makeup (Locus 13036), Area D1.

Fig. 4.20: Pottery from Floor above the Babylonian-Persian Pit: Phase D1-7, Final Locus 13013 (13008, 13084, 13156) and Floor Makeup (Locus 13036), Area D1

No.	*Object*	*Reg. No.*	*Locus*	*Type*	*Elevation*	*Description*
1	Bowl	9305/2	13084	B18	817.60	Light brown clay, black ash traces outside
2	Bowl	9151/6	13036	B25	817.55	Light brown and orange clay, white tiny grits
3	Bowl	9161/4	13036	B25	817.42	Light orange brown clay outside, light gray inside, white grits
4	Bowl	9151/5	13036	B31	817.55	Light brown clay, white grits
5	Krater	9124/1	13013	K2	817.79	Greenish clay outside, light gray clay many dark grits
6	Krater	9132/1	13013	K9	817.76	Beige clay, wedge and incised line decoration on rim
7	Cooking pot	9110/2	13008	CP1	818.04	Reddish brown clay
8	Cooking pot	9151/3	13036	Hell	817.55	Brown clay
9	Jug	9530/3	13156	Hell.	817.43	Dark brown clay, gray core
10	Flask/jug	9305/1	13084	Hell.	817.60	Dark brown clay inside, light brown-beige outside
11	Jug	9151/1	13036	JG7	817.55	Brown-orange clay, gray core
12	Juglet	9530/2	13156	Hell.	817.43	Reddish clay, pinkish surface
13	Jug/jar	9161/2	13036	Hell.	817.42	Beige clay outside, reddish-brown inside, white grits
14	Jar	9110/1	13008	Hell.	818.04	Whitish light brown clay outside, reddish inside, many very tiny white grits
15	Jar	9530/5	13156	Hell.	817.43	Whitish surface, reddish clay, gray core
16	Jar	9530/4	13156	Hell.	817.43	Gray clay
17	Jar	9532/1	13156	SJ7	817.43	Light brown clay, gray core, many very small white grits

to the 6th century BCE, and the others (Fig. 4.3:2–9) to the Persian period. Among the jugs and juglets, most are dated to the 6th–5th centuries BCE. Juglets (Fig. 4.7:10–11) are exceptional; they reached their peak during the Late Persian and Early Hellenistic periods, but exemplars were found already in 5th-century BCE assemblages. Their material and careless finish suggest that such juglets discovered in the pit might alternatively belong to the Early Persian period. The lamps (Fig. 4.10), with rounded or flat bases, are similar to the flat-based lamps of the Iron Age, but were made of the Moẓa clay typical of the Persian period. Among the bag-shaped jars, three (Fig. 4.11:1–3) are similar to those of the Iron Age and one (Fig. 4.11:4) is similar to the Late Persian–Hellenistic jars. The *yhwd* jar has two subtypes. One (Fig. 4.13) is a straight-necked jar. Stamp impressions found on the body of jars of this type are from the 6th and early 5th centuries BCE (lion stamp impressions, 6th-century BCE "private" stamp impressions and *yhwd ḥnnh*, one of the early types of *yhwd* impressions; see Chapters 6 and 7). Only a few were encountered in the assemblage. Most of the jars in the pit belong to the second subtype (Figs. 4.15–4.19:2–8), with outcurving short neck and with *yhwd* stamp impressions on their shoulder; these are dated to the Early Persian period (Chapter 8).[35] Both subtypes have rounded shoulders and elongated bodies, recalling the rosette-stamped jar of the late 7th–early 6th centuries BCE, except for the more rounded base. They also lack uniformity and exhibit differences in size and capacity. They are all made

35 The *yhwd* stamp impressions found on complete or almost complete storage jars belong to Lipschits and Vanderhooft's Types 6 and 10 (2011), dated to the 5th century BCE. The stamp impressions on handles that could not be connected to jars belong to Types 14 and 15 (Lipschits and Vanderhooft 2011), dated to the 4th century BCE.

of Moẓa clay, but there is considerable variation in the clay composition and in the amount and size of the inclusions added to the clay.

The number of vessel types suggests that from the 6th century BCE there is a larger representation of types, but the number of items is relatively small. In contrast, most of the items in the assemblage are well known from the Persian period, especially from its earliest phase in the 5th century BCE. A few types, such as the bowl represented in Fig. 4.1:22 and the jar shown in Fig. 4.11:4, are more characteristic of the 4th century BCE.

It is evident that some of the early types are close to their Iron Age prototype (e.g., the bowls with outfolded rim, the cooking pots, the lamps, the bag-shaped jars and some of the *yhwd* jars). Obviously, the former Iron Age vessels were familiar to the potters, who imitated them or continued to manufacture similar vessels in different types of clay. It seems likely, therefore, that the types that exhibit a close Iron Age tradition should be dated to not long after the 586 BCE destruction and should be assigned to the 6th century BCE. Other types in the pit have parallels in assemblages dated to the Early Persian period. Support for this Early Persian dating also derives from the date of the four imported Attic sherds (Chapter 5).[36]

The importance of the assemblage from the pit lies mainly in the four-handled *yhwd* jars and the stamp impressions found on them. This is the first time that a specific type of jar can be assigned to the lion stamp impressions and especially the *yhwd* stamp impressions on jar handles or body jars.[37] The similarity in shape between the *yhwd* jars and the earlier *lmlk* jars is significant in our understanding of the continuity in Judean administration between the late 8th and 2nd centuries BCE under successive Assyrian, Babylonian and Persian rule and later under Ptolemaic and Seleucid rule (Chapter 13).

Since it is not possible to obtain an absolute dating of the pottery assemblage discovered in the pit, its relative dating should be achieved by evaluating all possible factors: formation processes, stratigraphy, local pottery typology and the date of imported items.

As discussed in Chapter 3, Pit 13174 utilized a subterranean space rock-cut during the Iron Age; only after the space went out of use and its walls were robbed was it filled up. Its *terminus post quem*, however, is the late Iron Age (Building Phase II).

The *terminus ad quem* of the pit is the Early Hellenistic period, as indicated by the pottery resting on the floor above the pit and its makeup (Fig. 4.20). Restoration of the vessels from the pit has shown that its contents accumulated in a single event when all the vessels were brought from their place of use and thrown into the pit. This, however, does not entail a narrow timespan for the vessels. Just as is the case for destruction layers, which are dated according to the latest vessels in the assemblage, pottery vessels arrive at the site gradually, and consequently, at any given moment, the vessels will be dated to a chronological range. This is especially true with regard to storage jars, since they are not moved as much as smaller vessels and therefore tend to stay intact for longer periods. Consequently, the pottery assemblage from the pit should display a chronological range that ends when the vessels were thrown into the pit but begins earlier—when the vessels were brought to the storage place. We may reconstruct two possibilities: one is that the storehouse was in use not only in the 6th–5th centuries BCE, but for a long period later, until its contents were emptied into the pit. The other is that the storehouse was in use in the 6th and 5th centuries BCE, at which point it was abandoned with the vessels inside. In this scenario, activity

36 Admittedly, these are small sherds and not complete vessels, and consequently, they be strays. Typologically, however, they all date from the early 5th century BCE.

37 Exceptional is a late *yhwd* stamp impression of Type 16 (Lipschits and Vanderhooft 2011: 655), found on a Hellenistic bag-shaped jar from Aharoni's excavations at Ramat Raḥel, Stratum IVB (Aharoni 1964: Fig. 11:14).

in the edifice continued, and various later vessels—some with stamp impressions—rolled into it. Only at a much later date, probably in the Early Hellenistic period, was it cleaned out and all the vessels were thrown into the pit.

The typological discussion above suggests that the vessel types retrieved from the pit can be classified into two groups: types already known in the first half of the 6th century BCE and types assigned mainly to the first part of the Persian period (the end of the 6th and the 5th centuries BCE). The contents of the pit, therefore, belong to a narrow chronological timespan from the mid-6th and the 5th centuries BCE and should be assigned to the Babylonian–Early Persian period.

APPENDIX 4.1

LIST OF INCOMPLETE AND UNRESTORED VESSELS FROM PIT 13174

No.	*Uncatalogued Vessel*	*Loci*	*Description*
1	*yhwd* jar, lower part	13086, 13172, 13188	About 30 cm long, gray clay, whitish surface
2	*yhwd* jar, body sherds	13086	Ca. 20 large sherds
3	Lower part of *yhwd* jar	13174	Ca. 1/8 of the jar; beige-brown surface, orange clay, gray core, white grits
4	Body sherds and 3 handles of *yhwd* jar	13171, 13172, 13174, 13206, 13222	
5	Lower part of *yhwd* jar without base	13174, 13219, 13222	Ca. 1/8 of the jar
6	Body sherds of *yhwd* jar	13172, 13174, 13219, 13222	
7	Body sherds of *yhwd* jar	13086	Gray surface, orange core, white grits
8	Body sherds and two handles of *yhwd* jars	13171, 13219, 13036	
9	Body sherds of *yhwd* jar	13086, 13174	Pink clay on the interior, sherds might belong to more than one jar
10	17 handles of different *yhwd* jars	13086, 13172, 13174, 13218, 13219, 13222	
11	Body sherd and handle of *yhwd* jar	13174	Light brown clay, well-sorted inclusions
12	Neck, shoulder, handles, body sherds and base of *yhwd* jar	13045, 13200, 13218, 13219	Beige clay, orange surface vertically smoothed, several sherds join together
13	*yhwd* jar with rim, body sherds, handles and base	13086, 13174 13174 13219, 13222	Gray and pinkish clay, some sherds with crushed surface as result of air bubbles; number of handles and base sherds suggest that they might belong to more than one jar
14	Base and body sherds with handle of *yhwd* jar	13086, 13219,	Light brown clay
15	Base of *yhwd* jar	13174	Light brown-pinkish clay
16	Body sherds toward base of *yhwd* jar	13171, 13174, 13222	Many small sherds
17	*yhwd* jar rim and body sherds, including shoulder, handle and base	13172, 13174, 13219	Light brown clay, dark reddish surface outside, black core
18	Base of *yhwd* jar	13174, 13036	Light brown clay, gray core
19	Lower part of *yhwd* jar, including base	13086, 13174, 13219, 13222	Gray clay with many air bubbles and crushed surface, three mending holes
20	Shoulder with four handles, body and base of *yhwd* jar	13174, 13188, 13189, 13205, 13219, 13222	Light brown clay outside, brown and black-brown inside, many small and large grits, thick wall
21	Body sherds and base of ca. third of a jar	13174, 13222	Brown-orange clay outside, gray inside
22	Lower part toward base of a jar with delicate vertical burnish lines	13171, 13174, 13151	Gray clay
23	Lower part of *yhwd* jar, distorted at base	13045, 13086, 13171, 13172, 13174, 13219, 13036	Gray and brown clay, many white grits (similar to jar with lion stamp impression on the body)

No.	*Uncatalogued Vessel*	*Loci*	*Description*
24	Body sherds of a jar	13086, 13174, 13219	Brown-gray and purple clay
25	Body sherds toward base, body sherds and a handle	13086, 13174, 13219, 13222	Gray-black surface, brown gray clay, thick wall, air bubbles and crushed surface, very large grits
26	Base of *yhwd* jar	13219	Orange clay, light orange wash outside
27	Body sherds of *yhwd* jar	13086, 13188, 13219	Orange clay outside, gray clay inside (similar to jar with lion stamp impression on the body)
28	Neck, shoulder and body sherds of *yhwd* jar	13172, 13218, 13219	Thin wall, clay gray and orange outside, white grits
29	Shoulder, handle, body sherds and base of *yhwd* jar	13174, 13200, 13219	Light brown clay outside, light gray inside, white grits
30	Large body sherds, might belong to more than one jar	13086, 13171, 13174, 13189, 13222	Dark gray clay, small white grits
31	Handles, body sherds and base of *yhwd* jar, perhaps belonging to Jar 9598/1	13045, 13086, 13171, 13174, 13219, 13222	Light brown and orange clay; base sampled for residue analysis ERC2402
32	Body sherds of *yhwd* jar	13086, 13171, 13172, 13174	Stamp impression Reg. No. 9581/1 (Chapter 8: No. 26) might belong to this jar
33	Body sherds and shoulder of *yhwd* jar	13174	Orange clay; stamp impression Reg. No. 9646/1 (Chapter 7: No. 3) attaches to these sherds
34	*yhwd* jar in three parts	13086, 13174 13222	Reddish and gray-brown clay
35	Shoulder with handle, body and base of *yhwd* jar	13045, 13086, 13174, 13188, 13222	Light brown clay, gray core, white grits and few air bubbles, three pairs of mending holes
36	*yhwd* jar from neck to base without rim	13174, 13200, 13222	Light brown clay, brown core large white and red grits, the base is dark black inside
37	Jar handle with incisions	13086, 13172	Gray clay, well fired
38	Six bases and additional parts of bases of *yhwd* jars and some jug bases	Various loci of the pit	
39	Ca. 30 bases and parts of bases, most belonging to *yhwd* jars	Various loci of the pit	
40	17 complete rims of *yhwd* jars that do not join to neck or shoulder	Various loci of the pit	
41	Ca. 40 rims of *yhwd* jars	Various loci of the pit	
42	Jar base	13045, 13086, 13171, 13172, 13036	Light orange clay
43	Rounded jar base	13174, 13222	Light beige surface, orange clay pinkish core, many grits
44	Lower part of jug	13171, 13174, 13219	Gray and whitish clay
45	Rounded base of a bag-shaped jar?	13222	Gray and whitish clay
46	Body sherds and handle of bag-shaped jar?	13174, 13219, 13222	Ca. 40 cm, light brown clay, large and sorted small grits
47	Jar base	13086, 13174	Clay surplus attached to the inner part of the base
48	Body sherds	13174, 13036	Sherds close to base belonging to the same jar, but not connected
49	Body and shoulder of small bag-shaped jar	13206	
50	Bag-shaped jar, shoulder and handle, body and base sherds	13086, 13171, 13172, 13174,	Light brown clay, beige surface outside, orange surface inside, gray core
51	Body sherd, including part of the base	13219	Reddish brown clay, gray surface, grits
52	Base sherds	13086, 13172, 13200, 13036	Light brown and reddish clay

No.	*Uncatalogued Vessel*	*Loci*	*Description*
53	Jar base and body sherds	13174, 13205	Orange clay, gray core, large grits; air bubbles and crushed surface
54	Body sherds toward base of a jar	13086, 13174, 13188	Orange surface, light brown clay, white grit, clay similar to the jar with lion stamp impression on body, delicate burnish lines
55	Jar base	13174, 13219	Reddish clay outside, signs of smoothing close to base
56	Body sherds of burnt large decanter?	13086, 13219, 13222, 13036	Brown-black clay inside, some burnish lines on shoulder
57	Large body sherds	Various loci of the pit	
58	Large body sherds	Various loci of the pit	
59	Ca. 20 rims of bag-shaped jars?	Various loci of the pit	
60	Rims and body sherds of bowls, kraters, cooking pots jugs, juglets, holemouth jars and lamps	Various loci of the pit	Residual Iron IIC types familiar from the site, mostly Babylonian and Persian period types discussed above

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CHAPTER 5

ATTIC IMPORTS

S. Rebecca Martin

Five sherds from three imported wine cups or cup-skyphoi were found in the Babylonian-Persian Pit at Ramat Raḥel, all made of the familiar reddish-yellow Athenian clay. One sherd, a lip fragment (Fig. 5.1:1), probably belongs to a Type C cup with concave lip. Its relatively flat bowl dates it late in the development of this type, ca. 480 BCE (Sparkes and Talcott 1970: 91−92; cf. 264, Nos. 412−413, Fig. 4, Pl. 19). Four of the sherds (Figs. 5.1:2−4) are decorated in a black-figure silhouette style, some with incision. Two fragments probably of the same cup or cup-skyphos (Fig. 5.1:2–3) show pursuit scenes. Two other fragments of a cup or cup-skyphos (Figs. 5.1:4), joined together, retain small portions of a palmette. The thickness of all the painted fragments suggests that they came from cup-skyphoi rather than cups, but we cannot be certain. The sloppy incision, the silhouette style, and the subject matter of these fragments fit the late Archaic pottery of the Haimon Painter, his workshop, and their followers (Beazley 1963: 538–583; Boardman 1974: 273–276; Haspels 1936: 130–141, 241–247, Pl. 41). The *flourit* of the Haimon Painter and his circle has been variously dated to the first half of the 5th century BCE; a date around 500–475 BCE is probably correct (Stewart and Martin 2005: 82−83; see the discussion of "Haimonian" pottery in Martin 2014: 750, 766, Nos. 148, 152). It might be possible in the future to refine or even challenge that date. The function of these Athenian drinking cups at sites in modern Israel is not certain. At nearly every site with a Persian period occupation one or two fragments are uncovered (although the numbers are far greater at large coastal tells), suggesting that they should not be interpreted as either a strictly elite phenomenon or a sign of acculturation.

Lip Fragment (Fig. 5.1:1)

Black-glaze Type C cup with concave lip
Reg. No.: 9777/2
Locus: 13222
Dimensions: Maximum preserved height: 3.0 cm; thickness: 0.35–0.40 cm; diameter: 13.0 cm
Date: Ca. 480 BCE
Description: The lip of the cup is concave with a sharp carination above the flattish bowl. Glaze is thin and streaky on the inside.

Body Fragment (Fig. 5.1:2)

Black-figure cup or cup-skyphos
Reg. No.: 9783/3
Locus: 13222
Dimensions: Maximum preserved height: 4.2 cm; thickness: 0.5–0.55 cm
Date: Probably early 5th century BCE
Description: Lower body fragment, probably of the same cup or cup-skyphos as Fig. 5.1:3 (see below). It shows two figures running to the right on the topmost of a series of three thin lines above two bowl bands. The figures are dark black, but because the lines, bands and inside of the cup are thinner, they

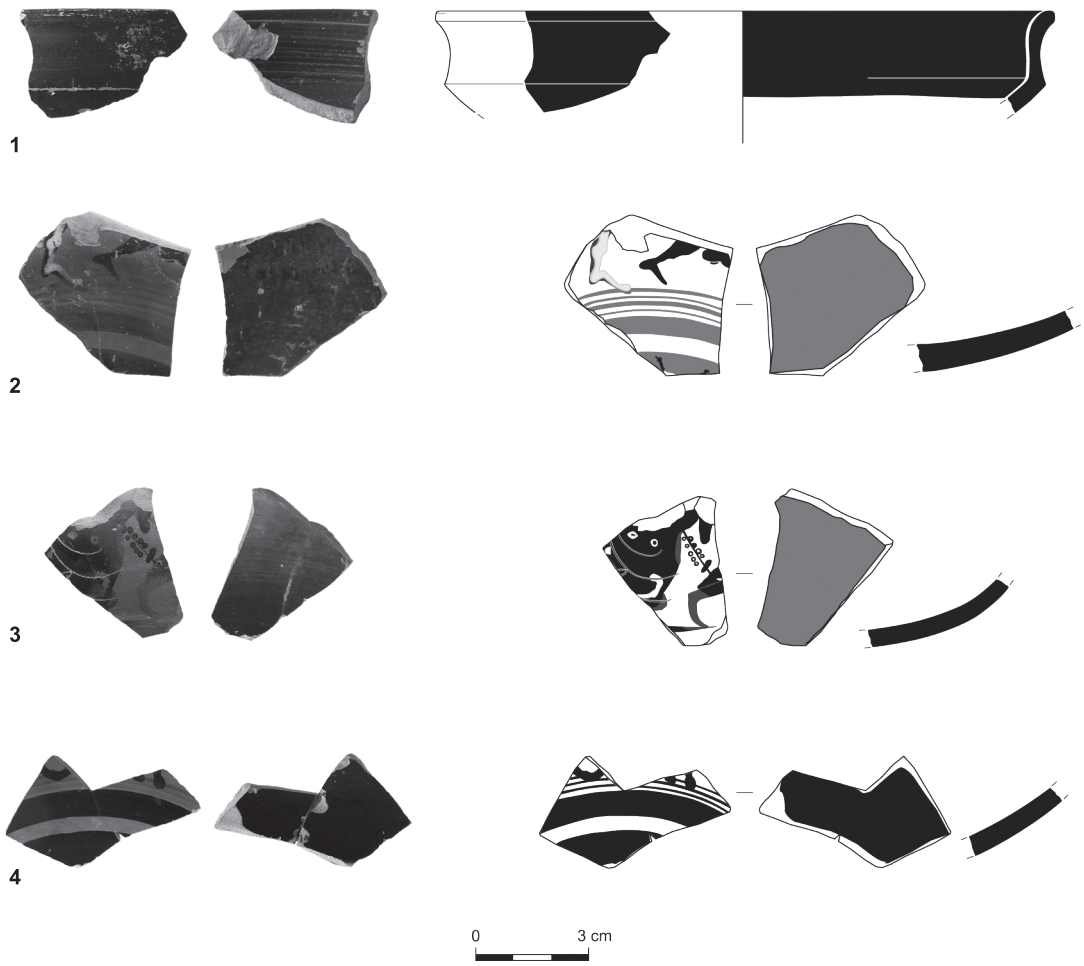

Fig. 5.1: Attic sherds Nos. 1–4.

have fired brownish-red. The foot and shin of the left figure have added white, securing that figure's identification as a female. Only the hind leg and a bit of drapery of the right figure are preserved. A trace of incision is visible on the drapery.

Body Fragment (Fig. 5.1:3)

Black figure cup or cup-skyphos
Reg. No.: 9729/1
Locus: 13218
Dimensions: Maximum preserved height: 3.9 cm; thickness: 0.4 cm
Date: Probably early 5th century BCE
Description: Body fragment probably of the same cup or cup-skyphos as Fig. 5.1:2. It shows two figures running to the right on a thin, brownish-red ground line. The drapery of the figure on the left is preserved in the area of the lower torso, upper legs and knee. A trace of what is possibly this figure's arm appears by the dot vine. The right figure is also draped; the figure's hind foot is just below the dot vine. The right figure has fired very light because of the thin application of glaze, and the inside of the cup is streaky reddish-brown. The clumsy incision and dot vine confirm that this vessel is "Haimonian."

Two Joined Body Fragments (Fig. 5.1:4)

Black-figure cup or cup-skyphos
Reg. No.: 9783/2
Locus: 13222
Dimensions: Maximum preserved height: 3.0 cm; thickness: 0.4–0.5 cm
Date: Probably early 5th century BCE
Description: Two joined sherds of a cup or cup-skyphos with shiny and well-fired black glaze inside and out. The decoration is a poorly preserved palmette; there are remains of a loop and one or two fronds. The palmette rests on three dilute lines above two thick black bowl bands.

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CHAPTER 6

LION STAMP IMPRESSIONS FROM THE BABYLONIAN PERIOD

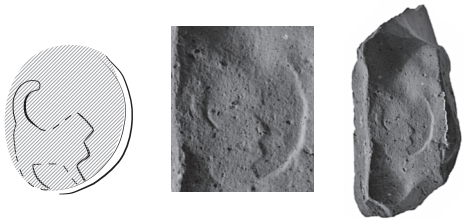
Oded Lipschits and Ido Koch

Aharoni reported the discovery of 47 lion stamp impressions in the course of his excavations at Ramat Raḥel;[1] in fact, he had found 52 (Lipschits and Koch 2016), fully published only a small number, and fleetingly mentioned a handful of others. Based on snippets of documentation of 29 lion stamp impressions, the photographs of 48 stamp impressions, and the actual finds located in various storages and museums, Lipschits and Koch (2016) were able to document in detail the majority of the lion stamp impressions discovered by Aharoni.

Twenty-one additional lion stamp impressions were unearthed in the renewed excavations conducted at Ramat Raḥel between 2005 and 2010,[2] bringing the total number discovered at Ramat Raḥel to 73. Four of these stamp impressions were discovered in the Babylonian-Persian Pit, and they are presented in the catalogue below. The typology is according to Lipschits (2018: 95; forthcoming).

No. 1

Reg. No. 9591/2; Locus 13171; Elevation: 816.84; Shape: oval; Dimensions: 19 × 22 mm in diameter



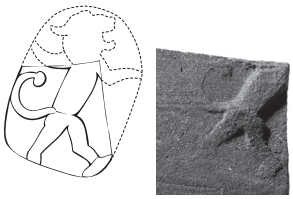
Type: 5b, Schematic, facing right
Clay: Grayish-red with fine white grits along with larger white and brown grits. The core is a darker shade of gray-red, with air bubbles.
Description: Located on the upper part of the handle, below its connection to the jar, on the left side. The impression is stamped facing right, so that the lion's head faces down, towards the base of the jar. The impression is poorly executed, very shallow, and only the right side, down the handle, can be seen. The head and part of the lion's tail is discernable.

1 Aharoni found seven lion stamp impressions in the 1954 season (Aharoni 1956: 147, Pl. 25:7–9), 11 in the 1959 season (Aharoni 1962: 10, Fig. 9:9–12, Pl. 8:6), 12 in the 1960 season (Aharoni 1962: 34, Pl. 30:7–9), ten in the 1961 season (Aharoni 1964: 22, Pl. 21:1–3,6) and seven in the 1962 season (Aharoni 1964: 45–46, Pl. 21:4–5).

2 For the publication of these 21 lion stamp impressions, see Lipschits and Koch, forthcoming.

No. 2

Reg. No. 9734/2; Locus 13219; Elevation: 817.23; Shape: square with rounded corner; Dimensions: 24 × 17 mm



Type: 8, Standing
Clay: Brownish-gray wash on orange clay, with fine white grits and gray core
Description: Located on a body sherd of the storage jar. Since it is only a small part of a jar, the exact location on the jar is unknown. The impression was stamped facing upward, parallel to the wheel marks of the jar. Only the lower left part of the stamp impression is preserved, just below and to the left of the break of the sherd. The lower part of a square frame can be seen, as can the lower part of a standing lion, including two hind legs, the body, a typical tail, and the lower part of two forelegs raised to the sides.

No. 3

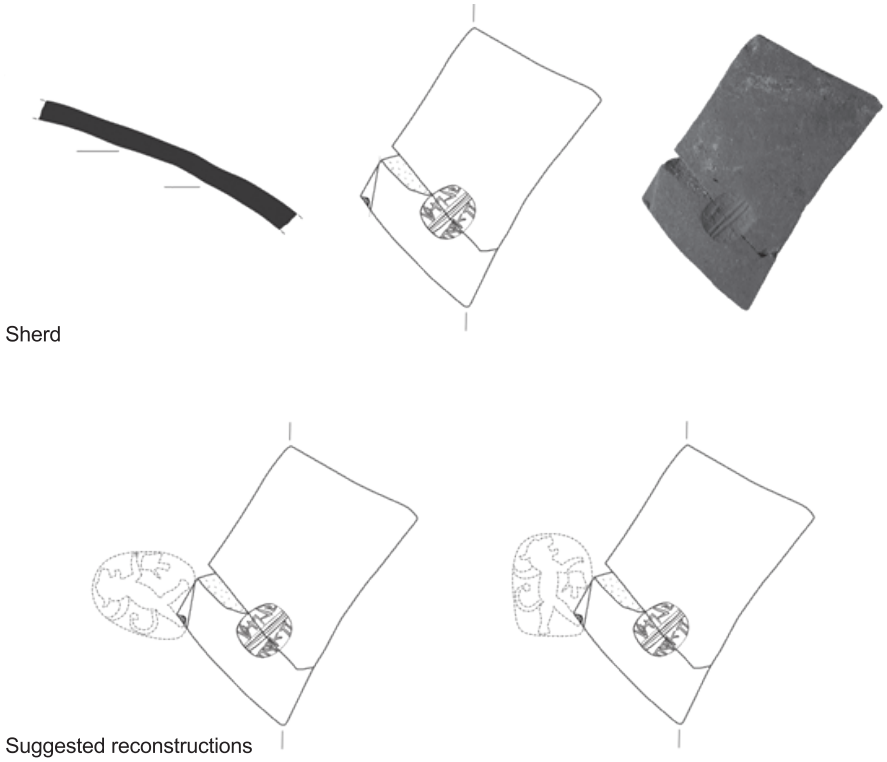
Reg. No. 9626/1; Locus 13174; Elevation: 816:94; Shape: square with rounded corners; Dimensions: 20 × 28 mm; stamped on Storage Jar 9618/6 (Figs. 4.13:2, 4.14:1) along with a "private" stamp impression (Chapter 7, No. 2), which appears to its right.[3]

Type: 8, Standing
Clay: Red-brown body sherd of a storage jar, with fine white grits and a gray core
Description: This impression is located on a body sherd of a storage jar, stamped on the shoulder of the jar between the two handles (Figs. 4.13:2, 4.14:1). The impression was stamped facing upward, parallel to the wheel marks on the jar. There was a break between the body of the standing lion and its left foreleg raised to the side. Below the left foreleg there is a clear human head in profile and a hand. The square frame of the stamp impression is not clear.

3 On the "private" stamp impression, see Richey, Vanderhooft and Lipschits 2019; and see below, Chapter 7.

No. 4

Reg. No. 9754/1; Locus 13219; Elevation: 815.58; Shape and dimensions: too fragmentary to estimate; appears above a "private" stamp impression (Chapter 7, No. 1)



Type: 8, Standing
Clay: Red-brown body sherd of a storage jar, with fine white grits and a gray core
Description: The impression is located on the body of the storage jar. Its precise location is unknown, since only a small part of the vessel was preserved, but it seems to be on the shoulder. The impression was stamped facing more or less upward, parallel to the wheel marks on the jar. Only a small corner of the impression was preserved, close to the "private" stamp impression. Its resemblance to lion stamp impression No. 3, above, suggests that it is the same impression type and was stamped in the same location on the jar. For two possible reconstructions, see illustration.

DISCUSSION

Of the four lion stamp impressions found in the Babylonian-Persian Pit, three belong to Type 8, the one type that is of exceptional artistic quality (Lipschits 2018: 104–115; forthcoming). It depicts a lion turning to the left while standing on its two hind legs and raising its two forelegs to the sides. Beneath its left foreleg there are two objects, which were generally interpreted as an incense altar, but have now been identified as the profile of a human head and the adjacent palm of a human hand (Sass 2010).

Only nine stamp impressions of this type are known. Five are from Ramat Raḥel, three of which, as aforementioned, were uncovered in the Babylonian-Persian Pit. The other Type 8 lion stamp impressions from Ramat Raḥel were found by Aharoni, one stamped on a body sherd[4] and the other on the handle of

4 Reg. No. 6082/1; Locus 813; Sub-sector AWS1; see Aharoni 1964: 45–46, Pl. 21:4; cf. Lipschits and Koch 2016: 404, No. 42.

a storage jar.[5] Four identical lion stamp impressions were found in various other locations: in Jerusalem (Ariel and Shoham 2000: 141–143, L24), Nebi Samwil (Magen and Har-Even 2007: 45, No. 31), Gibeon (Pritchard 1961: 20, Fig. 46:556) and Khirbat er-Ras (Feig 2016).

The dating of lion stamp impressions Type 8 to the 6th century BCE (Lipschits 2018: 91−97; forthcoming) is supported by the stamping of two such impressions on the same jars as "private" stamp impressions, which are well dated on paleographic grounds to the 6th century BCE (Richey, Vanderhooft and Lipschits 2019; and see below, Chapter 7).

This date is further supported archaeologically. Not a single specimen of any type of lion stamp impression was found in any First Temple period destruction layer. Even at Ramat Raḥel, the site that revealed most of the handles with lion stamp impressions, not a single handle was discovered in a fill of a courtyard or a building foundation from the first and second construction stages. Nevertheless, 11 handles bearing lion stamp impressions were uncovered in the renewed excavations, in the fill covering the foundation trenches and the garden in the western part of the site (Lipschits and Koch, forthcoming). This demonstrates that the lion stamp-impression system began after Building Phase II at Ramat Raḥel, i.e., not before the early 6th century BCE (Aharoni 1962: 34; Gadot 2010). The dating of the system that utilized lion stamp impressions to the period following the rosette stamp impressions of the late 7th–early 6th century BCE and preceding the *yhwd* stamp impressions that began in the late 6th century BCE is further bolstered by petrographic analysis of the storage jars (Gross and Goren 2010), by paleomagnetic research (Ben-Yosef *et al.* 2017) and by the study of the lion symbol (Ornan 2010; Sass 2010; Sass and Marzahn 2010; Lipschits 2011: 62–63; 2018: 104−115; forthcoming). All this evidence suggests that contrary to the long-held scholarly view that the lion stamp impressions should be dated to the late 6th–early 5th centuries BCE and that they constitute evidence of the first phase of Persian rule in Judah (Stern 1982: 210−212; 2001: 541; cf. Williamson 1988: 60–64), they in fact began earlier in the 6th century BCE (Lipschits 2010; 2011: 68–71; 2018: 104−115; forthcoming; Lipschits and Ornan 2010). This dating has far-reaching implications for the reconstruction of the history of Judah following the destruction of the First Temple (cf. Lipschits 2011).

SUMMARY

The discovery of four lion stamp impressions in the Babylonian-Persian Pit at Ramat Raḥel is a clear indication that its contents represent an early phase of activity in the pit, probably during the second quarter or the middle of the 6th century BCE. The pit revealed a unique concentration of Type 8 lion stamp impressions of exceptional quality and artistic value, preserving close connections to the Babylonian glyptic tradition. The pit contains material that continued in use throughout the 6th century BCE, as indicated by the Type 5b lion stamp impression and by the unique concentration of *yhwd* stamp impressions discovered there (see below, Chapter 8).

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5 Reg. No. 6432/1; Locus 827; Sub-sector AWS1; see Aharoni 1964: 45–46, Pl. 21:5; cf. Lipschits and Koch 2016: 405, No. 44.

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CHAPTER 7

"PRIVATE" STAMP IMPRESSIONS FROM THE BABYLONIAN PERIOD

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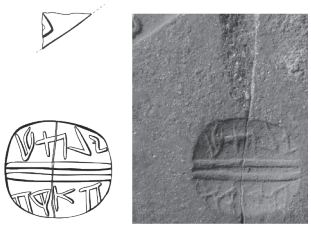
Three Babylonian period stamp impressions were found in the Babylonian-Persian Pit. Two of them (stamp impressions 9765/1 and 9626/1) are identical and both were found along with a lion stamp impression on the body or shoulder of the same storage jar.[1] A third (9646/1) is indecipherable. Details of the three impressions are provided here. The paleographic and epigraphic discussion, the onomastic and lexical analysis, and the conclusions pertain to the first two stamp impressions. The chapter concludes with a general discussion of Aramaic paleography of the Imperial period in light of the "private" stamp impressions from the Babylonian-Persian Pit.

TWO IDENTICAL "PRIVATE" STAMP IMPRESSIONS

No. 1

Reg. No. 9754/1; Locus 13219; Elevation: 815.58; Shape: oval; Dimensions: 13.1 × 11.2 mm; appears on a body sherd of a storage jar, with the beginning of a lion stamp impression above it (Chapter 6, No. 4)



Type: *ylḥʾš // h ʾlṣ? q h*
Clay: Reddish-brown
Description: "Private" impression on storage-jar sherd, stamped before firing. Letters appear above and below a double-line field divider; remains of a stamp impression depicting a standing lion appear to its left. For discussion, see below.

1 The following discussion is based on our previous publication of stamp impressions 9626/1 and 9754/1 in Richey, Vanderhooft and Lipschits 2019. We are grateful to the editors of *Maarav* for granting us permission to reproduce this material.

No. 2

Reg. No. 9626/1; Locus 13174; Elevation: 816.94; Shape: oval; Dimensions: 13 × 11 mm; this stamp impression appears on the body of storage jar 9618/6 (Chapter 4, Figs. 4.13:2, 4.14:1), with a lion stamp impression (Chapter 6, No. 3) to its left

Type: *ylḥʾš // h ʾlṣʾ q h*
Clay: Dark gray and reddish-brown
Description: "Private" impression, stamped before firing on the shoulder of four handles of the storage jar. The letters appear above and below a double-line field divider.
For script and discussion, see below.

AN UNIDENTIFIED "PRIVATE" (?) STAMP IMPRESSION

No. 3

Reg. No. 9646/1; Locus 13174; Elevation: 816.41; Shape: rounded?; Dimensions: 15 mm in diameter

Type: Unknown
Clay: Brownish-red, gray core, with many small and medium-sized white grits
Description: This impression was stamped on a body sherd of a 6th-century BCE storage jar (Chapter 4, Appendix 4.1, No. 33). The 1.5 mm deep impression is barely legible, due to a later smearing of the body of the jar, after the sealing and before firing. The low quality of the impression may be due to the material of the seal, as is evident from high-magnification photos of the impression, where slim parallel lines can be seen, perhaps indicating a wood surface.
Discussion: The stamp impression appears to contain two lines of script with a single-line divider between them. The seven letters—three (?) in the upper register and four in the lower one—are difficult to identify due to the low quality of the seal and the later smearing of the area of the impression. There seems to be a head of a *dalet* in the top right of the upper line (although it might alternatively be a *he*, *waw*, *zayin*, *yod*, *samekh*, *pe*, or *reš*), and possibly also the remains of another *dalet* in the top left of the lower line). If there is a *yod* in the lower right line and the third letter of this line is *waw*, the lower line might read *yhwd*.

DISCUSSION OF THE TWO IDENTICAL "PRIVATE" STAMP IMPRESSIONS

As mentioned above, stamp impressions 9754/1 (No. 1) and 9626/1 (No. 2) are "private" impressions that appear to have been stamped before firing by the same seal, on the bodies of storage jars near impressions of the standing lion type. These are the only cases in which a "private" stamp impression has been found alongside a lion stamp impression, thus correlating the Aramaic monumental paleographic sequence with the lion stamp-impression system. It has been suggested that this is a transitional

Neo-Babylonian phase in the Judean stamp system, succe0eding the late Judahite rosette types and preceding the *yhwd* types (Lipschits and Koch 2010; 2011; Lipschits 2018: 91−98; forthcoming). Because the two stamp impressions appear to have been formed by the same seal and since No. 9626/1 is much less well preserved than No. 9754/1, we compare the epigraphic and paleographic features of the two impressions and present a unified onomastic and lexical interpretation.

EPIGRAPHIC AND PALEOGRAPHIC ANALYSIS

As mentioned above, stamp impression 9754/1 was stamped on the reddish-brown body of a storage jar before firing, beneath an impression of a standing lion, traces of which remain. Stamp impression 9626/1 was also stamped before firing on the reddish-brown body of a storage jar, in this case to the right of an impression depicting an upright lion. As noted above, the former impression is much better preserved than the latter, but enough is preserved of both to indicate that they were formed by the same seal. This seal possessed all the formal features one would expect of an Iron IIB "private" seal, including a double-line field divider and an oval shape. Epigraphic and paleographic comments on individual graphemes follow.

Line 1

Yod: The grapheme is visible on impression 9754/1, but not on impression 9626/1. In the first case, the grapheme appears to have two horizontals to the left of the vertical, the upper of these being quite prominent and the lower very faint. The graphemic morphology of *yod* is essentially identical to those of even the oldest Aramaic inscriptions (for summary, see Attardo 2016: 259) and survives through ca. 400 BCE with inconsistent simplification;[2] it is therefore less useful for paleographic dating than other graphemes in these impressions.

Lamed: This grapheme is incised in the positive, so that it is reversed in the impression. The phenomenon of mixing graphemes incised in the positive with others in the negative is well attested in several types among the *yhwd* stamps. Like *yod*, this grapheme is not very useful for paleographic dating, since its form is essentially uniform from the 9th through the 4th century.[3]

Ḥetʾ: The next cluster of incisions is bisected by a crack in impression 9754/1 and is somewhat more faint in impression 9626/1. It is not quite clear whether there are two or three deliberate vertical incisions or whether the strokes on both sides of the crack form one or two graphemes. If there are two vertical incisions to the right of the crack in impression 9754/1—a possibility that is not completely ruled out by impression 9626/1—the grapheme might be a narrow *ḥet*. In this case, however, it would be difficult to understand the remaining incisions to the left of the join. The remaining +-shaped grapheme could be given one of two readings: either a quite advanced *aleph* (Naveh 1970: 26, 29, 46) or an extraordinarily archaic Aramaic or Hebrew *taw*. By the latter hypothesis, however, this would be either 1) an Aramaic graphemic morphology that had already fallen out of use in that script by the late 9th century,[4] or 2) a Hebrew graphemic morphology at a highly unusual angle, as one would expect Hebrew *taw* of this period to look more like an X than a + sign (Avigad and Sass 1997: 44; Herr 2014: 192).

2 The variability of *yod* is nicely illustrated by Lemaire (2014: 236, 238); see also Lipschits and Vanderhooft 2011: 70–71—as here, with relatively archaic forms throughout—and Sass and Marzahn 2010: 153, 156—again, with no forms that simplify the graphemic morphology in the fashion of the clay tablet script.

3 This is summarized in, e.g., Attardo 2016: 260; Lemaire 2014: 241. Even the papyrus script does not have a consistent "tick" at the right terminus of the horizontal until roughly the mid-4th century (Byrne 2014: 306; Naveh 1970: 27, 47).

4 The vertical of Aramaic *taw* is already substantially elongated in monumental scripts by the 9th century; Attardo (2016: 260) provides a recent brief summary, as does one of the present authors (Richey, forthcoming) in an edition of an 8th-century Aramaic personal seal from Zincirli.

It is, therefore, more probable that incisions to the right and left sides of the join in impression 9754/1 should be read together as a rather wide *ḥet*. There is, according to this reading, an extension of the leftmost vertical upward past the horizontal. The fact that the horizontal breaks through this stroke might encourage an alternative reading of this grapheme as *he*, but a comparable *ḥet* appears in at least one of the Babylonian brick impressions.[5] This graphemic morphology of *ḥet*—which results from the loss of two of the grapheme's three original horizontals—does not appear with any regularity until the 7th century BCE.[6]

Šin: All three incisions of this grapheme are very clear in both impressions. Like *lamed*, the grapheme was incised in the positive on the seal, resulting, in the impression, in a mirror-form in which the center vertical meets the rightmost vertical—rather than, as is usual, the leftmost vertical—slightly above the grapheme's base. A similar positively-incised *šin* is found in *yhwd* Type 9, represented by a single impression and dated to the later 5th century on paleographic and prosopographic grounds (Lipschits and Vanderhooft 2011: 72, 206–207). The relatively long, bending form of the medial incision may suggest that the engraver was not an expert.

Three-segment *šin*, simplified from an earlier four-segment form, is first attested in the script of the 7th-century clay tablets.[7] It is not, however, widespread in the monumental or seal script until the 6th century and later.[8] The leftward shift of the center vertical is irregularly attested beginning in that century and becomes consistent and exclusive by the 5th century.[9] The present grapheme is therefore the best evidence that these impressions must date to the 6th century or later.

Line 2

He: The first grapheme of Line 2 is visible on impression 9754/1 but not at all on impression 9626/1. The clear morphology of impression 9754/1 nevertheless suggests identification of this grapheme as *he*, consisting of two verticals capped by a horizontal that extends beyond the left vertical. This graphemic morphology has roughly the same chronological range (ca. 7th through 4th centuries) as that of *ḥet*, considered above.[10]

Aleph/ṣade[?]: A vertical is quite clear in both impressions; in the case of impression 9754/1, this vertical is immediately to the right of the crack in the sherd. Two obliques meeting just to the right

5 Namely, Sass and Marzahn 2010: 56 No. 20. Similar intersections are not uncommon in the contemporary papyrus script, for which see, conveniently, Byrne 2014: 303–304 and the script chart at *ibid*.: 298; cf. for the immediately subsequent period, Dušek 2007: 470.

6 These simplified forms are common but not exclusive in the 7th-century Aramaic tablet corpora; comments to this effect can be found in Fales *et al*. 2005: 668 and Attardo *apud* Fales 1996: 115–116, with a useful chart at Röllig 2014: 18–19. They are otherwise somewhat uncommon in that century, but do appear in the probably 7th-century Arslan Tash amulets (Pardee 1998), which follow Aramaic graphemic morphologies despite their Phoenician language. For the continuation of the simplified form through the Persian period, see Lemaire 2014: 237.

7 Summaries can be found at Lipiński 2010: 201–203 and Fales *et al*. 2005: 669; the simplistic statements found in Naveh 1970: 20–21 are inaccurate, especially given frequent cooccurrence of four- and three-segment *šin* in single tablets, e.g., DeZ 18950, ed. Röllig 2014: 114–115 (No. D.47).

8 Lemaire (2014: 238) helpfully contrasts the four-incision form of the Beirut decree (Caquot 1971) with the three-incision form of the Louvre tablet (Starcky 1960). The three-incision form occurs, but is not in the majority in the Babylonian bricks (Sass and Marzahn 2010: 157).

9 See, e.g., general comments in Lemaire 2014: 244 and on *yhwd* Type 9 in Lipschits and Vanderhooft 2011: 72, 206–207.

10 Like the simplified forms of *ḥet*, simplified forms of *he* first begin to appear in 7th-century argillary inscriptions, for which see, e.g., Fales *et al*. 2005: 668 and Naveh 1970: 11, 19. The entirety of the range is summarized briefly by Lemaire (2014: 241).

of that vertical are visible on impression 9754/1; on impression 9626/1, this graphemic morphology is obscured by damage that runs through the double-line divider and curves around through the present grapheme. The identification of this grapheme is difficult. The grapheme could be identified as a *kaph* incised in the positive, except that for phonotactic reasons, the sequence *-kq-* (see immediately below) is extremely rare and therefore difficult to interpret. Both *aleph* and *ṣade* are worthy of consideration; the former, however, usually includes extension of a horizontal to the left of the vertical, and the head of the latter is usually more like a Z than a sideways V. Nevertheless, there are individual examples of *aleph* with only a minimal or even no horizontal to the left of the vertical.[11] Similarly, there are very occasional examples of *ṣade* with only one horizontal, admittedly not an exact match for the graphemic morphology in view here.[12] While *aleph* is the more defensible graphemic identification given the more exact and extensive parallels to the present form, the sequence *hʾqh* has proven very difficult to interpret; therefore, in the onomastic and lexical analysis (below), both graphemic identification options are considered.

Qoph: The penultimate grapheme of this register is *qoph*, which is clear in both impressions. This grapheme has two fully formed triangles, one of each side of the central vertical. This form becomes uncommon, if not unattested, after the early 6th century.[13] This grapheme is therefore the clearest evidence that the present impressions date from the 6th century and perhaps more likely the earlier half of that century, in general terms contemporary with the Neo-Babylonian period in the southern Levant.

He: The leftmost and final grapheme appears, from both impressions, to intersect the edge of the stamp. Its features nevertheless make a graphemic identification possible: the grapheme consists of one horizontal and two vertical incisions (the one furthest to the right clearly visible on impression 9754/1). Neither of these extends above the horizontal. Identification as *he* alone accords with all of these features.[14] This would have essentially the same form as the exemplar at the beginning of the present register.

11 Close comparanda may be observed in the 7th-century Aramaic tablet script (e.g., throughout DeZ 20968, ed. Röllig 2014: 138–139 [No. D 60], with script chart at *ibid*.: 18–19), the 6th-century Aramaic inscriptions on Babylonian bricks (Sass and Marzahn 2010: 72 [No. 36 = VABab. 4574]; *ibid*.: 78 [No. 41 = VABab. 4602]) and in several ca. 5th-century Aramaic monumental inscriptions from Egypt, e.g., the three clear cases of *aleph* in *KAI* 268 (Porten and Yardeni 1986–99 [*TAD*] text D20.1; illustration at *ibid*.: IV.253), one each in ll. 1, 2 and 3. Several of the relevant lapidary forms are included in Lemaire's (2014: 242) chart, but with minimal comment, and there is a brief comment on these forms in Naveh 1970: 19.

12 Such a form is much more poorly attested, especially in the monumental script, than the form of *aleph* surveyed in the preceding note. Isolated examples include the *ṣade* in *wkrṣy* (*KAI* 269: 2; Porten and Yardeni 1986–99 [*TAD*] text D20.5; illustration in *ibid*.: IV.256). The tablet script has such forms somewhat regularly, for which see, e.g., the script chart in Röllig 2014: 18–19 and comments in Lipiński 2010: 199.

13 The head of *qoph* begins to open in some Aramaic monumental inscriptions already in the 7th century BCE, e.g., at Zincirli, for which see, recently, DeGrado and Richey 2017: 113, n. 20, and in general for early Aramaic, Attardo 2016: 260. By the 5th century, the circular head has uniformly become an S-shape, the upper half of which almost immediately becomes very small (Lemaire 2014: 244). Between these two bounds, there is some variety. The tablet scripts, for example, have virtually no closed examples of *qoph* already in the 7th century (e.g., Fales *et al*. 2005: 669), but the Beirut law decree (Caquot 1971) is, as mentioned above, probably ca. 6th century and has some nearly circular *qoph*s. There is likewise substantial variety in the contemporary Babylonian brick impressions (Sass and Marzhan 2010: 157). The grapheme does not occur in the *yhwd* stamp impressions and therefore receives no comment in Lipschits and Vanderhooft 2011.

14 Identification as *ḥet* would virtually require extension of the left vertical above the horizontal. Identification as *waw* is ruled out by the second vertical; the same can be said and more for those graphemes—namely *bet*, *dalet* and *reš*—which in this period and script would usually or always show extension of the rightmost vertical upwards past the horizontal (see, e.g., Lemaire 2014: 241). The angle and relative lengths of the surviving incisions seem unlikely for interpretation as *mem*, *nun*, *samekh* and *pe*.

Because the graphemic morphology of *šin* first appears in the monumental script in the 6th century BCE and the graphemic morphology of *qoph* is no later than the same century, the seal that produced these impressions can be dated with some confidence to the 6th century BCE. The graphemic morphology of *qoph* might further encourage a narrowing of this range to the first half of the 6th century. This would be permitted by all other graphemic morphologies, as well as the typology of the nearby lion impressions. The impressions could therefore be said to overlap roughly with the short Neo-Babylonian period in the southern Levant. It is worth stressing, however, that an extension of this general paleographic date to historical phenomena strains the available evidence, and one should keep in mind the approximate character of paleographic dates, especially in periods, scripts and media of such relatively poor attestation.

ONOMASTIC AND LEXICAL ANALYSIS

The epigraphic analysis above yields the reading *y l ḥ*$^{?}$*š // h* $^{\prime}$/*ṣ*$^{?}$ *q h* for the seal that has produced both of the impressions studied here. In brief, the first line contains a personal name that, although previously unattested, admits of a fairly straightforward analysis as long as the reading *ḥet* is preferred. The second line is, in contrast, highly uncertain from the epigraphic perspective and can reveal relatively little.

The lexeme *ylḥš* is most likely a personal name with its origin in a prefix-conjugation verbal instantiation of the root *l-ḥ-š*. Such instantiations are very common in Aramaic, Hebrew and other Northwest Semitic onomastica, both with and without expressed subjects.[15] By this analysis, one would vocalize the personal name as *Yilḥaš*. The root *l-ḥ-š* is attested throughout Northwest Semitic with the basic meaning "to utter an incantation." Nominal instantiations denoting "charm," "incantation," or something similar are well attested in the various Northwest Semitic languages. These include biblical Hebrew לַחַשׁ (Isa 3:20, 26:16; Jer 8:17; Ps 58:4–6; Ecc 10:11), Phoenician *lḥšt* (Arslan Tash 1:1 [*KAI* 27] and 2:1), various lexemes in the many dialects of Aramaic[16] and Ugaritic *lḫšt* "whisper" (RS 2.014^{+} iii 23').[17] In several cases, these and other nominal instantiations of *l-ḥ-š* are specifically associated with snakes.[18]

Interestingly, a name, or possibly title, from this root is given in Nehemiah 3:12 for a Persian period Judean official, שַׁלּוּם בֶּן הַלּוֹחֵשׁ שַׂר חֲצִי פֶלֶךְ יְרוּשָׁלִַם "Shallum, son of the *loḥeš* (incantation expert), the

15 Aramaic names incorporating or consisting solely of a prefix-conjugation verb are documented in, e.g., Maraqten 1988: 105 (and note some examples of verb-only names in *ibid*.: 172); Kornfeld 1978: 21–22; Abbadi 1983: 183, with special emphasis on forms "ohne theoph. Element." Hebrew onomastic formations of this type are documented in Zadok 1988: 129–130.

16 The root *l-ḥ-š* is common in verbal and/or nominal instantiations in several later Aramaic dialects, often with magical semantics, e.g, Jewish Palestinian Aramaic (Sokoloff 2002b: 281a), Jewish Babylonian Aramaic (Sokoloff 2002a: 623a), Mandaic (nominal ליהשא *lihša* "whisper, hissing, incantation" only; Drower and Macuch 1963: 236) and Syriac (Sokoloff 2009: 686). The epigraphic corpora are covered by Hoftijzer and Jongeling (1995: 593); in addition to the Jewish Palestinian Aramaic amulet (Hecht collection, of unknown provenance) token of לוחשא cited there from Naveh and Shaked (1985: 41), tokens of לחשתא(ה) occur in some recently edited or re-edited Jewish Babylonian Aramaic incantation bowls, e.g., VA 2509:12, ed. Levene 2013: 30–33 and BM 91763:10, ed. Levene 2013: 121–122. Lewis (2012: 102) also cites in abbreviated form the existence of *l-ḥ-š* in several of these dialects.

17 In Ugaritic, this always occurs in the formula *rgm* $^{\prime}$*ṣ wlḫšt* $^{\prime}$*bn* "word of tree and whisper of stone," which is attested throughout the *Ba*$^{\prime}$*lu* epic (*KTU*^{3} 1.1–6); for the formula and some connections in Greek literature, especially Hesiod, see Forte 2015. The D participle *mlḫš* occurs exclusively in RS 24.244 (*KTU*^{3} 1.100) to describe a magic professional acting against snakes.

18 Within the Hebrew Bible, there are snakes אשר אין־להם לחש "for whom there is no charm" at Jer 8:17, an "adder" (פתן) does not listen to "charmers" (מלחשים) at Ps 58:5–6, and a snake presents the danger of biting when a לחש is lacking at Ecc 10:11. All of these passages are noted as connecting "snakes" and instantiations of *l-ḥ-š* by Lewis 2012: 102 and n. 20, and there are more comments on this root in the context of a study of Israelite and Judean magic in Schmitt 2004: 110–112. For Ugaritic *mlḫš* in RS 24.244 (*KTU*^{3} 1.100), see the preceding note. Although Akkadian *mušlaḫḫu* "snake-charmer" is sometimes considered to be a Sumerian loanword (e.g., by *CAD* M 2 276–277), it is perhaps worth wondering, with del Olmo Lete and Sanmartín (2015: 543), if this is related to West-Semitic **l-ḥ-s*$_{1}$ by metathesis.

official of half the Jerusalem district." Nehemiah 10:25 similarly lists הלוחש—"the *loḥeš*" or a personal name *Halloḥeš*—among ראשי העם "chiefs of the people" (Neh 10:15). A seal of uncertain provenance in the Bible Lands Museum, *WSS* 1146 (Avigad and Sass 1997: 434), has *llḥš* in its only graphemic line and uppermost horizontal register; one could interpret *lḥš* as either a title or a personal name. We have found no other reflexes of *l-ḥ-š* used as a personal name in any of the Northwest Semitic languages.

The second line, by contrast, is very difficult to interpret. Seals of this type generally have either patronyms or titles in their second registers. No title accords with the clear graphemes *he*, *qoph* and *he* and with the graphemic identification options for the second grapheme, namely *aleph* or *ṣade*.[19] Given this, it seems best to suggest that this register contains a patronym, albeit a previously unattested one. Such a patronym would more likely include the *h-* causative morpheme in a suffix conjugation verb or verbal noun than a Canaanite definite article or any other morpheme.[20] The roots *ʾ-q-(y)*, *ʾ-q-q*, *ʾ-(w/y)-q*, *ṣ-q-(y)*, and *ṣ-q-q* are all, however, minimally, if at all, attested in West Semitic. Analyses assuming that *h-* is part of the root or that a root-constituent and assimilated *-n-* goes unrepresented in the orthography have not proven productive. No analysis assuming the orthography *qoph* for the reflex of proto-Semitic **ḏ* (the glottalized lateral phoneme)—as is, of course, common in earlier Aramaic (later *ayin*)—has seemed compelling either. One could of course posit that *hʾqh* or *hṣqh* represents a non-Semitic name, but still neither of these writings appear to have any parallels in broadly contemporary inscriptions.

The root *ṣ-(w/y)-q* is attested in the Northwest Semitic onomasticon and lexicon, usually with the semantics "to constrain" in the C-stem.[21] In the Northwest Semitic onomastica and lexica of the first millennium, there are a few cases in which the medial long vowel of such a form as **haṣīqā* (C-stem suffix-conjugation third-person feminine singular form of the root *ṣ-(w/y)-q*) is not represented in the orthography, but this would admittedly go against the norm.[22] The solution does have the benefit

19 The incisions visible cannot be reconciled with attested forms of *šin*, which could have yielded the lexeme *šāqe* "cupbearer" (compare, e.g., biblical Hebrew רַב-שָׁקֵה, Akkadian *šāqû*, etc.). An earlier intuition to read {*hꞱpʔꞱqdʔ*} *happāqīd* "the officer" in this line is less likely for several reasons. For one thing, epigraphically, the final grapheme is unlikely to be a *dalet*, since open-headed examples of Aramaic *dalet* have—especially in the monumental script—clear extensions of the rightmost vertical above the horizontal (see, e.g., Lemaire 2014: 237), which is certainly not the case for the final grapheme in line 2. Another reason is that whether the source language for the core lexeme is Aramaic or Hebrew (see immediately below), one expects the internal long vowel *ī* to be rendered by *yod* in the orthography of this period (for Hebrew, see, e.g., Gogel 1998: 73 and for Aramaic, see, e.g., Muraoka and Porten 2003: 32, 34–35; orthographies for the lexeme in question, all including *yod*, are documented in Hoftijzer and Jongeling 1995: 932–933). By this lexical interpretation, too, the initial *he* would have to be understood as the Canaanite (in this case presumably Hebrew) prefixed definite article (cf. the Aramaic suffixed definite article written *-ʾ*); mixing of language and script types would not be unparalleled in texts of this period (see survey in Naveh 1971), but the relative rarity of the phenomenon is worth acknowledging.

20 The use of suffix-conjugation verbs, including C-stem verbs, in the Hebrew and Aramaic onomastica is summarized by, e.g., Zadok 1988: 119; Maraqten 1988: 105; and Kornfeld 1978: 21. *h-* and *ʾ-* co-occur as orthographies for the causative (C-stem) verbal morpheme in this period of Aramaic; the situation is summarized most thoroughly in Folmer 1995: 123–133. Notably, a new early example of a suffix-conjugation form beginning with *aleph* is now attested in a ca. late 9th-century incantation from Zincirli, for which see Pardee and Richey, forthcoming.

21 Within Northwest Semitic, this root is best attested in Hebrew (e.g., for biblical Hebrew, BDB 847–848; *HALOT* 1014), Aramaic (for which see, briefly, n. 22, below) and Ugaritic (del Olmo Lete and Sanmartín 2015: 778). Notably for the present orthography with *h-*, all of those languages prominently feature instantiations in the C-stem, generally meaning something like "oppress" or "constrain." Possible or certain cognates beyond Northwest Semitic are reliably listed by those dictionaries.

22 The contemporary Aramaic evidence is summarized by Muraoka and Porten (2003: 131) and the near-contemporary Hebrew evidence by Gogel (1998: 138–139). The exceptional forms that would permit analysis of the present orthography *hṣqh* as C-stem suffix-conjugation third feminine singular form of the root *ṣ-(w/y)-q* include ca. 5th-century Aramaic *hqm* (*q-(w)-m*) (Porten and Yardeni 1986–99 [*TAD*] text D23:1) and 6th-century Hebrew *hšb* (*š-(w)-b*) in Lachish letter 5:6; it is perhaps notable, though, that both of these are third *masculine* singular forms and therefore have a different phonemic structure.

of involving a root that demonstrably exists in Northwest Semitic and was occasionally used in the onomasticon of at least one related language, in this case Ugaritic.[23]

There are, however, at least two complications for an analysis along these lines. First, because the root *ṣ-(w/y)-q* is from proto-Semitic **ḍ-(w/y)-q*,[24] the present patronym would involve the reflex of **ḍ* being written *ṣade* as in Canaanite, rather than *qoph* as in earlier Aramaic or *ayin* as in later Aramaic.[25] Second, the final *he* must be the feminine morpheme **-at* if the root involved is not third-weak; such feminine endings are unusual in ancient West-Semitic names given to men. Furthermore, if the lexeme *hṣqh* is taken to be a finite verb rather than a verbal noun, this would again require a Canaanite rather than an Aramaic orthography for the feminine morpheme in question.[26] Given the absence of an obvious solution here, it seems best to leave both graphemic identification options on the table until a better preserved token of an impression from this seal is excavated or an interpretation of the patronym is forthcoming.

CONCLUSIONS

The two stamp impressions discussed here are the first "private" impressions to appear on body sherds rather than handles, a phenomenon that has previously been noted for certain *yhwd* types and among the *mwṣh* stamp impressions. The *yhwd* stamp impressions on body sherds include all examples of Types 2, 3, 4, 5 and 9 in Lipschits and Vanderhooft 2011, one example of Type 13 (13–49 in Lipschits and Vanderhooft 2011: 317) and one example of Type 14 (14–20 in Lipschits and Vanderhooft 2011: 401). Among the catalogued *mwṣh* stamp impressions, only Nos. 12, 28 and 37 (three examples of a total of approximately 43; see Zorn, Yellin and Hayes 1994: 164–165; Lipschits 2018; forthcoming) were stamped on jar bodies rather than handles. This phenomenon of impressions on body sherds is unique to the 6th and early 5th centuries BCE and does not occur within the corpora of Iron Age "private," *lmlk*, rosette, or *yršlm* stamp impressions, nor among the concentric circle (or other; see, e.g., Shoham 2000) post-firing incisions.

Because these two stamp impressions are dated on paleographic grounds to the 6th century BCE, they can yield, despite their only partial decipherment, some important historical conclusions. First, some continuity of the private seal craft tradition is suggested by the employment of Iron Age artifactual conventions—that is, the use of the double-line field divider and seal border—in these somewhat later artifacts. Second, the cooccurrence of these stamp impressions with lion stamp impressions allows for,

23 The names *ṣqm* and *ṣqn* are both attested—coincidentally, as patronyms—in Ugaritic economic texts, the former as *bn ṣqm* in RS 19.096:51 (= *KTU*[3] 4.635) and the latter as *bn ṣqn* in RS 11.715[+] iii:7 (= *KTU*[3] 4.69) and RS 18.137:4 (= *KTU*[3] 4.398) (summary in del Olmo Lete and Sanmartín 2015: 779). Analysis of the latter as an instantiation of the root *ṣ-(w/y)-q* may be found in Gröndahl 1967: 188; the former does not seem to be discussed in that volume.

24 This is established by, for example, the fact that the Arabic cognate has *ḍ* (see under ضيق [*ḍ-y-q*] "to become narrow [etc.]" at Lane 1863–93: 1850) and the Aramaic cognate has *ayin* in later periods (e.g., Syriac ܥܘܩ [*ʿ-w-q*] "to be troubled [etc.]"; see, e.g., Sokoloff 2009: 1084). There would be some precedent for an orthography of this root being influenced, in an Aramaic-speaking and/or -writing context, by the Hebrew consonant, in that later Jewish literary Aramaic does sometimes write nominal and verbal instantiations of this root with *ṣade* (Sokoloff 2002b: 460).

25 The Northwest Semitic evidence is summarized conveniently in Garr 1985: 23–24. The development of the orthography in Aramaic is documented in Folmer 1995: 63–70.

26 In other words, the Aramaic reflex of this morpheme in verbal lexemes is *-at*, with retention of the lexeme-final unvoiced dental plosive **-t*; in Hebrew, at least, this phoneme is apocopated to yield **-ā*. In nominal lexemes, this apocopation occurs in both Aramaic and Hebrew. The overall situation in Northwest Semitic is summarized most conveniently in Garr 1985: 59–61, 93–94 (nominal lexemes), 125–126 (verbal lexemes).

but does not definitively require, the assignation of that system—now better described and increasingly attested (Lipschits and Koch 2010)—to the Neo-Babylonian period, with all the concomitant implications for Babylonian imperial policy in the west (Vanderhooft 2003; Lipschits 2005: 36–133), Near Eastern leonine imagery (Strawn 2005), and the continuity of Judean administrative systems from the Iron Age through the Hellenistic period (Lipschits, Sergi and Koch 2010; 2011; Bocher and Lipschits 2013; Lipschits, forthcoming).

ARAMAIC PALEOGRAPHY OF THE IMPERIAL PERIOD IN LIGHT OF THE "PRIVATE" STAMP IMPRESSIONS FROM THE BABYLONIAN-PERSIAN PIT

The Babylonian period "private" stamp impressions published above illustrate the survival of and the modifications to the Iron Age "private" seal impression phenomenon in Judah. The inscriptions also contribute to our understanding of the development of the Aramaic script in the 6th century BCE. The 6th-century Aramaic monumental script may be contextualized within longer-term developments throughout the Imperial period, that is, ca. 700–200 BCE, the period in which the Aramaic language and script were adopted by Imperial powers, namely Assyria, Babylon and Persia.[27] The "private" stamp impressions from Ramat Raḥel published above not only illuminate the prevalence and prestige of the Aramaic language and script but also exhibit the last vestiges of a disappearing Iron Age order and the first hints of a reoriented system.

The script of the "private" stamp impressions is best characterized as monumental Aramaic.[28] The monumental Aramaic script of the Imperial period—the time during which the independent kingdoms of the eastern Mediterranean littoral came under the direct influence of successive imperial powers—is increasingly well attested.[29] While there are still no dated monuments from the 6th century (contrast later periods, below),[30] two major epigraphic corpora that can be dated on paleographic grounds to the 6th century now help anchor the Aramaic monumental paleography of this century. These corpora are the 87 Aramaic inscriptions on Babylonian bricks from the Vorderasiatisches Museum of Berlin (Sass and Marzahn 2010) and the over 600 *yhwd* stamp impressions excavated from numerous south Levantine sites (Lipschits and Vanderhooft 2011).[31] Archaeological considerations and explicit cuneiform attributions to Nebuchadnezzar,

27 The use of Aramaic in this period is most conveniently documented in Gzella 2015: 104–280 (extending to the Roman period). Aramaic of the Persian period and attendant historical phenomena are surveyed in several recent articles, e.g., Grassi 2018; Gzella 2017a; 2017b: esp. 25–34; Dušek 2013; and Vanderhooft 2011.

28 Smoak and Mandell (2019: 313–314) have recently ratified our usage of "monumental" for this script, on the view that this terminology appropriately conveys both its paleographic context and its social implications.

29 A recent summary of the monumental Aramaic script of the period between ca. 587 and ca. 305 BCE is now available in Lemaire 2014, the main text of which was completed in 2002. Some additions to the corpus are summarized in an addendum (Lemaire 2014: 248). New Persian period monumental Aramaic inscriptions from the three major regions of attestation—Egypt, Arabia and Anatolia—continue to surface in excavations, in museums and on the antiquities market. Some new items from Arabia, for example, were published by Roche (2013; 2014) and from Anatolia by Lemaire (2013).

30 This is in part because there are very few Aramaic-inscribed monuments from the 6th century in general. Texts from the Levant and Mesopotamia in this period are exclusively argillary (see below), ostraca, or cursive-tending incised inscriptions on ephemera. The oldest Aramaic-inscribed monuments from both Arabia, especially Tayma, and Anatolia all seem to postdate this period; this determination is made largely on paleographic grounds, aside from the dated Anatolian monuments cited below (see nn. 34–35). Some of the Aramaic inscriptions from Tayma have date formulae, but because there is no specification of whose "year" is intended in these formulae, these inscriptions are less helpful for chronology than might have been hoped (Lemaire 1995: 66; in more detail, Roche 2015). Attestation of Aramaic in Egypt during this period is minimal and non-monumental (Lemaire 2018).

31 The administrative context of these seal impressions is discussed further in Lipschits and Vanderhooft 2014, and a sizable recent bibliography appears in Lemaire 2016: 129–130. The most recently published additions to the corpus—57 impressions published by Vaughn (2016)—are recently contextualized by Lipschits 2019.

Neriglissar and Nabonidus provide a tight chronological framework for the bricks (604–539 BCE; Sass and Marzahn 2010: 149–150). The earliest *yhwd* stamp inscriptions also belong to the 6th century. This is substantiated by stratigraphic data, most notably from the Ramat Raḥel and City of David excavations, and other historical evidence (Lipschits and Vanderhooft 2011: 23–58, 251–252). While it is still difficult to differentiate between the Aramaic script of the early and late 6th century, this new paleographical evidence argues for assigning certain undated epigraphs to this century. For example, the undated Beirut Decree is now confirmed, following an early intuition of Naveh (1987: 84; cf. Caquot 1971), to belong to this horizon (Sass and Marzahn 2010: 151–152; Lipschits and Vanderhooft 2011: 64), as are the *mwṣh* stamp impressions from Judah (Zorn, Yellin and Hayes 1994; Lipschits and Vanderhooft 2011: 63, 128–129).

The paleographic framework established by these corpora is corroborated by two sets of material, namely, 1) contemporary inscriptions in other media and with different script styles, and 2) inscriptions from earlier and later periods. In the 6th century, constituents of the first category are mostly inscriptions on clay tablets; when these accompany cuneiform inscriptions or cylinder seal impressions, they can often be dated to precise years.[32] The 6th century yields no dated Aramaic papyri, but this situation improves dramatically in the subsequent century. In this vein, inscriptions from earlier and later periods are often helpful for contextualizing and constraining the 6th-century Aramaic script. Like that of the 6th century, the script of the 7th century is best known and anchored from Aramaic inscriptions on dated tablets.[33] At the other end of the chronological range, the 5th century has produced a handful of dated monumental inscriptions. These include inscriptions from 482 BCE (the Saqqara funerary stele; *KAI* 267), 458 or 398 BCE[34] (the Aswan commemorative stele; *RÉS* 438, 1806; Lemaire 1992), and 455 or 394 BCE[35] (the Lydo-Aramaic bilingual from Sardis; *KAI* 260). Also useful is this century's huge number of dated Aramaic ostraca and papyri; this database only increases in later periods.[36]

32 According to the most recent counts, there are nearly 300 such Aramaic epigraphs on Babylonian tablets. Recent treatments include Streck 2017 and Oelsner 2006. An older bibliographic summary is available in Fitzmyer and Kaufman 1992: 44–46. When fully published, the approximately 700 Aramaic inscriptions on tablets from the Persepolis fortification archives should add substantially to the paleographic discussion; this corpus is in preparation by Annalisa Azzoni (see, most recently, Azzoni 2017).

33 The largest published corpora are from Dur-Katlimmu (Tall Šēḫ Ḥamad; *e.p.* Röllig 2014, with comments on these texts in Lipiński 2016: 35–106), an unknown upper Ḫabur site known as Maʿlānā (*e.p.* Lipiński 2010; note the contemporary Akkadian texts from this site now published in Homès-Fredericq and Garelli 2018), and Tell Šuyūḫ Fawqani (*e.p.* Fales *et al*. 2005).

34 *KAI* 267, the Aswan stele, refers to *šnt šbʿ ʾrtḥšsš mlk*ˀ "the seventh year of Artaxerxes the king" (l. 3′), but which Artaxerxes is intended here is uncertain. For a survey of the options and a preference for dating to Artaxerxes II Mnemon (thus 398 BCE), see Lemaire 1992, also the most comprehensive text edition.

35 As with the Aswan stele (discussed in the preceding note), there is still some debate as to the appropriate interpretation of the date of *KAI* 260. It explicitly assigns itself to *šnt 10 ʾrtḥšsš mlkʾ* "the tenth year of Artaxerxes" (Aramaic l. 1), but this king could plausibly be Artaxerxes I Longimanus (455 BCE), Artaxerxes II Mnemon (394 BCE), or Artaxerxes III Ochus (348 BCE). Cross, for example, clearly preferred either the first or second options (1966: 7, n. 5 [= 2003: 181, n. 5]). Naveh argued that "a mid-fourth century date is to be preferred" (1970: 57). Unfortunately, both arguments come to rest on purely paleographic grounds, and it is unclear which comparative material these scholars employ. Several aspects of this text are recent discussed by Mouton and Yakubovich (2019: 220–223).

36 Pioneering steps in this direction were made by Naveh (1970: 21–43). The scripts of the papyri are surveyed by Byrne (2014) and the ostraca by Lemaire (2014: 244–248). The three most substantial papyri corpora from the Persian and Early Hellenistic periods are those from Elephantine (Porten and Yardeni 1986–99, vols. I–III), Wadi ed-Daliyeh (Gropp 2001; Dušek 2007) and Bactria (Naveh and Shaked 2012). Relevant Persian and Hellenistic period ostraca corpora include those from Elephantine (Porten and Yardeni 1986–99, vol. IV; Lozachmeur 2006), Maresha (Eshel 2010; additional, apparently divinatory texts are recently surveyed in Eshel and Langlois 2019; Eshel and Stern 2017), and from throughout Idumea (Porten and Yardeni 2014–20; Yardeni 2016). Additional ostraca are surveyed in Lemaire 2016: 129.

The concrete employment of these paleographic data above, in our treatment of the Babylonian "private" stamp impressions, illustrates both the promise of these data and the necessity of caution in working with them. In assessing monumental epigraphs, information derived from script types other than the monumental must be used primarily as ancillary, corroborating material. For centuries in which only one script type is attested in clearly dated inscriptions, conclusions regarding other script types must be provisional and qualified. With these cautions in mind, the paleographer can detect clear trends in the Aramaic script of the 6th and 5th centuries BCE. This in turn allows for a more exact characterization of such broader phenomena as the transition to Aramaic script dominance in Judah, the survival of the phenomenon of "private" stamp impressions, and the administrative systems of Judah during the Neo-Babylonian and Persian periods.

ABBREVIATIONS

BDB	Brown, F., Driver, S.R. and Briggs, C.A. 1907. *A Hebrew and English Lexicon of the Old Testament.* Boston.
BM	British Museum, collection number
CAD	*The Assyrian Dictionary of the Oriental Institute of the University of Chicago*. Chicago. 1956–2010.
DeZ	Deir ez-Zor Museum, collection number
HALOT	Köhler, L. and Baumgartner, W. 1994–2000. *The Hebrew and Aramaic Lexicon of the Old Testament* (5 vols.; trans. M.E.J. Richardson). Leiden.
KAI	Donner, H. and Röllig, W. 1966–69. *Kanaanäische und aramäische Inschriften* (2nd ed.; 3 vols.). Wiesbaden.
KTU^{3}	Dietrich, M., Loretz, O. and Sanmartín, J. 2013. *Die keilalphabetischen Texte aus Ugarit, Ras Ibn Hani und anderen Orten* (3rd ed.) (Alter Orient und Altes Testament 360). Münster.
RÉS	Chabot, J.B. 1900–19. *Répertoire d'épigraphie sémitique* (4 vols.). Paris.
RS	Ras Shamra (Ugarit), excavation number
TAD	Text siglum. Porten, B. and Yardeni, A. 1986-99. *Textbook of Aramaic Documents from Ancient Egypt* (4 vols.). Jerusalem.
VA	Vorderasiatisches Museum, collection number
VABab	Vorderasiatisches Museum, Babylon excavation number

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CHAPTER 8

YHWD STAMP IMPRESSIONS

Oded Lipschits and David S. Vanderhooft

Of the 33 *yhwd* stamp impressions found on storage-jar handles in the Babylonian-Persian Pit, 32 are securely identified by type (according to Lipschits and Vanderhooft's 2011 typology), and one is catalogued as unidentified. One of the stamp impressions belongs to Type 4 (*yhwd ḥnnh*); 12 are of Type 6a, five are of Type 6b (bringing the total number of Type 6 handles to 17).[1] One stamp impression is of Type 7, four are of Type 10, one belongs to a newly identified type, 11b (Vanderhooft, Richey and Lipschits 2019), one belongs to Type 12a, one to Type 13h, two to Type 14 and four to Type 15.

Below is a detailed publication of all 33 stamp impressions, followed by a summary of the finds and a discussion of the *yhwd* stamp impressions from the pit within the context of the total 647 known *yhwd* stamp impressions and the 372 stamp impressions discovered at Ramat Raḥel.

TYPE 4: *YHWD ḤNNH*

No. 1

Reg. No. 9591/1; Locus 13174; Elevation: 816.84; Shape: oval; Dimensions: 23 mm wide, 18 mm high; stamped on complete Jar 9628/1 (Figs. 4.13:1, 4.14:2, 4.19:1)

Type: 4
Clay: Light brown with fine white grits and reddish-gray core. The impression was found on two different body sherds, one of which is a stronger gray and appears to be burnt or covered with ash as a result of its deposition process within the refuse pit.
Description: Stamp impression on the shoulder of a storage jar, with the top of the seal facing right, perpendicular to the rim. It was found on two body sherds of a fully restored jar. Since the impression was made on the body, a clear finger press mark can be seen opposite it on the interior, created by a counter-force applied during stamping. The impression is ca. 1–2 mm deep; despite the shallow depression the text is clear and all eight letters are discernable.
Script: The letters are divided by a single horizontal line in the middle of the seal. All the letters except the final *he* (on the bottom line) were carved on the seal in the negative, creating a positive impression of these letters. Of the eight letters, the two *nun*s are least clear. This stamp impression is a classic example of this rare, early, Type 4.

1 Four of the Type 6 stamp impressions were previously published, as well as one Type 10 stamp impression (Lipschits *et al*. 2009: Nos. 2, 4, 5, 9, 14).

TYPE 6A: *YHWD*

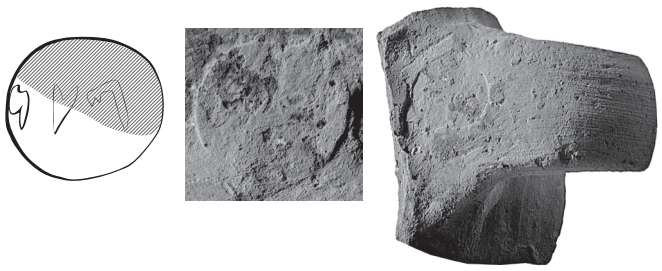
No. 2

Reg. No. 9371/1; Locus 13045; Elevation: 817.09; Shape: round; Dimensions: 19 × 21 mm in diameter; Publication: Lipschits et al. 2009: 11–12 (No. 5).

Type: 6a
Clay: Reddish-brown with white and brown grits and a thick gray core
Description: The impression appears on the upper part of the handle, close to the rim, facing down. It was uniformly stamped, 1 mm deep, and only the right side of the impression (left of the handle's central ridge) is effaced.
Script: All the letters are faintly impressed or effaced, especially their upper part, but some of the bottom parts are discernible. Only the lower part of the small angular *yod* on the right is clearly visible; the *he* is very faint; and the upper part of the *waw* is unclear, except for traces of a thick "wedge"-like head, suggesting the typical Y shape characteristic of Subtype 6a. The *dalet* is discernible as well, in a uniform row with the rest of the letters. The left stroke of the open head, reaching the edge of the impression, is another indication that the impression belongs to this subtype.

No. 3

Reg. No. 9378/1; Locus 13045; Elevation: 817.13; Shape: round/oval; Dimensions: 17 × 19 mm in diameter; Publication: Lipschits et al. 2009: 10 (No. 2).



Type: 6a
Clay: Fine yellow-light brown clay, with white grits and very thin light gray core.
Description: The impression was stamped on the upper part of a jar handle, close to the rim and almost completely perpendicular to it, rotated to the left. The seal was very shallowly impressed, 0.5–1 mm deep.
Script: All letters are either eroded or covered by a conglomerate. The only indicators pointing to the type of this stamp impression are its size and shape, as well as the traces of the typical *waw* and *dalet*, suggesting Subtype 6a.

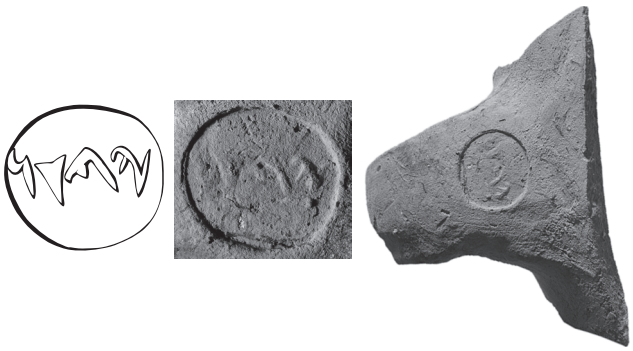
No. 4

Reg. No. 9356/1; Locus 13086; Elevation: 816.64; Shape: round; Dimensions: 16 x 18 mm in diameter; Publication: Lipschits et al. 2009: 11, No. 4; this handle joins several sherds, but since the jar is incomplete it was not drawn; stamp impression No. 8 might belong to the same jar

Type: 6a
Dimensions: 16 × 18 mm in diameter
Clay: Light brown with a few small white grits and a thick dark gray core
Description: The impression was stamped on the upper part of a completely preserved jar handle, close to the rim, facing down with a slightly diagonal orientation. It is a very shallow impression, the lower part (at the top of the handle) deeper than the upper part. There are clear signs that the handle was wiped after the stamping, including its upper central part, making the two central letters blurred. A burst air bubble just below the position of the *yod* and the *he* makes them even more ambiguous.
Script: The *dalet*, close to the edge of the seal, is the clearest letter. The *waw* is mostly eroded, but it is possible to see the thick left diagonal stroke of the typical Y-shaped letter of this subtype. Although very blurred, the *yod* and the *he* can be reconstructed.

No. 5.

Reg. No. 9621/1; Locus 13171; Elevation: 816.94; Shape: round; Dimensions: 19–21 mm in diameter; during restoration the stamped handle was connected to Storage Jar 9375/1 (Figs. 4.15:2, 4.16:1, 4.19:3)

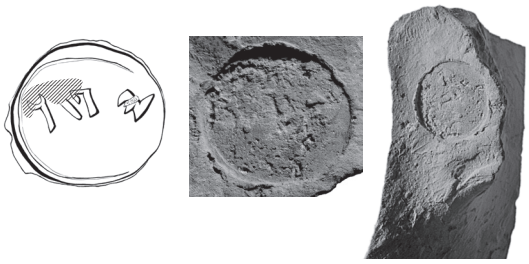


Type: 6a
Clay: Light brown, with fine white and some small black grits, and a slightly darker brown core; the surface is stained with a black deposit, either ashy or organic, and exhibits some root marks.
Description: The nearly round stamp impression appears on the upper part of a jar handle, close to the rim, the top of the seal facing the rim. It is 1 mm deep.

Script: The four letters are clear and easily recognizable. The Y-shaped *waw* identifies this stamp impression as belonging to Subtype 6a, and all the other letters are also typical of this type.

No. 6

Reg. No. 9586/1; Locus 13172; Elevation: 816.89; Shape: round; Dimensions: 19 × 21 mm in diameter



Type: 6a
Clay: Light brown, with fine white grits and light brown core; the clay is stained with a dark residue which could be ash or organic deposits.
Description: The impression was stamped on the top of a jar handle, close to the rim, facing up, towards the rim. It was uniformly stamped, 1 mm deep, probably after the juncture of the handle with the jar was smoothed, which added some surplus clay. Because of the low quality of the clay and the many grits and tiny air bubbles, the surface of the stamp impression was damaged, probably during firing.
Script: The upper parts of the letters were damaged, especially on the left side of the stamp impression, but even so, the four letters are visible and relatively clear, making this an example of Subtype 6a, with the typical Y-shaped *waw* so characteristic of the seal.

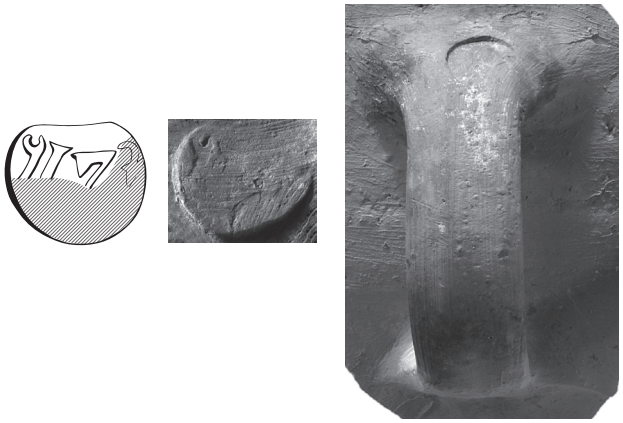
No. 7

Reg. No. 9631/1; Locus 13174; Elevation: 817.06; Shape: nearly round; Dimensions: 20–21 mm in diameter; part of Jar 9641/1 (Figs. 4.15:4, 4.16:3, 4.19:5); stamp impression No. 22 appears on the same jar.

Type: 6a
Clay: Gray-brown, with fine white grits, and a darker brown core. The handle is stained with dark sediment, ash or organic matter.
Description: The nearly round impression was stamped at the top of the jar handle, close to the rim, with the top of the seal facing the rim, and with a depth of up to 3 mm.
Script: All four letters are clearly visible. The *yod* tilts to the left with its foot angling up sharply to the right. The *he* tilts to the left, with a single vertical bar descending from the horizontal stroke. The *dalet* is open, although its left stroke is effaced. The Y-shaped *waw* places it within Subtype 6a.

No. 8

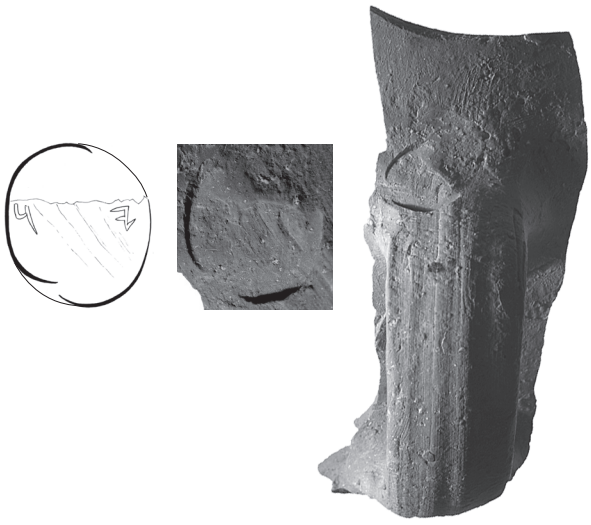
Reg. No. 9646/3; Locus 13174; Elevation: 816.41; Shape: round; Dimensions: 18 mm in diameter; this handle joins several sherds, but since the jar is incomplete it was not drawn; stamp impression No. 4 might belong to the same jar



Type: 6a
Clay: Light brown with a few visible grits and a dark gray core. Black-brown spots on the sherd might suggest burning or some post-depositional process.
Description: The impression was stamped on the upper part of a completely preserved jar handle, close to the rim, with the top of the seal facing down and to the left. The impression is poorly stamped, but its lower part, up the handle, is deep and very clear, whereas its upper part, to the lower left side of the handle, was not impressed at all.
Script: The letters are hardly visible because the seal was poorly impressed and the impression was smoothed by the potter, leaving many fingerprints. The *yod* is not preserved. The *dalet* is the best preserved letter, while traces of the *he* and *waw* are visible, although their forms are somewhat irregular, relatively thick—possibly the result of post-impression smearing. Traces of the typical Y-shaped *waw* classify the stamp impression as Subtype 6a.

No. 9.

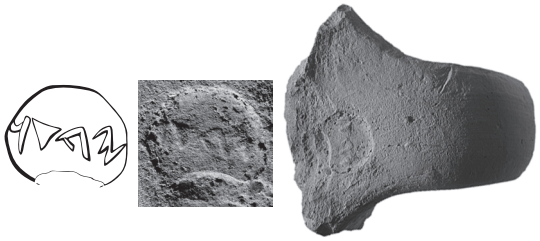
Reg. No. 9662/1; Locus 13174; Elevation: 816.41; Shape: round/oval; Dimensions: 17 × 20 mm in diameter; the handle joins sherd B.9628, L.3174



Type: 6a
Clay: Reddish-brown with fine and large white grits and a similarly colored core
Description: The impression was stamped on the upper left side of the jar handle, close to the rim, with the top of the seal facing the rim and to the right. The clay has been smeared on the upper part of the impression, which is 1–2.5 mm deep.
Script: The impression is severely eroded; the only visible letters are the *yod* on the right side and the *dalet* on the left, and even they are barely discernable. It seems that the potter or sealer tried to cancel the impression, smearing it from top to bottom, leaving a lump of clay at the top and rendering the letters almost completely illegible, with smear marks at the bottom of the impression. The *dalet* and especially the shape of the *yod* enable us to classify this stamp impression as Subtype 6a.

No. 10

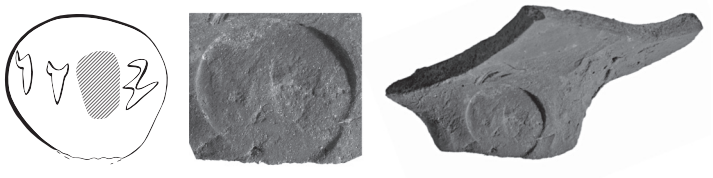
Reg. No. 9663/1; Locus 13174; Elevation: 816.41; Shape: round; Dimensions: 18 mm in diameter



Type: 6a
Clay: Yellowish-brown with a grayish-brown core and several types of grits, some fine, sandy white grits and some larger red and black grains.
Description: The impression was stamped on the upper part of the handle, close to the rim, facing down. It was uniformly stamped, 1.5 mm deep. The bottom of the stamp impression is broken.
Script: All four letters are visible. The *yod* slants to the left, with the bottom stroke angling sharply upward. The *he* is of the classic monumental form, with one vertical downstroke descending from the top horizontal. The *waw* has its usual Y shape of the type, but is slightly more triangular, perhaps due to deformation during stamping or firing. The *dalet* is open and positioned at the edge of the seal, so that the left part is effaced.

No. 11

Reg. No. 9734/1; Locus 13219; Elevation: 817.23; Shape: oval; Dimensions: 19–22 mm in diameter

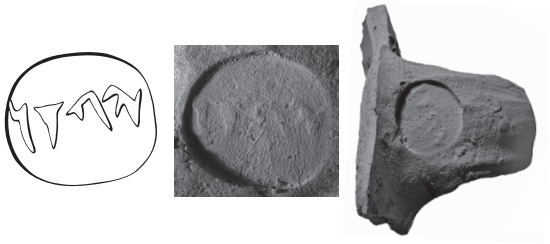


Type: 6a
Clay: Yellowish-brown with a grayish-brown core and fine sandy white grits
Description: The impression was stamped on the upper part of the handle, close to the rim, facing up. The upper part is very deep and the lower part very shallow, a clear indication that the seal was horizontal at the time of sealing.
Script: The four letters are blurred and difficult to discern. The *yod* is quite straight, unlike the usual *yod* of this type; this is probably due to pressure applied to the handle after stamping. The *he* was

later damaged, and the *waw* was of the usual Y shape, but slightly thicker than usual, perhaps due to deformation during stamping or firing. The *dalet* is open and positioned at the edge of the seal, so that its left part is effaced.

No. 12

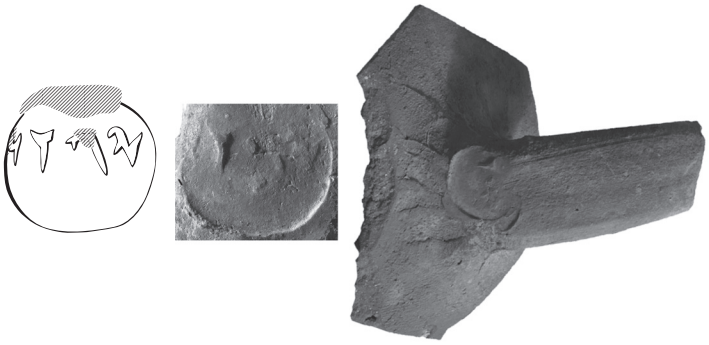
Reg. No. 9748/1; Locus 13219; Elevation: 816.75; Shape: round; Dimensions: 19 × 21 mm in diameter



Type: 6a
Clay: Pinkish brown, with fine small grits and a thick gray core
Description: The impression was stamped on the top of a jar handle, close to the rim, facing down. It was unevenly stamped, 1.5 mm deep in the lower and upper parts, but very shallow on the right side of the impression.
Script: All the four letters are easily discernable, making this a fine example of Subtype 6a, with its indicative Y-shaped *waw*.

No. 13

Reg. No. 9757/1; Locus 13219; Elevation: 816.75; Shape: round; Dimensions: 19 mm in diameter

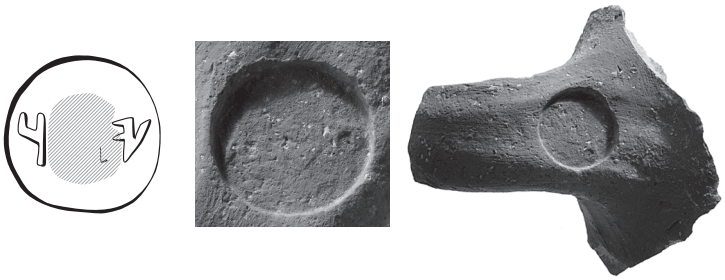


Type: 6a
Clay: Light brown with gray core and white grits.
Description: The impression was stamped on the top of the jar handle, close to the rim, facing down. It was unevenly stamped, deeper in the lower part of the impression, on the upper part of the handle, and very shallow in the upper part of the impression, where the handle bends. There are clear signs of double stamping, the earlier impression on the center of the handle and above it, the another impression—the one most visible—on the left side of the handle. There are also indications that the second stamping slid slightly from the top downward along the handle and slightly to the left.
Script: All the four letters are easily discernable, making this a fine example of Subtype 6a, with its indicative Y-shaped *waw*.

TYPE 6B: *YHWD*

No. 14

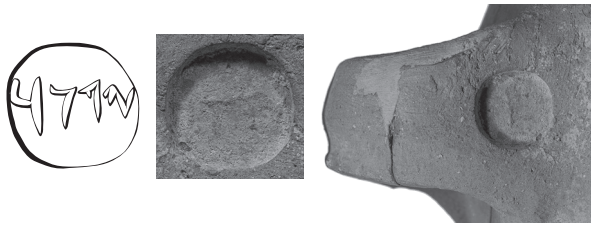
Reg. No. 9377/1; Locus 13045; Elevation: 817.13; Shape: round/oval; Dimensions: 18 × 20 mm in diameter; Publication: Lipschits et al. 2009: 19–20 (No. 14)



Type: 6b
Clay: Reddish-brown with large white grits and a uniformly-colored core
Description: The impression was stamped on the upper part of a jar handle close to the rim, with the top of the seal facing down and to the left. The impression is 3 mm deep at the point closest to the rim, and 1.5 mm deep on the lower part of the handle. This suggests that the force of the stamping was directed down and slightly inward as the storage jar stood upright.
Script: Most of the inscription is effaced, with only the *dalet* completely legible and the head and foot of the *yod* visible. The sharp slant upward and to the right of the foot of the *yod*, the clear, open, cup-shaped *dalet*, and the rounded oval shape of the seal identify the impression as Subype 6b.

No. 15

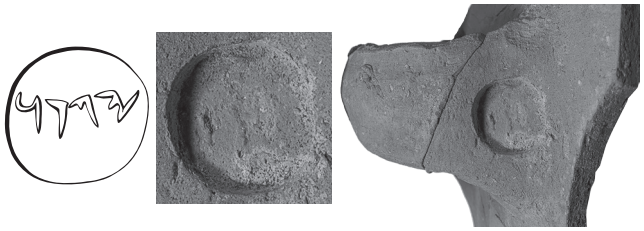
Reg. No. 9646/2; Locus 13174; Elevation: 816.41; Shape: round; Dimensions: 17 mm in diameter; the handle belongs to a jar that has been restored, although without the rim (Reg. No. 9667/1; Figs. 4.15:3, 4.16:2, 4.19:4); the handle bearing stamp impression No. 16 (see below) belongs to the same jar



Type: 6b
Clay: Grayish-brown, with many small white and brown grits and a gray core
Description: The impression was stamped on the upper part of the jar handle, close to the rim. The depth of 3–4 mm is almost entirely even across the impression, suggesting that the force of the impression was perpendicular to the slope of the handle as the jar stood upright. The top of the seal faced down toward the handle.
Script: All four letters are legible, although very faint in relation to the depth of the impression, suggesting that the seal was not well carved and that the deep impression was an attempt to overcome the shallow incision. The *he*, the most eroded of the four letters, is barely discernable, but the indicative *waw* is clear enough in its horizontal upper stroke to identify this example as Subtype 6b.

No. 16

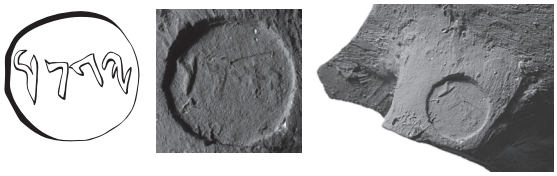
Reg. No. 9671/1; Locus 13174; Elevation: 816.15; Shape: round; Dimensions: 17 × 19 mm in diameter; the handle belongs to the same restored jar (Figs. 4.15:3, 4.16:2, 4.19:4) as the handle bearing stamp impression No. 15 (above)



Type: 6b
Clay: Grayish-brown with small white and brown grits and a gray core
Description: The impression, almost 3 mm deep, was stamped on the upper part of a jar handle, close to the rim, with the top of the seal facing down, toward the handle and slightly to the left.
Script: Despite the depth of the impression, the letters are barely visible. They are either eroded or were never clear. Of the four letters the *yod* is the clearest, with its left slant and sharp upward base. The *waw*, although faint, is recognizable as the Subtype 6b horizontal stroke. The vertical stroke of the *he* can also be seen.

No. 17

Reg. No. 9673/1; Locus 13188; Elevation: 816.14; Shape: round; Dimensions: 18 mm in diameter; this handle is connected to sherds from L13219



Type: 6b
Clay: Light brown surface, orange clay, gray core and small white grits. There are clear signs of additional brownish clay that was spread over the handle and its juncture with the jar; the handle and juncture are of very low quality
Description: The impression was stamped on the upper part of the jar handle, as the top of the seal was facing up towards the rim, and slightly to the right. It is 3 mm deep in the upper part and 1.5 mm deep in the lower part, a clear indication that the seal was horizontal when the stamping took place.
Script: Despite the depth of the impression, most of the letters are faint, except for the *dalet*, which is deeper and clearer. The *yod* is slanted, the *he* is faint but with a clear vertical stroke, the *waw*, though faint, is the typical Subtype 6b *waw* with its horizontal stroke.

No. 18

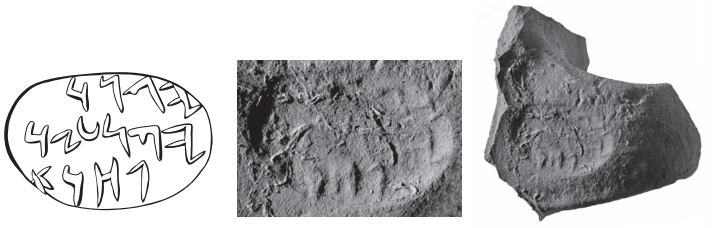
Reg. No. 9783/1; Locus 13222 (from the eastern section); Shape: round; Dimensions: 18 mm in diameter

Type: 6b
Clay: Light brown, orange brown inside, gray core and small white grits
Description: The impression was stamped on the upper part of the jar handle with the top of the seal facing down towards the base. The lower part of the impression is 2.5 mm deep near the upper part of the handle and 2 mm deep along the central ridge. The left part of the impression, to the right of the central ridge of the handle, is less than 1 mm deep—a clear indication that the seal was horizontal when the impression was stamped.
Script: All the letters are clear, except the left side of the *dalet*, on the left side of the impression, where it is somewhat shallow. The *yod* is slanted, its lower stroke reaching the right side of the impression, probably because of its depth on this side. The *he*, with its vertical stroke, is very clear; the *waw* has the typical horizontal stroke of Subtype 6b.

TYPE 7: *YHWD YHWʿZR PḤWʾ* ("YĚHÛD YEHÔʿEZER, THE GOVERNOR")

No. 19

Reg. No. 9652/1; Locus 13187; Elevation: 816.83; Shape: oval; Dimensions: 17 × 26 mm in diameter



Type: 7
Clay: Light brown clay, gray core with small and middle-sized white grits
Description: The impression was stamped in the center of the upper part of the jar handle, on its central ridge, with the top of the seal facing right. As usual with this type, the impression is very shallow all around and slightly deeper in the center. All the letters of all three lines of text are evident, especially on the right and in the center; the letters on the left side are slightly less clear, have signs of tiny roots and are covered by some spots of patina.
Script: The three lines of text are very clear. All the letters are sharp and are identical to all other examples of this type, which were all stamped by the same seal.

TYPE 10: *LYHʿZR* ("BELONGING TO YEHÔʿEZER")

No. 20

Reg. No. 9350/1; Locus 13086; Elevation: 816.64; Shape: round; Dimensions: 18 × 19 mm in diameter; Publication: Lipschits et al. 2009: 15 (No. 9)

Type: 10
Clay: Brown with many small white grits and a gray core
Description: The impression was stamped on the upper part of the jar handle, with the top of the seal facing up toward the rim and tilted slightly to the left. The impression is positioned on the left side of the handle. The impression is 2.5 mm deep on its upper left side and is very shallow on the lower right side, to the right of the handle's central ridge.
Script: The seal was engraved in the positive, so that all six letters *lyhʿzr* are clearly visible in the typical mirror-image stance of this type.

No. 21

Reg. No. 9634/1; Locus 13174; Elevation: 817.06; Shape: round; Dimensions: 20 × 21 mm in diameter

Type: 10
Clay: Grayish-brown with many fine white grits and a dark gray core. The sherd includes the entire handle and a large piece of the body.
Description: The impression was stamped on the upper part of the jar handle, close to the rim, with the top of the seal facing down. The bottom of the impression, near the rim, is 3 mm deep, while the top part, lower on the handle, is only 1.5 mm deep. This is an indication that the seal was applied vertically, parallel to the upright jar.
Script: In this perfect example of the Type 10 *lyhʿzr* seal, all the letters are clearly visible in mirror image.

No. 22

Reg. No. 9640/1; Locus 13174; Elevation: 817.06; Shape: slightly oval; Dimensions: 17 × 20 mm in diameter; this stamped handle belongs to Jar 9641/1 (Figs. 4.15:4, 4.16:3, 4.19:5), along with another handle stamped with Subtype 6a impression 9631/1 (see above, No. 7)

Type: 10
Clay: Grayish-brown with many sandy fine white grits and a red core
Description: The impression was stamped on the upper part of the jar handle, precisely on its juncture with the body, and faces down to the left. The impression is only about 1 mm deep and is deeper on the central ridge of the handle. The impression is very clear, suggesting a very well-made seal.
Script: In this good example of Type 10, all six letters, *lyhʿzr*, are clearly visible in their typical mirror-image stance.

No. 23

Reg. No. 9782/1; Locus 13222 (from the eastern section); Shape: slightly oval; Dimensions: 17 × 20 mm in diameter

Type: 10
Clay: Pinkish-brown with a few large white grits and a thick gray core
Description: The impression was stamped on the upper part of the jar handle, at the juncture with the body, after additional clay was smeared. The impression, facing left, is ca. 2.5 mm deep and slightly deeper on the right side of the handle. It is very well impressed and clear, suggesting a well-made seal.
Script: The six letters *lyhʿzr* were carved in the positive on the seal and are clearly visible in their typical mirror-image stance. This is a clear example of Type 10. Only the *yod* is slightly damaged.

TYPE 11B: *YHWD GDLYH* ("YĚHÛD GĚDALYĀH")

No. 24

Reg. No. 9799/1; Locus 13230; Elevation: 816.43; Shape: oval; Dimensions: 19 × 24 mm in diameter; Publication: Vanderhooft, Richey and Lipschits 2019

Type: 11b
Clay: Reddish clay with a gray surface, gray core and very small white grits
Description: The impression was stamped on the upper part of the jar handle, on the central ridge, facing left. It is much deeper (2–3 mm) on its upper right side and only about 1 mm deep on the left side of the impression, down the handle.

Script: The seal was incised entirely in the positive. The resulting impression reads from left to right. The *yod* was imperfectly s, and all other letters present the exact mirror images of widely attested forms.

TYPE 12A: *YH(W)D PḤW'* ("YĚHÛD, THE GOVERNOR")

No. 25

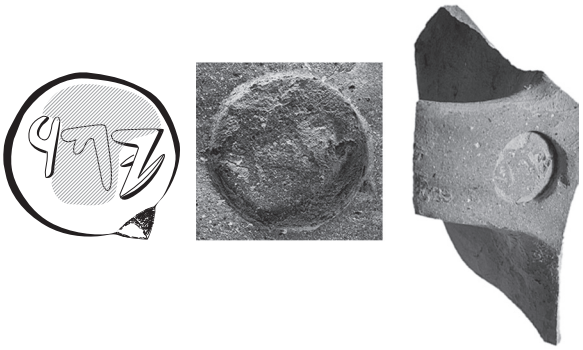
Reg. No. 9779/1; Locus 13174; Elevation: 816.24; Shape: oval; Dimensions: 19 × 24 mm in diameter

Type: 12a
Clay: Brownish-gray clay with gray surface, gray core and very small white and black grits
Description: The impression was stamped on the upper part of the jar handle, on its left half of the handle, facing right. It is much deeper (2–3 mm) in its upper part, on the central ridge of the handle, and very shallow in its lower part, along the left edge of the handle. The right part of the stamp impression is missing because the handle is broken.
Script: The lower line is badly preserved, but all four letters are visible. The upper line is much better preserved, but the *yod* on the right is damaged due to the breakage.

TYPE 13H: *YHD*

No. 26

Reg. No. 9581/1; Locus 13172; Elevation: 816.89; Shape: round; Dimensions: 20 mm in diameter; the handle joins several body sherds (not registered and not drawn; B9345, L13086; B9667, L13174; and B9603, L13171; see Chapter 4, Appendix 4.1, No. 32)



Type: 13h
Clay: Dark brown with many small brown and white grits and a gray core
Description: The impression was stamped on the upper part of the jar handle, close to the rim, the top of the seal facing left and slightly downward. The impression is 3 mm deep, except for its lower part, to the right of the central ridge of the handle, where it is slightly shallower.
Script: All three letters have the usual Aramaic monumental forms. The *yod* and *he* are mostly upright, as is characteristic of this type. The *yod*, although eroded or not properly impressed, seems to have a rounded top and a long bottom stoke. The *he* has a single bar descending from the horizontal stroke. The bar seems to be split, but that is the result of a grit in the clay. The *dalet* has an open cupped head, formed by a single curved stroke.

TYPE 14: *YH*

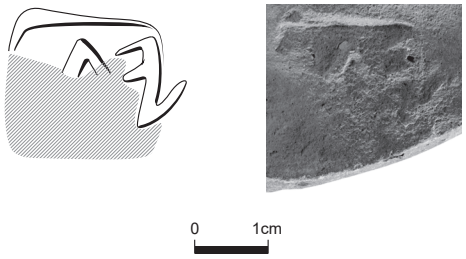
No. 27

Reg. No. 9635/1; Locus 13174; Elevation: 817.06; Shape: irregularly-shaped stamp impression, round with straight line at the top; Dimensions: 20 × 24 mm in diameter; straight upper line: 18 mm long

Type: 14 (new subtype)
The letters exhibit an unusual style, and the bezel—the inner ring typical of Type 14—is lacking. Only two examples with somewhat similar features have been found: one in Aharoni's excavations at Ramat Raḥel and the other in Jericho. It seems that this impression is a new subtype of Type 14.
Clay: Grayish-brown with fine white grits and a gray core
Description: The impression was stamped on the upper part of the jar handle, very close to the rim, with the top of the seal facing down. The lower part of the impression, on the upper part of the handle, is 3 mm deep, and the top of the impression is about 1–2 mm deep. It seems that the pressure applied in creating the impression was perpendicular to the slope of the handle.
Script: The two letters are clearly visible. The *yod* has a sharp angled top, like Subtype 14b, and a slight upward curve to the bottom final stroke. The *he*, however, does not match the Subtype 14b form. The two oblique bars are very long, with the top one reaching below the bottom of the *yod*.

No. 28

Reg. No. 9637/1; Locus 13174; Elevation: 816.70; Shape: irregularly-shaped stamp impression, round with straight line at the top; Dimensions: 20 × 24 mm in diameter; straight upper line: 18 mm long



Type: 14 (new subtype); although more eroded and not as clear as stamp impression No. 27, it seems that the two were made with the same seal.
Clay: Yellowish-brown, with fine and medium white grits, some brown inclusions and a light gray core
Description: This impression was stamped on the upper part of the jar handle, very close to the rim, with the top of the seal facing downward. The impression is shallow—1–1.5 mm deep in its upper part.
Script: The letters are mostly preserved, especially in their upper part. The bottom final stroke of the *yod* slants upward and seems to project beyond the presumed border of the stamp. The *he* is to the left, with especially long oblique lines projecting toward the bottom of the *yod*.

TYPE 15: *YH*-OVERLAPPING

No. 29

Reg. No. 9756/1; Locus 13219; Elevation: 815.58; Shape: oval; Dimensions: 19 × 23 mm

Type: 15
Clay: Burnt brown clay, with a gray core and a few large white inclusions
Description: This impression was stamped on the upper part of the jar handle, very close to the rim, on the central ridge of the handle, facing right. The impression is shallow (1 mm deep) in its upper part, on the right side of the handle and on the lower left side, left of the central ridge. The right and left sides of the impression, along the handle's ridge, are much deeper (2–3 mm).
Script: As all the stamp impressions of this type were probably stamped by the same seal, the *yod* and *he* here "overlap" with the *yod* in the positive and the *he* incised onto the seal in reverse and upside down.

No. 30

Reg. No. 9775/1; Locus 13222 (from the eastern section); Shape: oval; Dimensions: 19 × 22 mm

Type: 15
Clay: Reddish brown, with a gray core and some large white inclusions
Description: This impression was stamped on the upper part of the jar handle, on the central ridge, very close to the rim, facing right. The impression is shallow (1 mm deep) on its upper right side, on the right side of the handle, and elsewhere is 1.5–2 mm deep.
Script: As all the stamp impressions of this type were probably stamped by the same seal, the *yod* and *he* here "overlap" with the *yod* in the positive and the *he* incised onto the seal in reverse and upside down.

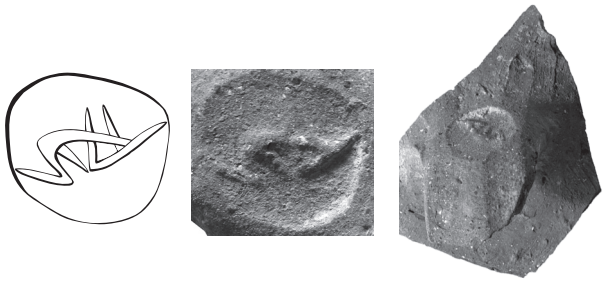
No. 31

Reg. No. 9776/1; Locus 13222 (from the eastern section); Shape: round/oval; Dimensions: 20 mm in diameter

Type: 15
Clay: Reddish clay, a gray core, with a few large and small inclusions
Description: This impression was stamped on the upper part of the jar handle, very close to the rim, slightly on the left side of the handle, facing down. The impression is shallow (1 mm deep) on its upper side, down the handle, and much deeper (3 mm) in the lower part, toward the rim. The relatively round shape of this impression is probably due to the direction of the stamping. There is a deep scratch in the handle, probably made when it was stamped, damaging the upper part of the impression, down the handle.
Script: As all the stamp impressions from this type were probably stamped by the same seal, the *yod* and *he* here "overlap" with the *yod* in the positive and the *he* incised onto the seal in reverse and upside down.

No. 32

Reg. No. 9814/1; Locus 13232; Elevation: 816.48; Shape: oval; Dimensions: 19 × 21 mm

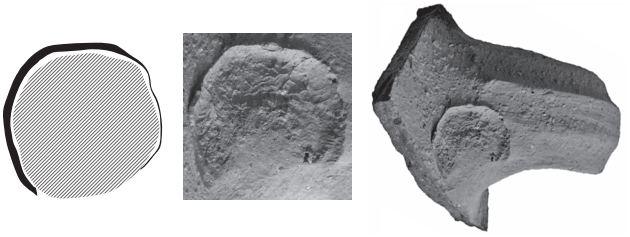


Type: 15
Clay: Brownish-gray, with a gray-black core and small and medium-sized white grits
Description: This impression was stamped on the upper part of the jar handle, very close to the rim, facing down and slightly to the right. The impression is shallow (1 mm deep), except for the lower part of the impression, up the handle, where it is 2 mm deep.
Script: As all the stamp impressions of this type were probably stamped by the same seal, the *yod* and *he* here "overlap" with the *yod* in the positive and the *he* incised onto the seal in reverse and upside down.

UNIDENTIFIED STAMP IMPRESSION

No. 33

Reg. No. 9753/1; Locus 13219; Elevation: 816.75; Shape: round; Dimensions: 25 mm in diameter



Type: Unidentified
Clay: Light brown, gray core and many small white and medium-sized grits
Description: This impression was stamped on the upper left part of the jar handle, very close to the rim. The right side of the impression is on the central ridge; the lower left side was not impressed. It is 2 mm deep, suggesting that the seal was pressed diagonally.
Script: No letters can be observed.

DISCUSSION

The data providing the basis for the current discussion (Table 8.1) is summarized in Tables 8.2 and 8.3 below, comparing the total number of *yhwd* stamp impressions in the general corpus (Lipschits and Vanderhooft 2020), the number recovered from Ramat Raḥel in general (*ibid*.), and the number of finds uncovered in the Babylonian-Persian Pit.

Twenty-five stamp impressions discovered in the Babylonian-Persian Pit (78% of the 33 finds) are of the early types of *yhwd* impressions (five already published in Lipschits *et al.* 2009: Nos. 2, 4, 5, 9, 14). This percentage is very close to the percentage of early *yhwd* stamp impressions from Ramat Raḥel in relation to their number in the entire known corpus (127 early *yhwd* stamp impressions out of a total of 165, or 76%), but is much higher than the percentage of early stamp impressions from Ramat Raḥel in relation to the other stamp impressions discovered at the site (127 stamp impressions from the early types out a total of 372 *yhwd* stamp impressions, or 34%).

The seven stamped handles of the middle types represent about 22% of all the *yhwd* stamp impressions recovered from the Babylonian-Persian Pit. This percentage is much lower than the percentage of stamp impressions of the middle types from Ramat Raḥel in relation to the entire known corpus (212 out of a total of 338 stamp impressions of the middle types, or 63%) and is also much smaller than the percentage of stamped handles of the middle types that were discovered at the site (57% of the 372 *yhwd*-stamped handles found at Ramat Raḥel).

The absence of stamped handles bearing late *yhwd* types—given the 33 late finds discovered elsewhere in Ramat Raḥel (representing ca. 9% of the 372 *yhwd*-stamped handles found at the site and 23% of the total of 144 late *yhwd* stamp impressions in the general corpus)—is a clear indication of the main dates of the finds in the pit.

Taking all these percentages into consideration, the main period of activity represented in the Babylonian-Persian Pit is the Early Persian period. Among the finds from the pit there is only one stamp impression of *yhwd* Types 1–5. This probably represents the earliest stamp impressions from the Early Persian period, still exhibiting characteristics of the First Temple period and of the "private" stamp impressions from the 6th century BCE. Most of the new finds are of Type 6 (17 stamp impressions, about 53% of the stamp impressions uncovered in the pit), compared to 73 Type 6 stamp impressions

Table 8.1: The *yhwd* Stamp Impressions Discovered in the Babylonian-Persian Pit

No.	Object No.	Locus	Elevation	Type	Description
1	9591/1	13174	816.84	4	Found on two body sherds of a fully restored jar (Figs. 4.13:1, 4.14:2, 4.19:1)
2	9371/1	13045	817.09	6a	Published: Lipschits *et al*. 2009: 11–12 (No. 5)
3	9378/1	13045	817.13	6a	Published: Lipschits *et al*. 2009: 10 (No. 2)
4	9356/1	13086	816.64	6a	Handle connected to part of jar which is not complete; stamp impression No. 8 (9646/3) might belong to the same jar. Published: Lipschits *et al*. 2009: 11 (No. 4)
5	9621/1	13171	816.94	6a	Stamp impression joined during restoration to Jar 9375/1 (Figs. 4.15:2, 4.16:1, 4.19:3)
6	9586/1	13172	816.89	6a	
7	9631/1	13174	817.06	6a	Part of jar 9641/1 (Figs. 4.15:4, 4.16:3, 4.19:5) with stamp impression No. 22 (9640/1) attached to same jar
8	9646/3	13174	816.41	6a	
9	9662/1	13174	816.41	6a	Joined to sherd B9628 L13174
10	9663/1	13174	816.41	6a	
11	9734/1	13219	817.23	6a	
12	9748/1	13219	816.75	6a	
13	9757/1	13219	815.58	6a	
14	9377/1	13045	817.13	6b	Published: Lipschits *et al*. 2009: 19–20 (No. 14)
15	9646/2	13174	816.41	6b	Belongs to Jar 9667/1, (Figs. 4.15:3, 4.16:2, 4.19:4); another stamp impression, No. 16 (9671/1), belongs to the same jar
16	9671/1	13174	816.15	6b	Part of Jar 9667/1 (Figs. 4.15:3, 4.16:2, 4.19:4); another stamp impression, No. 15 (9646/2), belongs to the same jar, 9646/2, L13174
17	9673/1	13188	816.14	6b	Sherds belong to B9739, but not connected
18	9783/1	13222		6b	
19	9652/1	13187	816.83	7	
20	9350/1	13086	816.64	10	Published: Lipschits *et al*. 2009: 15 (No. 9)
21	9634/1	13174	817.06	10	
22	9640/1	13174	817.06	10	Part of Jar 9641/1 (Figs. 4.15:4, 4.16:3, 4.19:5) with stamp impression No. 7 (9631/1) attached to the same jar
23	9782/1	13222	–	10	
24	9799/1	13230	816.43	11b	New type of *yhwd* stamp impression
25	9779/1	13174	816.24	12a	
26	9581/1	13172	816.89	13h	Joint to body sherd of a jar (not registered) B9345, L13086; B9667, L13174; B9603, L13171 (see Chapter 4, Appendix 4.1:32)
27	9635/1	13174	817.06	14	
28	9637/1	13174	816.70	14	
29	9756/1	13219	815.58	15	
30	9775/1	13222	–	15	
31	9776/1	13222	–	15	
32	9814/1	13232	816.48	15	
33	9753/1	13219	816.75	Unidentified	

discovered at Ramat Raḥel in general (about 20% of the all the stamp impressions at the site). To this we should add the four Type 10 stamped handles, which constitute about 12% of the stamp impressions in the pit, compared to the 22 Type 10 stamped handles discovered at Ramat Raḥel (about 6% of all the stamp impressions from the site)—a much greater percentage than the proportion of this type in the general corpus (24 out of 647, or around 4%).

Table 8.2: Breakdown of the Number of *YHWD* Stamp Impressions Uncovered at Ramat Raḥel, in the Babylonian-Persian Pit and in the General Corpus According to Type

Type	*Total in the General Corpus*	*Total Uncovered at Ramat Raḥel*	*Total from Babylonian-Persian Pit*
Early Types			
Type 1	18	7	0
Type 2	2	0	0
Type 3	4	0	0
Type 4	6	4	1
Type 5	2	1	0
Type 6	80*	73*	17*
Type 7	8	6	1
Type 8	2	0	0
Type 9	1	0	0
Type 10	24*	22*	4*
Type 11	4	1	1
Type 12	14	13	1
Total	*165**	*127**	*25**
Middle Types			
Type 13	112	73	1
Type 14	204	117	2
Type 15	22	22	4
Total	*338*	*212*	*7*
Late Types			
Type 16	55	3	0
Type 17	89	30	0
Total	*144*	*33*	*0*
Total of All Types	*647**	*372**	*32**

* Four of the Type 6 stamp impressions and one Type 10 stamp impression from the Babylonian-Persian Pit were previously published. This is why only 27 stamp impressions from the pit were calculated in the final tabulation (see Table 8.3).

Table 8.3: Percentage of the *YHWD* Stamp Impressions Uncovered at Ramat Raḥel in the Babylonian-Persian Pit and in the General Corpus According to Type

	Total Finds (%)	*Ramat Raḥel (%)*	*Babylonian-Persian Pit (%)*
Early Types	26	34	78
Middle Types	52	57	22
Late Types	22	9	0
Total	*100*	*100*	*100*

Only seven *yhwd* stamp impressions discovered in the pit are of the middle types, a very small addition to the 338 stamp impressions belonging to these types in the general corpus. This constitutes only about 22% of the finds in the pit, as compared to the general finds at the site (212 stamp impressions of the middle types, or 57% of the 372 *yhwd* stamp impressions discovered at Ramat Raḥel). This suggests that during the Late Persian and Early Hellenistic periods, the activity represented in the pit was minimal.

It should be pointed out that the elevations at which the stamp impressions were recovered in the pit cannot indicate any clear stratigraphy or chronological order in the depositional history of the pit. Table 8.4 clearly shows that early types of *yhwd* stamp impressions can be found both in the upper and lower parts of the pit and that middle types are found midway down the pit.

CONCLUSIONS

The *yhwd*-stamped jar handles discovered in the Babylonian-Persian Pit are not representative of the general finds at Ramat Raḥel, and the percentage differs from the general proportion discovered in Judah. It seems that the main period of deposition represented in the pit is a short period in the Early Persian period, probably

Table 8.4: *yhwd*-Stamped Handles in the Babylonian-Persian Pit According to Elevation

Elevation	*Type Uncovered*	*Stamp Impression No.*
815.58	6a	13
815.58	15	29
816.14	6b	17
816.15	6b	16
816.24	12a	25
816.41	6a	8
816.41	6a	9
816.41	6a	10
816.41	6b	15
816.43	11b	24
816.48	15	32
816.64	6a	4
816.64	10	20
816.70	14	28
816.75	6a	12
816.83	7	19
816.84	4	1
816.89	6a	6
816.89	13h	26
816.94	6a	5
817.06	6a	7
817.06	10	21
817.06	10	22
817.06	14	27
817.09	6a	2
817.13	6a	3
817.13	6b	14
817.23	6a	11

sometime in the early 5th century BCE, in continuation from the finds of the lion stamp impressions and other finds from the 6th century BCE, not represented by the system of *yhwd* stamp impressions.

The pit represents a secondary fill that was deposited in the Early Hellenistic period. The finds in the pit and the floor above it suggest that it reflects an activity around the 2nd century BCE, perhaps when a storeroom was cleared and many pottery vessels, including stamped jars, were thrown into it. This storeroom might already have been destroyed or gone out of use in the mid-5th century BCE, when it was abandoned with the vessels inside. We may assume that the continuation of activity in the edifice led to a few later vessels being added and broken vessels possibly being stored or thrown into the abandoned storeroom. Only much later was the storeroom cleared and all the vessels thrown into the pit (see, further, Chapters 3 and 13).

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CHAPTER 9

POTTER'S MARKS AND INCISIONS

Liora Freud

Six handles bearing potter's marks were found in the Babylonian-Persian Pit, all incised before firing. Four are X-shaped (Fig. 9.1:1–4), and two are rounded incisions (Fig. 9.1:5–6). The X-shaped incisions differ in depth and smoothness. Potter's mark No. 1 was created with a rod that was pushed against the clay to form cross marks. Marks Nos. 2 and 4 were incised with a thin tool; a sharper tool was used for No. 3, in which the potter used more force, creating a deeper slash. The rounded incisions of Nos. 5 and 6 are asymmetrical and were formed freehand with a sharp tool, resulting in an almost tear-shaped impression with a triangular form inside.

Two of the handles were joined during restoration to complete four-handled jars: the handle bearing the X-shaped mark No. 4 was joined to SJ 9661/1 (Figs. 4.17:1, 4.18:1, 4.19:6), and the handle with the rounded No. 5 incision was joined to SJ 9646/4 (Figs. 4.17:2, 4.18:2, 4.19:7).

1. Potter's Mark (Fig. 9.1:1)

Reg. No.: 9664/1
Locus: 13174
Elevation: 816.41
Shape: X
Clay: Gray clay and core, burnt black ash outside
Description: The potter used a rod or a finger that was pushed against the wet clay before firing to create a shallow X shape on the upper part of the handle.
Parallels: Ramat Raḥel, Aharoni's excavations, from an unknown context (Bocher, Ras and Freud 2016: Fig. 32.1:12); City of David, Strata 8–7 (Shoham 2000: Fig. 24:13).

2. Potter's Mark (Fig. 9.1:2)

Reg. No.: 9646/5
Locus: 13174
Elevation: 816.41
Shape: X
Clay: Light orange-brown
Description: An X-shaped potter's mark incised with a thin tool before firing on the upper part of the handle.
Parallels: Ramat Raḥel Renewed Excavations, Reg. No. 3094/2, L317 (Freud, forthcoming); City of David Stratum 10C–B, Area G; Strata 7B and 9, Area D2 (Shoham 2000: Fig. 24:1–3). It is noteworthy that in the City of David, the dating to the Persian and later periods is based mainly on the shape of the handle and the quality of the clay (Shoham 2000: 112).

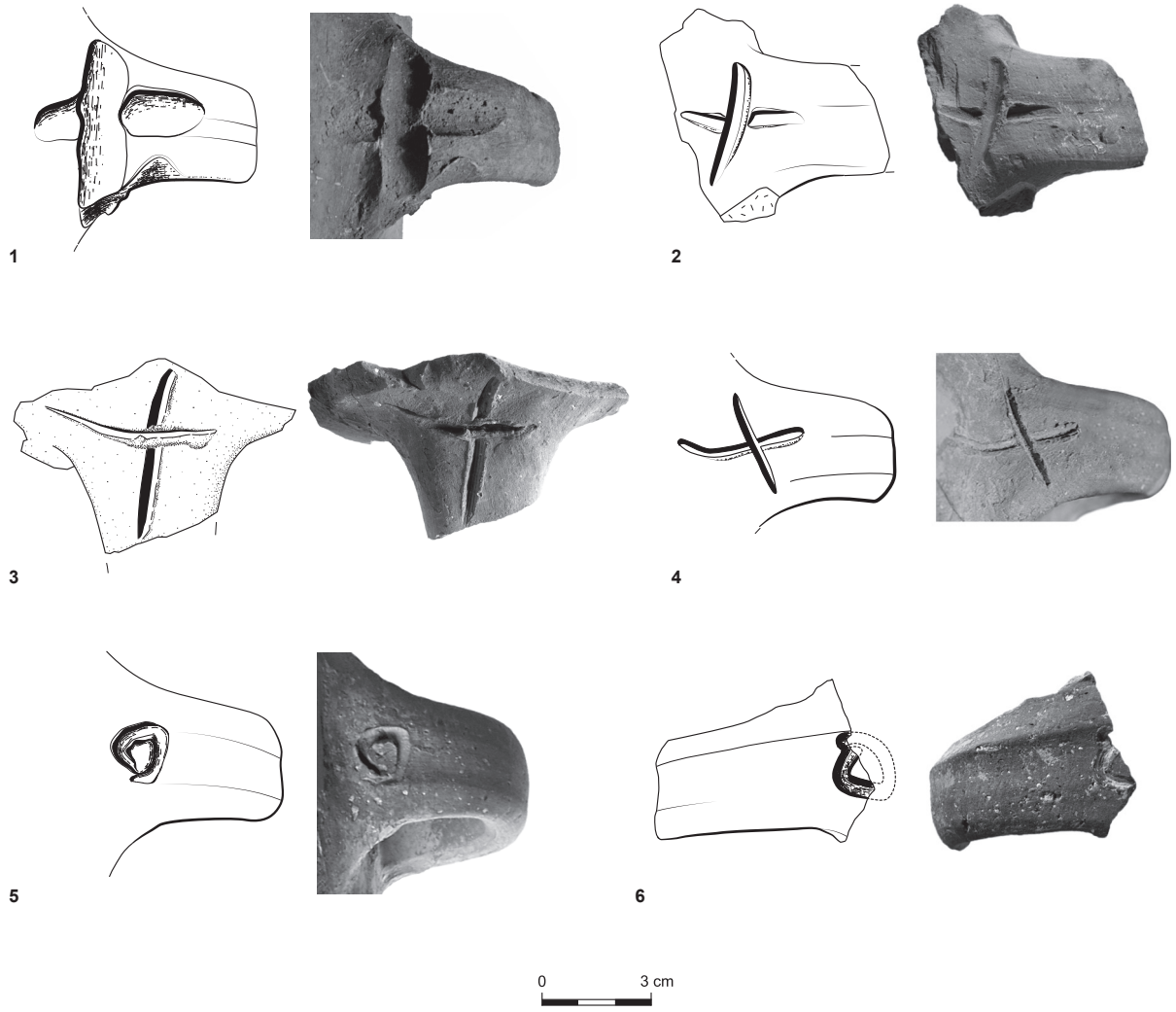

Fig. 9.1: Potter's marks and incisions.

3. Potter's Mark (Fig. 9.1:3)

Reg. No.: 9807/2
Locus: 13231 (Final Locus 13174)
Elevation: 816.95
Shape: X
Clay: Brown and light gray surface outside, orange-brown inside, gray core with white grits
Description: A potter's mark incised with a sharp tool before firing, creating a deep slash in an X shape on the upper part of the jar handle.[1]
Parallels: Ramat Raḥel, Aharoni's excavations, from fill above the courtyard (Bocher, Ras and Freud 2016: Fig. 32.1:9–11); Renewed Excavations, Reg. No. 3307/1, L358; Reg. No. 8910/1, L11028 (Freud, forthcoming).

4. Potter's Mark (Fig. 9.1:4)

The handle was joined during restoration to complete four-handled jar 9661/1 (Figs. 4.17:1, 4.18:1, 4.19:6).
Reg. No.: 9661/1

1 The handle was sampled for residue analysis; Chapter 10, Table 10.1: ERC sample 2404.

Locus: 13174
Elevation: 816.41
Shape: X
Clay: Orange-brown clay inside, brown-gray surface outside
Characteristics: A potter's mark incised with a sharp tool creating a deep slash in an X shape on the upper part of a handle.
Parallels: Ramat Raḥel, Renewed Excavations: Reg. No. 3303/1, L358; Reg. No. 9148/1, L13037 (Freud, forthcoming).

5. Rounded Incision (Fig. 9.1:5)

The handle was joined during restoration to four-handled jar 9646/4 (Figs. 4.17:2, 4.18:2, 4.19:7)
Reg. No.: 9655/1
Locus: 13174
Elevation: 816.41
Shape: Rounded
Clay: Dark brown and gray clay, gray core
Description: An asymmetrical, almost tear-shaped, incision incised in freehand with a sharp tool on the upper part of a handle
Parallels: Ramat Raḥel, Aharoni's excavations: from above the courtyard and from an unknown context (Bocher, Ras and Freud 2016: Fig. 32.2:11,12); Renewed Excavations: Reg. No. 1842/1, L164; Reg. No. 2599/1, L10101 (Freud, forthcoming). At the City of David, a similar, but not identical, triangular incision was found in Area E1 (dump) (Ariel and Shoham 2000: 158, Nos. L109–L110, 166, No. L165).

6. Rounded Incision (Fig. 9.1:6)

Reg. No.: 9779/5
Locus: 13222 (Final Locus 13174)
Elevation: 816.24
Shape: Rounded
Clay: Light gray clay, gray core, many large white grits
Description: Part of a rounded incision on the upper part of a jar handle, broken, only half preserved.
Parallels: See Mark No. 5, above.

DISCUSSION

Parallels of such incisions on storage-jar handles are known mainly from Jerusalem (Ariel and Shoham 2000) and Ramat Raḥel (Bocher, Ras and Freud 2016). In the renewed excavations conducted at Ramat Raḥel between 2005–2010, over 20 similar incisions were found. Most of them, except the ones recovered from the pit, originated from the fills that overlay the first three building phases (Chapter 2).

Although a familiar phenomenon, the study and publication of potter's marks and incisions on jar handles have often been inadequate, especially those deriving from past excavations. The dating of these incisions to the Persian and the Persian-Hellenistic periods was usually based on the type of clay or the context in which the handles were found (Shoham 2000: 112; Ben-Arieh 2000; Hizmi and Shabtai 1993: 79). A more accurate dating came from Shiloh's excavations in Area E in the City of David, where X-shaped incisions were added after firing to a handle stamped with a *yh* impression and to a handle with an empty stamp impression (Shoham 2000: 112, Fig. 24:17–18; Ariel and Shoham 2000: 138, Table 2). As mentioned above, two of the incisions from the pit were found on the handles complete four-handled

yhwd storage jars dated to the Persian period (Chapter 4). This supports the dating of such incisions to the Persian, rather than the Hellenistic, period.

The finding of storage jars with such incisions in the pit along with storage jars bearing *yhwd* stamp impressions points to their coexistence during the Persian period. This raises a question regarding the relationship between the *yhwd* stamp-impression system and the incised jar handles.

What is the meaning of the different incisions, and how should they be interpreted? The marking must have taken place in the potter's workshop because it was performed on the wet clay before firing. It is possible that the jars were intended for use by individuals unconnected to the administrative system or that they were part of the administrative system, but were marked differently for some unknown reason. Another possiblity is that the marks were merely the potter's trademark.

In conclusion, several jars with incisions made prior to firing were used in the Persian period alongside the jars with *yhwd* stamp impressions. Some of these incisions are identical and were probably made by the same potter. The meaning of these incisions is still unknown.

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CHAPTER 10

ORGANIC CONTENT OF PERSIAN *YHWD*-STAMPED STORAGE JARS

Dvory Namdar, Oded Lipschits, Liora Freud and Yuval Gadot

INTRODUCTION

The Babylonian-Persian Pit yielded a great number of restorable storage jars, some bearing stamp impressions on their handles or bodies. Typologically, there is no distinction between the jars that are stamped with a *yhwd* impression and those that are not. Storage jars, found by the thousands in the archaeological record, serve as testimony of what were once lively national and international commercial and administrative systems. Traded for their contents, the form of the jars had to fit the characteristics of the destined commodity, the mode of transportation and the need for quantity standardization. Jars traded through inland exchange systems and administration were more unified in shape and bore unique administrative proof by means of an impression stamped on their handles. Whether the stamping was used to mark goods, to label their quality based on their origin, to tie taxes with the purchasers, or to assure recognition of feasting contributions—identification of the content of the jars may shed light on the different aspects of the use of these containers.

Thus, a residue-analysis-oriented excavation was carried out in the pit, under controlled conditions (see Chapter 2). Samples were broken off vessels as they were unearthed and stored properly in paper bags until they were processed and analyzed. An appropriate *ad hoc* sampling protocol was developed (see below).

MATERIALS AND METHODS

MATERIALS AND SAMPLING PROTOCOL

Nineteen Persian period storage jars (*yhwd* jars) from the pit, both stamped and unstamped, were included in this study (Table 10.1). Pottery was collected in the field with gloves, left unwashed and wrapped in paper bags. A fragment, a few square centimeters in size, was broken off with pliers from the lower part of the body of each characteristic vessel, as close to the base as possible. Each sample was then split into two—one piece was analyzed for its organic content, and the other was marked and subsequently washed and restored with the rest of the pottery. As a result, each sample with non-contaminated organic material could be coupled with the complete restored jar and studied by pottery experts.

Two juglets, one cooking pot, one lamp, one bowl and five jar handles were found in the area of the pit excavated for residue analysis, mixed with the sampled storage jars. These items were chosen to serve as a contamination control. All control samples were treated in the same way as described for the storage jars.

In addition, another group of eight Persian period storage jars that had been washed and restored prior to our analysis were sampled. Three juglets restored in the same manner as the washed storage jars were sampled as well.

Table 10.1: Ceramic Items Sampled for Residue Analyses (Items with No Assigned Figure Number Were Not Drawn)

Sample No.	*Locus*	*Basket*	*Reg. No.*	*Type*	*Figure*	*Description**
2355	13174	9375	9375/1	Jar	Figs. 4.15:2, 10.1b	Washed and glued
2356	13086	9338	9338/1	Jar	Figs. 4.17:3, 10.1g	Washed and glued
2357	13174	9646	9340/1	Juglet	Figs. 4.7:10, 10.2a	Washed
2359	13174	9621	9621/1	Jar body with handle	Figs. 4.15:2, 8.15, 10.1c	Washed and glued, belongs to 9375/1
2364	13045	9641	9641/1	Jar	Figs. 4.15:4, 10.1e	Washed and glued
2391	13232	9814	9814/3	Cooking pot	Fig. 4.5:5	
2392	13232	9814	9814/4	Jar base		
2393	13232	9814	9814/5	Jar base		
2394	13232	9814	9814/2	Body sherd with handle		
2395	13232	9814	9814/1	Handle with stamp impression	Chapter 8, No. 32	
2396	13231	9806	9807/1	Jar rim	Fig. 4.13:4	Samples Nos. 2396, 2398, 2399, 2400, 2401and 2405 probably belong to the same jar; thus, Figs. 10.1:a and 10.1:k represent results for all of them; minor diversity reflects location in the pit
2397	13231	9806	9806/1	Jar body		
2398	13231	9802	9802/1 (probably belongs to rim 9807/1)	Jar body with handle		See above, Sample No. 2396
2399	13231	9802	9802/1 (probably belongs to rim 9807/1)	Jar body	Fig. 10.1a	See above, Sample No. 2396
2400	13231	9802	9802/1 (probably belongs to rim 9807/1)	Jar body		
2401	13231	9802		Jar body		
2402	13231	9800		Jar body		Samples Nos. 2402 and 2403 are part of the same (non-restored) jar (see Chapter 4, Appendix 4.1, No. 31)
2403	13231	9800		jar body		
2404	13231	9807	9807/2	Handle	Fig. 9.1:3	Handle with potter's mark
2405	13231	9807	9807/1?	Jar body	Fig. 10.1k	Probably belongs to jar 9807/1 (cf. Fig. 10.1:a)
2406	13231	9811	9811/2	Handle		
2407	13231	9811	9811/4	Jar or jug body		Close to base
2408	13231	9811	9811/3	Jar or jug body		Close to base
2409	13231	9811	9811/1	Jar base	Fig. 4.17:6	Upper and lower parts do not join, but belong to the same jar

* Not all the items that were washed are presented here, due to the incomplete nature of the records.

Table 10.1 (cont.)

Sample No.	*Locus*	*Basket*	*Reg. No.*	*Type*	*Figure*	*Description**
2410	13231	9811	9811/5	Jar body		Close to base
2411	13231	9811	9811/6	Juglet base		
2412	13231	9813	9813/4	Bowl	Fig. 4.1:22	
2413	13231	9813	9813/5	Jar base		
2414	13231	9813	9813/3	Jar body		Close to base
2415	13231	9813	9813/2	Jar body	Figs. 4.17:8, 10.1:h	Close to base
2416	13231	9813	9813/1	Lamp	Figs. 4.10:6, 10.2:b	
2417	13228	9798	9798/1	Jar base	Fig. 10.1d	
2418	13230	9799	9799/2	Jar rim	Figs. 4.13:3, 10.1:i	
2419	13230	9799	9799/1	Handle	Chapter 8, No. 24	Handle with stamp impression
2420	13233	9816	9816/2	Jar base		
2421	13233	9816	9816/1	Jar base	Fig. 10.1f	
2422	13233	9816	9799/2?	Jar base	Fig. 10.1j	Probably belongs to Jar 9799/2

METHODS

Lipid Extraction

Glassware was soaked in fuming nitric acid, washed carefully with distilled water and then washed with acetone, followed by dichloromethane. Powdered samples were extracted twice with 10 ml of solvent (dichloromethane: methanol, 2:1, v:v) followed by 10 minutes sonication. The samples were centrifuged for 5 minutes at 3500 rpm. The supernatant was transferred to a clean glass vial. The solvents were removed by evaporation under a gentle stream of nitrogen. Prior to analysis, 100 µl of *N,O*-bis (trimethylsilyl) trifluoroacetamide containing 1% trimethylchlorosilane was added to the dry extracts, followed by heating at 65°C for 20 minutes. One µl of each sample was injected into the gas chromatograph (GC) coupled with a mass selective detector (MSD).

Identification of Lipids with Gas Chromatography/Mass Spectrometry (GC/MS)

GC/MS analyses were carried out using an HP7890 gas chromatograph coupled with an HP5973 mass spectrometer (electron multiplier potential 2 KV, filament current 0.35 mA, electron energy 70 eV; the spectra were recorded every 1s over the range m/z 50 to 800), using a splitless injection mode. An Agilent 7683 autosampler was used for the sample introduction. A 30 m, 0.32 mm ID 5% cross-linked phenylmethyl siloxane capillary column (HP-5MS) with a 0.25 µm film thickness was used for separation, forwarded by 1 m of fused silica deactivated high temperature pre-column (0.25 mm ID). Helium was used as a carrier gas at a constant flow of 1.1 ml s^{-1}. An isothermal hold at 50°C was kept for two minutes, followed by a heating gradient of 10°C min^{-1} to 345°C, with the final temperature held for 10 minutes. The injection port temperature was 220°C. The MS interface temperature was 300°C. Peak assignments were carried out with the aid of library spectra (NIST 1.6), elution times of alcohols and alkanes standard compounds and compared with published data.

Quantification of Lipids Using Gas Chromatography (GC)

GC analyses were carried out using a HP6890 gas chromatograph equipped with a flame ionization detector (FID), a splitless injection mode and a 30 mHP-5 column. All parameters are similar to those applied for GC-MS.

Quantification of the amounts of lipids per weight ceramic unit using GC was conducted on all the samples that were initially found to contain alcohols. Seven of these samples were freshly excavated and not touched with bare hands prior to analysis. The quantification of the alcohols in the archaeological extraction was based on calibration curves built using a mixture of tetracontanol (C_{24}ol), hexacontanol (C_{26}ol), octacontanol (C_{28}ol) and triacontanol (C_{30}ol) standards, purchased from Sigma-Aldrich. The quantification of the alkanes was based on calibration curves built using a mixture of *n*-heptacontane (C_{27}), *n*-nonacontane (C_{29}) and untriacontane (C_{30}) standards, custom-made by Restek. The estimated quantification of the total lipid extracts (TLEs) of each sample was based on the areas under all the peaks eluted from the GC column against the calibration curve of *n*-heptacontane (C_{27}).

RESULTS

In 50% of the analyzed storage jars the very same molecular assemblage repeated itself. The organic extracts consist of mainly saturated fatty acids with 16 and 24 carbons (palmitic and lignoceric acid, respectively), homologous even *n*-alcohols with 24 to 30 carbon chains, odd numbered homologuous *n*-alkanes with 23 to 31 carbon chains and androstene (Fig. 10.1).

This molecular assemblage is typical of fresh light-colored beeswax (Namdar *et al.* 2007). The absence of any even-numbered *n*-alkanes from the TLEs also fits this identification. The original presence of wax esters in beeswax can be inferred from the homologous alcohols, with 24 to 30 even-numbered carbon chains and the small amount of androstene, hinting to the way the native wax esters were broken into the specific set of alcohols. This all points directly to the material that has been found in the stamped jars: clear beeswax that was biologically degraded by yeast.

Alongside this reiterative molecular assemblage, other compounds were detected in the different organic extracts of the storage jars. Phenols, diacids and short ketones are present as well in part of the extracts (Table 10.2).

Comparing the total lipid extracts (TLE) of the storage jars that were freshly excavated with those of jars that were washed and handled prior to the analysis show that the washing procedure did not affect—at least not in a direct and unambiguous way—the amounts of the TLE or the ratios between the different compound groups identified in the TLE (Table 10.2). The handling, however, did cause the introduction of extraneous contaminants to the lipids assemblages (Fig. 10.1b,c,e,g; Table 10.2), while on-site sampling helped monitoring and reducing the contamination related to handling, washing and storage.

In the extracts of the remaining 11 storage jars that were analyzed, another repetitive assemblage was detected containing nothing but palmitic and stearic acids, odd- and even-numbered *n*-alkanes and plasticizers (Table 10.2).

Control samples that included an oil lamp and a juglet contained a completely different molecular assemblage than those detected in the storage jars (Fig. 10.1). The oil lamp (Fig. 10.2b) extract was composed of traces of olive oil, while the identification of the type of organic (floral-originating) past content of the juglet (Fig. 10.2a) is more difficult to interpret.

DISCUSSION

The molecular assemblage extracted from the examined Persian period *yhwd*-stamped storage jars points to accumulation of biologically degraded beeswax. The presence of homologous odd-numbered alkanes

along with long chain alcohols and typical fatty acids suggests that fresh light-colored beeswax was extracted from the walls of the storage jars. In a wild hive, there are three main areas, differentiated by their shade (Crane 1999): dark, medium and light (Fig. 10.3). This color-based distinction is the result of the different uses of each area by the bees. The innermost part of the comb, also known as the "brooding

Table 10.2: Lipids Extracted from the Storage Jars Analyzed (Data for Figs. 10.1–10.2)*

Sample		*Lipids*		*Amount (μg/g)*			*Comments*
No.	*Fig.*	*Lipid Assemblages*	*Contaminants*	*TLE*	*Alkanes*	*Alcohols*	
2399	10.1a	Diacid$_{16}$, $C_{16:0}$, C_{18}Ol, $C_{18:1}$, $C_{18:0}$, *n*-C_{23-31}, $C_{20:0}$, $C_{22:0}$, $C_{24:0}$, C_{24-32}Ol, $MAG_{18:2}$, glycine, L-lysine, threonine, androstenone		170. 8	26.3	10.7	Figs. 10.1a and 10.1k—same item
2355	10.1b	$C_{9:0}$, $C_{10:0}$, K_{11}, $C_{13:0}$, $C_{14:0}$, $C_{16:0}$, diacid$_{16}$, *n*-C_{23-31}, C_{22-32}Ol, androstene	Phthalate, dimioinisitol	335.2	52.0	14.7	Figs. 10.1b and 10.1c—same item
2359	10.1c	$C_{9:0}$, $C_{10:0}$, $C_{12:0}$, $C_{14:0}$, $C_{16:0}$, C_{18}Ol, $C_{18:1}$, $C_{18:0}$, *n*-C_{23-31}, C_{24-32}Ol, androstene	Phthalate	247.7	26.4	18.2	Figs. 10.1b and 10.1c—same item
2417	10.1d	Diacid$_{12}$, $C_{16:1}$, lanostanol, $C_{16:0}$, fenoterol, C_{18}Ol, $C_{18:1}$, $C_{18:0}$, C_{20-32}Ol, diacid$_{16}$, *n*-C_{23-33}, $C_{24:0,}$ docosanethiol	Phthalate, 2-hydroxy-isocaproic acid	186.1	16.6	12.0	
2364	10.1e	Phenol, K_{11}, $C_{12:0}$, $C_{14:0}$, $C_{16:0}$, $C_{17:0}$, C_{18}Ol, $C_{18:1}$, $C_{18:0}$, *n*-C_{23-31}, $C_{20:0}$, diacid$_{16}$, $C_{22:0}$, $C_{23:0}$, $C_{24:0}$, C_{24-32}Ol, androstene		301.5	95.6	54.5	
2421	10.1f	$C_{16:0}$, C_{18}Ol, $C_{18:1}$, $C_{18:0}$, *n*-C_{23-33}, C_{26-32}Ol, $C_{24:0}$		132.1	11.1	4.7	
2356	10.1g	$C_{9:0}$, $C_{10:0}$, $C_{12:0}$, $C_{14:0}$, C_{16}Ol, $C_{16:0}$, C_{18}Ol,$C_{18:0}$, *n*-C_{23-31}, C_{22-32}Ol, MAG_{18}	Phthalate, dehydroabietic acid	547	93.7	35.5	
2415	10.1h	$C_{14:0}$, $C_{16:0}$, , C_{18}Ol, $C_{18:0}$, *n*-C_{23-31}, C_{24-32}Ol	Phthalate	13.2	3.9	1.7	
2418	10.1i	$C_{16:0}$, $C_{18:0}$, coprostanol, *n*-C_{23-33}, C_{26-32}Ol, $C_{24:0}$		152.6	27.6	15.5	Figs. 10.1i and 10.1j—same item
2422	10.1j	$C_{16:0}$, $C_{18:1}$, $C_{18:0}$, $C_{20:0}$, $C_{22:0}$, $C_{24:0}$, $C_{26:0}$, $C_{28:0}$, *n*-C_{23-33}, C_{26-32}Ol, androstene		284.3	51. 5	16.4	Figs. 10.1i and 10.1j—same item
2405	10.1k	$C_{16:0}$, $C_{18:1}$, $C_{18:0}$, $C_{20:0}$, $C_{22:0}$, $C_{24:0}$,		340. 1	89.7	6.1	Figs. 10.1a and 10.1k—same item
2416 Lamp	10.2b	$C_{16:0}$, $C_{18:1}$, $C_{18:0}$, $C_{20:0}$, $C_{22:0}$, $C_{23:0}$, $C_{24:0}$, MAG_{18}	Phthalate				
2357 juglet	10.2a	Thymol β-d-glucopyranoside, succinic acid, $C_{12:0}$, $C_{13:0}$,isopropyl myristate, $C_{14:0}$, $C_{16:0}$, C_{18}Ol, $C_{18:1}$, $C_{18:0}$, diacid$_{16}$, oleanitrile, DAG_{16}, DAG_{18}	Phthalate				

*$C_{x:y}$ = fatty acid with *x* carbons chain and *y* degree of unsaturation; $C_x$ol = alcohol with *x* carbons chain; K_x = ketone with *x* carbons chain; *n*-C_x = normal alkane with x carbons chain; MAG_x = monoacylyglycerides with $C_{x:y}$ attached to the glyceride-backbone

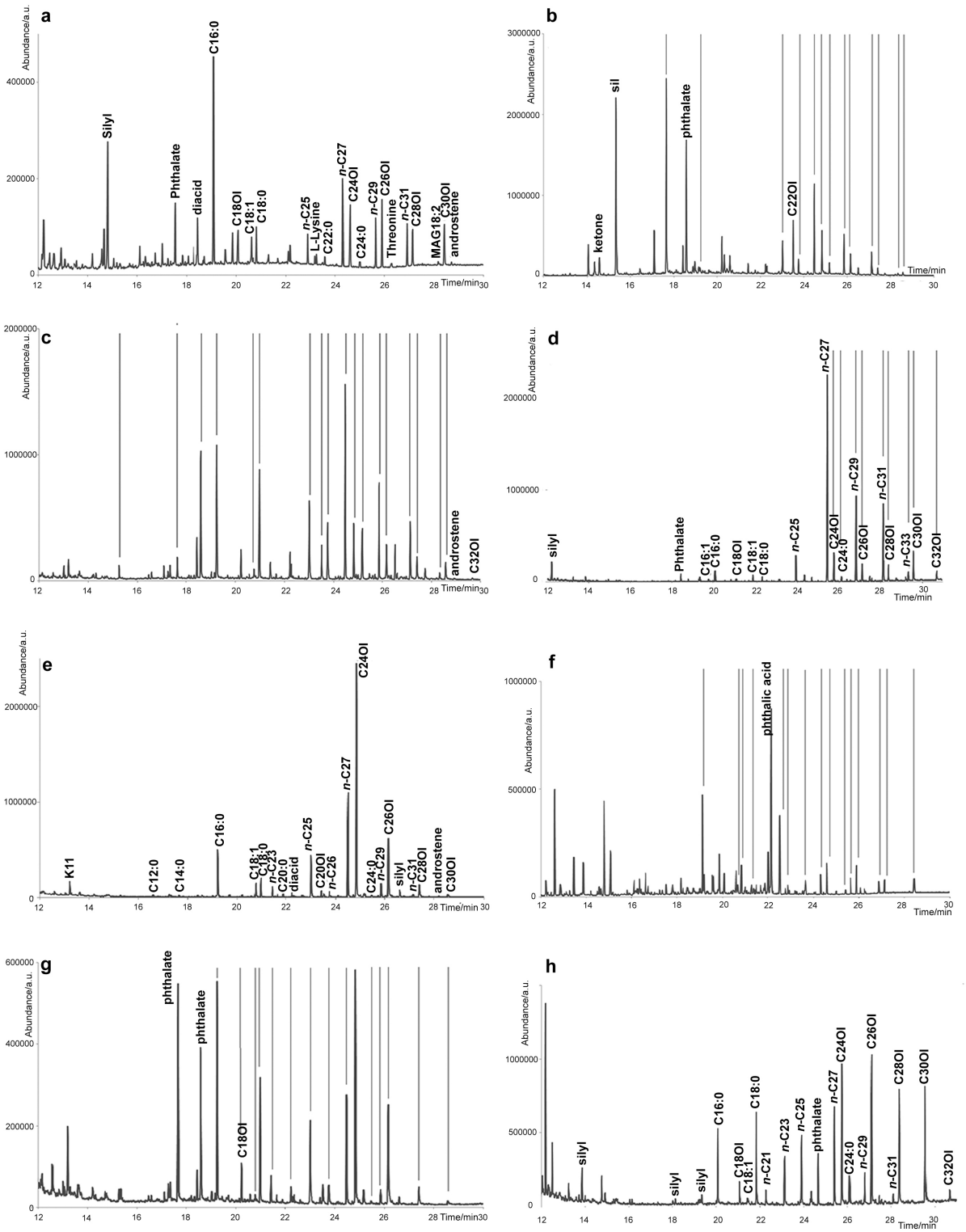

Fig. 10.1: Chromatograms of all the lipids assemblages detected in the studied jars: (a) 2399, (b) 2355, (c) 2359, (d) 2417, (e) 2364, (f) 2421, (g) 2356, (h) 2415.

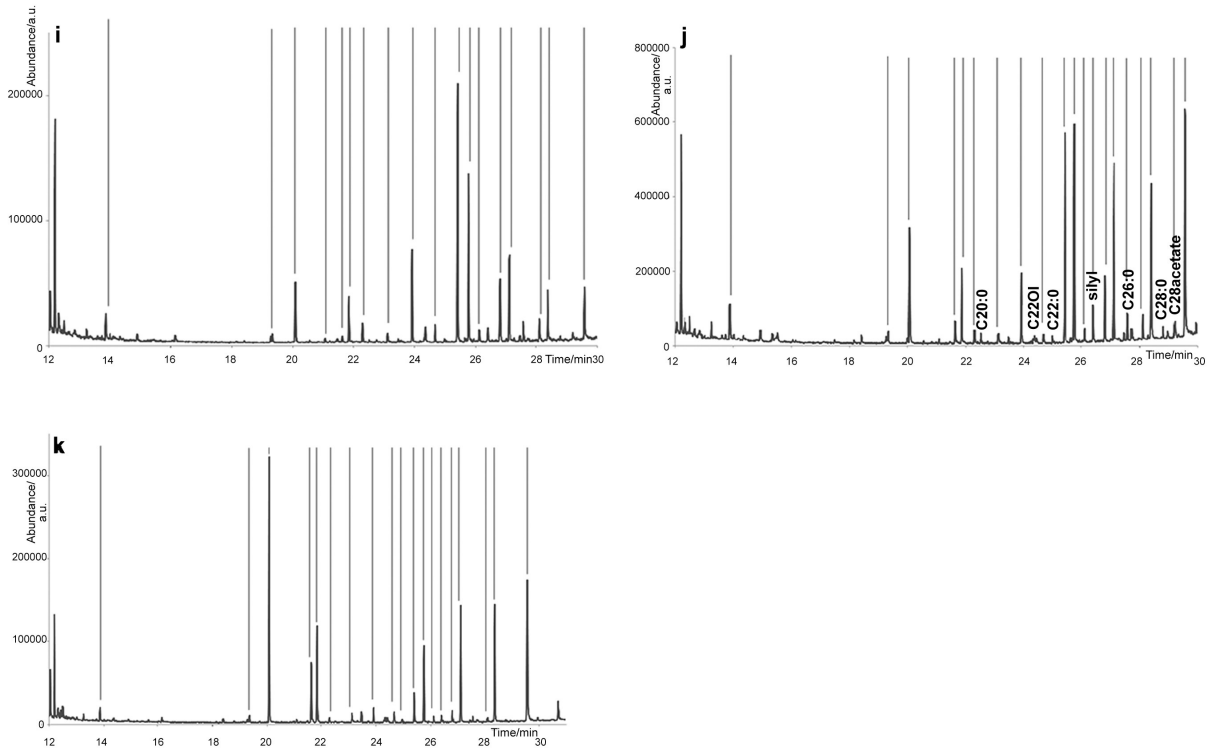

Fig. 10.1 (cont.): Chromatograms of all the lipids assemblages detected in the studied jars: (i) 2418, (j) 2422, (k) 2405.

area," is used by the bees to lay their eggs; the larvae develop into a pupa and by the end of the maturation cycle the young bees leave the brooding area. While doing so, the young bees shed their cuticle, which coats the cells of the brooding area (Namdar *et al.* 2007). Thus, with time, this area becomes darker and narrower until there is not enough space for bees to grow. The bees then leave the hive and build a new one. As the larvae have to be fed with pollen, the bees keep the pollen gathered for this purpose in the cells that surround the brooding area. These cells are light brown-shaded with time. The remaining outermost cells are filled with honey and these cells are left in their light native color.

The various colored parts of the beeswax differ chemically as well (Namdar *et al.* 2007). In general, beeswax is composed of three main families of molecules: wax esters, odd-numbered *n*-alkanes and saturated fatty acids (Evershed *et al.* 2003). The dark-colored beeswax accumulates an additional compound group, even-numbered *n*-alkanes that originate from the bees' cuticles (Salvy *et al.* 2001; Namdar *et al*. 2007; Namdar *et al*. 2009).

Beeswax was used in antiquity as an illuminant, an adhesive, an embalming medium, in casting of metal objects, and more. In our case, beeswax may have been used as a coating or sealing agent, applied to the inner walls of the jars for mechanical purposes. In this instance, the exhibited biodegradation of the beeswax was accidental and may have been caused by airborne yeast. Thus, the commodity that was stored in the jars remains unknown.

An alternative explanation is that the jars contained some alcoholic beverage that was made of fermented honey. In this case the biodegradation of the beeswax would have been the outcome of intentional fermentation of the honey. Based solely on our results it cannot be concluded unequivocally which of the two options is accurate. However, even-numbered *n*-alkanes were not detected in the TLEs of the samples. This means that only light-colored beeswax—the area in which the honey is stored—was placed in the jars. This suggests that an intentional selection was made. If the beeswax was used solely

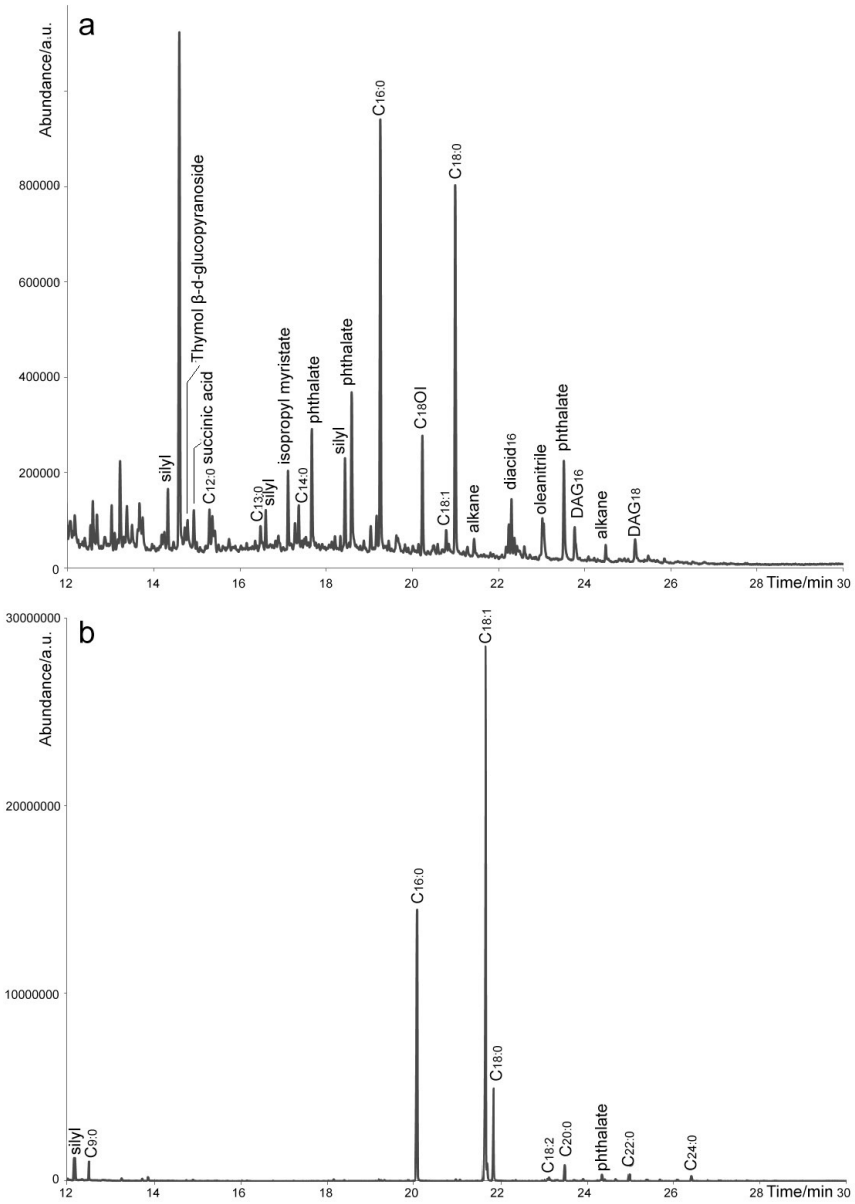

Fig. 10.2: Chromatogram of the total lipid extract from control vessels from the pit: (a) juglet, (b) lamp.

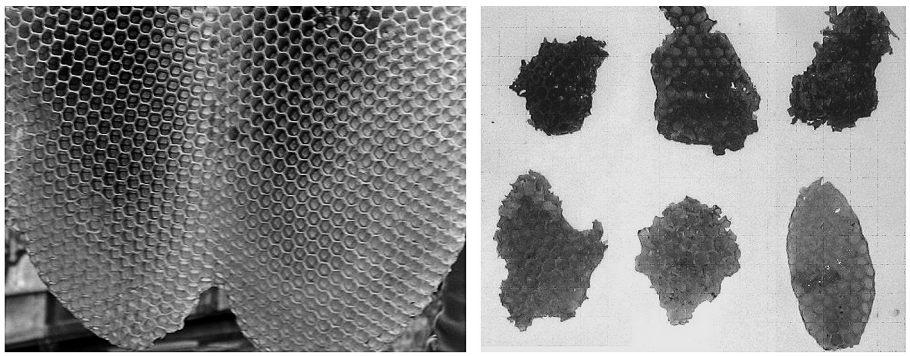

Fig. 10.3: The different shades of brown in a wild beehive: dark (brooding area), medium (pollen-storage area), and light (honey-storage area).

for coating, we would expect to find wax originating from the entire honey comb without much care and with at least residues of the even-numbered alkanes as well. The selection made may suggest that the presence of beeswax is merely fortuitous and that the commodity stored in the jars was in fact the honey.

Mead is the fermentation product of honey. From textual evidence it seems that mead was a basic alcoholic beverage commonly produced in ancient societies. Historically, meads were fermented with wild yeasts and bacteria residing on the skins of the fruit or within the honey itself. The earliest archaeological evidence of the production of mead dates back to around 7000 BCE, although archaeological evidence of it is unclear. The presence of androstene, among others, suggests that the breakdown of the wax esters was not hydrolytic but was caused by yeast activity. The fermentation of the honey started with digestion of the sugars. By fermentation the yeast converts carbohydrates to carbon dioxide and alcohols. The creation of even-numbered *n*-alcohols in the range inspected in our samples is the result of the degradation of the wax esters, after all the available sugars were exhausted (Evershed *et al*. 2003).

The fact that other types of vessels came from the same excavated loci pointed to the non-contaminated nature of the results. The fact that mostly non-polar compounds were part of the original content of the jars may explain the relatively low damage that washing with tap water caused to the molecular assemblage preserved.

CONCLUSIONS

The use of beeswax, whether for coating or for alcoholic beverages, highlights the importance of bees and honey for the economy of the Iron Age and Persian period in Israel and Judah. Until recently not much was known about apiaries, as they did not appear in the archaeological record of the Levant. The beehives found at Tel Reḥov (Mazar *et al.* 2008; Bloch *et al.* 2010) are exceptional in this respect. As far as we can tell, Ramat Raḥel was the destination of the jars and therefore we should look for the beehives elsewhere, most probably at the point of departure of the storage jars. Petrographic analysis of the *yhwd* storage jars showed they were centrally produced in the Jerusalem environs.

The *yhwd*-stamped storage jars of the Persian period are part of a sequence of jars used in Judah, beginning in the 8th century BCE with the storage jars bearing *lmlk* stamp impressions. Further research into other jars bearing other stamps such as *lmlk* and rosette impressions may shed light not only on their content but also on the seal's function—either as an indicator of the content of the jar or as relating to greater political and administrative powers.

ACKNOWLEDGMENTS

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CHAPTER 11

ISOLATION AND CHARACTERIZATION OF LIVE YEAST CELLS FROM A MEAD VESSEL

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In this paper we present the results of the isolation and characterization of yeast samples from mead storage jars excavated from the Ramat Raḥel Babylonian-Persian Pit.[1] We identified the yeast by sequence analysis as *Hyphopichia burtonii*—a yeast that is also found in the contemporary yet traditional beverage, *tej*, an Ethiopian mead. We grew it in wort similar to the modern beer yeast *Saccharomyces cerevisiae* and produced a potable and tasty mead and beer.

Based on the hypothesis that yeast has the potential to survive for long periods of time within the nano-pores of clay vessels, we tested the possibility of isolating live yeast from vessels that had previously contained fermented liquids. We were successful in isolating and characterizing two strains of yeast from vessels excavated from the pit. We extracted the first strain from a typical Early Persian period Judean storage jar (Table 11.1:1; Figs. 4.17:2, 4.18:2, 4.19:7). According to previous organic residue analyses (Chapter 10), such vessels contained mead (honey wine; Lipschits *et al.* 2017: 107–108). We isolated the second strain from an oil lamp found in the same context (Table 11.1:38; Fig. 4.10:5).

Our interest in this project was part of our broader research into finding a new method to isolate live microorganisms from ancient vessels (Aouizerat *et al.* 2019).

METHODS

Yeast Growth

Yeast is routinely grown from a single colony, either in liquid YPD medium (Difco, USA) at 30°C, under aerobic conditions with agitation (250–300 rpm), or on solid YPD medium containing 2% w/v Bacto-agar (Difco, USA) incubated at 30°C. Stocks of yeast strains were kept in -80°C in 50% glycerol.

Yeast Isolation from Vessels and Control Samples

The excavated vessels were flooded with rich YPD medium (Difco, USA) and incubated at room temperature for seven days. Samples from the medium were then streaked on selective agar plates for fungal isolation (NOVAmed BA-114, Israel) and incubated at 30°C each for designated periods of 12 to 48 hours. Yeast colonies growing on the plates were re-plated on solid YPD agar plates, containing 2% w/v Bacto-agar (Difco, USA). Colonies with the typical shape, structure and color of yeast-colonies were picked and, using light microscopy, the existence of yeast was validated by typical yeast cell structures. Positive colonies were picked for further analysis.

1 This article reproduces material published in Aouizerat *et al.* 2019.

Table 11.1: The Samples Examined from Ramat Raḥel for the Presence of Yeast

Index	*Sample*	*Sample Type*	*Isolated Yeast (+/–)*	*Beer Production (+/–)*	*Isolated Yeast Name*
A. Storage Jars					
1	RR1	Sherd from putative mead Storage Jar 9646/4	+	+	RRPrTmd13
2	RR2	Base of putative mead Storage Jar 9814/4	–	–	
3	RR3	Sherd from putative mead *yhwd* Storage Jar 9641/1	–	–	
4	RR4	Sherd from putative mead bag-shaped Storage Jar 9661/2	–	–	
B. Controls					
5	RR5	Sediment from sherd B9675	–	–	
6	RR6	Sherd from Juglet B9618	–	–	
7	RR7	Sediment from sherd B9592	–	–	
8	RR8	Sediment from sherd B9675	–	–	
9	RR9	Sherd from Storage Jar 9618/6 (with lion and "private" stamp impressions)	–	–	
10	RR10	Sediment from sherd B.9592	–	–	
11	RR11	Sediment from modern construction	–	–	
12	RR12	Sediment from the pit	–	–	
13	RR13	Sediment from the pit	–	–	
14	RR14	Sediment from the pit	–	–	
15	RR15	Pit wall	–	–	
16	RR16	Sediment from the pit	–	–	
17	RR17	Sediment from the pit	–	–	
18	RR18	Sediment from the pit	–	–	
19	RR19	Sediment from the pit	–	–	
20	RR20	Sediment from the pit	–	–	
21	RR21	Sediment from the pit	–	–	
22	RR22	Pit wall	–	–	
23	RR23	Iron Age wall	–	–	
24	RR24	Sediment from the pit	–	–	
25	RR25	Sediment from the pit	–	–	
26	RR26	Sediment from the pit	–	–	
27	RR27	Sediment from the pit	–	–	
28	RR28	Sediment from the pit	–	–	
29	RR29	Sediment from the pit	–	–	
30	RR30	Sediment from the pit	–	–	
31	RR31	Sediment from the pit	–	–	
32	RR32	Sediment from the pit	–	–	
33	RR33	Sediment from the pit	–	–	
34	RR34	Sediment from the pit	–	–	

Table 11.1 (cont.)

Index	*Sample*	*Sample Type*	*Isolated Yeast (+/–)*	*Beer Production (+/–)*	*Isolated Yeast Name*
35	RR35	Sediment from the pit	–	–	
36	RR36	Sediment from the pit	–	–	
37	RR37	Sediment from the pit	–	–	
C. Lamps					
38	RR38	Lamp 1 (9666/1)	+	–	RRPrNerP7
39	RR39	Lamp 2	–	–	
40	RR40	Lamp 3	–	–	

DNA Purification

Yeast cell DNA isolation was performed as previously described (Holm *et al.* 1986). Briefly, 10 ml of overnight (~18 hours) cultures were centrifuged at 3000 rpm for 5 minutes and washed in sterile water. The cells were treated with 200 µl of phenol chloroform, 0.3 g of acid-washed glass beads and 200 µl of Smash and Grab solution (Holm *et al.* 1986). They were then lysed using a vortex for 3 minutes, after which TE buffer was added. The cells were centrifuged and the aqueous layer containing the DNA was transferred to 1 ml ethanol, washed and suspended in TE buffer. 1 µl of RNase (10 mg/ml DNase- and Protease-free RNase, ThermoFisher Scientific) was added, and the solution was incubated at 37°C for 5 minutes. 10 µl of ammonium acetate (4M) and 1 ml of ethanol were then added, and the solution was washed and suspended in 100 µl of TE buffer. The extracted DNA was stored at -20°C. DNA quantification was carried out on a Synergy H1 microplate reader (BioTek Instruments, Inc., Vermont, USA), using a Take3 micro-volume plate.

Internal Transcribed Spacer (ITS) Analysis

The ITS region of the yeast was amplified using standard Illumina primers as described on the Earth Microbiome Project website (http://www.earthmicrobiome.org/protocols-and-standards/its). PCR fragments were Sanger sequenced by the inter-departmental sequencing unit of the Hebrew University. The sequences were identified by BLAST analysis against the ISHAM barcoding database (http://its.mycologylab.org) and the NCBI database (https://blast.ncbi.nlm.nih.gov/Blast.cgi).

DNA Sequencing

Sequencing was performed in the inter-departmental unit at the Hebrew University, Hadassah Ein Karem Campus. Libraries were prepared by using a Nextera XT DNA kit (Illumina, San Diego, CA), and DNA was amplified by a limited-cycle PCR and purified using AMPure XP beads. The DNA libraries were normalized, pooled and tagged in a common flow cell at 2 × 250 base-paired-end reads using the NextSeq platform.

Genome Assembly

Raw reads are available on Genbank (PRJNA449847). Illumina adaptors were removed with Trimmomatic 0.36 (Bolger, Lohse and Usadel 2014). The quality of the reads was determined using FastQC (http://www.bioinformatics.bbsrc.ac.uk/projects/fastqc). *De-novo* assembly was then carried out with the Celera assembler 8.3rc2 (Myers *et al.* 2000) and non-target-species scaffolds were excluded using BlobTools V1 (Laetsch and Blaxter 2017). The sequencing and genome assembly effort was targeted at obtaining

assemblies contiguous enough to derive protein coding gene data for phylogenomic analyses. These data provided us with at least 2702 protein coding genes per sample with at least 294 AA median length. The gene count variation could be both the result of ploidy differences or of genome assembly artifacts, and may cause the underestimation of one to one orthologs. However, we were still able to curate a large and high quality one-to-one ortholog gene subset to perform the phylogenomic analyses.

Beer and Mead Preparation

For beer-production comparison we followed a common standard recipe (Kunze 2004) where only the yeast strain was changed. Water (5 l) was heated to a pasteurization temperature of 72°C. Malt extract was added to a final concentration of 100 gr/l, while stirring thoroughly, and allowed to infuse together for 30 minutes at temperatures between 63−67°C. The solution was then heated to 100°C; once the mixture came to a boil 1 gr/l of hops was added. The mixture was allowed to boil for 45 minutes, after which another 1 gr/l of hops was added. The mixture was then heated for one minute more. Previously prepared ice-cold water (5 l) was then added to the mixture, and the prepared wort was transferred to a sanitized fermenter and brought to a final volume of 10 l. The wort was left at room temperature for 30 minutes, after which overnight cultures of yeast were added. Fermentation typically began within 12−48 hours; the mixture was left untouched for a week. Mead was prepared in a similar manner, but with honey instead of malt extract or hops.

HS-SPME Procedure and GC-MS Analysis of Beer

The method we used was based on the method described by Rodriguez-Bencomo *et al.* (2012). Bottles of beer were cooled to 4ºC to prevent loss of volatiles. A beer sample (6 ml), a magnetic stirrer, 100 µl of an internal standard (5ppm 2-Octanol) and 1.8 g of NaCl were added to 20 ml SPME headspace vials and were sealed with PTFE/Silicon septum (Supelco). The samples were then incubated for 10 minutes at 44.8°C in a water bath on a heating plate and stirred by a magnetic stirrer. The septum covering the vial headspace was pierced with the needle containing the SPME fiber, retracted and the fiber was subsequently exposed to the headspace for 47 minutes at 44°C, then inserted directly into the GC-MS injection port. SPME Fiber 50/30 µm Divinylbenzene/ Carboxen/ Polydimethylsiloxane (DVB/CAR/PDMS) 2-cm length and manual holder were purchased from Supelco (Sigma Aldrich). The analyses were performed using a gas chromatographer (Agilent 6890N) fitted with a splitless injection with a liner suitable for SPME analysis and an Agilent 5973 mass spectrometer (MS) detector in Full-Scan mode. An Agilent MSD ChemStation Software was used to control the gas chromatograph (G1701-90057). Ultra-high purity grade helium was used as the carrier gas at a flow rate of 1 ml/min. Samples were analyzed on a DB-5MS UI column (30 m × 0.250 mm i.d. × 0.25 µm film thickness) from Agilent. The oven temperature was programmed as follows: 40°C as initial temperature, held for 5 minutes, followed by a ramp of temperature at 4°C/min to 60°C and then at 8°C/min to 200°C held for 15 minutes. An electron impact ionization technique was used at 70 eV. The detector range of scan was from m/z 10 to 250. Suggestions for the identification of the detected peaks were carried out by Wiley mass spectrometry database. Peak areas were calculated using the integration order in the ChemStation Software. For each sample, we determined the peak area for 2-octanol standard and ethanol, as well as for 35 aroma compounds usually found in beer. Following the integration of the 2-octanol peaks we were not satisfied with its repeatability between technical repeats. Thus, we decided to use the peak areas of ethanol, which was separated clearly and was highly correlated to its determination by distillation in our lab, as internal standard for each sample. To achieve normalized ethanol peak areas, we divided the peak area of ethanol by its concentration (%) determined by distillation for each beer sample. Finally, the relative peak area for each compound was calculated by dividing the peak area of the compound to that of the normalized ethanol peak area, and multiplied by 1000, to get more presentable numbers. This allows us a presentation of qualitative analysis of relative

peak areas for each compound across our samples. The results of the experiment, and the statistical analysis presented, are an average of the three biological samples for each yeast strain.

Determination of Carbohydrates in Beers

Stock solution of Phenol (J&K Scientific Gmbh), 0.05 g/ml and D(+)-Glucose (Merck), 100 µg/ml were prepared. Glucose Standards-Aliquots of 1 ml, 2 ml, 3 ml, 4 ml, 5 ml, 8 ml, 10 ml, 13 ml and 20 ml of the glucose stock solution were pipetted and transferred into nine 30 ml beakers. An adequate amount of distilled water was added to make a final volume of 20 ml. Each solution (2 ml) was measured and transferred into 10 test tubes. The phenol (2 ml) and 10 ml of the concentrated 95%–97% sulfuric acid (Merck) were pipetted and added to each of the 10 test tubes. A light orange color developed and the tube was allowed to stand for 10 minutes. The solutions were then transferred into 1 cm path length cuvettes and the absorbances were measured at 485 nm with a UV spectrophotometer (Genesys 10S UV Vis, Thermo). For measurements, 1 ml of beer was measured and transferred into 1 l volumetric flask. Distilled water was added to make 1000 ml solution. Aliquots (2 ml) were transferred into test tubes and mixed with 2 ml phenol solution and 10 ml concentrated sulfuric acid. A light orange color developed, and the absorbance was measured at 485 nm after 10 minutes. Results were determined by averaging triplicate measurements. Ethanol concentration in the beer samples was determined using a digital distillator Super Dee and an electronic hydrostatic balance model Super Alcomat (Gibertini, Italia). The pH values of the beer samples were measured using a pH meter Hanna HI 2211 (Hanna Ins.).

To analyze their spectrophotometric properties, the beer samples were degassed and centrifuged, followed by a spectrophotometeric (Genesys 10S UV VIS Thermoscientific) measurement at 430 nm (quartz cuvettes 10 mm). The beer color was calculated by two scales: SRM and EBC (SRM = Absorbance*12.7; EBC = Absorbance*25.0). To determine the beer's density, we used a hydrometer ("Alla" Franc).

Beverage Tasting

The flavor and aroma assessments were performed according to the BJCP's judge procedure manual (https://www.bjcp.org/judgeprocman.php) as follows: A 100 ml sample was served to the assessors in identical vessels to prevent variations of aroma and flavor compounds distribution. The assessors then recorded their impressions discreetly on a recognized form, to avoid bias between the tasters. The evaluation form included categories for appearance, aroma, flavor and overall impression. The forms were then collected, summarized and processed. The summary ignored the appearance and overall impression sections as well as hop flavor and aroma entries. It focused primarily on known fermentation byproducts and sugar residue compounds. All "named entries" on the forms (such as Caramel, Fruity, etc.) come with a notation of the strength of the flavor/aroma derived from the tested beverage, on a scale of 1−5 (left column on the evaluation form) and averaged by five testers.

Statistical Analysis

Statistical analysis was performed using R (https://www.r-project.org) and Prism Graphpad 7 (https://www.graphpad.com/scientific-software/prism). Differences between growth curves in wort medium were calculated using R "growthcurver" package (https://cran.r-project.org/web/packages/growthcurver/vignettes/Growthcurver-vignette.html) by fitting the growth data to the logistic equation. The r parameters of each curve were compared either to that of SafAle S.04, a modern beer yeast which served as control, or to each other using Principal Components Analysis (PCA, R prcomp() command). For significance distances from the control growth curve we used the Student's t-test. Differences between aromatic and flavor compounds in beer produced by the isolated yeast strains and aromas and flavors of these beer were compared by clustering analysis using R function hclust() with method "complete"

and dist() function with method "Euclidean." The dendograms and clusters were created using Ward hierarchical clustering with bootstrapped *P-values* using R pvclust() method from R package pvclust, with parameters: hclust = "ward.D2" and method.dist = "Euclidean."

RESULTS

Isolation of Yeast Strains from the Storage Jar and Lamp

We hypothesized that the enrichment of clay vessels with large amounts of fermenting yeast that were absorbed into the vessel pores of the ceramic matrix permanently changed the microorganism content of the vessel (vessel microbiome).

We examined sherds of four storage jars from Ramat Raḥel Pit 13174. These were typical of Judea during the Early Persian period and, according to previous organic residue analyses, contained mead (Chapter 10). One of these sherds yielded a yeast strain, designated RRPrTmd13.

Negative Controls

One of the key questions in the current research is whether the yeast cells were descendants of the enriched ancient yeast cultures that fermented the liquid stored in the excavated vessels or whether they were from those equally abundant in the environment. In order to answer this question, we used the above method to isolate yeast from non-beverage related vessels and sediments in the surrounding environments of the excavated sites. To this end, we tested 33 control samples from the Ramat Raḥel site. These samples included vessels that were not associated with beverage storage, including cooking pots, jugs and juglets, and bowls, as well as sediments and stones gathered from the site. None of these vessels or items yielded yeast (Table 11.1). In addition, we succeeded in isolating a yeast strain from one of the ancient lamps (Table 11.1:38; Fig. 4.10:5), termed RRPrNerP7.

Genome Sequencing and Analysis of the Isolated Yeast

We sequenced both the ITS1 region and the full genomes of the two yeast strains that had been isolated from the ancient vessels (Table 11.2). The genome data were used to extract the genetic barcode LSU-*rRNA* gene, to corroborate the ITS1 results and to further carry out a full-genome BLAST analysis and a phylogenomic analysis. The genomic dataset was also used to investigate copy-number variation (CNV) of the gene orthologs in order to shed light on the biochemical activity of the yeast as described below. The yeast strains were identified based on similarities to yeast strain genomes from the NCBI database and there was a match between the ITS identification and the full genome sequencing.

The RRPrTmd13 yeast strain which was isolated from a mead-containing vessel (based on organic residue analysis) was found to be similar to the yeast *Hyphopichia burtonii* (*Endomycopsis burtonii*) (Table 11.2). Significantly, this yeast species was previously isolated (Dugan 2009; Bahiru, Mehari and Ashenafi 2006) from *tej,* an Ethiopian honey wine (Alemu *et al.* 1991) and a traditional African mead. The yeast strain RRPrNerP7, isolated from the clay oil lamp, was also found to be similar to *H. burtonii*. Nevertheless, RRPrNerP7 and RRPrTmd13 were divergent from each other in phenotypes related to several aspects of beverage production. We compared RRPrTmd13 and RRPrNerP7 regarding duplications and deletions in 52 orthology clusters with gene ontologies related to the metabolism of various carbohydrates and the transmembrane transport of iron, sodium and sugars found to have characteristic copy number variations in modern wine-producing *S. cerevisiae* yeast (Gallone *et al.* 2016), although not specifically studied in mead-producing yeast strains. These duplications and deletions in both isolates occur in significantly different orthology clusters (*t-test*,

Table 11.2: Genetic Identification of Yeast Strains Isolated from Ancient Vessels

Isolate (Common short name)	*Accession (NCBI)*	*Site*	*Period*	*Vessel Type*	*Culture*	*Closest Relative*	*Status*	LSU-*rRNA*[2]		*Phylogenomic tree*[3]		*Whole Genome Blast*[4]		*Relation to Fermented Beverages*	*References*
								Tree Distance	*P (known sp.)*	*Position*	*Node Support (BP)*[5]	*Match*	*Scaffold prop*[6]		
RRPrTmd13 (Temed)	SAMN08918675	Ramat Raḥel	Persian	Mead container	Persian	*Hyphopichia burtonii*[1]	sp. nov – putative	NA	NA	Very similar, sister node of *H. burtonii*	100	H. burtonii	> 0.95	Isolated from tej, an Ethiopian honey wine	(Dugan 2009; Bahiru, Mehari and Ashenafi 2006)
RRPrNerP7	SAMN08918674	Ramat Raḥel	Persian	Lamp	Persian	*Hyphopichia burtonii*[1]	sp. nov – putative	NA	NA	Very similar, sister node of *H. burtonii*	100	H. burtonii	> 0.95	Isolated from tej, an Ethiopian honey wine	(Dugan 2009; Bahiru, Mehari and Ashenafi 2006)

1. *Hyphopichia burtonii* has the following synonyms*: Pichia burtonii,, Pichia burtonii, Endomycopsis burtonii, Boidin, Candida armeniaca-cornusmas, Candida fibrae Nakase, Cladosporium fermentans, Sporotrichum anglicum, Sporotrichum carougeaui, Trichosporon behrendii, Trichosporon beijingense* (http://www.mycobank.org /Biolomics.aspx? Table= Mycobank& Rec=36231&Fields=All)

2. LSU-*rRNA*: The patristic distance (substitutions per base) between the isolate and its closest relative, given with the probability that this is an intraspecific tree distance.

3. Phylogenomic tree: The phylogenetic position of the isolate in the phylogenomic tree, provided with the branch support of this relationship. Node supports are bootstrap percentages.

4. Whole genome blast: The closest blast match of most contigs and the proportion of contigs that are assigned to this match.

5. Node support (Bootstrap Percentage, BP): The percentage of bootstrap tree that had the same topology as the maximum likelihood tree for a given node.

6. Scaffold prop: The proportion of scaffolds that had the taxon as their first blast hit.

p-value = $2x10^{-7}$). Additional phenotypic differences between RRPrTmd13 and RRPrNerP7 are described below.

Each genome assembly was analyzed with the online version of BLASTn. To summarize the results, we considered all the taxonomic IDs that constituted more than 5% of the matches (Table 11.2). The best match of almost all the scaffolds of isolates RRPrTmd13 and RRPrNerP7 was *H. burtonii*, albeit with a mean percent identity of only 84.5% (stdev 4.5%). We would thus suggest that these isolates represent species that are not yet recorded in the NCBI nucleotide repository.

To validate the phylogenetic position of the isolates, we selected reference genome assemblies of 55 isolates that are available on Genbank. We then annotated coding sequences in the reference genomes, as well as in our isolate genome assemblies, using Augustus 3.2.3 (Keller *et al.* 2011). For the annotation process, we chose the coding sequences of the nearest available reference relative as hints. We extracted a protein sequence file for each isolate genome and reference genome and assigned orthology information to each gene with eggNOG 4.5.1 (Huerta-Cepas *et al.* 2016) (http://eggnogdb.embl.de/#/app/home). We selected orthologs with one representative in at least 50% of the reference genomes and in at least three out of our five isolates. Protein sequences of each ortholog were aligned with MAFFT (Katoh and Standley 2013) using the L-ins-i algorithm and each ortholog alignment was trimmed with TrimAl using the gappyout algorithm. Using treeCl (Gori *et al.* 2016), we reconstructed maximum likelihood gene trees for each ortholog, and clustered the resulting gene trees based on the Weighted Robinson Folds (WRF) (Robinson and Foulds 1981) pairwise inter-tree distances and the db-scan clustering algorithm, in order to assess the existence of conflicting phylogenetic signals. For every cluster, treeCl produces a supermatrix of all the genes in the cluster, which we used for a partitioned tree reconstruction with RAxML (Stamatakis 2014) using the LG evolutionary model and 100 thorough bootstrap replicates for branch support *Saccharomyces cerevisiae*.

The sequence alignments of 118 orthologs passed our filters and were included in the analysis of the *Saccharomycetaceae* + *Debaryomycetaceae* dataset. Conflicting phylogenetic signals were not detected among them, as the db-scan algorithm detected only one cluster, which was robust to changes in minimal local radius cutoff. The phylogenetic tree was reconstructed from a supermatrix of all the 118 orthologs with the matrix and partition (uploaded Files 6 and 7). Isolates RRPrTmd13 and RRPrNerP7 were very closely related to each other (less than 4×10^{-4} SPB) and emerged as a sister clade of *Hyphopichia burtonii* (Debaryomycetaceae) with a sequence divergence of over 0.2 SPB.

Since we observed different phenotypes in isolates RRPrTmd13 and RRPrNerP7, with only isolate RRPrTmd13 producing mead (see below) we also expected that this difference would be reflected by CNV instances between the two isolates. Although Gallone *et al.* (2016) did not analyze mead-producing yeasts, wine shares some of the sugar sources with honey-based mead, and similarly, the mead-producing isolate (RRPrTmd13) shares some of the duplications and deletions with the wine-producing isolate (Gallone *et al.* 2016) when compared with isolate RRPrNerP7. However, both isolates had similar numbers of CNV instances expected in wine yeasts (27 and 25 for RRPrTmd13 and RRPrNerP7, respectively), providing no prediction as to the expected phenotype.

Phenotypic Characterization of the Isolated Yeast

We compared several phenotypes of the isolated yeast strains. First we compared the morphology of cells and colonies using phase light microscopy to image colonies (Fig. 11.1) on agar plates containing the lab standard yeast medium, YPD. The yeast strains showed the common structure of budding yeast cells and white smooth colonies.

Next, we hypothesized that the isolated yeast strains were naturally selected to grow in beverage fermentation conditions and would be able to grow in beer wort, similar to modern domesticated beer yeast strains. To test this hypothesis, we compared growth kinetics of ancient isolated yeast strains to

those of the modern beer yeast strain, *S. cerevisiae* SafAle S.04 (Fermentis Division of S.I.Lesaffre, France) when grown in wort (Fig. 11.2). As a negative control, we used the pathogenic yeast species *Candida parapsilosis* (Trofa, Gácser and Nosanchuk 2008), which, unquestionably, is not used for beverage production. To compare the growth curves, we fit each curve to a logistic equation that models growth curves (Tsoularis and Wallace 2002).

We found that RRPrTmd13 grows as beer yeast in wort while RRPrNerP7 does not. These results suggest that the yeast strains RRPrTmd13 isolated from the putative beverage containers are indeed progenies of yeast that were selected in the past for growth in fermentation-related conditions (Aouizerat *et al.* 2019).

Analysis of Beverage Produced by the Isolated Yeast

Finally, as supportive evidence for their identity, we tested the ability of the isolated yeast strains to produce potable alcoholic beverages. To this end, we performed an initial screen using a standard common recipe of beer brewing (Kunze 2004) with the two isolated yeast strains. RRPrTmd13 produced aromatic and flavorful beer and was taken for additional compounds and flavor analysis while RRPrNerP7 did not produce drinkable beer, but a liquid with strong spoiled aroma and flavors.

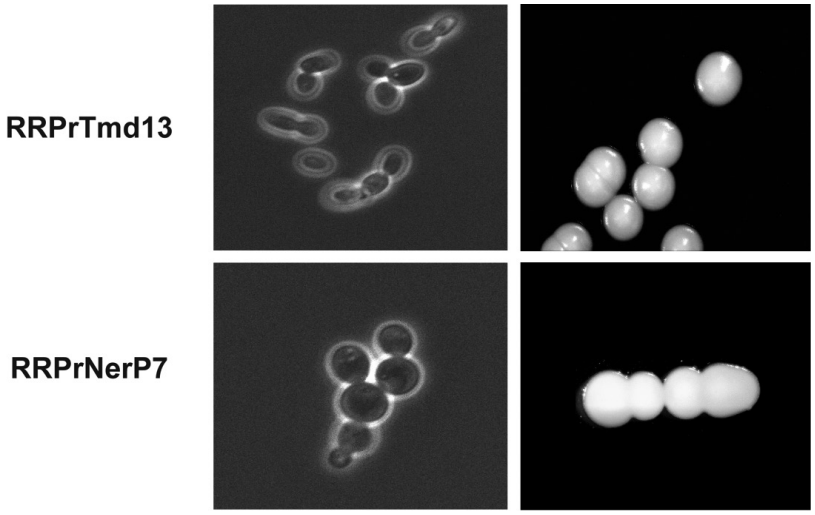

Fig 11.1: Colonies and microscopy image of the yeast cells.

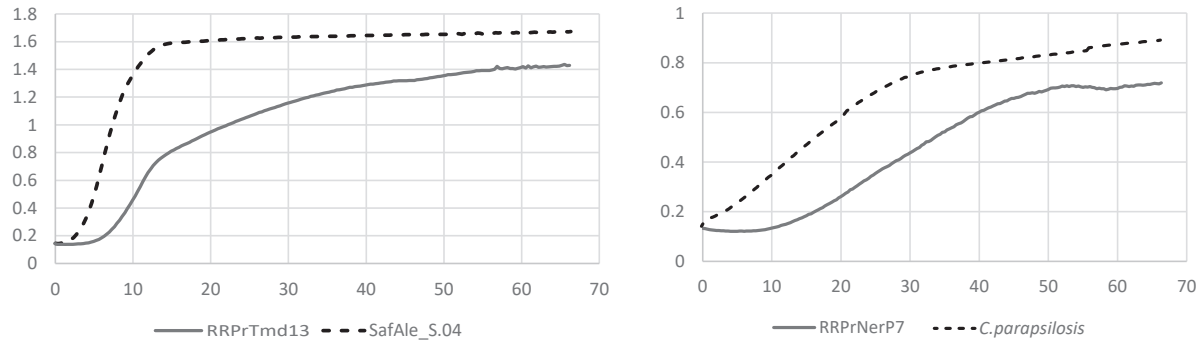

Fig 11.2: Growth curves of the yeast in wort; note that the RRPrTmd13 growth curve (shown on left) is similar to that of the modern commercial beer producer Sefale, while the RRPrNerP7 growth curve (shown on right) is similar to the non-beer-producing strain *C. parapsilosis*, supporting the notion that was selected in wort conditions.

Next, we compared the beer produced by the yeast to that produced by the positive control, SafAle S.04 (Fermentis Division of S.I.Lesaffre, France). Comparison of the total carbohydrates and alcohol concentrations produced by the yeast showed that RRPrTmd13 exploited carbohydrates and produced about 6% alcohol, similar to the "professional" beer yeast strain SafAle S.04, while RRPrNerP7 did not (Aouizerat *et al.* 2019). We performed further qualitative analyses of several aromatic and flavor compounds in the beers by HS-SPME-GCMS. The detected compounds were known to be present in beers, including alcohol, ester, monoterpenoid, and carboxylic-acid groups (Rodriguez-Bencomo *et al.* 2012; Cajka *et al.* 2010; Rossi *et al.* 2014). This analysis shows that relatively high ratios of many aroma compounds were detected in the beer produced by RRPrTmd13, clustered with SafAle S.04.

The beers were also compared by organoleptic descriptive analyses performed by members of the Beer Judge Certification Program (BJCP, https://www.bjcp.org), a beer taster's organization. The results of these analyses were in agreement with the chemical analysis that RRPrTmd13 produced beers that are similar in color, aroma and flavor to that of SafAle S.04.

DISCUSSION AND SUMMARY

In this work, we isolated yeast directly from ancient vessels that were assumed to have previously served as mead containers. We found that yeast is significantly more abundant in putative beverage containers than in other non-beverage-related archaeological vessels or sediments from these sites and the surrounding environment (Aouizerat *et al.* 2019). This supports the hypothesis that the yeast found in the beverage containers originated from the large amount of yeast cells that grew during the beverage fermentation and continued to reproduce and survived as colonies in the microenvironments of the pores in the ceramic matrix of these vessels. In agreement with this hypothesis, phenotypic and genomic characterization of these yeast strains (including genomic DNA sequencing) showed that they are similar to yeast found in modern traditional beers and that they are able to ferment and produce potable beer similar to modern beverages.

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CHAPTER 12

THE FAUNAL REMAINS

Deirdre N. Fulton

Ramat Raḥel faunal remains from the Persian period were recovered in Area D1, on the southeastern side of the site. While Persian period artifacts were found in previous excavations throughout the site, no collection or systematic analysis of the faunal remains has been published to date. The Persian period faunal collection is modest and comes entirely from Area D1. This one pit assemblage offers an important snapshot of a Judean highland site that functioned as an administrative center.

Earlier faunal publications of Ramat Raḥel focused on the Iron II, demonstrating the specific role that eating played in administrative space (Fulton *et al*. 2015; Fulton, forthcoming). This report provides an analysis of the entire animal bone collection from Area D1, all of which was found in the one large pit known as the Babylonian-Persian Pit (Final Locus 13174). The faunal collection dates from the Persian period. It is similar to the earlier Iron II material in that it reveals continuity in foodway patterns throughout the late Iron II and Persian periods.

THE COLLECTION

In total, 687 bone specimens were uncovered in the Babylonian-Persian Pit. Whenever possible, they were identified to their genus or species, but since bone identification is made difficult by certain factors, such as taphonomic pressures that degrade bone into smaller elements, not all the bones could be identified to genus or species. When bones cannot be identified beyond "mammalian," they are referred to the category "animal" (AN). Bones that cannot be identified to a genus or species, but may be identified by body part, such as cranial, vertebral, ribs or shafts of long bones, are categorized by size as "small mammal" (SM), "medium-sized mammal" (MM), or "large mammal" (LM). The SM bones are dog-sized or smaller, the MM bones are sheep/goat- or pig-sized, and the LM bones are cow- or equid-sized. It should be noted that due to the rocky, specifically limestone, soil matrix, many of the bones were pitted or showed other signs of damage, but did not manifest signs of long-term exposure to the elements. The pit appears to be the original discard location of the animal remains rather than an open pit that was used over a long period of time.

As expected the AN category of remains constitutes the largest percentage of the collection at 36% (Table 12.1). The SM and LM categories comprise 4% of the entire collection (1% and 3% respectively), but the MM category comprises 23%.

Paralleling the abundance of MM remains, the most abundant identifiable species is sheep/goat (25%). Differentiating sheep from goats is difficult, and a residual category sheep/goat is used when separation of the two species is not possible (Boessneck, Müller and Teichert 1964; Zeder and Lapham 2010). At 5%, cattle are a distant second in species abundance, and dogs, the third most abundant species, represent a mere 2%. Dogs appear in the faunal record for the first time in the Persian period at Ramat Raḥel. Dog consumption was not common in the Persian period, and there are no butcher marks, indications of cooking, or trauma to the dog bones at Ramat Raḥel. Dog remains in the form of deliberate burials are noted at a number of sites of the eastern Mediterranean littoral during the Persian period, most notably

Table 12.1: NISP (Number of Individual Specimens) and Percentage of All Animal Genus or Species from Ramat Raḥel, Area D1, L13174

	NISP	*% Total*
Animal (AN)	*246*	*36*
Small mammal (SM)	9	1
Medium-sized mammal (MM)	160	23
Large mammal (LG)	21	3
Ovis/Capra (sheep/goat)	179	25
Ovis aries (sheep)	6	1
Capra hircus (goat)	3	<1
Bos taurus (cattle)	33	5
Sus scrofa (pig)	5	1
Aves (bird)	4	1
Canis (dog)	12	2
Vulpes vulpes (fox)	1	<1
Equus sp. (equid)	3	<1
*Gazella gazella (*gazelle)	1	<1
Ibex nubiana (ibex)	2	<1
Camelus dromedarius (camel)	1	<1
Rodenta (rodent)	2	<1

at sites such as Ashkelon (Wapnish and Hesse 1993; Hesse and Fulton, forthcoming) and Dor (Sapir-Hen 2011; Sapir-Hen *et al.* 2014).[1] Dog remains from this time have also been identified at sites in Judah, such as Jerusalem (Raban-Gerstal *et al*. 2015).[2] There is no single model that explains the abundance of dogs in Persian and Hellenistic contexts, either as burials or individual specimens. Indeed, as Horwitz, Wolff and Ortiz (2017) have correctly cautioned, referring to all dog remains as "burials" is misleading. There are several reasons for the appearance of dog remains in archaeological contexts, including intentional burial, but their presence may simply be an interment for "pest control" of a city.[3] In the example of Ramat Raḥel, the bones are not buried as individual interments, but rather as part of the pit contents.

Other species that are present, but constitute 1% or less of the collection, are pigs (*Sus*), birds (*Aves*), fox (*Vulpes vulpes*), equids (*Equus*; all appear to be donkey), gazelle (*Gazella*), ibex (*Ibex*), camels (*Camelus*), and rodents (*Rodenta*). While gazelle and ibex may have been occasionally hunted and eaten, their presence at 1% or less of each indicates that they were not a major component of the diet.

DISCUSSION

As the species presence indicates, the Babylonian-Persian Pit faunal remains reflect a typical highland diet (Fig. 12.1). The largest percentage of the collection is sheep/goat (81%), with cattle a distant second

1 In the example of Ashkelon, the dog remains continue into the Early Hellenistic period (Hesse and Fulton, forthcoming).

2 Horwitz, Wolff and Ortiz (2017) provide a comprehensive list (to date) of sites with canid remains dating from the Iron II through the Hellenistic period in the southern Levant.

3 See Wapnish and Hesse 1993: 74, for a discussion of what constitutes a dog burial.

(15%). Pig is also found within the collection (2%), as are birds (2%). The species present do not diverge greatly from the fauna of the Iron II (Fulton *et al.* 2015; Fulton, forthcoming), with the exception of pig. No pig was present among the earlier Iron II fauna, but the small percentage of pig in the Persian material is insufficient to reflect a major dietary shift of any kind (Table 12.2).

Pigs represent a total of 2% of the main livestock consumed. As shown in Table 12.2, the major species see little change. As was noted by Fulton *et al*. (2015), the Iron II pit (Locus 14109) reflects a different series of behaviors, most notably seen through the high percentage of birds (specifically partridges, a goose and a songbird-sized bird).

The relatively low percentage of cattle at Ramat Rahel is, arguably, the most important faunal data point as it reflects a meat economy that is not dependent on cattle. Ramat Rahel in the Persian period follows similar patterns of cattle consumption with sites such as the late Iron II Western Wall Plaza in Jerusalem (Sapir-Hen, Gadot and Finkelstein 2016) and late Iron II Ramat Raḥel. Indeed, the Western Wall Plaza in Jerusalem reveals an assemblage of 90% sheep/goat, 8% cattle and 0.5% pig. In contrast to Jerusalem, the site of Tel Moẓa, located in the Soreq Valley, has an assemblage of 68% sheep/goat, 30% cattle and 1% pig (Sapir-Hen, Gadot and Finkelstein 2016). Sapir-Hen, Gadot and Finkelstein have argued that the difference in cattle numbers between Jerusalem and Tel Moẓa is due to the location of these two sites: Tel Moẓa agriculture was part of a plow-based economy; hence the high percentage of cattle. In contrast, Jerusalem was not part of a plow-based economy, but was instead dependent on vine and tree agriculture, namely olives and grapes.

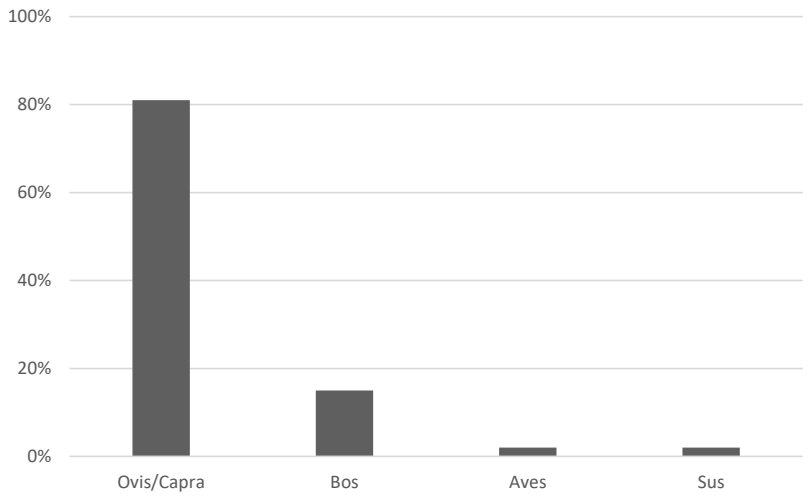

Fig. 12.1: Percentage (based on NISP) of major species.

Table 12.2: Percentage of Major Taxa (Based on NISP) from Building Phases I–III

	Iron IIB–C (Building Phase I)	*Iron IIC (Building Phase II)*	*Iron IIC Locus 14109 (Building Phase II)*	*Persian Period The Babylonian-Persian Pit (Building Phase III)*
Ovis/Capra	88%	78%	63%	81%
Bos	11%	11%	8%	15%
Aves	0%	11%	29%	2%
Sus	0%	0%	0%	2%

Similarly, Ramat Raḥel was not part of the cattle-intensive, plow-based agricultural system of the Soreq Valley. Instead, it was dependent on the olive-oil and/or wine industry of the Rephaim Valley, evident in the hundreds of jar handles uncovered.

Based on the continuity in percentage of species as well as the high number of seal impressions that have been found (Lipschits *et al.* 2011; Lipschits and Vanderhooft 2011), the economy of Ramat Raḥel did not change between the late Iron II and the Persian period but continues to be dependent on olive-oil and/or wine production from the Rephaim Valley.

THE ARCHAEOLOGICAL ANIMAL

Examining the archaeological animal—that is, what bone elements of MM and LM animals are present in a sample—offers a glimpse into how the entire animal is represented in a collection. The MM category consists of sheep, goat and sheep/goat, and the LM category is composed of cattle. Before consumption occurs, an animal is slaughtered and the carcass is broken down into different components of meat, bone and sinew. The bone component is further reduced into five distinct areas of the carcass that differ in "meatiness" and hence, utility.

The archaeological animal consists of the head, which includes cranium and horn core, mandible (upper jaw), maxilla (lower jaw), and teeth. The axial skeleton consists of ribs, vertebrae and sternum. The forelimb and hind-limb category includes bones from the upper shoulder to (but not including) the wrist (scapula, humerus, radius, ulna) and from the hip to (but not including) the ankle (innominate, femur and tibia). Wrists and ankles are made up of the carpals and tarsals. Finally, toes include both the metapodials (metacarpals and metatarsals) as well as phalanges.

The highest percentage of MM cuts is from the long bones of the fore- and hind limbs (Fig. 12.2). This indicates that the faunal remains are from meals and not from the primary butchering activities, which would include more head and lower limb bones. A further breakdown shows that there is a 1:1.9 ratio of fore- to hind limbs, almost a two to one ratio. The hind limbs are represented by a number of innominates (hips) and proximal femurs, which reflect meaty portions of the animal. Within the lower limb category, a few Phalanx 3 were found, supporting the conclusion that this pit does not reflect the detritus of primary butchering. In addition, the cranial fragments are mostly mandibular (jaw) and maxillary (upper jaw), but there are few other cranial elements, revealing that portions of the head which do contain edible meat (like tongue and brain) are not represented.

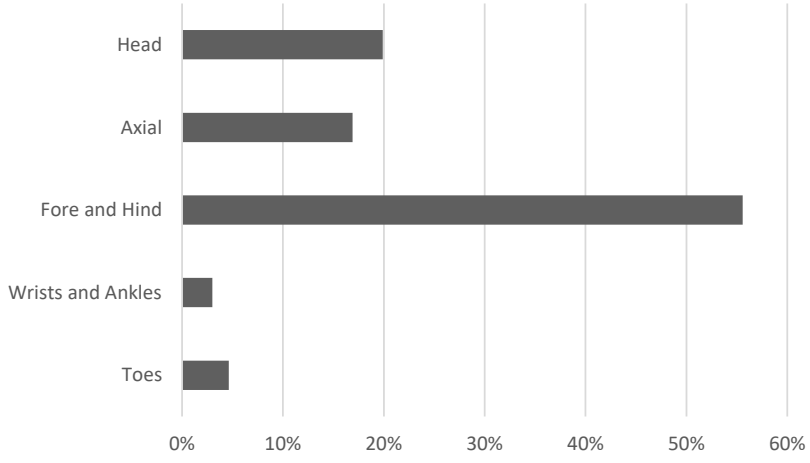

Fig. 12.2: Percentage of the various bone elements of the medium-sized mammal (MM) archaeological animal.

The LM category also reveals that the highest percentage of bone elements is from long bones (Fig. 12.3). More lower limbs are represented than in the MM category, consisting of metapodials and Phalanx 1. These bone elements have little to no food value and may reflect skinning activities.

The age of animals at time of slaughter also provides important information concerning the animal economy (Fig. 12.4). In a normal pastoralist economy, animals are culled at different ages depending on the focus of production. If the focus is on dairy products, very young (usually male) animals are culled along with very old animals, particularly those whose productivity has decreased. In a meat economy, animals are culled during different seasons, but generally there is a small percentage of very young animals slaughtered.

While only a few mandibles were uncovered in the Persian period pit, the few that could be aged reveals culling of animals between the ages of six months to three years (Fig. 12.4). This reflects prime-age animals. When the mortality profile is considered with the archaeological animal—specifically that prime-aged animals were slaughtered and meaty portions of the animal predominate—meat provisioning almost certainly was in place. In other words, outside pastoralists supplied animals to Ramat Raḥel as part of an organized meat and secondary-products economy.

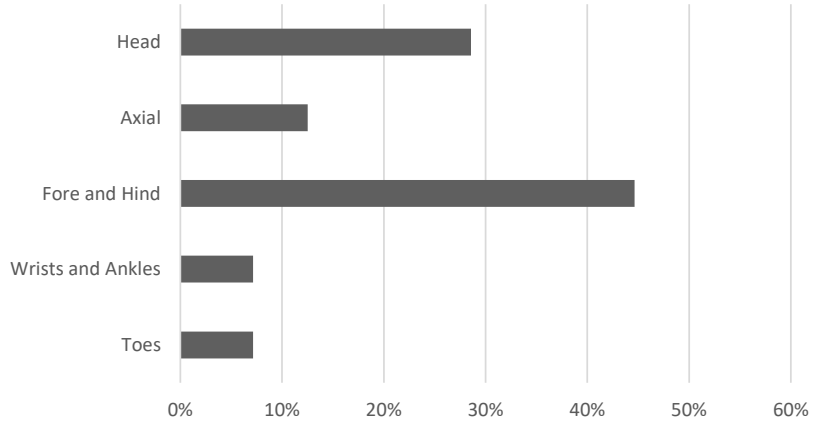

Fig. 12.3: Percentage of the various bone elements of the large mammal (LM) archaeological animal.

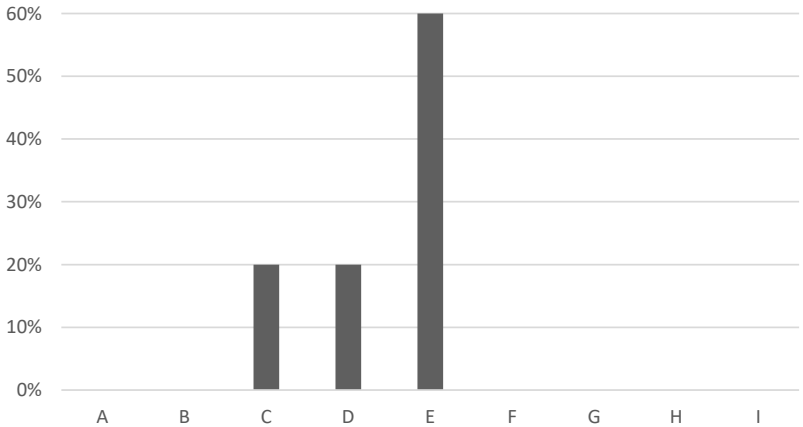

Fig. 12.4: Percentages of tooth-age stages in sheep/goat samples from Locus 13174 (Payne 1973); A) 0–3 months; B) 3–6 months; C) 6–12 months; D) 12–24 months; E) 24–36 months; F) 36–48 months; G) 48–72 months; H) 72–96 months; I) 96–120 months.

CONCLUSION

Ramat Raḥel's modest Persian period faunal collection reveals a continuity with the Iron II at the site itself, as well as with other sites such as the Western Wall Plaza in Jerusalem. Specifically, the low percentage of cattle and high percentage of sheep/goat is in keeping with the olive-oil and/or wine economy of the Rephaim Valley.

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CHAPTER 13

SYNTHESIS AND SUMMARY

Oded Lipschits, Liora Freud, Manfred Oeming and Yuval Gadot

The Babylonian-Persian Pit is a late Iron Age, rock-cut refuse pit excavated during the renewed excavations at Ramat Raḥel. It developed from the lowered rock surface of an earlier subterranean room built in Phase D1-9. Although the walls and the floor of the earlier structure have not been found, the rock surface was flattened at an elevation of 816.20 m and this is probably the level at which the floor was laid, almost certainly at least 1.20 m lower than the level of the surrounding flattened bedrock. After the earlier structure had fallen out of use and its walls were robbed, the irregular depression of more than 7 × 8 m that it made in the rock was used for the disposal of pottery vessels. The pit filled up toward the Early Hellenistic period and a floor was built above it, sealing it and its contents.

The pit was full of earth and rich organic material. Restoration showed that its contents had not accumulated gradually. We may reconstruct a single event in which storage jars and other vessels—many of them complete—were brought from an unknown place of use and thrown into the pit. It seems that buildings in the area had been cleared and their contents hurled into the pit. Thus, the contents of the pit belonged to an earlier phase than the action of dumping them into the pit. It may well be that the fill was intentionally dumped in order to level off the subterranean room and create a level surface for the establishment of floors in Phase D1-7, dated to the Hellenistic and Early Roman periods. Stratigraphically, Pit 13174 was sealed by Floor 13013 and its makeup belongs to Phase D1-7. We only know when these floors were last in use; we do not know when they were constructed. A good guess, however, would be in the Early Hellenistic period.

Although the pottery assemblage found in the pit includes bowls, kraters, cooking pots, jugs, juglets, lamps and other finds that can be interpreted as domestic in nature, the most dominant vessel type in the pit is the four-handled *yhwd* storage jar. The analysis of these jars showed us that they can be divided into two main subtypes that functioned in the local administration during the Babylonian and Early Persian periods (6th–early 5th centuries BCE): The earlier one (Subtype A), characterized by a thickened rim, a relatively high neck and a wide shoulder, is similar to the former Judahite four-handled ovoid jar (*lmlk* and rosette storage jars), and reflects the continuity of these jars between the Kingdom of Judah in the late 7th and early 6th centuries BCE and the later 6th-century BCE province of Yehud. The fact that these jars were stamped with lion and 6th-century BCE "private" stamp impressions, as well as with early *yhwd* stamp impressions, is a clear indication of the continuity of this type of jar from the Babylonian to the Persian period, probably from the early 6th until the early 5th century BCE.

Most of the jars found in the pit belong to the later jar type, Subtype B, which seems to be a Persian period outgrowth of the earlier storage jars and which continued into the Hellenistic period. This type of jar is characterized by a slightly thickened and outturned rim, a very short neck and a rounded and elongated shoulder. It is poorly made with air bubbles on the sides or with a crushed surface and is very common in Persian period Judah. It also shares morphological similarities with the oval storage jars of the 8th–7th centuries BCE, and especially with the jars stamped with *lmlk* stamp impressions. It is one of the best examples of the continuity in the pottery-making tradition in Judah after the destruction of the kingdom and into the Persian period. Some nine storage jars of this type were stamped with early types of *yhwd* impressions.

With the exception of cooking pots, not even one familiar vessel known from the 586 BCE destruction layers was found among the complete vessels in the Babylonian-Persian Pit. It seems that from the 6th century BCE there is a larger representation of types, but the number of items is relatively small. It is obvious that the potters were familiar with the typical Iron Age shapes and either imitated them or continued to manufacture them using other clay types. Therefore, it seems correct, from the perspective of pottery analysis, to date those types with a close Iron Age tradition to a period not long after the 586 BCE destruction and thus to assign them to the 6th century BCE.

The discovery of four lion stamp impressions (Chapter 6) is a clear indication of the earliest phases of activity presented in the assemblage, probably during the second quarter or the middle of the 6th century BCE. The unparalleled concentration of Type 8 lion stamp impressions—a type exhibiting exceptional quality and artistic level—points to the status of the site during this period. The rest of the finds, including the Type 5b lion stamp impression and the unique concentration of *yhwd* stamp impressions (Chapter 8), clearly indicate that the storeroom from which the vessels were cleared into the pit continued to be used during the remainder of the 6th century BCE.

In addition, two "private" stamp impressions were found, for the first time, on body sherds, rather than handles (Chapter 7). This phenomenon, hitherto known only from certain *yhwd* types and *mwṣh* stamp impressions, is unique to the 6th and early 5th centuries BCE and does not occur within the corpora of Iron Age "private," *lmlk*, rosette, or *yršlm* stamp impressions. These stamp impressions reflect the continuity of the private seal craft tradition and are another indication of the continuity of Judean administrative systems from the Iron Age through the Hellenistic period. Furthermore, because these two "private" stamp impressions are dated on paleographic grounds to the 6th century, their concurrence with lion stamp impressions allows the assignation of that system to the Neo-Babylonian period, with all the concomitant conclusions for Babylonian Imperial policy in the West, Near Eastern leonine imagery and the continuity of Judean administrative systems from the Iron Age through the Hellenistic period. These stamp impressions may also demonstrate the continuity of the "private" seal craft tradition by the employment of Iron Age artifactual conventions—that is, the use of the double-line field divider and seal border—in these somewhat later artifacts.

In contrast to the Babylonian period assemblage, most of the items in the pit are well known from the Persian period, especially from its earliest phase in the 5th century BCE. These stamp impression types and pottery vessels have parallels in assemblages dated to the early part of the Persian period. Support for this Early Persian dating also derives from the date of the four imported Attic sherds.

Since the storeroom where the storage jars were housed was in use in the 6th and early 5th centuries BCE—although there are some later pottery vessels, including stamped jars—we may assume that the storeroom was abandoned with the vessels inside sometime in the first half of the 5th century BCE. This is in keeping with the Attic imports, which are dated to 500–475 BCE. Since activity continued there throughout the Persian and Early Hellenistic periods, some later vessels must have rolled into it. Only at a much later date, probably in the Early Hellenistic period, was the storeroom cleaned and all the vessels thrown into the pit.

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We believe that the finding of 11 complete and many fragmented storage jars stamped with *yhwd* impressions dating from the Early Persian period, together with other vessels that date from the 6th–5th centuries BCE, opens the way to a fuller understanding of the history of pottery making and administration in Judah between the late 8th and late 4th centuries BCE, a long period during which Judah was a vassal Assyrian, Egyptian and Babylonian kingdom, and then a Babylonian and Persian province.

The most striking fact is that, morphologically, the *yhwd* storage jars constitute a direct continuation of the oval storage jars used in the *lmlk* administration during the 8th and the first half of the 7th centuries BCE

and of the storage jars stamped with rosette impressions, dated to the late 7th and early 6th centuries BCE. The study of Judah's administration under the Imperial yoke was, until now, based on the evolution and chronological context of the stamp impressions. The notion that the stamping of jar handles for administrative needs began in the last quarter of the 8th century BCE and continued consecutively through the 7th, 6th, 5th and 4th centuries and until the Hasmonean period in the second half of the 2nd century BCE was raised by Lipschits *et al.* (Lipschits, Sergi and Koch 2010; 2011; Lipschits and Vanderhooft 2011; Bocher and Lipschits 2013; Koch and Lipschits 2013; Sergi *et al.* 2012; Lipschits, forthcoming). This argument challenged the previous understanding that each stamping episode was an independent phenomenon and constituted a response to stressful political and military events (Ussishkin 1976; 1977; 2012; Naʾaman 1979). It is now evident that the *yhwd* storage jars found at Ramat Raḥel are a product of the same pottery-production tradition as the rosette storage jars before them and even the *lmlk* storage jars. Of the 11 complete storage jars, the best examples of this continued tradition are the jars stamped with both lion and "private" impressions and the jar with the *yhwd ḥnnh* stamp impression on its shoulder.

Furthermore, the stamping of *yhwd* storage jars was carried out in workshops that manufactured these kinds of jars for other needs as well. This conclusion is based on the fact that unstamped storage jars with identical typological features are known to have been widely distributed in Judah. Although we know little about the production of such jars during the late 7th and early 6th centuries, the evidence from the pit points towards the continuation of the same practices with the renewal of Judah's administrative system during the 6th century. All this was despite the destruction of Judah by the Babylonians and the fact that it was turned into a province.

The new finds from the Babylonian-Persian Pit at Ramat Raḥel indicate that after the destruction of Jerusalem and the other main urban and military Judahite centers by the Babylonians at the beginning of the 6th century BCE, "the people who were left in the land of Judah" (2 Kings 25:22) continued to live in close proximity to the north and south of Jerusalem. They continued to maintain a rural economy and to produce wine, oil and other agricultural products in the same way and with similar stamped jars as before. They continued to pay taxes, they produced pottery in the same Iron Age tradition, and they served under the same administration. The administrative center at Ramat Raḥel continued to function as the collection center of taxes mainly in the form of jars of mead, wine and oil, and it did so with no marked change, except for the new lion stamp impressions on the body and handles of very similar jars.

The new finds from Ramat Raḥel also contribute to the understanding that there were only minor changes in the material culture at the end of the 6th century BCE, and that the beginning of the post-exilic period does not exist from the archaeological point of view. No demographic change can be detected; no change in settlement pattern, administration or economy is evident. There was no change in pottery production or in any other aspect of the material culture, except, probably, for a sharp change in glyptic traditions and the disappearance of the use of icons (the lions) in seals used for stamping jars and the change to the different types of *yhwd* stamp impressions. Only small and graduated changes are evident in all aspects of the material culture (from script to pottery), which slowly brought about new shapes and characteristics and created the classic Persian period forms and features that crystallized and characterized the later Persian period.

Any attempt to draw clear distinctions between the "Babylonian," "Early Persian," "Late Persian" and "Early Hellenistic" periods is generally a partly historical interpretation based on a traditional understanding of the biblical material. The same holds true for attempts to differentiate between the "exilic" and "post-exilic" periods and to identify sub-periods within them, such as the periods before and after Ezra and Nehemiah in the mid-5th century BCE. It is evident from the above discussion that the finds from the Babylonian-Persian pit provide us with a strong archaeological tool that will contribute to an understanding of the development of pottery production and stamp impressions during these periods.

We hope that the detailed understanding of the development of the material culture, as presented in this book, will serve future studies and shed new light on the history of Judah during the Babylonian and Persian periods.

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