

The Trajanic Auxiliary Fort at Ḥawara (Modern Ḥumayma), Jordan

The Roman fort at Ḥawara, modern al-Ḥumayma, was founded soon after the conquest of the Nabataean kingdom by Trajan in AD 106, and the establishment of the Provincia Arabia. (FIG. 1) Like the *Via Nova Traiana*, the initial phase of fort construction and staffing probably was completed between 111 and 114 (Oleson 2010: 59; Abudanah *et al.* 2016: 391), and work may well have commenced immediately after the conquest. (FIG. 2) This complex, one of the best preserved principate period forts in the Near East, was designed to accommodate an auxiliary unit, probably a *quingenary ala*, detached from one or more of the legions stationed in the region after the conquest. A third-century inscription found in a shrine in the associated civilian settlement mentions the Legio III Cyrenaica, but units from the Legio VI Ferrata may also have cycled through the fort (Oleson *et al.* 2002: 112-16). The walls, one gate, and many of the internal structures were excavated by the author between 1993 and 2005 (Oleson 2009; Oleson *et al.* 1999, 2003, 2008; Sherwood *et al.* 2008a-b), with supplementary work by M. B. Reeves in 2012 (Reeves *et al.* 2017).

The first two volumes of the *Ḥumayma Excavation Project Final Report*, published in 2010 and 2013 (Oleson 2010; Oleson and Schick 2014), concerned the history and water-supply system of the site, along with the Nabataean campground and necropolis, Byzantine churches, and Early Islamic farmhouses. Preparation of the final report concerning the fort, to appear as volume three, has led to new or refined conclusions concerning the design, construction, layout, history, and function of the fort, as well as its relation to other military architecture in the region. This paper will present some new results and highlight some remaining questions.

On-going study of the ceramics, coins, and architecture has improved our understanding of the phasing of the fort. Yvonne Gerber has just begun her final detailed analysis of the ceramics, but we have important preliminary results.

Summary of the Phasing of the Fort

Phase I: Pre-Roman Nabataean ceramics, without any known structural remains (first century AD).

Phase II: Construction of the fort, interior buildings, and water-supply system, with subsequent piecemeal alterations (ca. 106-110 to ca. 285). Construction of military bath in the *vicus*.

Phase III: Possible abandonment of the fort, either as a result of destruction by Zenobia's army in 270 or as part of Diocletian's reorganization of the frontier in the 290s (late third to early fourth century).

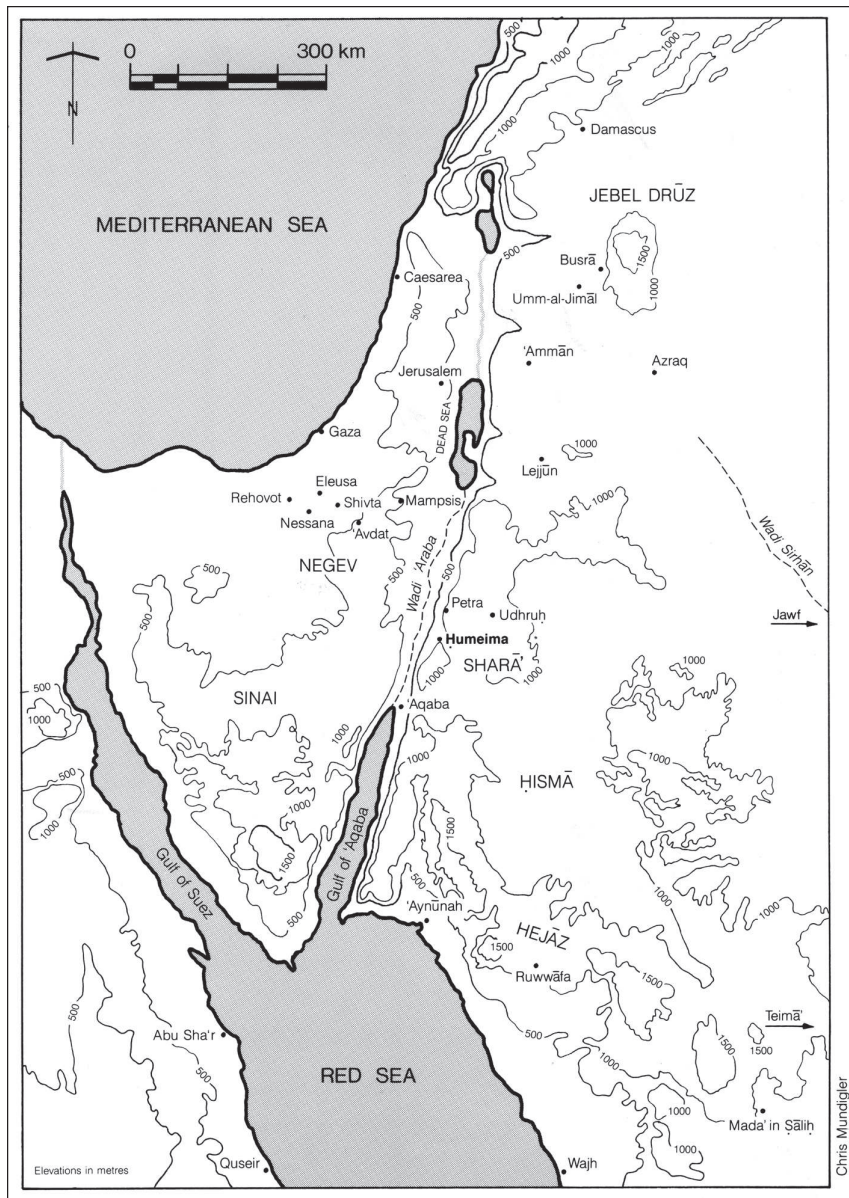
Phase IV: Renovation or reoccupation of portions of the fort (ca. 320 to 363), including units of *Equites sagittarii indigenae*. Ends with

destruction by earthquake of 363 or events associated with the revolt of Queen Mavia in 375-378.

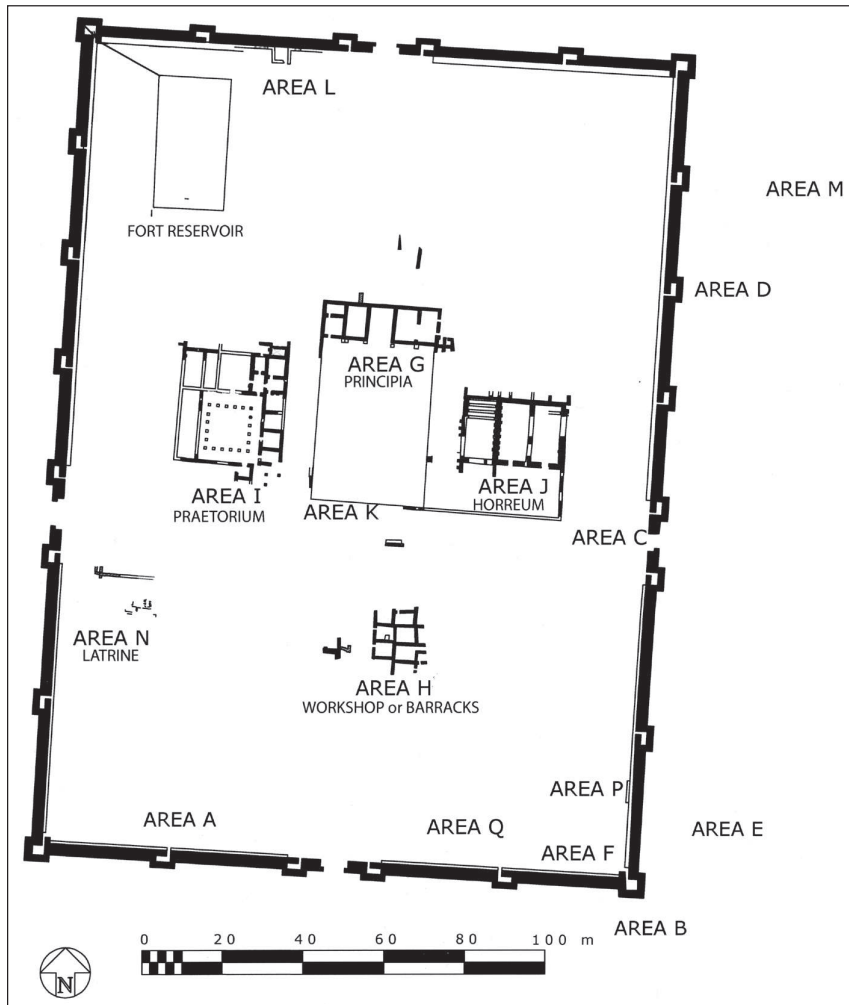
Phase V: Renovation of portions of the fort for military and civilian occupation, and dumping of debris in many abandoned rooms (ca. 363 to early fifth century).

Phase VI: Abandonment of the fort (early fifth century), removal of building materials, and gradual burial of the walls by wind and water-born soil (fifth to eighth century).

Phase VIA: Small-scale, temporary occupation of Area L (mid-sixth century).



1. Location map.



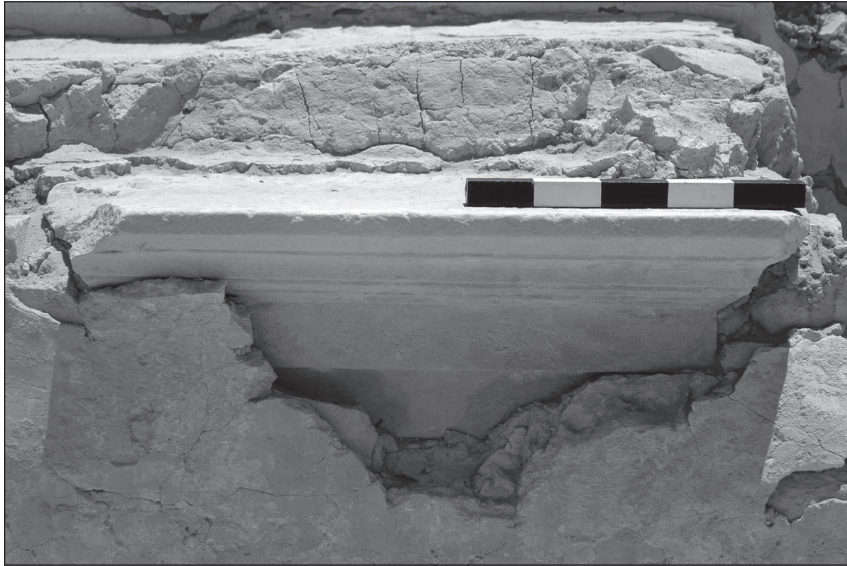
2. Plan of fort.

Phase I (First century AD)

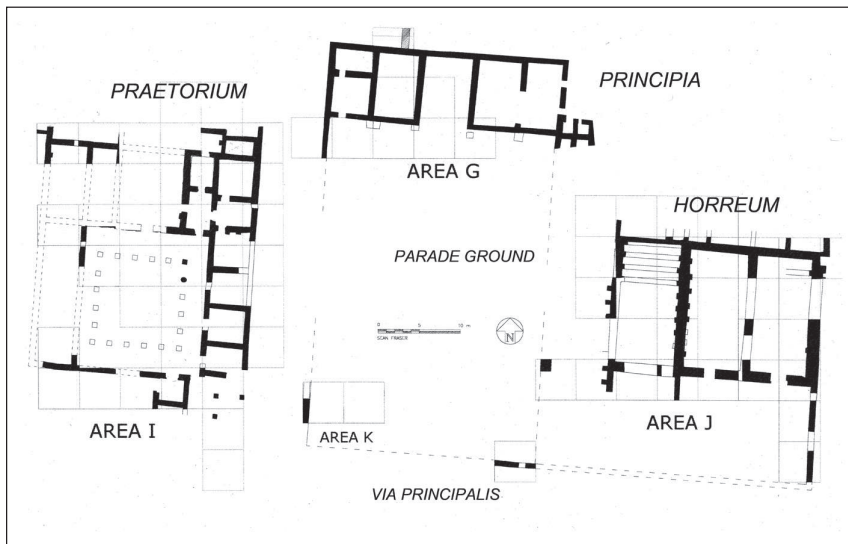
Is characterized by a scatter of late first or very early second-century AD Nabataean fine ware ceramics in the red sandy soil around the foundations of the fort walls and interior structures. No pre-existing Nabataean structures have been identified as yet within the fort area, although numerous stone mouldings and blocks taken from substantial Nabataean buildings elsewhere in the settlement centre were used in its construction. (FIG. 3) The Roman bath southwest of the fort was built on top of a Nabataean structure (Reeves *et al.* 2017), as was a shrine in the *vicus* (Reeves *et al.* 2009: 230-35), but the slope on which the fort was built is farther from the settlement centre and was probably outside the Nabataean occupation area.

Phase II (ca. 106 to 285)

Saw construction of the fortification wall, all interior buildings, and the internal water-supply and drainage system. Assuming some coordination with the completion of the *Via Nova Traiana*, these projects were probably finished by at least the first six years after the conquest in 106 (FIG. 4) There were subsequent minor, piecemeal alterations and renovations to some of the interior structures of the fort during the second and third century, but the main structures within the walls were complete in the early second century. Several strikingly luxurious features in the *praetorium* suggest the participation of Nabataean workmen. Stylistic details show that the mosaic floor in the commander's suite of the *praetorium* was laid by the same school of mosaicists that had



3. Nabataean block from *praetorium*.



4. Plan of central structures.

been at work in a Nabataean villa in Wādī Mūsā immediately before the Roman invasion (‘Amr *et al.* 1997: 470) (FIG. 5).

Room J, adjacent to the suite with the mosaic floor, was added later on in Phase II (Reeves *et al.* 2017). It had a hypocaust heating system very similar in design to that in the remarkable Nabataean or early Roman bath in a spectacular location on the Jabal al-Khubthah above Petra (Tholbecq 2015: 43-61). There was a similar heated room in the small fort at Khirbat al-Khālīdī (ancient *Praesidium*; Oleson 2010: 457-59), 33 km south of Ḥawara. The luxurious House EZ IV at az-Zanṭūr in Petra, which belongs to approximately the same period as

the *praetorium*, also had a winter *triclinium* with hypocaust heating (Kolb 2007: 167-68). A Nabataean or early Roman period house at Khirbat adh-Dharīḥ has two similar hypocaust rooms, one of which may have been associated with a bath (Kolb 2007: 168; al-Muheisen and Piraud-Fournet 2014: 838-39). Petra supplied most of the pottery used by both soldiers and civilians at Ḥawara throughout its history (Oleson and Schick 2014: 10-11), so other types of relations are natural. Reeves and Harvey (oral communication) have noted that the absence of military stamps on the bricks from Room J and elsewhere in the fort suggest that they, too, were supplied by potters at Petra.

5. Mosaic in *praetorium*.

Phase III

It is more difficult to document the abandonment in Phase III (late third to early fourth century). A gap in coin evidence suggests a temporary abandonment of the fort at the end of the third century, which probably reflects Diocletian's reorganization of the frontier after 285. Interference by Zenobia's army as she headed to Egypt in 270 is also a possibility. We have found no evidence of destruction in the fort attributable to Zenobia, but a shrine and buildings in the *vicus* were abandoned around this time (Oleson *et al.* 2008: 310-14). Perhaps her army by-passed the well-defended fort, cut the aqueduct that supplied it with water, and plundered the civilian settlement. Coins of five of the six emperors who directly preceded Diocletian were found in various locations in the fort. Not one coin of Diocletian, however, has been found in the fort or, in fact, anywhere at the site of Ḥumayma. Coins of the other early Tetrarchs—Maximian, Galerius and Constantius Chlorus—are also missing. In AD 305 coverage picks up again with Maximinus II, Maxentius, Constantine, and Licinius I and II. The juxtaposition of complete numismatic coverage of the emperors immediately preceding and following the absent Diocletian may indicate some sort of dramatic change: either transfer of the military unit elsewhere, or a break in the supply of new specie.

A few coins of the tetrarchy were found in the small tetrarchic fort at Bīr Madhkhūr, but so far none of Diocletian (A. Smith, Personal communication 2016). At the 'Ayn Gharandal fort, which actually boasts a building inscription of Diocletian, about 150 coins were found, but none of Diocletian and only one of Maximian (R. Darby, Personal communication 2016). Since Diocletian is unlikely to have abandoned these forts immediately after their construction, it probable that the absence of his coins there is either an accident of excavation or a symptom of supply problems. At a settlement located on the 'Arabah road in the southern Negev, a small fort very similar to that at Gharandal and with a similar inscription of Diocletian, two coins of Diocletian were found, two of Maximian, and 10 of Constantine (Davies and Magness 2015: 63). Farther north, coins of Diocletian were also found at the Diocletianic fort of al-Lajjūn (Parker 2006: 416-17). The preliminary report on the coins from the whole site of Hegra (Bauzou 2015: 523-25) lists coins of emperors before and after Diocletian but does not mention issues by Diocletian himself. Significantly, the Roman fort at Hegra, probably staffed just like Ḥawara by a detachment of the Legio III Cyrenaica, was also abandoned in the late third century (Villeneuve and Fiema. 2018). Despite the distance separating Hegra and Ḥawara (*ca.*

425km), there were close relations between the two outposts, leading to similarities in the design of fortifications and barracks and staffing with *equites sagittarii dromedarii*.

How should we interpret the absence of these coins at Ḥawara: problems with coin supply, or abandonment? Coins of the later tetrarchs show that the fort was in fact occupied by around 320, when Licinius, was busy in the region, or a few years later, early in the reign of Constantine. Perhaps the garrison was stationed elsewhere for a few years after the hypothetical Zenobia event, but returned once the aqueduct had been repaired and civilian Ḥawara had revived. So far, analysis of the ceramics, coins, and stratigraphy have not confirmed irrefutably that the fort was abandoned for a short period in the late third or early fourth century, but it seems likely. During this phase several roofs and walls collapsed in the *principia*, and debris accumulated in and around several of the rooms, but the absence of occupation debris below the collapse level in these rooms suggests that the rooms had been cleared out prior to the damage. In Area N, the craft area with five basins, which most likely served as a brewery, was abandoned at the end of Phase II and not put back into use in Phase IV.

Phase IV

During Phase IV (*ca.* 320 to 363), many structures in the fort were renovated or redecorated, notably the *praetorium* and *principia*. The rich deposits of fourth-century ceramics and numerous coins of the House of Constantine testify to continued occupation throughout this period, although it is not clear that the reoccupation was entirely military in character. The careless renovation of the *principia*, for example, suggests some change in the function of the structure.

The addition of at least one ballista platform (*ballistarium*) to the fort wall at some point during Phase IV, however, indicates the presence of at least a small unit of soldiers. This narrow

platform, *ca.* 4.85 m long by 1.80 wide, was constructed against the wall in the southeast quadrant of the fort, between two towers. There are traces possibly indicating that several more were built at several other locations up against the inside face of the enceinte. In Josephus' admiring description of Roman field camps in Judaea (Jewish War 3.76-82) he says that "in the spaces between the towers are placed rapid-fire devices, catapults, and stone-throwers, every variety of artillery engine all ready for use." I believe the platform at Ḥawara is a rare surviving example of this type of catapult platform. Added to the wall walk, the feature provides a space of 4.85 x 3.20 m, sufficient for deployment of small arrow or stone shooters. This type of platform has seldom been preserved or recognized. One possible regional candidate is a platform built inside the city wall of Petra, on the North Ridge above a road and possible route of approach (Parker and Perry 2013: 401-2). Although this platform is long and thin (L 8.88 m, W 0.88 m), it was built up against a wall 2.25 m thick, the top surface of which should have given sufficient room for mobilizing a ballista on the wall walk behind the curtain wall. Such a platform is suitable for the smaller arrow-shooting machines that could be efficiently manned by two or three men and that did not require much space (Marsden 1969: 192 and pl. 8; 1971: 231-32). A slightly different arrangement, consisting of a rectangular rubble platform in the northeast corner of Camp G at Masada, may be another regional example (Davies 2011: 69, fig. 3, 75; no scale given).

During Phase IV, a forge was also installed in one of the former barracks rooms in Area H, either to produce metalwork in iron and bronze, or to recycle unneeded military gear, or both. This mix of craft of sleeping areas is unusual, but it is documented elsewhere in the later empire, in part because of the smaller unit sizes. The movement of civilians into forts was common along the frontier in Britain and along the Danube at this time, because of a decline

in the size of military units and a concomitant rise in insecurity (Lemke 2015: 90-92; Mosser 2015: 80). A reduction in the size of the unit stationed in the ̄awara fort during the fourth century may explain the presence of civilians in the fort at this time. The failure to renovate in Phase IV the abandoned Phase II brewery, which was large enough to supply 500 soldiers, also suggests a smaller garrison. Phase IV ends with the collapse of all the buildings in the fort, most likely caused by the devastating earthquake of 363, which is well documented at the regional centres of Ayla and Petra (Oleson 2010: 59). The excavators of Diocletian's fort of Yotvata, which also suffers destruction at this time, suggest that it might be associated with either the earthquake or the rebellion of Queen Mavia in 375-378 (Davies and Magness 2015: 63).

Phase V

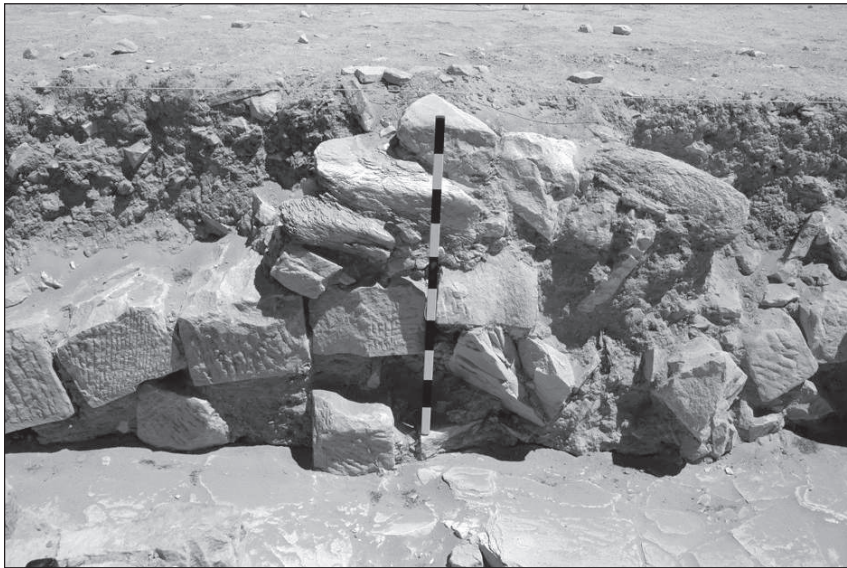
The excavated areas that were not reoccupied in Phase V, for example parts of the granary, the latrine and associated craft area, and some peripheral rooms in the *praetorium* did not yield large quantities of artefacts in use at the time of the destruction event. Some of the rooms had packed earth floors belonging to Phase IV, incorporating ceramics and other finds, but no extensive collections of crushed artefacts appeared. In official service buildings such as the granary or the *praetorium*, this lack of residual objects probably reflects in part the discipline of military life, in part the hazards of the selection of areas to excavate. In addition, survivors of the disaster undoubtedly dug through the debris to salvage useful items, disturbing the pre-destruction deposits. There is apparently wind-blown soil on some of the floors in the *principia* and granary, directly below the level of structural collapse, so some parts of various buildings may have remained standing for a few months, allowing salvage of property prior to their final collapse.

At the beginning of the post-earthquake Phase

V, some of the rooms in several structures were cleaned up for re-use, with repairs to damaged pavements, including the mosaic-floored rooms in the *praetorium* and the large rooms in the northeast corner of the *principia*. Many of the walls were roughly re-plastered, and benches, bins, new doors, steps, and cooking facilities were added at this time. The mosaics in the commander's suite in the *praetorium* reveal damage from falling debris, and large areas where the tesserae had been detached from the plaster sub-floor were patched and covered with plaster. All the rooms show some signs of burning, a process that left reddish or black marks on the *tesserae*. No carbonized wood or burned debris was found during excavation, indicating that the burning is unlikely to have occurred at the final destruction event. The majority of these burn marks appear along the room perimeters near a wall, although some occur in the centre of a room. The small size and location of these burned areas suggest that small, contained fires were lit, most likely by squatters who occupied the building in Phase V. Other rooms, particularly the hypocaust room in the *principia* and some *contubernia* in the barracks area, were filled with dumps of ceramics, plaster, and rubble cleared out of the rooms that had been put back into use. The complete lack of coins from this phase suggests low intensity, probably civilian occupation, as does the fact that the *horreum* remained out of use and unoccupied, the fallen roof arches left in place (FIG. 6). The ceramic record for this phase terminates sometime in the first quarter of the fifth century.

Phase VI

After the final abandonment of the fort in the early fifth century, Phase VI saw the removal of building materials for reuse elsewhere, particularly facing blocks from the fortification wall and interior buildings. The cores of these walls then spilled out over the remaining lower courses of facing, and the spaces in and around



6. Detail of fallen *horreum* arch.

the interior structures were gradually filled in with wind and water-borne soil. The lack of stratigraphy in many of the rooms, and the typical mixing of artefacts from all periods of occupation, probably results in part from the churning up of the debris and fill during the salvage of fallen wall and roof blocks.

There was, however, one hiccup in this abandonment. In Phase VIA a single small room, only 2.0 m on a side, was built up against the inside of the fortification wall just west of the north gate. A bronze *folles* dating later than 491 and probably struck by Justinian dates this structure to the mid-sixth century. It is possible that this shelter was provided for a supervisor or for a night watchman and tool storage during the salvage of building materials from the fort for the construction of houses or some of the five Byzantine churches in the central part of the site. In any case, it is a reminder that even after the abandonment of the fort, the civilian settlement continued to thrive.

I can only summarize here some of the other information that has come up during the preparation of the final report. Excavation by the French-Saudi team at Madāin Šālih has recently revealed portions of a heavily fortified Nabataean military camp, adapted in the early second century for a Roman garrison (Nehmé *et al.* 2015: 17-77). A possible

barracks building has been exposed that shows similarities in scale and plan with the barracks at Ḥawara (Villeneuve and Fiema 2018; Fiema, Forthcoming). Judging from the inscriptions found in the city gate located nearby, the camp was occupied by a detachment from the Legio III Cyrenaica, the same legion that supplied a detachment to Ḥawara. One inscription mentions a unit of *eq(uites) dro(medarii)* from this legion associated with the fort (Nehmé *et al.* 2015: 38). This evidence strengthens Nikolic's hypothesis that the *equites sagittarii indigenae* mentioned by the *Notitia dignitatum* (Or. 34) as stationed at Ḥawara.

were mounted on camels rather than horses (Oleson 2010: 54, 59; Nikolic, Forthcoming). Detachments of soldiers on their way to Hegra probably originated at or passed through the fort at Ḥawara, and it is likely that there was a good deal of movement between the two forts, despite the distance. There is no reason why units of *equites dromedarii* could not have rotated between the two forts, perhaps in connection with patrols along the routes that connected them.

The motivation and model for the selection of a fort plan with projecting towers at Ḥawara still remain unclear. (FIG. 7) Such a plan is unprecedented elsewhere for a Roman fort of this period, although it certainly makes sense in



7. View of Tower no. 5.

terms of defensive strategy. The Ḥawara fort has the proportions and internal layout of a typical principate “playing card” fort, but the architect abandoned the usual rounded corners and inward-projecting towers for projecting corner towers, supplemented by towers along the walls that project only on the exterior, all the towers projecting far enough to allow enfilading fire. Gregory’s hypothesis that the fortress cities of the Near East inspired this design in forts of the third-century, can be applied to second-century Ḥawara as well (Gregory 1995: 148-227, 1996). Perhaps Trajan’s engineers, preparing for the invasion and occupation of Parthia, were experimenting with an urban design that allowed a more effective defensive posture: enfilading fire, better access from the wall walk, and free passage on the wall walk across the back of the tower. Pietsch (2000: 27-30) has connected the growth in the importance of troops armed with the bow – both mounted and on foot – with the adoption of projecting towers in Parthian fortifications. According to his interpretation, in the first century AD the Parthians adopted tactics involving mounted *sagittarii* along with defensive rather than offensive manoeuvres, and these developments fostered the use of towers facilitating the deployment of archers in Parthian fortifications. Roman campaigns against the Parthians subsequently fostered

similar changes in the design of Roman camps and forts in the third and fourth centuries. Like Gregory, however, Pietsch overlooks the early date of the Ḥawara fort design, and there is no reason the process could not have begun earlier in the second century, particularly since Trajan was preparing to invade Parthian territory. The detachment of the Legio III Cyrenaica stationed at Hegra in the mid-second century, probably sent from or via Ḥawara, added to the Nabataean fort at that site towers that project six Roman feet, just like those at Ḥawara (Villeneuve and Fiema 2018). The Hegra fort, significantly, was abandoned by its troops in the late third century, just as I have proposed for Ḥawara, and it subsequently seems to have been reoccupied by civilians (Fiema, Forthcoming). Another atypical aspect of the Ḥawara fort is the presence of a *titulum* outside the north gate, a curved earthen defensive wall, barely visible to the naked eye and difficult to photograph, but clear in GPR. (FIG. 8) shows the *titulum* during the winter rainy period, when ground moisture highlights the difference in patterns of vegetation over the disturbed soil of the *titulum* fill and the surrounding soil. The upper dashed line follows the highest ridge of the feature, approximately 0.75-1.0 m above the surrounding soil, while the lower line follows the approximate edge of the southern extent of the spreading fill. *Titula*

8. *Titulum* from south-east.

are rare throughout the Empire, but one can be seen in aerial photographs outside the north gate of the probable Roman marching camp at Khirbat Abū Safat near al-Jafr (Kennedy and Bewley 2004: 176; APAAME website image 20091022_DLK-0340.dmg). Another *titulum* is visible in aerial photographs outside one of the gates of the possible marching camp at Tall Abara, near Udhrūḥ, although Kennedy (2004: 180-81) labels it a *clavicula*. Both of these parallels are well within the region of interest to the forces at Ḥawara.

The question of roofing is important for the reconstruction of the main structures inside the Ḥawara fort. The three storerooms of the *horreum* preserve arch support impostes and fallen voussoirs for cross arches that carried flat roofing slabs. The same arrangement is seen in the barracks. The walls of the *principia*, in contrast, have no arch support piers, suggesting that this structure may have had pitched roofs covered with roof tiles. This hypothesis is strengthened by the discovery of nearly 7,000 roof tile fragments in this area, weighing 842 kg. Only 322 roof tile fragments weighing 60 kg were found around the *horreum*. Several rooms in the *praetorium* have arch support piers, but not all of them, and 713 tile fragments weighing 109 kg were found in this area. So portions of this structure also may have been roofed with

tiles. None of the other structures inside the fort yielded enough roof tile fragments to justify restoration of pitched roofs. It makes sense that the two most prestigious administrative structures in the fort should have been roofed in this conspicuously Roman style. Of course, these totals are far less than the original statistics would have been, indicating that large numbers of tiles were salvaged, probably in Phase V after the earthquake destruction. Approximately 18,000 cover tiles were inverted and reused in maintenance of the aqueduct channel, but the pan tiles are missing. Few turn up elsewhere at Ḥawara, even in the churches, so they most likely were exported to sites such as Ayla.

The fort at Ḥawara is notable for allowing the documentation of exceptionally thorough modular planning based on rational units of the *pes monetalis* (Roman foot, 0.296 m). I have expanded my comparative study of modular planning to the other published Roman camps and forts in the Near East, but publication of this type of analysis remains rare, and as a result comparative statistics are usually limited to the exterior walls (Oleson 2009, Forthcoming). Nevertheless, it is clear that the Roman engineers in this region routinely laid out their military structures according to pre-set proportions, or in rational numbers of the *passus* of 5 *pm*, or the *pertica* and *decempeda* consisting of 10 *pm*,

or in fractions and multiples of the *actus* of 120 *pm*. The *stadium* of 625 *pm* was sometime also employed; it consisted of 125 *passus*.

Despite its auxiliary status, the Ḥawara fort had many of the features and structures of a legionary camp or fort: four gates, with the *via principalis* and *via praetoria* crossing at 90 degrees; a *principia*, or headquarters building with parade ground in front; a *praetorium*, or commander's residence; a *horreum*, or granary (Area J); a barracks building; a possible craft area with latrine (Area N); and a probable stable. The advanced fortification technique and the careful modular planning of all the structures, along with their comprehensive variety, reflects the importance Trajan and his engineers placed on this isolated frontier post. As when the prince Aretas chose this unoccupied site for the foundation of Ḥawara in the later first century BC, and again just after AD 685 when 'Ali ibn 'Abd Allâh ibn al-'Abbâs purchased the village (Oleson 2010: 57-61), the location drew the attention of those in the highest ranks of power.

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