

HERODIUM

Final Reports of the 1972–2010 Excavations

Directed by Ehud Netzer

Volume I

Herod's Tomb Precinct

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CHAPTER 12

MILITARY EQUIPMENT FROM THE AREA OF THE MAUSOLEUM AND THE THEATER AT HERODIUM

Guy D. Stiebel

The excavations of the area of the mausoleum and theater at Herodium revealed a significant number of iron artefacts, most notably representing a martial material culture. This group of ferrous items comprises iron hobnails and arrowheads. In addition, a large number of slingshots was uncovered alongside a group of rolling stones. Of great interest are a rare bone ear-lath of a composite bow and a copper alloy brooch; both provide important insights into issues of production and identity. This collection of artefacts should be added to the previously published large assemblage of military equipment from both Corbo's and Netzer's excavations at Herodium (Stiebel 2003).

CATALOGUE

MILITARY DRESS AND FITTINGS

Iron Hobnails

Typical dome-head hobnails of Roman *caligae* were uncovered in the excavations. Such items are commonly reported in the contexts of the First Jewish Revolt and the Bar-Kokhba Revolt (for a detailed discussion and parallels, see Stiebel 2009: 327–328). Although the typically encountered, sporadic examples of individual hobnails are seemingly the result of material fatigue and attrition, numerous hobnails were lost due to the rocky terrain of Judea (Stiebel 2007: 254–255). Nonetheless, the group of six hobnails that were found together suggests that they came from a single sole.

1–6. Group of six hobnails

L.A2582–5132 (Pl. 12.I: 1–6)

Phase 4b (period between the two revolts)

Six dome-head iron hobnails, probably from the sole of one *caliga*. All shanks are bent at a right angle.

Dimensions: D. of heads: 10–12 mm.

7. Hobnail

L.A2788–6230/1

Phase 4a (First Jewish Revolt)

Much corroded large dome-head iron hobnail with a broken shank. The hobnail was discovered among the debris of the mausoleum, in front of the cistern to the north.

Dimensions: D. of head: 18–19 mm; total H.: 18 mm+; H. of head: 10 mm.

8. Hobnail

L.A2844–6383 (Pl. 12.I: 7)

Phase 4a (First Jewish Revolt)

Hobnail with a dome head. The head is broken.

Dimensions: D. of head: 13 mm; total H.: 16 mm; H. of head: 6 mm.

9. Hobnail

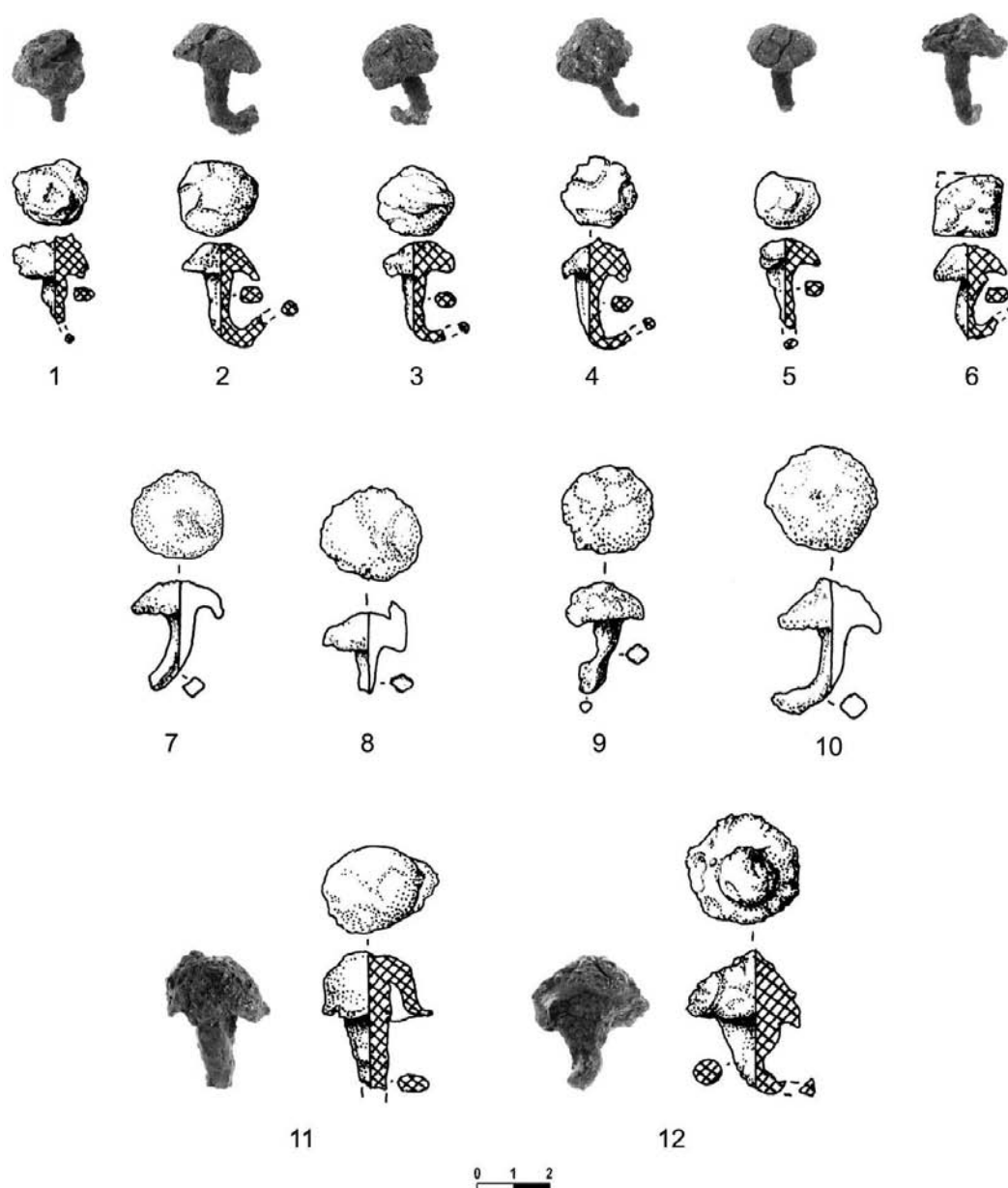
L.A2758–6119/1 (Pl. 12.I: 8)

Phase 4b (period between the two revolts)

Corroded hobnail with a broken shank.

Dimensions: D. of head: 13 mm; total H.: 12 mm; H. of head: 5 mm.

CHAPTER 12: MILITARY EQUIPMENT



Pl. 12.I. Hobnails from the mausoleum excavations at Herodium.

10. Hobnail

L.A2758-6119/2 (Pl. 12.I: 9)

Phase 4b (period between the two revolts)

Corroded hobnail with a straight broken shank.

Dimensions: D. of head: 11 mm; total H.: 15 mm; H. of head: 7 mm.

Large hobnail, with a dome head and a shank bent at a right angle.

Dimensions: D. of head: 14 mm; total H.: 18 mm; H. of head: 6 mm.

11. Hobnail

L.A2596-5210 (Pl. 12.I: 10)

Stages 3 to 4 (from the creation of the artificial mount up to the period between the two revolts)

12. Hobnail

L.A2902-6531

Phase 4a (First Jewish Revolt)

Caliga hobnail.

Dimensions: D. of head: 16 mm; total H.: 16 mm; H. of head: 8 mm.

13. Hobnail

L.A2655-5426/2

Phase 4b (period between the two revolts)

Caliga hobnail with a dome head and a shank bent at a right angle.

Dimensions: D. of head: 11–12 mm; total H.: 15 mm; H. of head: 4 mm; Th. of shank: 5 mm.

14. Hobnail

L.A2583-5143

Phase 4b (period between the two revolts)

Caliga hobnail with a dome head and a slightly bent shank.

Dimensions: D. of head: 12 mm; total H.: 21 mm; H. of head: 8 mm; Th. of shank: 4–5 mm.

15. Hobnail

L.A2870-12584 (Pl. 12.I: 11)

Postdating Stage 3 (area of the theater)

Large iron dome-head hobnail with a broken shank.

Dimensions: D. of head: 12–15 mm; total H.: 20 mm+; H. of head: 8 mm.

16. Hobnail

L.A2983-10066 (Pl. 12.I: 12)

Stages 2–3 (area of the theater)

Much damaged dome-head iron hobnail with a broken shank.

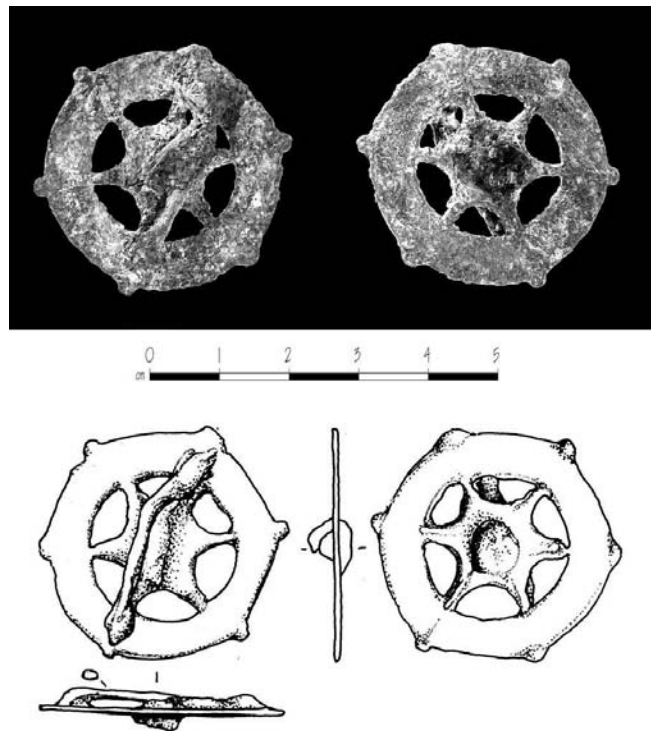
Dimensions: D. of head: 15 mm; total H.: 20 mm+; H. of head: 8 mm.

17. Brooch

L.A2582-5126 (Ill. 12.1, Color Plate 14: 3)

Phase 4b (period between the two revolts)

A wheel brooch (*fibula*). The cast copper-alloy brooch features the typical outlines of a wheel brooch. The circular wheel-like front has six central spokes corresponding to the six very small projecting lobed knobs located around its perimeter. The triangular concave spokes connect the outer edge with the round center to which a highly corroded round-headed iron pin is attached. The elongated fastening pin is preserved on its back. The brooch was found in a refuse dump revealed to the west of the mausoleum ruins and clearly belonged to the Roman occupying force at the end of the First Jewish Revolt (71 CE). A



III. 12.1. Roman wheel brooch revealed in the refuse dump to the west of the mausoleum ruins.

very similar, yet unpublished, specimen was revealed in Yigael Yadin's excavations at Masada and belongs to the same chronological stage.

Wheel brooches are documented as early as the first century CE and the latest examples are attested in third-century CE contexts. The main distribution centers of wheel brooches were in Gaul and the Rhineland, most notably in northern and eastern Gaul (Green 1982: 168). It must be stressed that the Gallic origin of the brooch does not appear to testify to the origin of the soldiers but rather to their fashion taste. Gallic dress items were very popular among Roman soldiers, the most prominent example being the AVCISSA brooch. Another indication of this "Gallic trend" is the woollen tabby with checks uncovered at Masada, which clearly originated from the northwestern provinces (Sheffer and Granger-Taylor 1994: 197–198, Fig. 84, Cl. Pl. VIb). This kilted *sagum* no doubt belonged to a member of the Roman garrison that was stationed at Masada. The fact that Roman soldiers constituted an important economic factor and were significant consumers of a wide spectrum of goods is well documented (Le Bohec 1994: 207–220, esp. 218–219), and dress

items and fittings were evidently acquired by the soldiers via two parallel channels: privately but also in an institutionalized manner (*cf.* P. Ryl. II, 189; *BGU* 1564 = *SP* 395).¹

Dimensions: D. of head: 38 mm (with knobs).

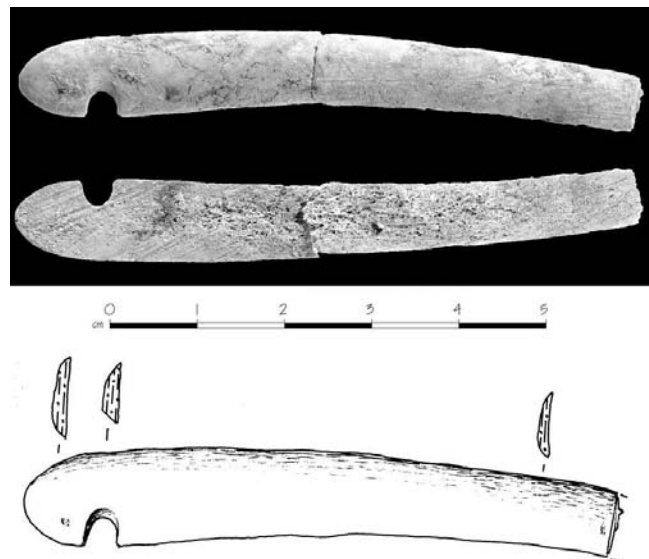
Archery Tackle

The assemblage from the mausoleum and theater areas comprises a rare component — a composite bow and a handful of trilobate iron arrowheads.

18. Ear-lath of a composite bow

L.A12477–11224 (Ill. 12.2, Color Plate 14:4)

Stage 3 (the creation of the artificial mount, area of the theater)



Ill. 12.2. Bone ear-lath uncovered west of the theater in a Herodian dump.

A single bone ear-lath was uncovered west of the theater in a Herodian dump, the formation of which was attributed to the activity of the workers who constructed the artificial mount. It formed part of a composite reflex bow (Coulston 1985: 224–234; James 2004: 191–192). The lath was found almost intact, apart from its most dorsal part that is missing. It has a deep semicircular nock. The slightly curved body

exhibits scoring marks on the front part, while saw marks are discernible on its flat inner side. James (2004: 199) suggested that the rough nature of the lath's inner side was intended to provide a surface conducive for the application of glue that held it to the wooden core of the bow.

Three bone ear-laths were uncovered at Masada, all dated to the First Jewish Revolt (Stiebel and Magness 2007: 26, Pl. 27: 1–3). A bone grip from a Bar-Kokhba Revolt context was further identified in the Wadi Murabbaʿât Caves (de Vaux 1961: Pl. XII: 2, Fig. 12: 10; for its identification, see Stiebel 2009: 313, Fig. 2), while another pair of ear-laths was found at the Byzantine site of Nessana (Colt 1962: 52, Pl. XXI: 27). Eastern examples from the Late Roman period are attested in Dura-Europos (James 2004: 191, nos. 648–651) and Belmesa (Coulston 1985: 233, nos. 26–27, Figs. 15–18).

A DNA analysis of one of the ear-laths from Masada indicated local production, as it was found to have been manufactured from an ibex's bone (Stiebel 2007, Appendix 1.1). Since the ibex was endemic only to Palestine, Jordan, and southern Syria, regions that were frequented by both the Roman and rebel archers, the lath cannot be attributed with certainty to either side.

Dimensions: L.: 73 mm; W.: 9 mm; W. of nock: 3 mm.

TRILOBATE IRON ARROWHEADS

All the arrowheads belong to the most common type: the trilobate iron arrowhead (for an introductory discussion, see Stiebel 2009: 313–315). They should be added to the already published 137 trilobate iron arrowheads (Stiebel 2003: 216–217, 227–236). As in the latter assemblage, the most common trilobate iron arrowhead is of Type C (Stiebel 2003: 217; *idem* 2009: 314).

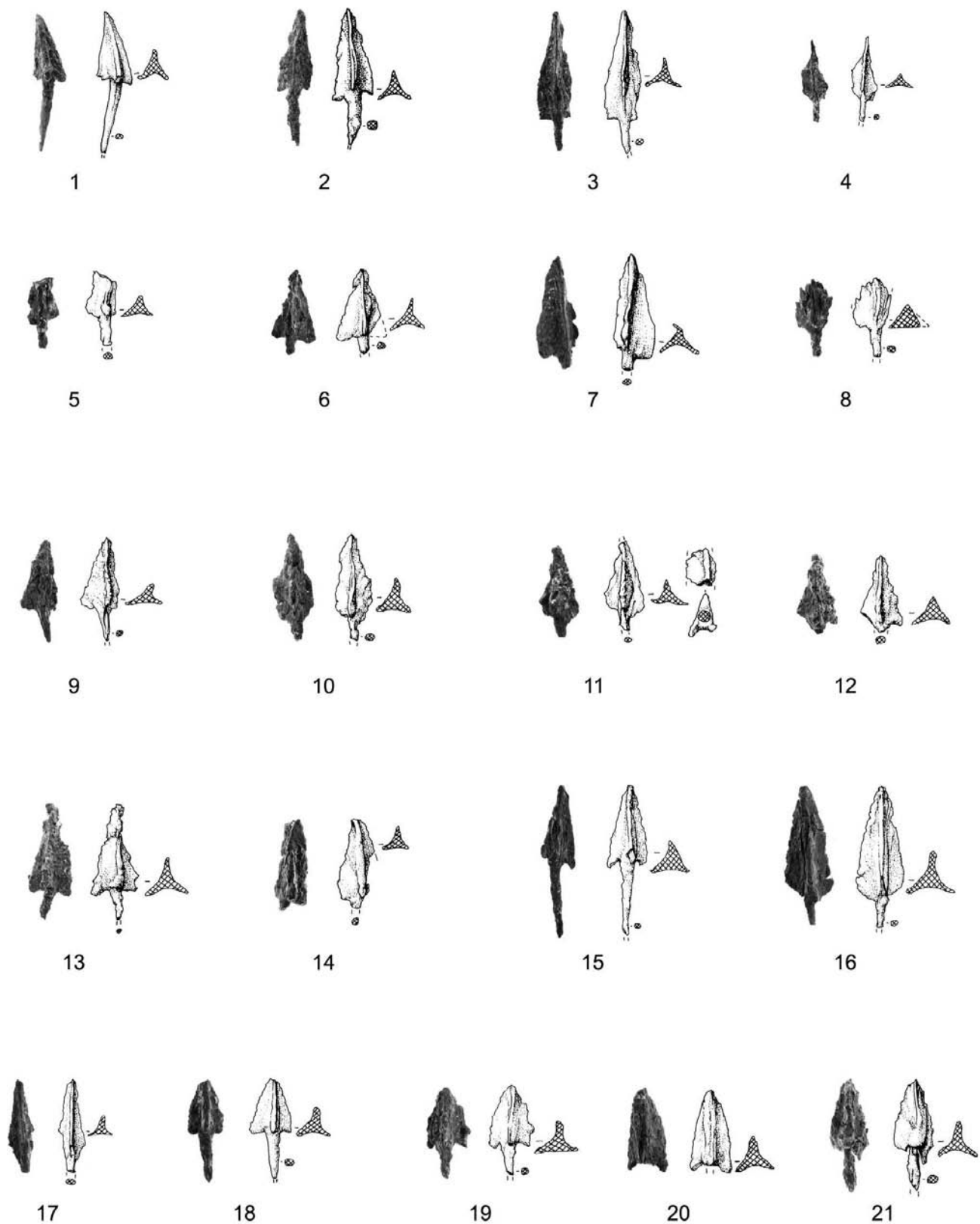
19. Trilobate iron arrowhead

L.A2628–5313/1 (Pl. 12.II: 1)

Phase 4a (First Jewish Revolt)

1. For the production and ownership of Roman military equipment, see Bishop and Coulston 2006: 233–240; 262–267; Stiebel 2007: 242–264.

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Pl. 12.II. Arrowheads from the mausoleum excavations at Herodium.

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Very well-preserved head, with slightly bent tang due to impact. The tang still features the corroded remains of the wooden foreshaft. It belongs to Type C (Stiebel 2003: 216–217, 227–236).

Dimensions: Overall L.: 48 mm; L. of tang: 24 mm; W. of head: 10–12 mm.

20. Trilobate iron arrowhead
L.A2628–5313/2 (Pl. 12.II: 2)
Phase 4a (First Jewish Revolt)

Similar to cat. no. 19. It has a slightly bent tang due to impact. One wing is partly damaged. The head belongs to Type C.

Dimensions: Overall L.: 48 mm; L. of tang: 20 mm; W. of head: 10–11 mm.

21. Trilobate iron arrowhead
L.A2852–6403 (Pl. 12.II: 3)
Phase 4a (First Jewish Revolt)

Much corroded head. One wing is missing and another is damaged. The tang is bent and broken due to impact. The head belongs to Type A.

Dimensions: Overall L.: 48 mm+; L. of tang: 11 mm+; L. of head: 37 mm.

22. Trilobate iron arrowhead
L.A2759–6118 (Pl. 12.II: 4)
Phase 4a (First Jewish Revolt)

Very damaged head. Broken tang and most of the wings is missing.

Dimensions: Overall L.: 29 mm+.

23. Trilobate iron arrowhead
L.A2759–6235/1 (Pl. 12.II: 5)
Phase 4a (First Jewish Revolt)

Small and badly damaged head.

Dimensions: Overall L.: 25 mm+.

24. Trilobate iron arrowhead
L.A2759–6235/2 (Pl. 12.II: 6)
Phase 4a (First Jewish Revolt)

Damaged head with one damaged wing. It seems to belong to Type C.

Dimensions: Overall L.: 29 mm+; L. of head: 24 mm; W.: 11 mm.

25. Trilobate iron arrowhead
L.A2844–6382 (Pl. 12.II: 7)

Phase 4a (First Jewish Revolt)

Damaged head. One wing and most of the tang are missing. It appears to belong to Type C.

Dimensions: Overall L.: 39 mm+; L. of head: 35 mm.

26. Trilobate iron arrowhead
L.A2810–6296 (Pl. 12.II: 8)
Phase 4a (First Jewish Revolt)

Very damaged head; most of its distal part is missing.

Dimensions: Overall L.: 27 mm+; L. of head: 19 mm+.

27. Trilobate iron arrowhead
L.A2718–6005/1 (Pl. 12.II: 9)
Phase 4a (First Jewish Revolt)

Damaged head with two chipped wings. The tang is bent due to impact. It seems to belong to Type A.

Dimensions: Overall L.: 35 mm; L. of head: 24 mm.

28. Trilobate iron arrowhead
L.A2780–6212 (Pl. 12.II: 10)
Phase 4a (First Jewish Revolt)

Corroded head. Its tang is broken. The head appears to belong to Type E.

Dimensions: Overall L.: 37 mm+; L. of head: 31 mm; W.: 12–13 mm.

29. Trilobate iron arrowhead
L.A2788–6230/2 (Pl. 12.II: 11)
Phase 4a (First Jewish Revolt)

Bent wings and broken tang due to impact. The head belongs to Type B.

Dimensions: Overall L.: 31 mm+; L. of head: 25 mm; W.: 11–12 mm.

30. Trilobate iron arrowhead
L.A2757–6229/1 (Pl. 12.II: 12)
Phase 4a (First Jewish Revolt)

Bent wings and broken tang due to impact. The head belongs to Type C.

Dimensions: Overall L.: 39 mm+; L. of head: 30 mm; W.: 13–14 mm.

31. Trilobate iron arrowhead
L.A2757–6229/2 (Pl. 12.II: 13)

Phase 4a (First Jewish Revolt)

Bent wings and broken tang due to impact. The two wings are damaged. The head belongs to Type C.

Dimensions: Overall L.: 27 mm+; L. of head: 25 mm; W.: 11–13 mm.

32. Trilobate iron arrowhead
L.A2691–5562 (Pl. 12.II: 14)

Phase 4a (First Jewish Revolt)

Only one wing survived, and tang is bent and broken due to impact. The head belongs to Type C.

Dimensions: Overall L.: 31 mm+; L. of head: 29 mm; L. of tang: 4 mm+; W.: 11 mm.

33. Trilobate iron arrowhead
L.A2651–5380 (Pl. 12.II: 15)

Phase 4b (period between the two revolts)

The tang is slightly bent due to impact. Two wing tips are also bent. The head belongs to Type C.

Dimensions: Overall L.: 52 mm; L. of tang: 25 mm; W. of head 11 mm.

34. Trilobate iron arrowhead
L.A2828–6361 (Pl. 12.II: 16)

Phase 4b (period between the two revolts)

Partly damaged head. The tang is broken, seemingly due to impact. The head belongs to Type B.

Dimensions: Overall L.: 47 mm+; L. of head: 39 mm; W.: 14–15 mm.

35. Trilobate iron arrowhead
L.A2762–6151 (Pl. 12.II: 17)

Phase 4b (period between the two revolts)

Small damaged head. One wing is damaged and most of the tang is missing. It appears to belong to Type E.

Dimensions: Overall L.: 32 mm+; L. of head: 25 mm; W.: 8 mm.

36. Trilobate iron arrowhead
L.A12174–10583 (Pl. 12.II: 18)

Stages 2 to 3 (erection of the theater up to the creation of the artificial mount; area of the theater)

Very small and robust head that belongs to Type C. Its tip is missing.

Dimensions: Overall L.: 34 mm+; L. of tang: 26 mm; W.: 11 mm.

37. Trilobate iron arrowhead
L.A2827–6344 (Pl. 12.II: 19)

Stages 2 to 3 (erection of the theater up to the creation of the artificial mount; area of the theater)

Small and robust head that belongs to Type C. Both its tip and tang are missing due to impact.

Dimensions: Overall L.: 31 mm+; L. of head: 20 mm+; W.: 12 mm.

38. Trilobate iron arrowhead
L.A12264–10745 (Pl. 12.II: 20)

Stages 2 to 3 (erection of the theater up to the creation of the artificial mount; area of the theater)

Tang is missing. The head belongs to Type D.

Dimensions: Overall L.: 28 mm+; L. of head: 28 mm; W.: 11–12 mm.

39. Trilobate iron arrowhead
L.A12616–12530 (Pl. 12.II: 21)

Stages 2 to 3 (erection of the theater up to the creation of the artificial mount; area of the theater)

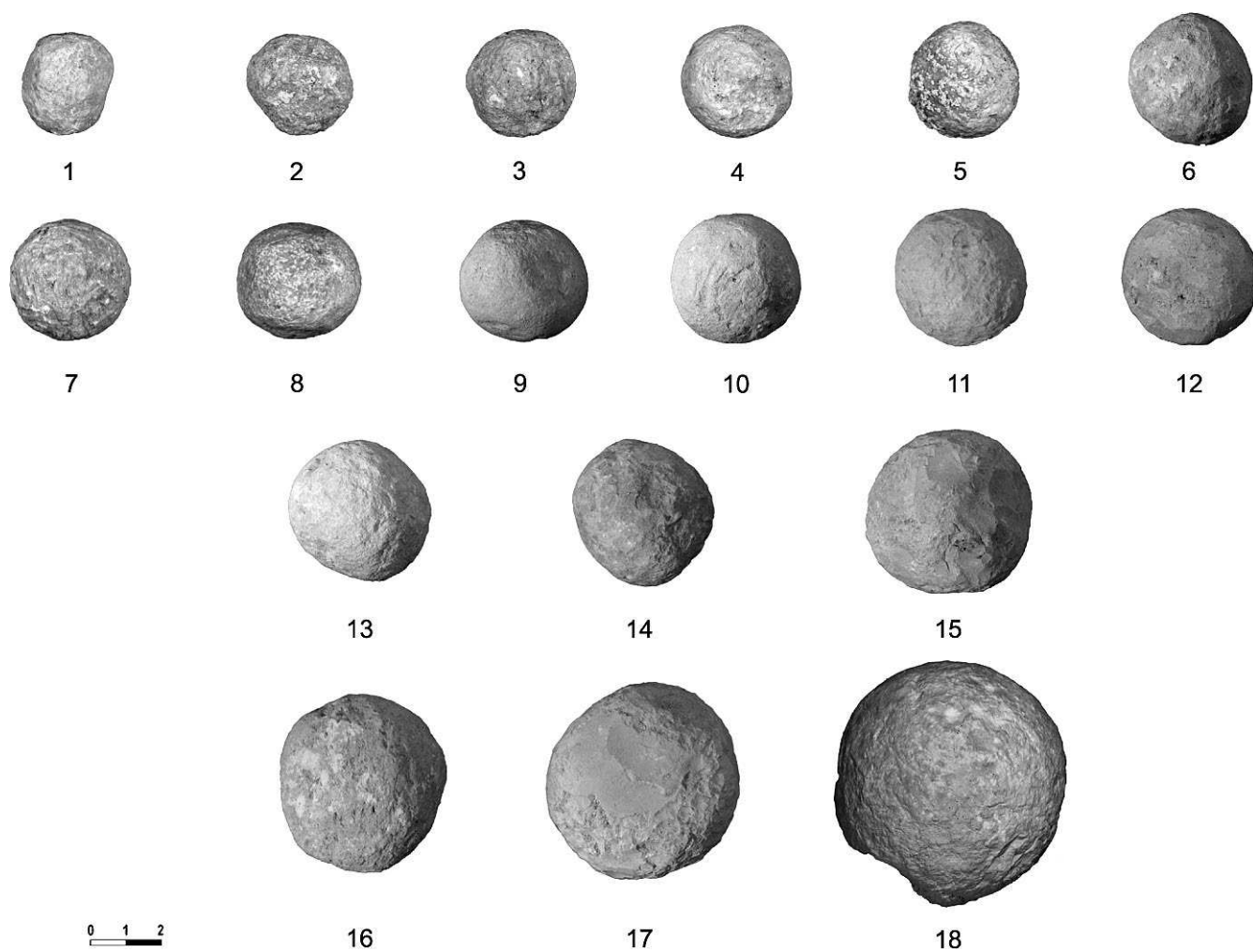
Strongly barbed wings. The tang is bent due to impact. The head belongs to Type D.

Dimensions: Overall L.: 40 mm+; L. of head: 28 mm; L. of tang: 15 mm; W.: 12–14 mm.

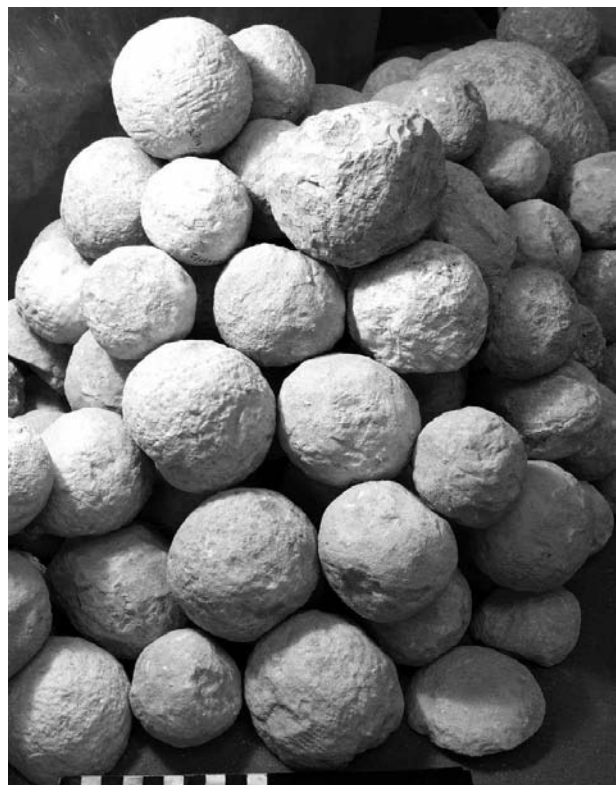
STONE PROJECTILES

Slingshots and ballista balls

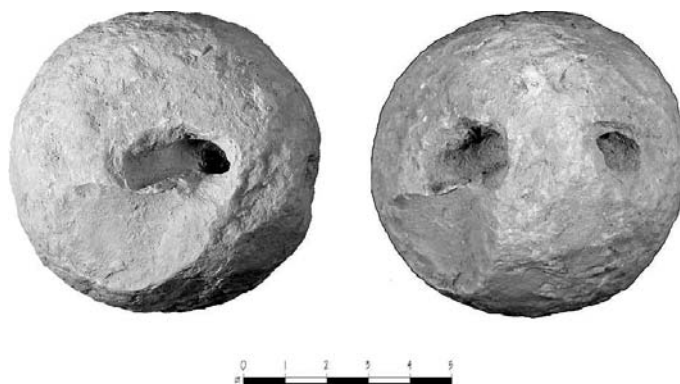
The excavations of the top soil and the uppermost layers that covered the mausoleum area (Stages 4–5) yielded nearly 350(!) stone projectiles, most notably slingshots (see Plan 12.1, Table 12.1, and Ills. 12.3–5). Ten *ballista* balls were found among the mausoleum's ruins, in a context dating to the First Jewish Revolt, whereas all the others came from a Bar-Kokhba context: A cluster of *ballista* balls was uncovered directly above and next to the built remains in the area of the foray openings of the tunnels that were revealed to the southeast of the



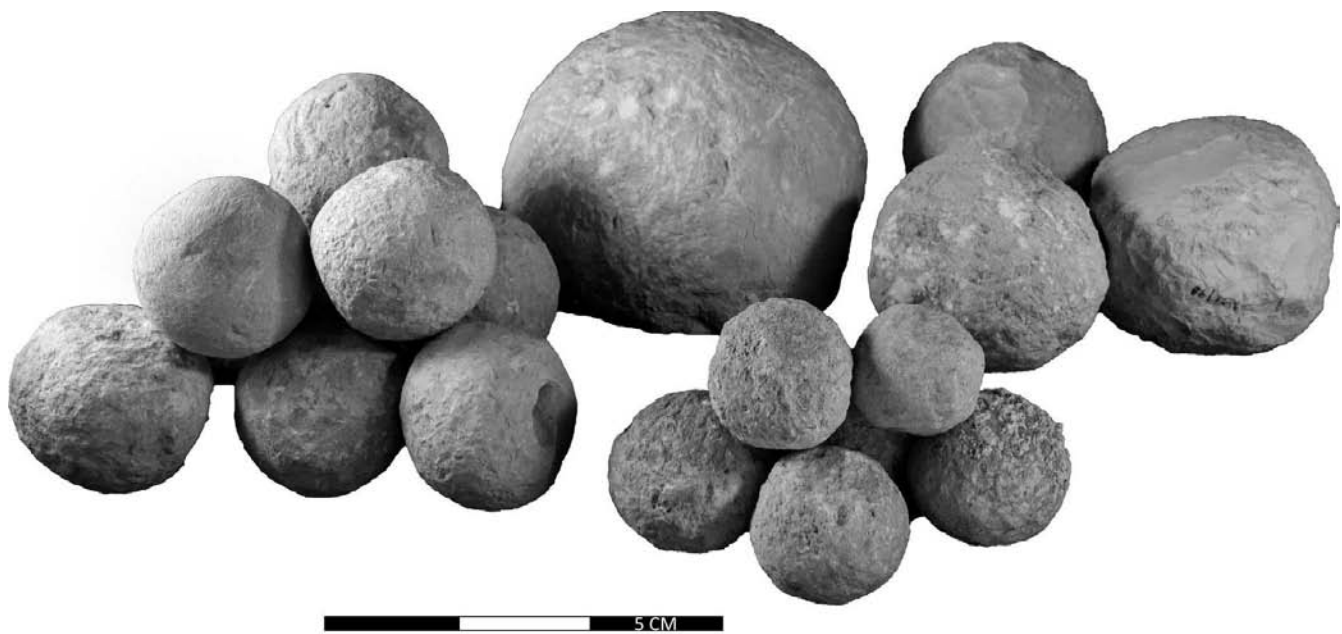
Pl. 12.III. Stone projectiles from the mausoleum excavations at Herodium.



III. 12.3. Compiled assemblage of slingshots found among the mausoleum's ruins.



III. 12.4. Perforated slingshot revealed during the excavations in the area around the mausoleum.



III. 12.5. Compiled group of slingshots and ballista balls found among the mausoleum's ruins.

mausoleum's podium; some of them in a direct relationship to the activities that took place inside the tunnels. The major group of *ballista* balls was revealed to the west of the tomb precinct, at the top of a layer including stone steps originating from the late stairway, which had been pushed down the stairway during the Bar-Kokhba Revolt (Stage 5). Such clusters, the result of incoming Roman fire, are attested at Masada and at Gamala (Stiebel 2005: 100, 103–104; 2007: Figs. 26, 28, 30–31). This find indicates the presence of auxiliary slingers, in all likelihood of Syrian origin, in the Roman force that attacked Herodium (cf. *BJ* 3.211; Stiebel 2007: 213–214).

Rolling stones

Rolling stones were used at Herodium as early as the time of Herod the Great, and predominantly during the two revolts (Stiebel 2003: 219–221, 239–240). One such stone was revealed on the hill's eastern slope, below the artificial mount's fill (III. 12.6).

Twenty rolling stones were found heaped together just to the west of the late (monumental) stairway (W1706; III. 12.7). They were uncovered in a triangular pocket created by W1706 and the curvilinear bedrock scarp (rc.1778). Although it is difficult to ascertain this, it does seem that they were



III. 12.6. Rolling stone revealed on the hill's eastern slope, below the artificial mount's fill.

intentionally heaped here rather than incidentally having ended up here after being rolled down from the mountaintop. Such a concentration might have been intended to block a possible Roman assault via the stairway. A previous study pointed out two possible Roman assault axes from the southeast and the



Plan 12.1. Plan of the tomb precinct showing the locations where slingshots were revealed.



III. 12.7. Group of rolling stones as found *in situ* in the triangular pocket created by the late stairway and the curvilinear bed-rock scarp (rc.1778).

northwest (Stiebel 2003: Fig. 6), as indicated by the concentrations of rolling stones that were documented at the very foot of the Mountain Palace-Fortress. The higher location of the concentration under discussion and the position of the stones heaped on the slope seem to suggest that they were indeed piled there by the rebels and were never put to use, as the Romans did not ascend via the stairway. The fact that the opening of the foray tunnel near the mausoleum was targeted by numerous slingshots and arrowheads seems to support this interpretation.

DISCUSSION

An overall review of the military equipment that was uncovered in this area is in good accord with the data that has been documented to date from Herodium. A most important contribution of this assemblage derives from the sealed Herodian contexts in which military equipment has been discovered. Together with the assemblages from Jericho and Cyprus (Stiebel 2013), it provides a unique and most important insight into the equipment of Herod's army. The bone ear-lath typical of composite bows, which had an eastern origin, is the earliest example of this type

of bow in Roman Palestine. This should not come as a surprise in view of Herod's recruitment of Babylonian mounted archers (*AJ* 17.24 ff.; Shatzman 1991: 174–180; Stiebel 2007: 216–217).

When one turns to the period of the First Jewish Revolt against Rome, the dominance of light projectiles in the archaeological record seems to provide the best reflection of the fighting strategy of the attacking Romans. It seems that the steep terrain compelled the Roman forces to employ a combination of face-to-face combat and supporting fire. The latter was provided by the use of slings and light torsion artillery, such as *ballistae*. As noted above, we have suggested that the course of the Roman attack may be identified by an analysis of the spatial distribution of the rolling stones (Stiebel 2003: 220–221). Two such concentrations were identified southeast and northwest of the Mountain Palace-Fortress, to which one can add the stones that were heaped near the stairway. For the assaulting Romans the mausoleum's area presented two major strategic targets — the late stairway and more crucially the foray openings of tunnels. The spatial distribution of the stone projectiles radiating from the opening of the tunnel close to the ruins of the mausoleum represents suppressing Roman fire — seemingly shot from the nearby hill to the east of this area.

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HERODIUM I: HEROD'S TOMB PRECINCT

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Table 12.1. Stone projectiles from the excavations of the mausoleum area (Stages 4–5).

Locus	Index	Preserved part	Weight (gram)	Min. thickness (mm)	Max. thickness (mm)
A2522	12	Complete	305	62	67
A2559	22	Complete	245	48	68
A2577	23	Complete	240	60	69
A2577	137	Complete	815	89	100
A2577	138	Complete	430	72	74
A2577	139	Complete	385	66	77
A2577	140	Complete	410	62	78
A2577	141	Complete	390	69	72
A2577	142	Complete	635	73	85
A2577	143	Complete	455	67	80
A2577	144	Complete	430	60	72
A2577	145	Complete	380	67	72
A2577	146	Complete	255	53	64
A2577	148	Complete	390	54	70
A2577	149	Complete	495	61	76
A2577	150	Complete	175	50	63
A2577	151	Complete	495	67	72
A2577	152	Complete	280	54	66
A2577	153	75%	325	[60]	80
A2577	154	Complete	320	64	95
A2577	155	75%	255	[51]	72
A2577	156	75%	195	56	61
A2577	157	Complete	170	56	58
A2577	158	Complete	310	53	71
A2577	159	25%	115	[34]	62
A2577	160	50%	105	47	60
A2577	161	50%	145	[42]	66
A2577	162	33%	125	[42]	69

CHAPTER 12: MILITARY EQUIPMENT

Locus	Index	Preserved part	Weight (gram)	Min. thickness (mm)	Max. thickness (mm)
A2577	315	Complete	450	62	75
A2577	316	Complete	430	68	69
A2577	317	Complete	465	60	78
A2577	318	Complete	190	52	58
A2577	319	Complete	325	60	64
A2577	320	Complete	535	68	70
A2577	321	Complete	655	73	83
A2577	322	Complete	330	64	65
A2577	323	Complete	310	56	66
A2577	324	Complete	280	66	68
A2577	325	Complete	525	72	73
A2577	326	Complete	465	64	68
A2577	327	Complete	245	55	62
A2577	328	Complete	355	58	66
A2577	329	Complete	405	57	70
A2577	330	50%	185	[40]	70
A2577	331	50%	205	[41]	72
A2577	332	66%	545	[66]	81
A2577	333	33%	360	[52]	73
A2577	334	33%	225	[45]	75
A2577	335	15%	205	[44]	80
A2577	336	50%	115	[36]	60
A2577	337	50%	170	[32]	69
A2577	338	25%	125	[40]	66
A2577	339	15%	45	[29]	[65]
A2577	340	15%	45	[53]	[60]
A2577	341	12%	40	[38]	[58]
A2578	40	33%	255	[43]	79
A2579	28	Complete	330	69	72
A2581	39	33%	185	[39]	[68]
A2586	69	33%	185	[38]	[81]
A2586	81	75%	290	[50]	70
A2586	82	33%	150	[32]	[66]
A2588	53	50%	185	40	72
A2588	55	75%	210	[50]	66
A2588	307	Complete	245	59	67
A2597	50	Complete	305	59	69

HERODIUM I: HEROD'S TOMB PRECINCT

Locus	Index	Preserved part	Weight (gram)	Min. thickness (mm)	Max. thickness (mm)
A2599	304	50%	170	[35]	76
A2601	308	50%	255	[42]	78
A2601	309	Complete	260	63	69
A2605	305	Complete	360	57	72
A2605	306	33%	145	[39]	74
A2606	163	Complete	225	53	65
A2607	311	Complete	1135	84	98
A2609	16	33%	110	[30]	[64]
A2609	17	Complete	230	50	64
A2609	24	33%	140	[41]	68
A2609	67	33%	200	60	61
A2609	68	Complete	110	[41]	[63]
A2609	70	33%	615	[63]	[145]
A2609	147	Complete	565	64	84
A2609	164	Complete	520	67	78
A2611	18	33%	130	[32]	64
A2611	20	Complete	210	57	63
A2611	25	Complete	390	60	72
A2611	38	50%	100	[32]	62
A2613	245	Complete	225	55	59
A2616	37	Complete	340	[58]	74
A2616	42	50%	180	[36]	73
A2616	49	Complete	375	56	73
A2620	21	Complete	245	52	66
A2620	30	75%	350	80	81
A2620	32	33%	125	[30]	64
A2623	289	Complete	380	68	70
A2623	290	Complete	425	64	73
A2623	291	Complete	345	67	73
A2623	292	Complete	460	73	75
A2624	244	Complete	460	64	73
A2629	296	Complete	410	64	75
A2629	297	Complete	0.03	19	41
A2631	11	33%	215	[55]	[75]
A2631	15	33%	155	[42]	[75]
A2633	14	Complete	375	65	76
A2633	26	50%	275	[43]	75

CHAPTER 12: MILITARY EQUIPMENT

Locus	Index	Preserved part	Weight (gram)	Min. thickness (mm)	Max. thickness (mm)
A2634	298	50%	185	[37]	75
A2634	299	Complete	330	[46]	82
A2635	287	50%	170	[37]	63
A2640	219	Complete	500	58	75
A2640	220	50%	370	[49]	76
A2640	221	75%	360	[56]	75
A2640	222	15%	750	[52]	145
A2640	223	Complete	275	58	68
A2640	224	15%	90	[44]	[53]
A2641	300	Complete	455	61	71
A2641	301	50%	270	[39]	77
A2641	302	15%	85	[35]	65
A2641	303	33%	115	[33]	[50]
A2643	167	Complete	325	61	68
A2643	168	33%	95	[32]	60
A2643	169	Complete	275	52	65
A2643	230	Complete	300	58	65
A2643	231	Complete	500	60	73
A2643	232	Complete	280	56	65
A2643	233	Complete	415	60	72
A2643	234	Complete	210	54	59
A2643	235	Complete	315	59	67
A2645	225	75%	605	77	[77]
A2645	226	50%	310	[55]	73
A2645	227	Complete	705	72	86
A2645	228	Complete	220	51	66
A2645	229	75%	185	[46]	62
A2648	293	Complete	360	63	70
A2648	294	Complete	395	65	73
A2648	295	50%	200	[43]	70
A2671	236	Complete	310	62	68
A2671	237	Complete	485	66	75
A2671	238	75%	160	[33]	56
A2671	239	Complete	280	48	67
A2672	10	50%	185	47	[70]
A2674	203	75%	85	[27]	[50]
A2674	204	50%	155	[42]	53

HERODIUM I: HEROD'S TOMB PRECINCT

Locus	Index	Preserved part	Weight (gram)	Min. thickness (mm)	Max. thickness (mm)
A2674	205	75%	185	[47]	58
A2674	206	Complete	205	47	61
A2674	207	50%	0.075	[23]	58
A2674	208	50%	125	[41]	62
A2674	209	50%	100	[28]	62
A2674	210	50%	175	[33]	72
A2674	211	Complete	445	64	72
A2674	212	Complete	560	71	79
A2674	213	Complete	200	57	59
A2674	214	Complete	465	61	72
A2674	215	Complete	330	50	67
A2674	216	Complete	325	60	64
A2674	217	Complete	535	66	78
A2674	218	Complete	375	69	72
A2674	273	50%	80	[30]	58
A2677	2	Complete	185	54	63
A2678	9	Complete	375	63	73
A2678	66	33%	130	[28]	68
A2682	240	Complete	240	50	63
A2682	241	Complete	295	50	69
A2682	242	Complete	285	63	66
A2682	243	Complete	240	61	62
A2683	288	Complete	215	[33]	66
A2688	19	Complete	180	53	65
A2688	178	50%	305	[40]	77
A2691	43	33%	60	[29]	[55]
A2691	177	50%	290	68	72
A2691	179	Complete	335	56	73
A2691	180	Complete	285	60	65
A2691	181	Complete	300	62	70
A2691	182	Complete	295	56	74
A2691	183	Complete	360	65	72
A2691	184	Complete	490	65	72
A2691	185	Complete	150	48	56
A2691	186	Complete	295	62	70
A2691	187	75%	175	[54]	68
A2693	129	Complete	595	71	78

CHAPTER 12: MILITARY EQUIPMENT

Locus	Index	Preserved part	Weight (gram)	Min. thickness (mm)	Max. thickness (mm)
A2693	130	Complete	660	64	81
A2693	131	Complete	330	68	72
A2693	132	Complete	310	61	71
A2693	133	Complete	400	68	75
A2693	134	75%	410	72	75
A2693	135	Complete	250	63	66
A2693	136	Complete	330	70	71
A2693	246	Complete	670	72	77
A2693	247	Complete	375	64	70
A2693	248	Complete	465	55	80
A2693	249	Complete	330	53	73
A2693	250	Complete	380	69	69
A2693	251	Complete	465	65	69
A2693	252	75%	290	[56]	68
A2693	253	Complete	245	52	60
A2693	254	50%	205	[41]	68
A2693	255	75%	200	[42]	64
A2693	256	Complete	365	55	77
A2694	6	Complete	455	66	72
A2694	8	Complete	290	56	61
A2700	261	Complete	460	65	73
A2700	262	Complete	345	58	67
A2700	263	Complete	460	69	75
A2700	264	Complete	540	62	80
A2700	265	50%	130	[32]	66
A2700	266	50%	260	[33]	7
A2700	267	25%	110	[21]	70
A2700	268	Complete	235	53	58
A2709	271	Complete	325	51	67
A2725	257	Complete	255	59	62
A2725	258	Complete	200	57	58
A2725	259	50%	355	[47]	83
A2725	260	Complete	405	62	68
A2727	276	Complete	175	46	63
A2747	274	25%	85	[23]	[58]
A2756	282	Complete	350	60	72
A2756	283	Complete	635	70	82

HERODIUM I: HEROD'S TOMB PRECINCT

Locus	Index	Preserved part	Weight (gram)	Min. thickness (mm)	Max. thickness (mm)
A2757	29	Complete	320	58	72
A276?	83	50%	205	[48]	75
A2760	64	Complete	235	52	63
A2763	44	Complete	505	70	79
A2769	33	Complete	195	58	61
A2770	60	Complete	500	68	77
A2773	48	Complete	1695	89	107
A2773	56	Complete	275	62	70
A2791	36	Complete	435	62	76
A2798	34	Complete	525	68	78
A2798	45	Complete	395	59	70
A2798	46	50%	315	46	80
A2798	51	Complete	380	66	65
A2801	52	50%	270	45	74
A2802	47	Complete	395	58	69
A2802	61	33%	135	35	71
A2802	62	50%	155	29	73
A2802	63	33%	120	[25]	71
A2804	72	Complete	350	65	70
A2804	73	Complete	250	57	64
A2804	74	75%	215	[52]	70
A2804	75	Complete	235	59	66
A2804	76	Complete	320	66	72
A2804	77	Complete	220	55	65
A2804	78	Complete	210	[50]	67
A2804	79	50%	195	[41]	68
A2804	80	33%	140	[34]	[67]
A2808	54	Complete	325	55	65
A2808	59	Complete	165	52	61
A2808	85	Complete	265	57	63
A2808	86	Complete	330	66	74
A2808	87	Complete	590	69	88
A2808	88	Complete	390	67	73
A2810	98	Complete	380	61	73
A2810	99	33%	195	[34]	72
A2810	100	Complete	290	[59]	70
A2810	101	Complete	245	57	63

CHAPTER 12: MILITARY EQUIPMENT

Locus	Index	Preserved part	Weight (gram)	Min. thickness (mm)	Max. thickness (mm)
A2810	102	Complete	200	51	68
A2810	103	Complete	75	\	\
A2810	104	Complete	250	[51]	62
A2810	105	Complete	325	59	72
A2810	106	Complete	160	52	60
A2810	107	Complete	265	60	67
A2810	108	Complete	315	57	73
A2810	109	75%	170	54	[47]
A2810	110	Complete	150	50	55
A2810	111	50%	145	40	59
A2814	1	Complete	240	53	60
A2814	13	50%	265	[48]	77
A2817	71	20%	960	84	93
A2819	277	Complete	625	72	76
A2819	278	75%	175	[44]	60
A2819	279	33%	200	[45]	69
A2819	280	50%	220	[40]	67
A2819	281	25%	105	[29]	[69]
A2822	89	Complete	365	62	73
A2822	90	50%	275	[50]	72
A2822	91	Complete	220	[55]	62
A2822	122	Complete	415	[69]	84
A2822	123	75%	220	[52]	65
A2822	124	Complete	315	57	67
A2822	125	Complete	245	54	61
A2822	126	50%	400	[47]	79
A2822	127	25%	180	[40]	70
A2822	128	50%	150	[41]	61
A2822	284	Complete	295	57	67
A2822	285	Complete	460	63	68
A2822	286	Complete	975	73	94
A2828	3	Complete	895	70	88
A2828	5	50%	240	[49]	74
A2830	115	33%	175	61	[58]
A2830	118	Complete	175	57	60
A2830	119	50%	185	68	[56]
A2830	120	50%	140	66	[34]

HERODIUM I: HEROD'S TOMB PRECINCT

Locus	Index	Preserved part	Weight (gram)	Min. thickness (mm)	Max. thickness (mm)
A2830	121	50%	100	[65]	[30]
A2830	170	33%	95	[44]	61
A2830	171	Complete	215	56	61
A2830	172	50%	145	[40]	63
A2830	173	50%	140	45	59
A2830	174	75%	205	68	69
A2830	175	50%	265	47	72
A2830	176	50%	160	61	65
A2834	4	Complete	405	65	74
A2841	165	50%	220	[39]	76
A2841	166	50%	190	[40]	73
A2842	112	Complete	240	57	63
A2842	113	Complete	265	60	68
A2843	7	50%	210	[38]	73
A2843	188	Complete	315	[66]	77
A2843	189	33%	105	[32]	[60]
A2843	190	Complete	315	61	67
A2843	191	Complete	240	53	60
A2844	196	Complete	515	62	77
A2844	197	Complete	365	66	73
A2844	198	75%	210	65	67
A2844	199	75%	220	48	69
A2845	192	Complete	355	63	70
A2845	193	Complete	655	75	82
A2845	194	Complete	670	76	79
A2845	195	50%	190	[36]	70
A2848	27	Complete	275	53	65
A2848	114	Complete	455	76	74
A2848	7934	33%	70	[31]	62
A2850	117	Complete	525	72	76
A2882	342	Complete	530	66	74
A2911	270	Complete	150	50	55
A2921	269	Complete	1005	85	90
A2929	272	50%	205	[38]	63
A2938	200	Complete	465	56	75
A2938	201	50%	460	[49]	91
A2938	202	Complete	365	60	79

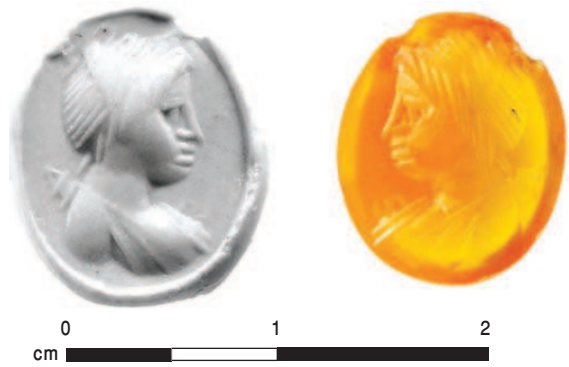
CHAPTER 12: MILITARY EQUIPMENT

Locus	Index	Preserved part	Weight (gram)	Min. thickness (mm)	Max. thickness (mm)
A-Surface	31	Complete	430	78	[62]
A-Surface	35	Complete	345	60	70
A-Surface	41	Complete	380	57	71
A-Surface	57	Complete	330	60	72
A-Surface	58	50%	315	[47]	75
A-Surface	65	33%	120	[34]	67
A-Surface	84	50%	125	[35]	[65]
A-Surface	92	Complete	580	70	88
A-Surface	93	Complete	425	63	75
A-Surface	94	Complete	305	[64]	75
A-Surface	95	50%	235	[56]	77
A-Surface	96	Complete	230	61	65
A-Surface	97	75%	165	[46]	60
A-Surface	275	25%	80	[43]	[70]
A-Surface	310	Complete	280	58	72
A-Surface	312	Complete	150	53	55
A-Surface	313	Complete	220	51	62
A-Surface	314	Complete	320	59	67
?	116	Complete	7155	170	173

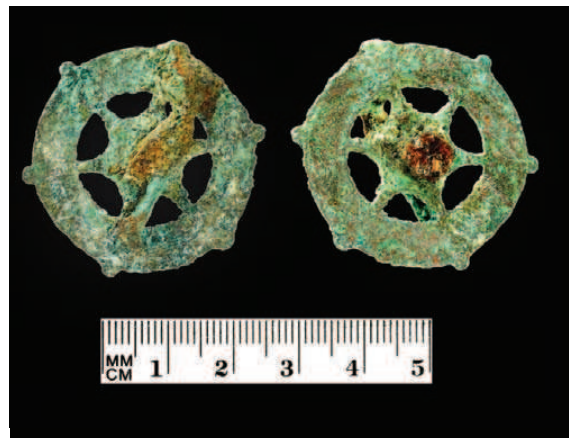
Plate 14



14.1. Carnelian gem inserted into the oval cavity of an iron ring revealed during the excavations of the tomb precinct. (Photo: T. Rogovski)



14.2. Carnelian gem (right) and its imprint (left). (Photo: T. Rogovski)



14.3. Roman wheel brooch revealed in the refuse dump to the west of the mausoleum ruins. (Photo: T. Rogovski)



14.4. Bone ear-lath from a composite bow uncovered west of the theater in a Herodian dump. (Photo: T. Rogovski)