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Economy-Related Finds from Khirbat al-Mudayna (Wadi ath-Thamad, Jordan)

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In a recent study of the characteristics of early states, Steiner suggests that Iron Age Moab had two economic spheres: the royal economy and the local economy. The local sphere consists of the economy of people living in villages and in small, fortified towns, and of the pastoral population. While agriculture was the backbone of this economy, crafts and industries such as pottery production, metalworking, and the production of textiles were designed to meet the needs of the local market. As more evidence becomes available through current excavations, this description of one facet of a small state's economic organization can now be tested against the archaeological record. Finds from a pillared industrial building in the fortified town of Khirbat al-Mudayna on the Wadi ath-Thamad include two inscribed scale weights and one uninscribed weight. Also recovered from Iron Age contexts are seven seals and three bullae. Although this corpus is small in number, it represents a group of artifacts directly related to the local economy and includes the first occurrence of inscribed weights in Moab. This paper presents those weights, seals, and bullae in their archaeological context and studies their implications.

INTRODUCTION

The anthropological models proposed by Claessen (1978) and Tainter (1988) present ten characteristics that can serve as the basis for understanding the economic organization of early states. In 2001, M. Steiner used those models in her own characterization of emerging states such as the Iron Age kingdom of Moab;¹ of great importance is her emphasis that “these societies were *not* urbanized or urban-based . . . ‘real’ cities were non-existent” (Steiner 2001: 329; authors’ emphasis). In her opinion, Iron Age Moab had two economic

spheres, the royal economy and the local economy.² The latter sphere pertains to people living in small, fortified towns and villages, as well as the pastoral population. Agriculture was the backbone of the town folk’s economy, along with crafts and industries designed to supply goods for the local market. The local industries probably consisted of pottery production, metalworking, and the production of textiles.

As more evidence of life-ways in fortified towns and villages becomes available, this description of one facet of a small state’s economic organization can now be tested against the archaeological record.

¹Steiner contrasts her work with that of scholars who depend heavily on biblical sources to explain the economic system, such as Neufeld (1960), Silver (1983), and Holladay (1995). To this group, we can now add Halpern (2001).

²Holladay (1995: 393) is insistent that the Iron Age economy of Palestine is in no way a “redistributive economy,” although McNutt (1999: 157) argues for a certain amount of “reciprocal and redistributive modes of exchange.”

One such example is the fortified site of Khirbat al-Mudayna on the Wadi ath-Thamad (fig. 1), where excavations have uncovered a casemate wall system that encircles the town,³ a six-chambered gate (B100; Chadwick, Daviau, and Steiner 2000), and a small temple (B149; Daviau and Steiner 2000) with an inscribed incense altar (Dion and Daviau 2000). On the ground floor in the gate building there were the remains of food storage vessels and cooking ovens, while the upper-storey rooms provide evidence for additional food storage and intensive industrial activity, in the form of three large limestone basins and several loom weights. In the final stage of occupation at Khirbat al-Mudayna, a small area of Temple 149 was used for metal smithing,⁴ while the adjacent courtyard (C150) was a slaughtering area.

During the 2001 field season, excavation was expanded south of Temple 149, where several rooms were uncovered in a building with a partial tripartite plan (B200; fig. 2).⁵ This building was founded on bedrock and appears to have had only one period of use during Iron Age II.⁶ Finds in Building 200, including two inscribed scale weights, and a third weight that was not inscribed, yield fresh evidence for crafts and industries as well as for economic exchange. In this article, we will pay special attention to those weights because of the new light they cast on the economic life of Khirbat al-Mudayna and its possible trade links during Iron Age II.

³A trench cut through the fortifications in Squares E80–F73 at the south end of the site uncovered a glacis on the outer slope leading down to a rock-cut moat.

⁴A preliminary analysis of the metal samples was conducted by X. Veldhuijzen, at the University of Leiden.

⁵M. Steiner was field supervisor, and M. Cohen and H. J. Maurice served as square supervisors. The excavations were sponsored by Wilfrid Laurier University and funded in part by a grant from the Social Sciences and Humanities Research Council of Canada.

⁶The pottery assemblages from the gate room (B100) and from Building 200 share the same formal characteristics; this is seen most clearly in the four-handled storejars (of the type found in Temple 149; Daviau and Steiner 2000: fig. 13:4–5). Both assemblages appear to date to the eighth–seventh centuries B.C. This dating is based on the ¹⁴C readings for the roof beam in Gate Room 103 and the woven mat in Room 152 (Daviau 2000: 285, n. 15; Chadwick, Daviau, and Steiner 2000: 260–61). A decanter-shaped juglet (P212) has parallels in the “House of the Bullae” in Jerusalem that dates to the end of the seventh–early sixth century B.C. (Shiloh 1986: pl. 6A). This parallel offers a possible date for the destruction of Building 200. A complete study of the pottery will accompany the final report on Building 200, following the completion of excavation.

ARCHAEOLOGICAL SETTING OF BUILDING 200

Pillared Building 200 is located 14.00 m south of Temple 149, and like the temple, it runs up to the western face of the inner casemate wall on the east side of the town (figs. 1–2). This building is orientated east-west, and the rear, or east, end of the building is occupied by two rooms. The northern room is almost square (R201; 3.80 × 3.85 m deep), while the southern room is slightly irregular in shape and somewhat smaller (R204; 2.00–2.60 × 3.85 m deep).⁷ The main room to the west is divided in three by two parallel rows of pillars and basins. At the west end, there is a corridor running north-south that may lead to an entrance on the north.⁸ Building 200 measures approximately 6.50 m at its east end, 7.50 m on the west, and is 13.00 m in length (interior dimensions). Although the overall plan shares some similarities with the well-known four-room houses of western Palestine,⁹ the proportions of B200 are quite different, especially in the shape of the back rooms. There are also several important features unique to this structure that set it apart.

Foremost among these features are 10 limestone basins, each supported on a low cobblestone wall

⁷The depth of these back rooms (R201, R204), 3.85 m, is almost double the mean of just under 2.00 m for the broad rooms in the four-room houses studied by Braemer (1982; see also, Holladay 1997: 339). The deepest of these back rooms is at Hazor in House 2a, where the twin rooms measure 2.40 m (Braemer 1982: 227). Another example of a deep broad room is in House 38 at Bethel; however, this building was only partially excavated (Braemer 1982: 200).

⁸The opening of a large depression in the bedrock, just north of B200, was exposed in 1996 in Squares A9–A10 and A19–A20. Although the edge of the bedrock is very irregular, the maximum diameter at several points is 4.00 m. A second possible entrance to Building 200 may have been located in the north wall (W1027) of Room 202, leading to this depression or cistern.

⁹Two important studies of these houses are those of Braemer (1982) and of Holladay (1997). What remains surprising is Holladay's continued rejection of the evidence for domestic and industrial activities in the paved side rooms of such houses (1995: n. 34). This may be due to his assumption that the ceilings of the lower-storey rooms were too low for humans (ca. 1.52 m), and that this area was reserved for small animals, which made use of floor-level mangers (Holladay 1997: 339). In the case of B200, the northern room is on bedrock, and this surface was covered with domestic and industrial equipment, including unfired clay loom weights, a work platform, hand grinders, and an oversized basalt quern and a loaf-shaped upper millstone (see table 1 for details).

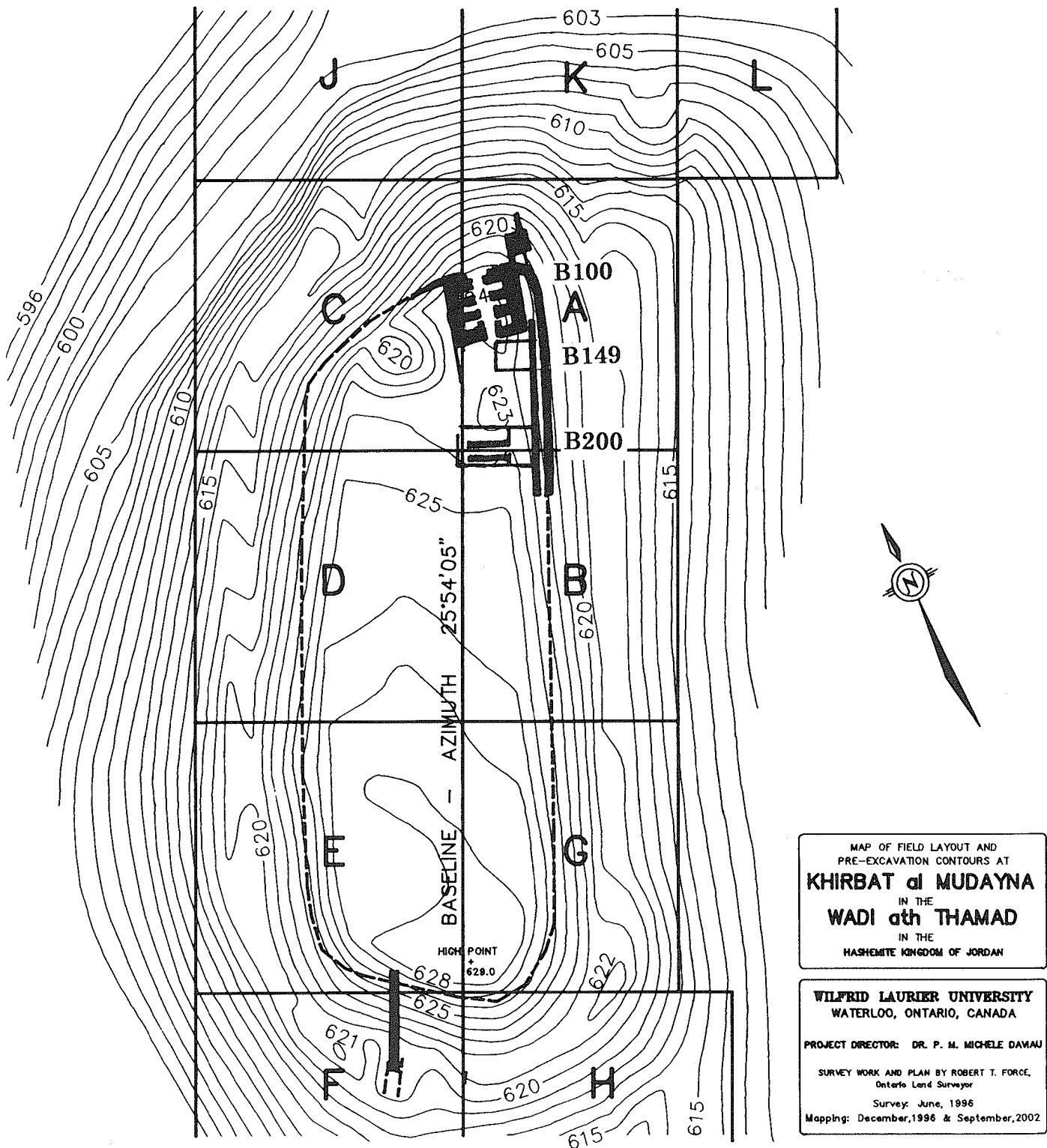


Fig. 1. Plan of Khirbat al-Mudayna, showing major excavation fields (A-B in the north, and E-F in the south).

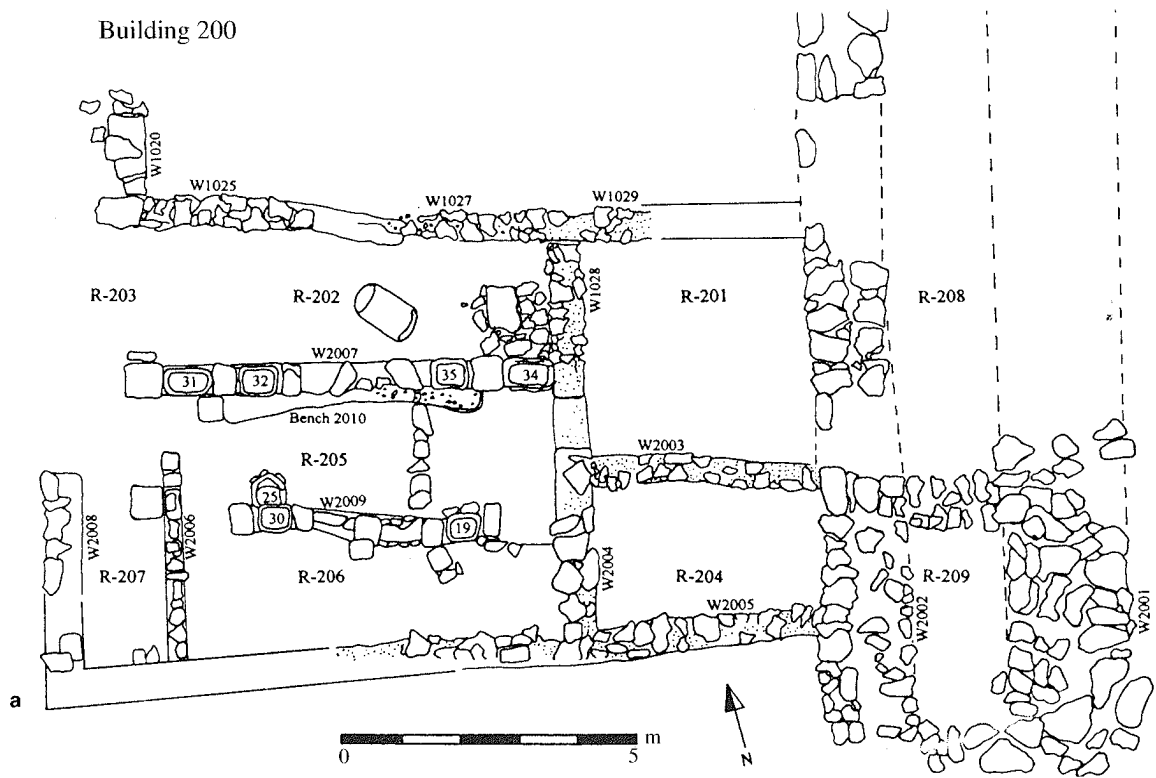


Fig. 2. a: Plan of Building 200, 2001 season. b: Room 205 in Building 200.

unit that links one pillar to another. There are six basins in the northern row of pillars, and four in the southern row. These 10 basins were initially carved to various depths, but all are of similar length and width (ca. 0.50–0.60 × 0.60–0.70 m). The wall units, on which the basins stand, and the flanking pillars themselves are all plastered with thick mud plaster, while the basins are covered on their exterior surfaces with a harder and thinner plaster coating. Three basins are not in situ; two were found in pieces in Room 202, to the north, and another may have fallen into Room 206 on the south. However, plastered support walls and impressions in the mud mortar indicate clearly the original position of these basins (Daviau and Dion 2002: 43, photo). Two basins in the northern row are quite deep (ca. 0.20 m), and their size suggests a function somewhat different from that of the shallower basins. In most cases, the basins were filled with ashy material, which may have been the remains of burning roof collapse.

The northern row of pillars (W2007) is footed on bedrock, which steps down at a point some 0.40 m beyond the southern face of the pillars, forming a bench or shelf. The entire bench is covered with a thin hard plaster decorated with circular depressions. This distinctive pattern makes it possible to see that the thin plaster seals against the softer mud plaster on the pillars, and then runs over the bench and down onto the floor, suggesting that the pillars were installed and the floor was laid before Bench 2010 was plastered. The bench may have served as a step, since the basins in the north row are too high (1.50 m) to be reached with ease from the floor of the central room. Better access can be had from the northern room (R202), although the presence of a large number of ground stone tools and installations also restricted access to the basins.¹⁰

Two features in central Room 205 may indicate separate activity areas; one is a curved lip that forms a semicircle on the upper surface of Bench 2010, and the other is a one-row, one-course wall line that

runs perpendicular to the pillars at floor level. This feature may have served as a divider between work areas, but it does not line up directly with a pillar on the south, and its position impedes easy access from the central room to a basin in the southern row. At its north end, this line of stones abuts the bedrock bench (B2010). At present, it is difficult to discern what the exact purpose of this feature may have been. What is clear is that this line of stones was not plastered, unlike all the other installations in pillared Room R205.

A third feature (B1:25) is located against the north face of Basin B1:30, in the southern row of pillars. This installation consists of a group of stones in a horseshoe shape that rests directly on the floor. The stones are held in place by plaster, which contains a number of stones embedded in its makeup. The center of this installation consists of a single stone (0.21 × 0.24 m in size), which serves as the floor of this feature. At present, its function is unclear, but it is not a typical domestic installation. Five domestic ovens have been excavated at Khirbat al-Mudayna to date, three in Gate Room 153, and two in Building 125, south of Temple 149; but it is clear that no such oven has been recovered in Building 200.

The floor of the central room (R205) is a soft, yellow, beaten earth surface. On this floor there was a small amount of broken pottery, a piece of iron, one inscribed scale weight (MT 687–5/31), an ivory spindle fragment (MT 701) with an incised decoration, a bone spatula (MT 703), and a holed *glycymeris* pendant.¹¹ Although the objects found on the floor surface do not identify the function of the central room with certainty, the textile tools suggest the processing of wool or other fibers. The inscribed weight (MT 687–5/31), along with a second, smaller weight (MT 679–5/29) found in the upper-storey collapse from the west end of the same room, are an indication that small quantities of goods were weighed in this building. Whether these materials were used in the crafts and industries associated with the various basins cannot be demonstrated at this stage in the excavation. The *glycymeris* pendant and the ivory spindle provide evidence for personal adornment and weaving (typical domestic activities), as well as for long-distance trade and local exchange.

¹⁰Clearly, the height of the basins above floor levels makes it unlikely that animals were stabled here. The division of the northern "aisle" into two discrete rooms (R201, R202) with narrow doorways also supports the view that this building did not function as a stable. The buildings studied by Holladay (1986) and Currid (1992), among others, had a different plan; they consisted of three parallel rooms running the full length of the structure. This subject has generated extensive discussion in scholarly circles and will be examined in greater detail following the completion of excavation in Building 200.

¹¹For a detailed discussion of the functional classification and formal typology of such artifacts, see Daviau 2002.

TABLE 1. Other Artifacts Surrounding Quern 160 in Room 202

<i>Object</i>	<i>Registration number</i>	<i>Comments</i>
Mortar	MT 159-1/159	Basalt
Hand grinders (2)	MT 150-1/150, 167-1/167	Basalt
Saddle quern	MT 180-1/180	Stone
Pounder	MT 161-1/161	Chert
Loom weights (4)	MT 153-1/153, 164-1/164, MT 165-1/165, 179-1/179	Unfired clay
Spindle whorl	MT 169-1/169	Limestone
Button	MT 176-1/176	
Bead	MT 177-1/177	Carnelian

Additional evidence for industrial activity was uncovered in Room 202, where another stone installation (A20:15) is located north of Basin 34. This feature, a kind of working platform, was made of a single large flat stone (ca. 0.55 × 0.80 m), which is surrounded by flat-lying, smaller stones holding it in place. These stones represent various minerals and were all imported to the site; none were of local limestone. Adjacent to this working platform were a group of artifacts in situ on bedrock (A20:14), including an oversize basalt grinding quern (MT 160-1/160; 67.00 × 77.00 m × 25.00 cm)¹² and its accompanying loaf-shaped millstone (MT 155-1/155), which alone weighs 28.0 kg and measures 17.00 × 64.00 × 15.00 m in height (table 1). Collapsed on top of these industrial tools were large fragments of two limestone basins, probably fallen from the northern line of pillars (W2007) where two basins are missing.¹³

Upper-Storey Rooms

On top of the stone installations and occupational debris immediately above the floor of the central room (R205), there was a good deal of fallen roof debris, consisting of hard mud ceiling material with

¹²No such large, nonportable, basalt querns were recovered among the 90 or more identified at Tall Jawa, south of ʿAmman (Daviau 2002: 153–55). However, one oversize quern does appear in the Iron Age I pillared house at Tall al-ʿUmayri (Herr and Clark 2001: 45).

¹³The spaces between two sets of pillars were plastered, and the shape of the missing basins is still preserved. A smaller, oval basin, recovered above the ceiling in Room 206, was probably in use on the upper storey.

pebble inclusions, as well as reasonably intact roof beams. Resting on this roof debris were several objects and a large amount of pottery, including a group of mendable vessels.¹⁴ Several pieces of pottery were found lying directly on top of the charred roof beam, indicating that the pottery and associated objects had indeed been sitting on the upper floor when it fell. Included in this corpus of utilitarian pottery is a very finely made black and red painted decanter. Artifacts include two iron points, as well as a basalt grinder, a polished hollow bone, and the second inscribed scale weight (MT 679-5/29). In the middle of the room, there was a limestone incense altar pinned between two limestone pillar bases that clearly had fallen from the upper storey.¹⁵

While one might imagine that the upper-storey rooms of this industrial building were used for domestic purposes, the ceramic assemblage is clearly not domestic. A quick comparison of mended forms with a typical room (R303) in an Iron Age II house

¹⁴In this assemblage, there was only a handful of cooking pot sherds. It should be noted that the north wall (W1025+1027) of Building 200 was located 8.00 m south of a room with two ovens and a hearth (Building 125, Square A18, immediately south of Temple 149). A certain amount of contamination in the composition of ceiling material can be expected, especially sherd material. Further refinement of the location of each ceramic vessel, either from the upper storey or in the ground floor rooms, will be possible following the completion of excavation in Room 206. Sherds from vessels on the upper storey tend to scatter when the ceiling collapses.

¹⁵No stairway has been uncovered to date, but one might expect a permanent access to the roof and/or second storey in so well constructed a building. Perhaps the unexcavated east (R203, R204) or west (R207) rooms will shed more light on access to the upper floor.

TABLE 2. Ceramic Vessels from Kh. al-Mudayna Building 200 and Tall Jawa Room 303 in Building 300

<i>Building 200</i>	<i>Tall Jawa, Room 303</i>
1 bowl	10 bowls
4 kraters	3 kraters
1 pithos	15 pithoi
7 storejars/small jars	1 storejar
5 juglets	1 juglet
3 small one-handled cups	1 miniature cup
1 small bowl	2 cooking pots
1 decanter juglet	
2 small decanters	
3 jugs	
1 flask	
1 thick-walled ceramic mortar bowl	

(B300) at Tall Jawa illustrates the sharp contrast (Daviau 1994: fig. 3). Room 303 contained a cooking area marked by an accumulation of ash (Daviau 1994: 182) and was adjacent to Rooms 305 and R302, each one containing an oven (table 2). Although the presence of small or miniature ceramic vessels in the assemblage from Room 205 can easily be associated with the domestic cult (Daviau 2001), these vessels alone cannot be considered the mark of a domestic building when the principal items associated with food preparation and consumption are missing (see the paradigm tested by Daviau [1993: table 2.12]) The basic features of a domestic area consist of bowls, cooking pots, and ovens, all of which are missing or seriously underrepresented in this corpus. And the presence of the basins on the ground floor cannot be ignored. What is likely is that the architectural plan of a pillared building was adapted at Khirbat al-Mudayna for a nondomestic function. The heavy use of plaster may be an indication that a certain amount of water was used in the ground floor rooms in processing whatever material was produced in this building.

Included in the collapse of upper-storey remains into northern Room 202 was a group of well-made items consisting of a limestone roof roller (MT 105-1/105), a rectangular mortar (MT 104-1/104), a basalt hand grinder (MT 54-1/54), and several unfired clay loom weights; these clay weights suggest that weaving was one of the activities performed up-

stairs. A second debris layer from the upper storey fell into Room 202; it was distinguished by the presence of ashlar stones with clear hammer dressing marks on their surfaces. A total of eight stones were present, the largest of which measured 0.36 × 1.11 m × 0.24 m thick. Also within the collapse were concentrations of charcoal, Iron Age pottery sherds, a broken upper loaf-shaped millstone, and two stone pounders. The smaller (MT 149-1/149) of these two pounders was stained red and black, as was a rectangular mortar (MT 104-1/104).

The artifacts assumed to be in use on the upper storey of the pillared building are indicative of a variety of activities, including storage of items probably in use on the ground floor. The upper storey also served as workrooms. The loom weights and red-stained tools may all have been associated with the textile industry. A hollow bone artifact and a needle-shaped geological sample from Room 203 may also be related to textile production. The presence of a third uninscribed scale weight may have been related to the industrial activities, although the full implication of the presence of the three weights in this building is not yet certain.

THE STONE SCALE WEIGHTS

In the central pillared room (R205), two inscribed scale weights were recovered in 2001. A third weight, from the upper-storey room above Room

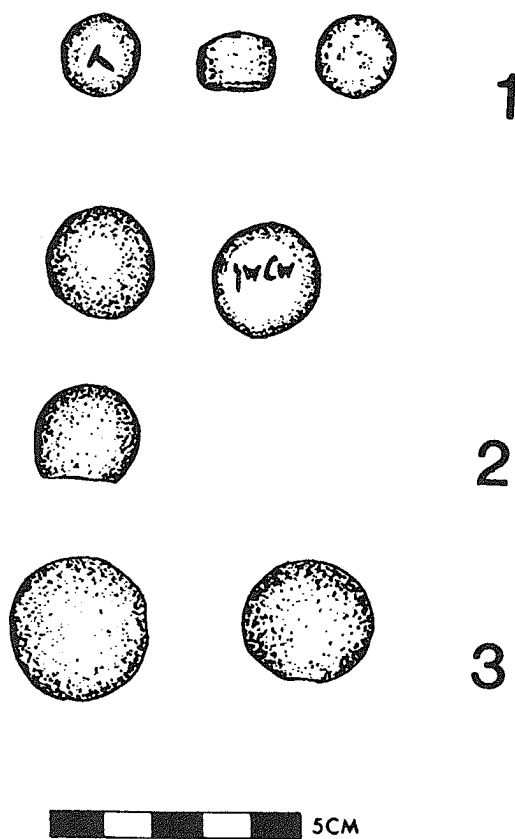


Fig. 3. (1) MT 679-5/29 (B1:20/39). Inscription: hieratic figure 10, on the top. (2) MT 687-5/31 (B11:43/39). Inscription: *ššn*, on the base, filled with white paint. (3) MT 702 (B11:2/6). Uninscribed.

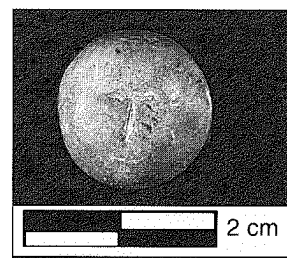


Fig. 4. Top of Weight MT 679-5/29.

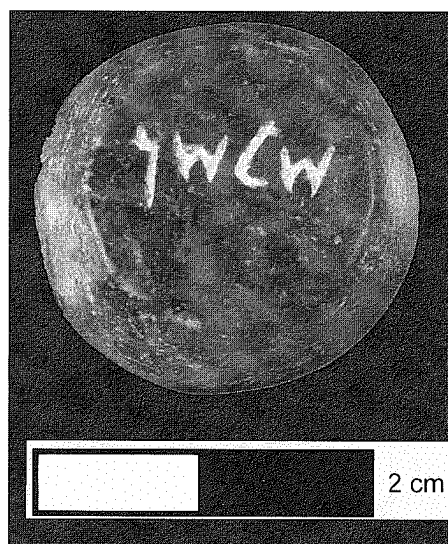


Fig. 5. Base of Weight MT 687-5/31.

206, is anepigraphic, and unfinished at best, and will play a minor part in the following discussion.

Catalog and Discussion of Scale Weights

MT 679-5/29 (figs. 3:1; 4; B1:20/39). Weight 4.698 g. Domed; limestone with quartz vein;¹⁶ pink (5YR 7/4)-reddish yellow (5YR 7/6); D at base 1.40 cm; maximum D 1.60, H 1.10 cm. Inscription: hieratic figure 10, on the top. Complete.

MT 687-5/31 (figs. 3:2; 5; B11:43/39). Weight 16.316 g. Domed; igneous rock; reddish brown (2.5YR 3/6) stone, with black flecks (2.5YR 2.5/

¹⁶Geological identification was provided by B. Conant (Department of Geography and Environmental Studies, Wilfrid Laurier University; personal communication, March 14, 2002). In the case of MT 687-5/31, the matrix was fractured and infilled, possibly a potassium feldspar. Sample MT 702 is also an igneous rock with quartz crystals, possibly a rhyolite.

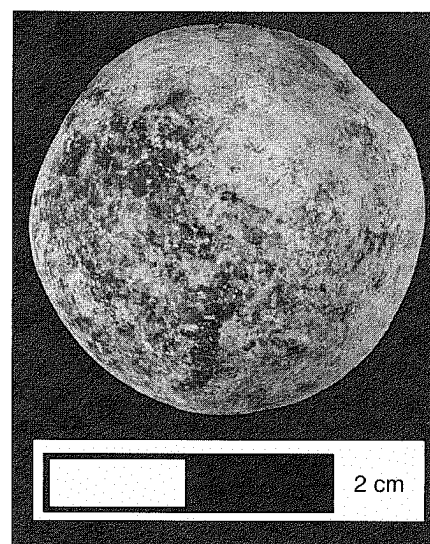


Fig. 6. Weight MT 702.

0); D at base: 1.70 cm; maximum D 2.10 cm, H 1.90 cm. Inscription: *šlšn*, on the base, and filled with white paint. Complete.

MT 702 (figs. 3.3; 6; B11:2/6). Weight 34.064 g. Spherical; igneous rock; white (10YR 8/2); one flattened area; D 2.50 × 2.70, H 2.00 cm. Very slightly chipped.

The very small corpus of inscribed weights from Iron Age Transjordan¹⁷ is insufficient to provide an interpretative context to these weights; however, it is immediately apparent that they are closely related to the numerous domed stone weights of seventh-century B.C. Judah. Their shapes are the same and, as will be shown below, their masses and inscribed values in some measure fit into the same system.

The Inscriptions

The inscription on MT 679 (fig. 3.1) uses the numeral 10 of the so-called abnormal hieratic script, similar to the figure 10 found on Judaeen weights. While this numeral can be formed in different ways, the shape used here is the most common one west of the Jordan (Kletter 1998: 68); for a very similar example on a 10-gerah Judaeen weight, see Kletter 1998: 232, fig. 37.9. As on the Judaeen weights, the inscription on MT 679 is engraved on the top of the dome, to the exclusion of any alphabetic label.

MT 687 (fig. 3.2), on the other hand, exhibits special features. The inscription, the number thirty, is written in full on the base, in alphabetic characters filled with a white substance; this is all the more remarkable, since “abnormal hieratic” had a special sign for 30—a sign used, for example, in the second column of ostracon No. 6 of Qadeš-Barnea^c (see Cohen 1981: 105–6). Analogies to each one of these three features can be found among the Judaeen weights:

- Kletter (1998: 65) lists seven weights with an inscription on the base, to which one must add a 5-gerah (*gērā*) weight from Gezer, which bears the hieratic numeral 5 on its top, and five vertical lines on its base (Kletter 1998: 80).

- Five of these inscriptions involve alphabetic characters. Three represent personal names, but four other epigraphs indicate the weight of the artifact.
- The white paint has its analogy in a 2-shekel weight from Tel Maḥata, where it is also used “to stress the engraved script” (Kletter 1998: 60).

However, one must bear in mind that in the few exceptional cases when an inscription is engraved on the base of a Judaeen weight, this is never—as it is here—at the cost of the normal labeling placed on the top of the dome (Kletter 1998: 65).

The Alphabetic Inscription

šlšn, the epigraph on MT 687, is documented as the word for “thirty” both in Moabite (Mesha Inscription, line 2) and in Old Aramaic (*KAI* 219, line 3).¹⁸ The final *nun* rules out the Hebrew and Phoenician languages, both of which write this word with a final *mem*; the less well-documented Ammonite dialect must be excluded as well, since it uses *-mem* as its masculine plural morpheme.¹⁹ The script is more likely to be Aramaic than Moabite,²⁰ since the leg of the *nun* is straight, instead of curving leftward as it does in Moabite inscriptions;²¹ but palaeography is of little use in determining the date when the weight was inscribed. The word *šlšn* may have been written during the latter part of the ninth century or during the eighth century; none of the characters it contains is diagnostic enough to narrow this window. Moreover, the script is likely to be deceptively conservative in Transjordan as in Judah, where weights of the seventh century are regularly inscribed with signs suggesting the eighth (Kletter 1998: 64).

¹⁸This is the “first” of the three dolerite fragments of Bar-Rakib, a king of Sam²al in northern Syria, who reigned from ca. 732 to some time before 710 (Dion 1997: 110–11).

¹⁹Tall Sīrān bottle inscription, line 7, has *bywmt rbm*, “numerous days” (“many days”; Zayadine and Thompson 1973: 132).

²⁰The script could also be construed as Ammonite, and the color of the stone corresponds to that of four Ammonite seals (Lemaire 1995: 480); but this does not necessarily mean provenience from an Ammonite source. Avigad (1989: 14), Lemaire’s *Gewährsmann* on the origin of this type of stone simply describes it as “of a kind found in Transjordan.” Moreover, as mentioned above, the final *nun* of *šlšn* rules out the Ammonite language.

²¹This is true, among others, of the local [*km*]šydn inscription; see Daviau 1997: 227.

¹⁷Kletter (1998: 57) mentions a *nešep* weight from Busayra; a 2-shekel weight from Tall as-Sa‘īdiya; a 4-shekel weight from Umm al-Biyara; and a 2-shekel weight from Dayr ‘Alla (see also, van der Kooij and Ibrahim 1989: fig. 142). The list would be longer of course if one were to include unmarked weights, such as the five examples found at Tawilan (Bienkowski 1995: 88–89), and those objects classified as possible weights by Daviau (2002: 89–90) at Tall Jawa.

Metrology

What units are meant by the numerals 10 and 30? The obvious Judaeian affinities of MT 679, and the large number of units for such a small artifact as MT 687, strongly suggest an equivalent of Hebrew *gerah*, a word so far unknown in Aramaic as well as in Moabite. But can this fit both of the weights? The weight of the 10-unit MT 679 is much less (4.698 g) than one-third of the weight of the 30-unit MT 687; this artifact weighs 16.316 g, one-third of which would be 5.438 g. However, this difficulty is lessened by the following considerations.

The fact that MT 679 is marked with a hieratic numeral and MT 687 with an Aramaic or Moabite word suggests that they belonged to two different tool kits, and indeed these two weights were not found together as if they were intended to be used by the same person: MT 679 was kept on the second storey, while MT 687 was in ground floor Room 205 (see above, "Archaeological Setting"). As these weights were not meant to function together, it seems advisable to compare them separately to other known weights bearing equivalent inscriptions. In this way, the discrepancies will appear less dramatic.

If one compares MT 679, with its 4.698 grams, to the 13 Judaeian weights of 10 *gerah* in Kletter's catalog, which range from 4.47 g to 5.66 g, it is found to be among the lightest, but still within acceptable distance from the 5.13 average of those weights (see Kletter 1998: 71).²² It is indeed a well-known fact that the ancients were neither able to measure small weight differences accurately, nor to achieve faultless conformity to a standard in manufacturing their scale weights, especially when it comes to the smallest artifacts (Kletter 1998: 32–33, 71, 81).

MT 687 does not lend itself to so direct a comparison. To the best of our knowledge, no inscribed 30-*gerah* weight has yet been found. West of the Jordan, traders used a combination of weights lighter than 1 shekel and of multiples of this standard. The number "30 *gerah*" (with hieratic numeral) is only found, along with larger numbers of *gerah*, on the Qadeš-Barnea^c ostrakon quoted above, a mere scribal exercise that does not reflect actual commercial prac-

tice. Yet, if one accepts Kletter's average *gerah* of 0.55 g (Kletter 1998: 81), one expects 30 *gerah* to weigh 16.50 g, which is very close to the 16.316 g of MT 687.

Even the unmarked weight from Khirbat al-Mudayna (MT 702) fares well enough if the same method is applied. If once again we assume a *gerah* of 0.55 g, its 34.064 g roughly amount to 62 *gerah*. Remove about one and a half grams on account of the fact that this weight looks unfinished, and its weight will be double that of the 30-*gerah* weight from the same square. It will then presumably qualify as a 60-*gerah* weight—the double of MT 687.

In conclusion, Khirbat al-Mudayna attests to what seems to be two slightly different weight series. One of these, represented by MT 679, is well known from a large corpus found mainly in Judah, and the Mudayna weight may indeed have gotten there through trade, as Kletter (1998: 57–58) suggests for the relatively few examples in his corpus that were discovered outside of Judah. The other series is represented by MT 687.²³ It works with a unit equivalent to the Judaeian *gerah*, but it keeps counting such units beyond the shekel equivalence; the number of units is not engraved on the top of the artifact; and it is not represented by a hieratic numeral, but written in full in an Aramaic or Moabite dialect. These departures from the Judaeian system may be due to a distinctive local tradition, as the special features of the incense altar inscription (Dion and Daviau 2000); however, for want of comparanda from this region, one cannot rule out that they were more widely spread through Moab or a larger portion of Transjordan.

OTHER EVIDENCE FOR ECONOMY: THE STAMP SEALS AND BULLAE²⁴

Along with the evidence from the pillared building and from the scale weights themselves, other artifacts contribute to our knowledge of the local economy at Khirbat al-Mudayna. Principal among the hundreds of small finds are seven stamp seals and three bullae. Although not one of the items in this group is inscribed, it is clear that the seals do

²²The masses of the 10-*gerah* weights cataloged by Kletter are, in grams, 5.13; 5.24; 5.4902; 5.6567; 4.47; 5.04; 4.66; 5.39; 4.66; 5.62; 5.31; 5.21; 4.88. Note, however, that, basing himself on weights of 5, 6, and 8 *gerah*, Kletter (1998: 81) concludes that the average for this unit is 0.55 g.

²³It may also be represented by the unmarked weight from the same square.

²⁴The discussion here is preliminary; the seals and bullae from Khirbat al-Mudayna are currently being studied by Jürg Egger (Department of Biblical Studies, University of Fribourg) as part of a study of all seals and bullae from Transjordan.

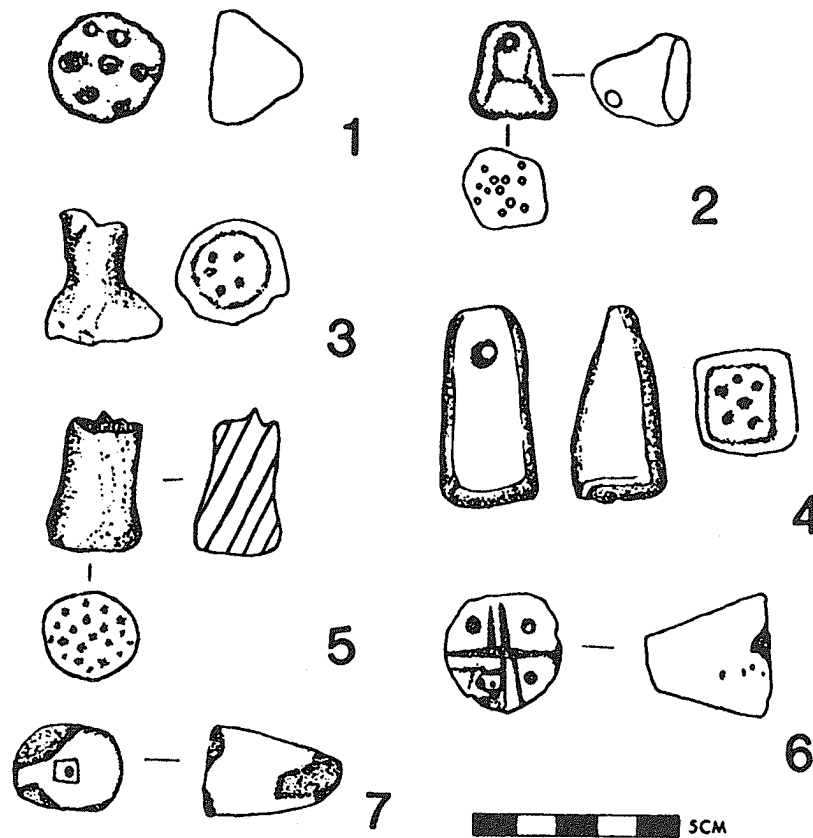


Fig. 7. (1) MT 389–3/389 (S:0.5/1). Conical seal, seven depressions, no suspension hole; limestone; complete. (2) MT 615–5/4 (A7:29/71). Irregular shape, 12 depressions, suspension hole; limestone; complete. (3) MT 749–5/28 (A4:70/125). Cylindrical, five depressions, hole not preserved; conglomerate; broken. (4) MT 770–5/19 (A4:66/118). Pyramidal, six depressions, suspension hole; complete. (5) MT 543–4/99 (L14:9/14). Cylindrical, 20 depressions, hole not preserved; limestone(?); broken. (6) MT 317–3/317 (A8:2/14). Truncated cone, four depressions, hole not preserved; stone; broken. (7) MT 322–3/322 (A4:10/24). Conical, one depression in a square, no hole; chipped.

not share the same designs as the bullae. The most common motif on the flat surface of the stamp seals is a field of small depressions, varying in number from one seal to another. As these seals share this motif with Aramaean seals and with seals from various sites in Israel, we can make some suggestions concerning their design.

Catalog of Seals

MT 389–3/389 (fig. 7:1; S:0.5/1). Conical seal, seven depressions, no suspension hole; limestone (white, 1 Gley 8/); D 2.80, H 2.28 cm; complete.
 MT 615–5/4 (figs. 7:2; 8; A7:29/71). Irregular shape, 12 depressions, suspension hole; stone; W 2.20 cm, H 2.20 cm; complete.

MT 749–5/28 (figs. 7:3; 9; A4:70/125). Cylindrical shaft, five depressions, hole not preserved; conglomerate (brown, 10YR 4/3); D 2.70 cm, H 3.00+ cm; broken.

MT 770–5/19 (figs. 7:4; 10; A4:66/118). Pyramidal, six depressions, suspension hole; limestone (very pale brown, 10YT 7/3); W 2.40 cm, H 4.50 cm; complete.

MT 543–4/99 (figs. 7:5; 11; L14:9/14). Cylindrical, 20 depressions, hole not preserved; fine sandstone or siltstone²⁵ (light gray, 10YR 7/2); D 2.00 cm, H 3.10+ cm; broken.

MT 317–3/317 (figs. 7:6; 12; A8:2/14). Truncated cone, four depressions, hole not preserved; stone

²⁵Identification provided by B. Conant, March 14, 2002.

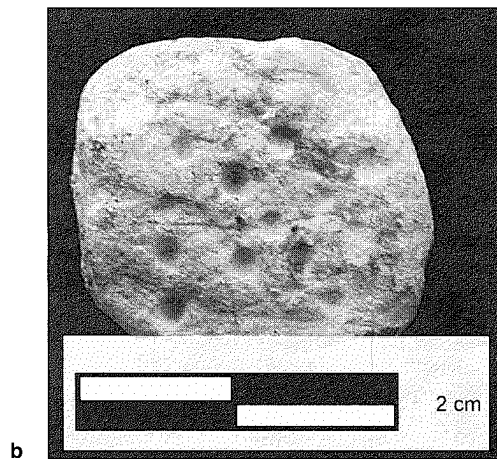
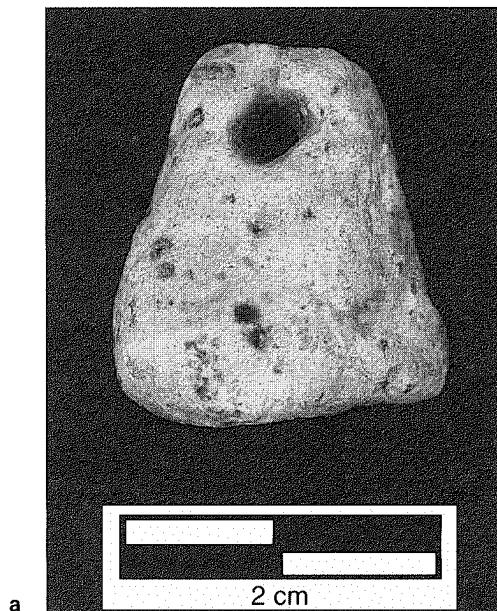


Fig. 8. Seal MT 615-5/4, two views.

(very dark gray, 2.5YR 3/1); D 2.90 cm, H 3.10 cm; broken.

MT 322-3/322 (figs. 7:7; 13; A4:10/24). Conical, one depression in a square, no hole; limestone (?) (white, 5Y 8/1); L 2.60 cm, W 2.00 cm, H 3.00 cm; chipped.

Catalog of Bullae

MT 23-1/23 (figs. 14:1; 15; L34:0.5/1). Mud fragment; floral(?) design; string mark on reverse; light reddish brown (5YR 6/4); L 2.10 cm, W 2.00 cm, T 0.90 cm; broken.

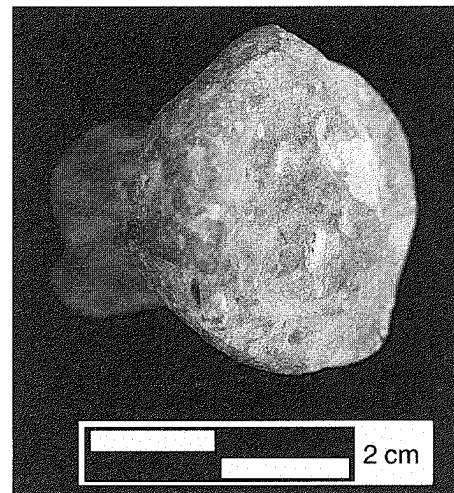


Fig. 9. Seal MT 749-5/28.

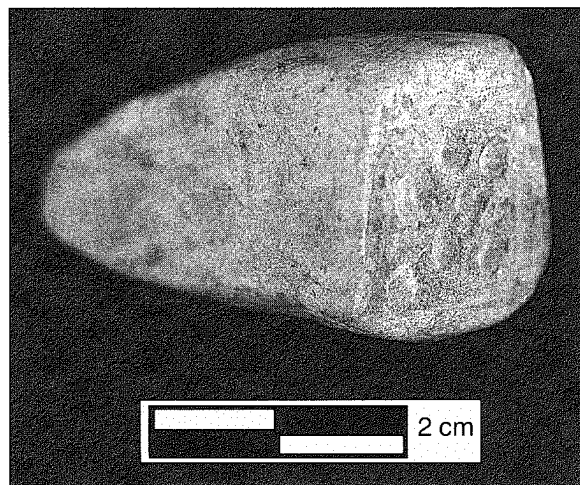
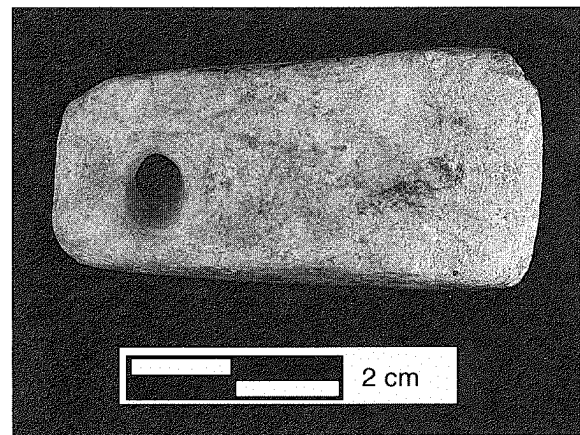


Fig. 10. Seal MT 770-5/19, two views.

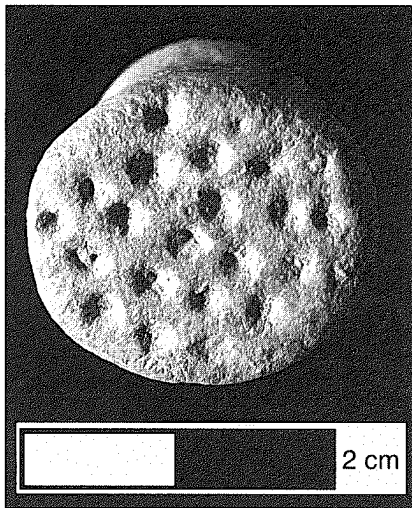


Fig. 11. Seal MT 543-4/99.



Fig. 12. Seal 317-3/317.

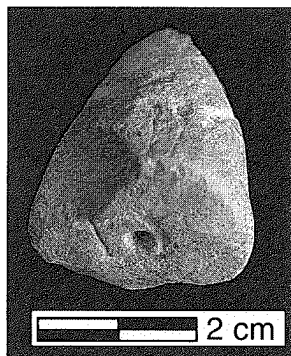


Fig. 13. MT Seal 322-3/322.

MT 26-1/26 (figs. 14:2; 16; L37:0.5/1). Mud bulla; design scene; string mark on reverse; light yellowish brown (10YR 6/4); L 3.15 cm, W 2.50 cm, T 1.05 cm; complete.

MT 120-1/120 (figs. 14:3; 17; L33:15/21). Mud fragment; unknown design; string mark on reverse; pink (5YR 7/4); L 3.10 cm, W 2.20 cm, T 1.80 cm; broken.

DISCUSSION

The quality of stone varies among the seals: one is of soft limestone, two are made of fine but light-weight stone, and the remainder consist of hard stones that take a good polish, possibly quartzite. The design on the base of three of these seals (MT 389, 543, 615; fig. 7.1, 5, 2) consists of a random pattern of small depressions that vary in number from 4 to 20 depressions. Two other seals (MT 749, 770; fig. 7.3, 4) also have a random pattern, but the field of depressions is enclosed in a border. The design on Seal MT 317 (fig. 7.6) also makes use of circular depressions, but these are separated from one another by two sets of perpendicular lines. Seal MT 322 (fig. 7.7) has only one centered depression surrounded by an incised square.

Parallels for this style of seal appear at Tell en-Naṣbeh in Tomb 32 (McCown 1947: pl. 54:33), at Mount Ebal (Brandl 1986-1987: fig. 1:3), and Beth-Shemesh (Grant and Wright 1938: pl. 51:41), with the best example from Tawilan (Bienkowski 1995: 9.50).²⁶ Keel and Uehlinger (1998: 322) identify the random distribution of small circles or depressions as a design representing the host of heaven, a design which is often accompanied by a lunar crescent (Buchanan and Moorey 1988: pl. 12:425; see also Lemaire 1999: 201-2). The closest parallel is a seal that has small circular depressions without a crescent; this motif appears on the top, or obverse, of

²⁶Seals with a pattern of random depressions are distinct from scaraboid seals with a ring and dot motif, such as those from Lachish (Tufnell 1953: pl. 44:120-22), and those with the ring and dot forming a floral pattern from Megiddo (Sass 2000: 404; fig. 12.41:1). Another style includes either the ring and dot, or circular depressions that are connected to one another, or to a central circle, possibly representing an astral symbol (Tufnell 1953: pls. 44:118-19; Lamon and Shipton 1939: pls. 67:9; 69:67). Astral symbolism is seen most clearly on those seals that include a crescent and a large circular depression (sun) along with random depressions filling the remainder of the field (Keel and Uehlinger 1998: illus. 316).

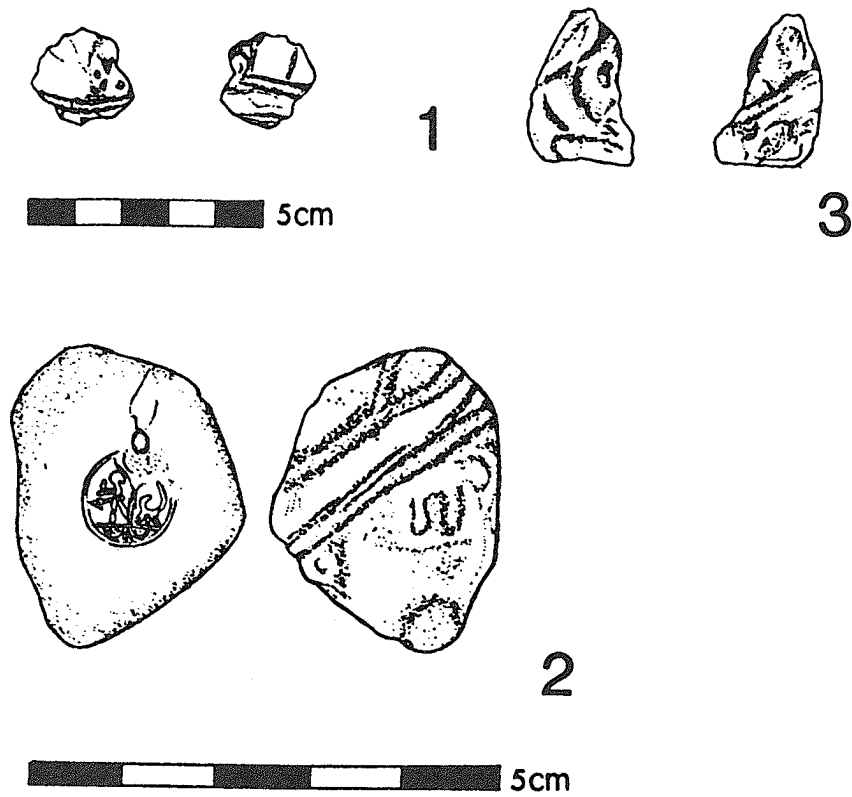


Fig. 14. (1) MT 23-1/23 (L34:0.5/1). Mud fragment, floral(?) design, string mark on reverse; broken. (2) MT 26-1/26 (L37:0.5/1). Mud bulla; design scene, string mark on reverse; complete. (3) MT 120-1/120 (L33:15/21). Mud fragment, unknown design, string mark on reverse; broken.

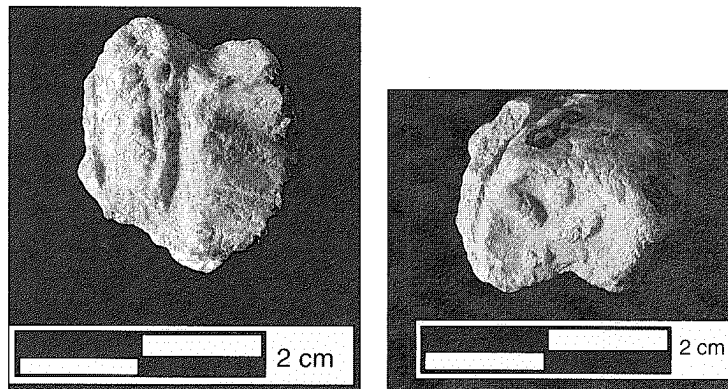


Fig. 15. Bulla MT 23-1/23, two views.

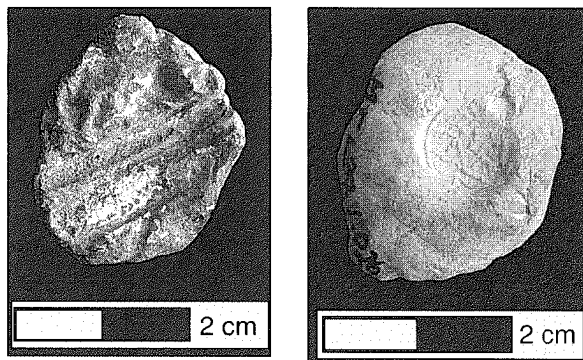


Fig. 16. Bulla MT 26–1/26, two views.

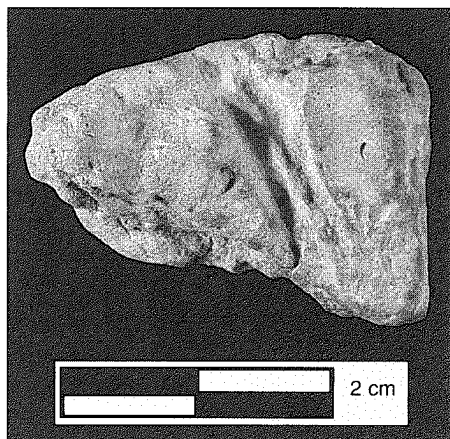


Fig. 17. Bulla MT 120–1/120.

a double seal (Buchanan and Moorey 1988: pl. 12:349).

The identification of the designs on two bullae is problematic, due primarily to the way in which they were broken. The obverse of bulla MT23–1/23 appears to represent petals of a floral motif, but it is incomplete. The design on the obverse of bulla MT 120–1/120 is not preserved; only the reverse retains clear marks of the position of the string. Bulla MT 26–1/26 is complete, but the seal impression is very small, and the details of the design are so faint that they are difficult to reproduce. At the same time, it is clear that this was a complicated scene, probably from a scaraboid seal, and with a design very distinct from the floral motif on bulla MT23–1/23.

The find spots for the seals and bullae at Khirbat al-Mudayna vary in that only three seals were found in stratified loci in the gate (B100) and two in the courtyard (C150) immediately south of the gate. The remaining seals and all three bullae were recovered from surface loci or from the large Iron Age dump on the east side of the mound. This dump was already noticed by Glueck (1934: fig. 4; 1939: fig. 45) and was probably the source of much of the pottery and figurines that he recovered from this site. The large amount of exclusively Iron Age II pottery in the dump makes it clear that the seals and bullae date to the same horizon.²⁷

This small corpus of directly trade-related items (three weights, seven seals, three bullae) has interesting qualities. First of all, it compares favorably to the finds from Tall Jawa, south of ⁶Amman, a site that yielded only four seals (Daviau 2002: 85–89)²⁸ among the 3,000 objects recovered from ten buildings; there were no bullae and no inscribed weights recovered during six field seasons (1989–1995; Daviau 2002: 1–7).²⁹ Two aspects of the Khirbat al-Mudayna corpus are especially noteworthy. First, the fact that all the seals share the same type of iconography, with which the bullae have nothing in common, suggests that the bullae may have come in with shipments from outside the local community.³⁰ Second, here as elsewhere, the very small size of the weights points to the transfer of valuable commodities, not mere staples of a subsistence economy.

The setting of Khirbat al-Mudayna Thamad, on the eastern edge of the Dhiban plateau, west of the

²⁷Almost 1,000 sherds have been collected from the surface and from the dump, some of which will undergo chemical analysis at the Pottery Institute of the University of Leiden. The typological study of these sherds and all pottery from Gate 100, Temple 149, and Courtyard 150 is under the direction of M. Steiner.

²⁸These seals are located in the National Museum in ⁶Amman (TJ 437 = J-19354, TJ 1128 = J-19380, TJ 1986 = J-19399, and TJ 965 = J-10356). The cylinder seal (TJ 965) is extremely worn, so there is no visible inscription or decoration; it was recovered from a Persian-period grave in the outer casemate wall, after the Iron Age town had gone out of use. The accession numbers (J-) were provided by Jürg Egger.

²⁹The number of artifacts related to exchange is exceeded by the Ammonite site of Tall al-⁶Umayri with its 80 seals, but there the seals may date to an earlier and/or later period (Herr and Clark 2001: 45).

³⁰The bullae were attached to goods and were eventually removed and discarded; on this practice, see Buchanan and Moorey (1988: 19).

modern Desert Highway, is suggestive for understanding the economic strategies of the ancient inhabitants. Clearly, the inhabitants lived in a zone (Daviau 1997) where grain and vegetables could be grown when there was sufficient rain and the wadi was not dry, and where sheep and goats could be pastured. These are the same subsistence strategies used by the settled Bedouin in the area today.³¹ The storejars and pithoi found in the gate (B100) indicate extensive food storage, and the importance of animal husbandry is evident from the large number of animal bones that were found in Courtyard 150, adjacent to Temple 149. More than 8,000 bones with butchering marks had been found during the previous seasons,³² and an equal number were recovered from the underlying surfaces in the same courtyard during the 2001 season. The dominant species are sheep and goat, along with a much smaller representation of cattle, gazelle, deer, and camel.

Beside the food element, the economy is represented by the manufacture of textiles and the preparation of offerings for use in the temple. Evidence for the textile industry consists of three large basins and a group of unfired-clay loom weights from the upper-storey gate rooms (R101, R103, R151; Chadwick, Daviau, and Steiner 2000: fig. 2), as well as the basins and textile tools of Building 200. What is missing is an adequate parallel that could clarify what activities were associated with the basins. The wooden models of textile-producing buildings from Egypt show spinning and weaving activities, but not the area where the fibers were washed or dyed (for example, a model from the tomb of Gemni, 12th dynasty; Jørgensen 1996: pl. 53).³³ Obviously many questions remain unanswered concerning Khirbat al-Mudayna's textile industry. Where was the fabric dyed? Could this be done inside the town in a building adjacent to a large cistern or water system? What else could be processed in the numerous basins? How does the pillared building relate to the butchering of sheep carried out in Courtyard 150?

³¹In contrast to the hill country of Cisjordan, the Dhiban plateau does not appear to be a suitable area for the cultivation of olives and grapes; this is more common to the north in the Madaba Plain and in the Balqa hills around Amman.

³²The faunal remains from the 1996–1999 seasons were studied by P. R. W. Popkin (2001).

³³According to the Hebrew Scriptures (Isa 7:4), the fuller's field in Jerusalem was out of town, at a place where there was running water.

Also of significance is the nature of the two samples of incense found in situ, one sample on a cuboid altar (MT 647–5/1) in the kitchen of Building 125, immediately south of Temple 149, and a second sample on the incense altar (MT 684–5/30)³⁴ located in the upper storey collapse of B200 (Daviau and Dion 2002: 43). Preliminary analysis suggests that the aromatic substance consists of local floral material, and not of resinous frankincense imported from Arabia. This suggests that Khirbat al-Mudayna was outside the scope of the incense trade that passed through Edom and the Negev (Finkelstein 1992: 162–63). At present, one cannot determine what part Khirbat al-Mudayna may have played in the long-distance trade of the day, nor even how it functioned within the Moabite context. However, an ivory spindle, a *Glycymeris* pendant, a Judean lamp in Temple 149 (Daviau and Steiner 2000: 16; fig. 12:1), and the various scripts used on the scale weights and on Altar MT 4/15 (Dion and Daviau 2000) suggest some involvement in the exchanges that went on in the region, and the seals demonstrate a certain control over the production of local goods and their exchange with neighboring estates or settlements. Although it is not yet clear where Khirbat al-Mudayna fits into the spatial hierarchy of Iron Age II Moab, its size and fortifications indicate its importance in this border region.³⁵ What is certain at this stage of excavation is that this small, fortified settlement was trading with other sites in the region and was itself a producer of goods for exchange. The fact that none of the seals were inscribed suggests that, if they were used in the local economy as characterized by Steiner, they were not necessarily suitable for the royal economy of the kingdom of Moab.

³⁴This altar, inscribed with a lotus flower, as well as the altars from Temple 149 are illustrated in Daviau and Dion (2002: 42–43).

³⁵Routledge (1997: 136–37) demonstrates the rapid increase in settlements along the eastern margin of the Karak plateau during the seventh–sixth centuries B.C. He attributes this settlement increase to the extension of Moabite control throughout eastern Moab, creating a political and spatial hierarchy based on Dibon. While Routledge (1997:140) admits that this theoretical framework does not relate directly to the changes on the Karak plateau for the eighth century, it could be an important model for the development of the Moabite state on the northern plateau during that time, and for the relationship of Khirbat al-Mudayna [Thamad] with Dibon to the southeast.

REFERENCES

- Avigad, N.
1989 Another Group of West-Semitic Seals from the Hecht Collection. *Michmanim* 4: 7–21.
- Bienkowski, P.
1995 The Small Finds. Pp. 79–92 in *Excavations at Tawilan in Southern Jordan*, by C.-M. Bennett and P. Bienkowski. British Academy Monographs in Archaeology 8. Oxford: Oxford University.
- Braemer, F.
1982 *L'architecture domestique du Levant à l'âge du Fer*. Paris: Éditions Recherche sur les Civilisations.
- Brandl, B.
1986– Two Scarabs and a Trapezoidal Seal from
1987 Mount Ebal. *Tel Aviv* 13–14: 166–72.
- Buchanan, B., and Moorey, P. R. S.
1988 *Catalogue of Ancient Near Eastern Seals in the Ashmolean Museum*, Vol. 3: *The Iron Age Stamp Seals (c. 1200–350 BC)*. Oxford: Clarendon.
- Chadwick, R.; Daviau, P. M. M.; and Steiner, M.
2000 Four Seasons of Excavations at Khirbat al-Mudayna on Wādī ath-Thamad, 1996–1999. *Annual of the Department of Antiquities of Jordan* 44: 257–70.
- Claessen, H. J.
1978 The Early State: A Structural Approach. Pp. 533–97 in *The Early State*, eds. H. J. M. Claessen and P. Skalník. New Babylon, Studies in the Social Sciences 32. The Hague: Mouton.
- Cohen, R.
1981 Excavations at Kadesh-barnea, 1976–1978. *Biblical Archaeologist* 44: 93–107.
- Currid, J. D.
1992 Rectangular Storehouse Construction during the Israelite Iron Age. *Zeitschrift des Deutschen Palästina-Vereins* 108: 99–121.
- Daviau, P. M. M.
1993 *Houses and Their Furnishings in Bronze Age Palestine: Domestic Activity Areas and Artefact Distribution in the Middle and Late Bronze Ages*. JSOT/ASOR Monographs 8. Sheffield: Sheffield Academic.
1994 Excavations at Tell Jawa, Jordan (1993). Preliminary Report. *Annual of the Department of Antiquities of Jordan* 38: 173–93.
1997 Moab's Northern Border: Khirbat al-Mudayna on the Wadi ath-Thamad. *Biblical Archaeologist* 60: 222–28.
2000 Survey and Excavation in Northern Moab. Pp. 279–92 in *Proceedings of the First International Congress on the Archaeology of the Ancient Near East, Rome, May 18th–23rd 1998*, eds. P. Matthiae, A. Enea, L. Peyronel, and F. Pinnock. Rome: Università degli Studi di Roma “La Sapienza.”
- 2001 Family Religion: Evidence for the Paraphernalia of the Domestic Cult. Pp. 199–229 in *The World of the Aramaeans II: Studies in History and Archaeology in Honour of Paul-Eugène Dion*, eds. P. M. M. Daviau, J. W. Wevers, and M. Weigl. JSOT Supplement Series 325. Sheffield: Sheffield Academic.
- 2002 *Excavations at Tall Jawa, Jordan, II: The Iron Age Artefacts*. Culture and History of the Ancient Near East 11/2. Leiden: Brill.
- Daviau, P. M. M., and Dion, P.-E.
2002 Moab Comes to Life. *Biblical Archaeology Review* 28, no. 1: 38–49, 63.
- Daviau, P. M. M., and Steiner, M.
2000 A Moabite Sanctuary at Khirbat al-Mudayna. *Bulletin of the American Schools of Oriental Research* 320: 1–21.
- Dion, P.-E.
1997 *Les Araméens à l'âge du fer: Histoire politique et structures sociales*. Études Bibliques 34. Paris: Gabalda.
- Dion, P.-E., and Daviau, P. M. M.
2000 An Inscribed Incense Altar of Iron Age II at Ḥirbet el-Mudēyine (Jordan). *Zeitschrift des Deutschen Palästina-Vereins* 116: 1–13.
- Finkelstein, I.
1992 *Ḥorvat Qiṭmīt* and the Southern Trade in the Late Iron Age II. *Zeitschrift des Deutschen Palästina-Vereins* 108: 156–70.
- Glueck, N.
1934 *Explorations in Eastern Palestine, I*. Annual of the American Schools of Oriental Research 14. Philadelphia: American Schools of Oriental Research.
1939 *Explorations in Eastern Palestine, III*. Annual of the American Schools of Oriental Research 38–39. Philadelphia: American Schools of Oriental Research.
- Grant, E., and Wright, G. E.
1938 *Ain Shems Excavations (Palestine). Part IV (Pottery)*. Biblical and Kindred Studies 7. Haverford, PA: Haverford College.
- Halpern, B.
2001 *David's Secret Demons: Messiah, Murderer, Traitor, King*. Grand Rapids, MI: Eerdmans.
- Herr, L. G., and Clark, D. R.
2001 Excavating the Tribe of Reuben. *Biblical Archaeology Review* 27, no. 2: 36–47, 64–66.

- Holladay, J. S., Jr.
 1986 The Stables of Ancient Israel. Pp. 103–65 in *The Archaeology of Jordan and Other Studies Presented to Siegfried H. Horn*, eds. L. T. Geraty and L. G. Herr. Berrien Springs, MI: Andrews University.
 1995 The Kingdoms of Israel and Judah: Political and Economic Centralization in the Iron IIA–B (1000–750 BCE). Pp. 368–98 in *The Archaeology of Society in the Holy Land*, ed. T. E. Levy. New York: Facts on File.
 1997 Four-room House. Pp. 337–42 in *The Oxford Encyclopedia of Archaeology in the Near East*, Vol. 2, ed. E. M. Meyers. New York: Oxford University.
- Jørgensen, M.
 1996 *Catalogue, Egypt I (3000–1550 B.C.)*, Ny Carlsberg Glyptotek. Copenhagen: Ny Carlsberg Glyptotek.
- Keel, O., and Uehlinger, C.
 1998 *Gods, Goddesses and Images of God in Ancient Israel*. Trans. Th. H. Trapp, from German. Minneapolis: Fortress.
- Kletter, R.
 1998 *Economic Keystones: The Weight System of the Kingdom of Judah*. JSOT Supplement Series 276. Sheffield: Sheffield Academic.
- van der Kooij, G., and Ibrahim, M. M., eds.
 1989 *Picking up the Threads . . . A Continuing Review of Excavations at Deir Alla, Jordan*. Leiden: University of Leiden, Archaeological Centre.
- Lamon, R. S., and Shipton, G. M.
 1939 *Megiddo I: Seasons of 1925–1934, Strata I–V*. Oriental Institute Publications 42. Chicago: University of Chicago.
- Lemaire, A.
 1995 Recherches sur les ateliers sigillaires jordaniens au Fer II. Pp. 479–88 in *Studies in the History and Archaeology of Jordan V*, ed. K. Amr, F. Zayadine, and M. Zaghoul. Amman: Department of Antiquities.
 1999 Coupe astrale inscrite et astronomie araméenne. Pp. 195–211 in *Michael: Historical, Epigraphical and Biblical Studies in Honor of Prof. Michael Heltzer*, eds. Y. Avishur and R. Deutsch. Tel Aviv: Archaeological Center.
- McCown, C. C.
 1947 *Tell en-Naşbeh I: Archaeological and Historical Results*. Berkeley: Palestine Institute of Pacific School of Religion.
- McNutt, P. M.
 1999 *Reconstructing the Society of Ancient Israel*. Louisville, KY: Westminster John Knox.
- Neufeld, E.
 1960 The Emergence of a Royal-Urban Society in Ancient Israel. *Hebrew Union College Annual* 31: 31–53.
- Popkin, P. R. W.
 2001 Khirbat al-Mudayna, A Preliminary Faunal Report. M.A. thesis, University of Saskatchewan. Routledge, B.
- 1997 Learning to Love the King: Urbanism and the State in Iron Age Moab. Pp. 130–44 in *Urbanism in Antiquity from Mesopotamia to Crete*, eds. W. E. Aufrecht, N. A. Mirau, and S. W. Gauley. JSOT Supplement Series 244. Sheffield: Sheffield Academic.
- Sass, B.
 2000 The Small Finds. Pp. 349–423 in *Megiddo III: The 1992–1996 Seasons*, eds. I. Finkelstein, D. Ussishkin, and B. Halpern. Monograph Series 18. Tel Aviv: Emery and Claire Yass Publications in Archaeology, Institute of Archaeology, Tel Aviv University.
- Shiloh, Y.
 1986 A Group of Hebrew Bullae from the City of David. *Israel Exploration Journal* 36: 16–38.
- Silver, M.
 1983 *Prophets and Markets: The Political Economy of Ancient Israel*. Boston: Kluwer-Nijhoff.
- Steiner, M.
 2001 I am Mesha, King of Moab, or: Economic Organization in the Iron Age II. Pp. 327–29 in *Studies in the History and Archaeology of Jordan VII*. Amman: Department of Antiquities of Jordan.
- Tainter, J. A.
 1988 *The Collapse of Complex Societies*. Cambridge: Cambridge University.
- Tufnell, O.
 1953 *Lachish III: The Iron Age*. 2 vols. New York: Oxford University.
- Zayadine, F., and Thompson, H. O.
 1973 The Ammonite Inscription from Tell Siran. *Berytus* 22: 115–40.