



Endnotes for “The Roman Assault on Shiloh: A Military Reconstruction”

Fall 2023 *Bible and Spade*

Notes

¹ Boyd V. Seevers and Kenneth E. Downer, “The Roman Conquest of Shiloh (A.D. 69): The Archaeological Evidence,” *Near East Archaeological Society Bulletin* 68 (forthcoming), Introduction.

² Josephus, *Jewish War* 4.550–51.

³ Frank Russell, “Roman Counterinsurgency Policy and Practice in Judaea,” in *Brill’s Companion to Insurgency and Terrorism in the Ancient Mediterranean*, ed. Timothy Howe and Lee L. Brice, Brill’s Companions in Classical Studies: Warfare in the Ancient Mediterranean World 1 (Leiden: Brill, 2016), 265–68.

⁴ Duncan B. Campbell, *Greek and Roman Artillery 399 BC–AD 363*, *New Vanguard* 89 (Oxford: Osprey, 2003), 37.

⁵ Josephus, *Jewish War* 5.270; E. W. Marsden, *Greek and Roman Artillery: Historical Development* (Oxford: Clarendon Press, 1969), 86–91; Erwin Schramm, “Erwin Schramm’s Ancient Artillery,” in *The Ancient Artillery of Saalburg: Two Treatises on Greek and Roman Artillery*, trans. and ed. William Paul Dean (published independently, 2018), 35.

⁶ Petru Ureche, “The Bow and Arrow during the Roman Era,” *Ziridava: Studia Archaeologica* 27 (2013): 184, http://www.z-studarch.ro/2013_27/10Ureche.pdf. Roman military author Vegetius recommended that Roman slingers and archers practice using “bundles of twigs or straw” as targets 180 meters away, suggesting some degree of accuracy at that distance (*De re militari*, Book II, “Drilling the Troops” [Vegetius, *The Military Institutions of the Romans*, trans. John Clark, from Latin, ed. Thomas R. Phillips, Military Classics (Harrisburg, PA: Military Service Publishing Company, 1944), 58]). Modern slingers on Ibiza in the Balearic Islands have been said to be able to hit one-square-meter targets from over 200 meters away (Robert E. Dohrenwend, “The Sling: Forgotten Firepower of Antiquity,” *Journal of Asian Martial Arts* 11, no. 2 [2002]: 41, http://slinging.org/forum/yabbfiles/Attachments/history_of_the_Sling.pdf).

⁷ For discussion on the emotional effects of such artillery, see Marsden, *Greek and Roman Artillery*, 97–98.

⁸ At modern Shiloh, this would be along the path approaching the hill, about 40 yards south of the covered building labeled “The Basilica,” which sits just to the right of the path.

⁹ For Roman army organization, see Nic Fields, *The Roman Army of the Principate 27 BC–AD 117*, *Battle Orders* 37 (Oxford: Osprey, 2009), 10–12, <https://www.academia.edu/33179222>. Vegetius noted that each cohort had a stone-throwing weapon mounted on a cart (*De re militari*, Book II, “Machines and Tools of the Legion” [Vegetius, *Military Institutions*, 59, 64]). Marsden interprets this weapon as a ballista during the early imperial era (*Greek and Roman Artillery*, 179–80).

¹⁰ Marsden, 179–80.

¹¹ Marsden, 179, 184. Like the smaller-caliber stone-throwers, the scorpion was an antipersonnel weapon (Schramm, “Erwin Schramm’s Ancient Artillery,” 30). Jodi Magness calculated the range of the scorpion at 400 yards based on her excavations at Gamla (Jodi Magness, “Arrowheads and Projectile Points,” in *Gamla III: The Shmarya Gutmann Excavations 1976–1989, Finds and Studies, Part 1*, by Danny Syon, with contributions by Shua Amorai-Stark et al., IAA Reports 56 [Jerusalem: Israel Antiquities Authority, 2014], 28).

¹² Adrian Keith Goldsworthy, *The Roman Army at War: 100 BC–AD 200*, *Oxford Classical Monographs* (Oxford: Clarendon Press, 1998), 13; Fields, *Principate*, 10–12.

¹³ Josephus, *Jewish War* 3.93–95; Jodi Magness, “Masada: Arms and the Man,” in *Masada: The Dead Sea’s Desert Fortress*, ed. Robin Ngo (Washington, DC: Biblical Archaeological Society, 2014), 38, https://www.biblicalarchaeology.org/wp-content/uploads/2019/03/masada_the_dead_seas_desert_fortress.pdf#page=39.

¹⁴ Against Roman armor, Jewish missiles were largely ineffective (Josephus, *Jewish War* 3.525; Goldsworthy, *Roman Army at War*, 185; James J. Bloom, *The Jewish Revolts against Rome, A.D. 66–135: A Military Analysis* [Jefferson, NC: McFarland, 2010], 152).

¹⁵ Josephus, *Jewish War* 3.93–95; Magness, “Masada: Arms and the Man,” 38.

¹⁶ Cassius Dio, *Roman History* 62.12.1–2 (see Cassius Dio, *Dio’s Roman History*, trans. Earnest Cary, on the basis of the version of Herbert Baldwin Foster, Ph.D., vol. 8 of 9, The Loeb Classical Library [New York: G. P. Putnam’s Sons, 1925], 101, 103); M. C. Bishop, *The Pilum: The Roman Heavy Javelin*, Weapon 55 (Oxford: Osprey, 2017), 6; Magness, “Masada: Arms and the Man,” 38.

¹⁷ Bishop, *Pilum*, 3, 42–43, 73. Vegetius observed the following about Roman javelins: “When once fixed in the shield it was impossible to draw them out and when thrown with force and skill they penetrated the cuirass without difficulty” (*De re militari*, Book I, “Troops in Action” [Vegetius, *Military Institutions*, 27]). See also Caesar, *Bellum Gallicum* 1.25; Fields, *Principate*, 28.

¹⁸ Nigel Pollard, “The Roman Army,” in *A Companion to the Roman Empire*, ed. David S. Potter, Blackwell Companions to the Ancient World (Malden, MA: Blackwell, 2006), 211–12,

https://www.researchgate.net/profile/Paula-Fredriksen/publication/230538673_Christians_in_the_Roman_Empire_in_the_First_Three_Centuries_CE/links/5a8bbd12a6fdcc6b1a43e4ab/Christians-in-the-Roman-Empire-in-the-First-Three-Centuries-CE.pdf#page=233. The auxiliary forces at Shiloh were likely Arabian archers and Syrian slingers, since there is record of exactly such troops supporting the Roman army in other battles during the Jewish Revolt (Josephus, *Jewish War* 3.68, 3.168, 3.211).

¹⁹ Pollard, “The Roman Army,” 211; Fields, *Principate*, 18; Jonathan P. Roth, “The Logistics of the Roman Army in the Jewish War” (PhD diss., Columbia University, 1991), 134.

²⁰ Josephus, *Jewish War* 3.211; Magness, “Masada: Arms and the Man,” 39.

²¹ Vegetius, *De re militari*, Book I, “Troops in Action” (Vegetius, *Military Institutions*, 26); Pollard, “The Roman Army,” 215.

²² *Tactics, Techniques, and Procedures for the Field Artillery Manual Cannon Gunnery*, with Change 1, FM 6-40 (Washington, DC: Headquarters, Department of the Army, October 1, 1999), p. C-3,

https://www.marines.mil/Portals/1/Publications/mcwp3_16_4.pdf. “Suppression of a target limits the ability of enemy personnel to perform their mission. . . . The effect of suppressive fires usually lasts only as long as the fires are continued.”

²³ To keep Jewish defenders off the ramparts during the siege at Jotapata, the Romans augmented their artillery with archers and slingers (Josephus, *Jewish War* 3.166–68). They repeated this action later in the same siege to force the defenders back and enable the battering rams to move forward (3.219–20).

²⁴ John Peddie, *The Roman War Machine* (Stroud, Gloucestershire, UK: Alan Sutton, 1994), 76; Fields, *Principate*, 19.

²⁵ Josephus, *Jewish War* 3.96; Pollard, “The Roman Army,” 214.

²⁶ Josephus, *Jewish War* 3.255; Bloom, *Jewish Revolts*, 152.

²⁷ For further information, see Seevers and Downer, “Conquest of Shiloh,” Suture Needles.

²⁸ Peddie, *The Roman War Machine*, 9; Roy W. Davies, *Service in the Roman Army*, ed. David Breeze and Valerie A. Maxfield (Edinburgh: Edinburgh University Press, with the publications board of the University of Durham, 1989), 214.

²⁹ The image of the set of Roman medical instruments on the following page is from Nick Summerton, “The Roman Army Medical Service,” *Footprints around Roman Malton and Beyond* (blog), Malton Museum, February 7, 2021, <https://www.maltonmuseum.co.uk/2021/02/07/the-roman-army-medical-service/>, fig. 3. Image credit: ©Nick Summerton.

³⁰ By contrast, the ABR excavation at nearby Khirbet el-Maqatir, which was also attacked by Roman forces in AD 69, did produce evidence of a Roman encampment there after that battle.

³¹ Vegetius, *De re militari*, Book I, “Marches” (Vegetius, *Military Institutions*, 31).

³² Josephus, *Jewish War* 1.45.

³³ Josephus, *Jewish War* 5.50; Bloom, *Jewish Revolts*, 153–54.

³⁴ Bloom, 239. Richard A. Horsley notes, “Once the Romans began their systematic campaign to pacify the country (A.D. 67–68), . . . the brigands came to occupy center-stage in the revolt. In fact, as the Roman army advanced from Galilee into NW Judea, banditry escalated into peasant revolt” (“Ancient Jewish Banditry and the Revolt against Rome, A.D. 66–70,” *Catholic Biblical Quarterly* 43, no. 3 [July 1981]: 429, <https://www.jstor.org/stable/43718898>).

³⁵ Josephus, *Jewish War* 2.540–55; Russell, “Roman Counterinsurgency,” 257.

³⁶ Horsley, “Ancient Jewish Banditry,” 420–21; Russell, “Roman Counterinsurgency,” 261–65.

³⁷ Vegetius, *De re militari*, Book III, “Marches Near the Enemy” (Vegetius, *Military Institutions*, 76–77).

³⁸ In marching his legions to attack Galilee in AD 67, Vespasian ensured that the hindmost portion of his column was protected with a rear guard consisting of light and heavy infantry and cavalry (Josephus, *Jewish War* 3.126).

³⁹ Josephus, *Jewish War* 3.303–4, 3.133; Russell, “Roman Counterinsurgency,” 269.

⁴⁰ Marsden, *Greek and Roman Artillery*, 164.

⁴¹ Davies, *Service in the Roman Army*, 215.

⁴² Each century had a two-wheeled cart drawn by two horses or mules to haul the scorpion, and another two-wheeled cart pulled by two more animals for hauling other equipment (Jonathan P. Roth, *The Logistics of the Roman Army at War (264 B.C. - A.D. 235)*, Columbia Studies in the Classical Tradition 23 (Leiden: Brill, 1999), 210–11; Peddie, *The Roman War Machine*, 50).

⁴³ Roth, “Logistics” (1991), 221–22.

⁴⁴ Seevers and Downer, “Conquest of Shiloh,” logistics appendix, Establishing the Order of March.

⁴⁵ Seevers and Downer, “Conquest of Shiloh,” Size and Population of Shiloh. Roughly half of the 470 inhabitants, about 235, would have been male, but many would have been too old, young, or infirm to fight.

⁴⁶ Seevers and Downer, “Conquest of Shiloh,” Size and Population of Shiloh; Scott Stripling, Shiloh dig director, email message to author, October 9, 2022.

⁴⁷ This was a frequent Jewish tactic. For several examples, see Josephus, *Jewish War* 3.165, 3.271, 3.277, 4.026, and 5.117.

⁴⁸ Steve Kaye, “Observations on Marching Roman Legionaries: Velocities, Energy Expenditure, Column Formations and Distances,” Banda Arc Geophysics, October 2013, http://www.bandaarcgeophysics.co.uk/arch/Roman_legionary_marchingV2.html, Table 4. Kaye provides a fascinating, in-depth look at Roman army march velocities over varying terrains. For a Roman infantry formation marching on flat, well-maintained Roman dirt roads, Kaye calculates their speed as 2.85 mph / 4.5866 kph, or 1.2741 meters per second; thus, marching 10.2 miles would have taken about 3 hours and 35 minutes, including ten-minute breaks every hour. See also Seevers and Downer, “Conquest of Shiloh,” logistics appendix p. 4.

⁴⁹ They may have been able to fire much faster. “One minute is a very generous time to allow for each aimed shot” (Marsden, *Greek and Roman Artillery*, 94).

⁵⁰ The actual formation used at Shiloh is unknown, but the Romans are known to have been able to adapt to meet the tactical situation (Goldsworthy, *Roman Army at War*, 189–90).

⁵¹ Goldsworthy, 190; Vegetius, *De re militari*, Book I, “Troops in Action” (Vegetius, *Military Institutions*, 26); Pollard, “The Roman Army,” 215; Dohrenwend, “The Sling,” 45.

⁵² Starting from the artillery position, the infantry would have had to march about 116 meters at about 0.67 m/sec. (Kaye, “Marching Roman Legionaries,” Table 4), taking 173 seconds, or roughly three minutes, to close within 50 meters of the first buildings.

⁵³ Dohrenwend, “The Sling,” 43.

⁵⁴ For comparison, the sustained rate of fire for the M240 machine gun used by the US military is 100 rounds per minute, or 1.66 rounds per second [*Operator’s Manual for Machine Gun, 7.62MM, M240 (1005-01-025-8095); M240B (1005-01-412-3129); M240C (1005-01-085-4758); M240D (1005-01-418-6995); M240E1 (1005-01-252-4288); M240G (1005-01-359-2714); M240N (1005-01-493-1666)*, Department of the Army Technical Manual 9-1005-313-10 (Washington, DC: Headquarters, Departments of the Army, Air Force, Marine Corps, and Navy, November 15, 2002), p. 0007 00-13, https://ia803207.us.archive.org/8/items/gunmanual_M240_-_Machine_Gun_Manual_-_TM_9-1005-313-10/M240%20-%20Machine%20Gun%20Manual%20-%20TM%209-1005-313-10.pdf].

⁵⁵ During the Roman siege of Jotapata two years before, Josephus “instructed his men, . . . when the volley of missiles came, to crouch down and cover their bodies with their bucklers, and to fall back for a while, until the archers had emptied their quivers”; but once the main Roman assault force advanced, they were to “spring on to them” suddenly to meet the attack (Josephus, *Jewish War* 3.259–60, in Josephus, *Josephus: In Nine Volumes*, vol. 2, *The Jewish War, Books I–III*, trans. H. St. J. Thackeray, The Loeb Classical Library [Cambridge, MA: Harvard University Press, 1956], 651).

⁵⁶ Ballista fire may have caused the collapse of one of the buildings at the dig site (Seevers and Downer, “Conquest of Shiloh,” Ballista Balls).

⁵⁷ Fields, *Principate*, 43; Goldsworthy, *Roman Army at War*, 191–92. The Romans used trumpets to signal the charge at Jotapata (Josephus, *Jewish War* 3.265) and at Gamla (4.20). There may have been two trumpeters per cohort (Peddie, *The Roman War Machine*, 23).

⁵⁸ Cassius Dio, *Roman History* 62.12.1–2 (see Cassius Dio, *Dio’s Roman History*, 8:101, 8:103); Fields, *Principate*, 45. The Roman battle cry was so unsettling that at Jotapata, Josephus urged his men “to stop their ears, so as not to be frightened” (Josephus, *Jewish War* 3.259, in Josephus, *Josephus: In Nine Volumes*, 2:651). The

Roman advance has been described as “a slow, steady affair, culminating in a close-range barrage of pila and an explosive charge of armoured men” (Fields, *Principate*, 45).

⁵⁹ Josephus notes at least one instance of battlefield interrogation of Jewish captives (*Jewish War* 3.320–21).

⁶⁰ Josephus records that after the siege of Jaffa, “the more efficient combatants were at length exterminated, and the rest of the population was then massacred in the open or in their houses, young and old alike. For no males were spared, except infants; these, along with the women, the Romans sold as slaves” (*Jewish War* 3.304, in Josephus, *Josephus: In Nine Volumes*, 2:663). Roman actions at Gadara were similar (*Jewish War* 3.133). See also Russell, “Roman Counterinsurgency,” 269.

⁶¹ See above note.

⁶² Bishop, *Pilum*, 28, 62; Andrew E. Holley, “Stone Projectiles and the Use of Artillery in the Siege of Gamla,” in *Gamla III: The Shmarya Gutmann Excavations 1976–1989, Finds and Studies, Part 1*, by Danny Syon, with contributions by Shua Amorai-Stark et al., IAA Reports 56 (Jerusalem: Israel Antiquities Authority, 2014), 37–38.

⁶³ Davies, *Service in the Roman Army*, 231–232.

⁶⁴ Burning a city or village was common Roman practice. After seizing Gadara, an unwallled village like Shiloh, the Romans burned not only it but also “all the villages and country towns in the neighbourhood” (Josephus, *Jewish War* 3.134, in Josephus, *Josephus: In Nine Volumes*, 2:617). Josephus also relates that after the fall of Jotapata, “Vespasian ordered the city to be razed and had all its forts burnt to the ground” (*Jewish War* 3.338, in Josephus, *Josephus: In Nine Volumes*, 2:671). See also Russell, “Roman Counterinsurgency,” 270–72 for a review of the Roman terror campaign, and Seevers and Downer, “Conquest of Shiloh,” *Aftermath of Attack*, for comments on lack of burning at the dig site.

⁶⁵ 2023 Shiloh Object Registry, searched May 2023 by Boyd Seevers.

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