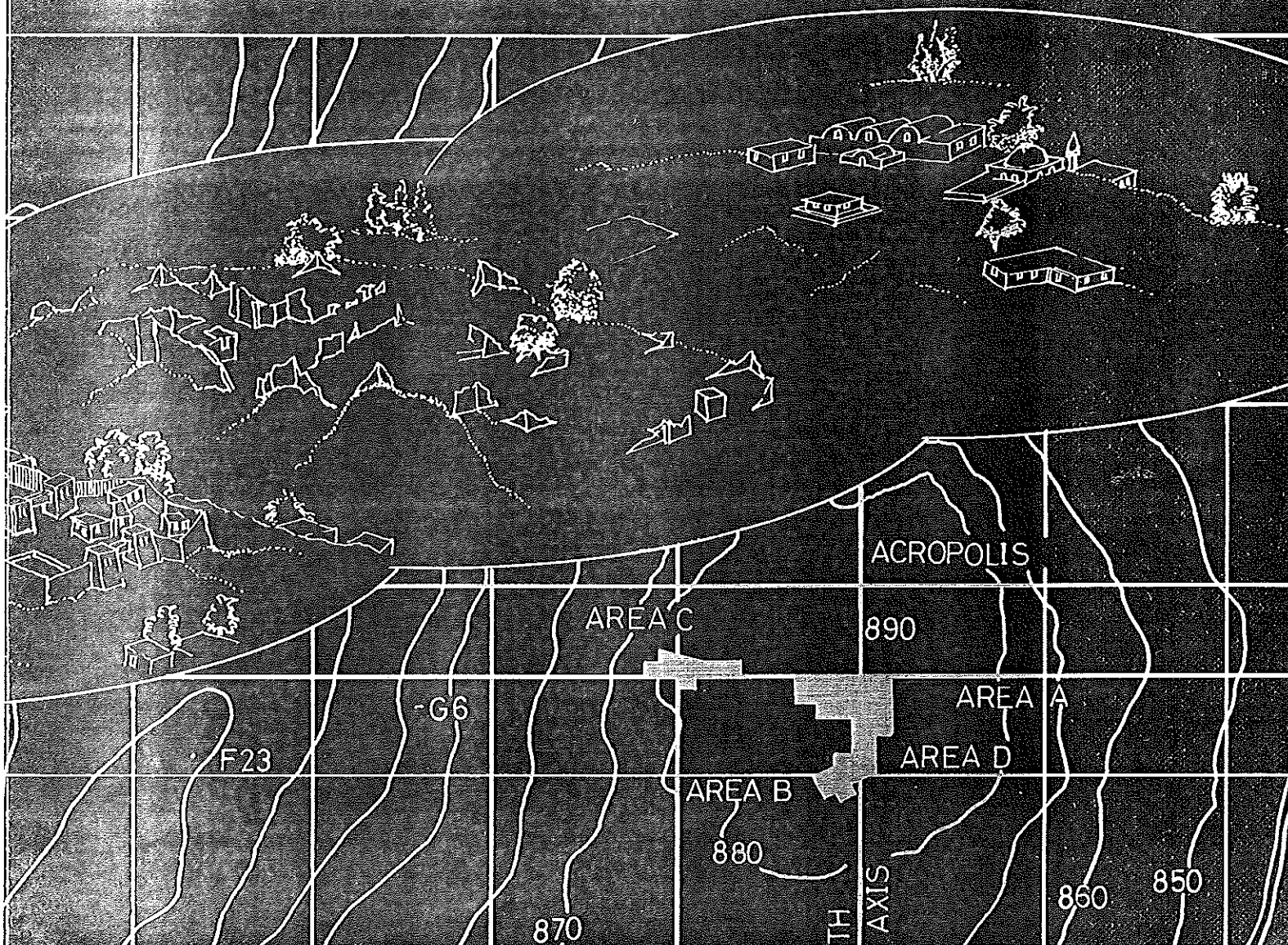


# HESBAN 1

## Sedentarization and Nomadization

Øystein Sakala LaBianca



# HESBAN

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# SEDENTARIZATION AND NOMADIZATION:

FOOD SYSTEM CYCLES AT  
HESBAN AND VICINITY  
IN TRANSJORDAN

by

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HESBAN 1

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## Chapter Six

# Configurations of the Food System During the Greco-Roman Millennium: Ca. 333 B.C. to A.D. 661

### Introduction

Over the approximately 1,000 years between the arrival of Alexander the Great in Palestine, ca. 333 B.C., and the conquest of the region by the Muslims, ca. A.D. 661, several distinct, yet intimately intertwined paths of development took place on the Transjordanian landscape. On the one hand there was the path promoted by the Hellenized and Romanized elite of Palestine which gradually led to the establishment of an urban-oriented production regime in the project area emphasizing, especially during Late Roman and Byzantine times, the cultivation of vine and tree fruits. On the other hand there were the paths chosen by the rural masses, some of which led to close and intimate cooperation within the Greco-Roman production regime, others which led to pastoral-oriented production regimes emphasizing autonomy and self-sufficiency as a means of coping with increasing disinheritance and alienation experienced at the hands of the Hellenized and Romanized majority.

In this chapter some of the evidence leading to this view of the Hesban vicinity food system during Greco-Roman times is presented. As in earlier chapters we shall look at five principal parameters of the food system, namely environmental, settlement, landuse, operational, and dietary conditions. By considering the changes which occurred in each of these five domains of the food system we shall see clearly the development of the Greco-Roman production regime. Much more subtle are the clues indicating the independent paths pursued by certain members of the rural masses.

In the analysis which follows, their paths of resistance will be seen by focusing attention on evidence suggestive of the processes of polarization and nomadization within the project area. Not to

reckon with several such co-occurring developments is, in our opinion, to fail to properly acknowledge the complexity of the sociocultural situation in Transjordan during this pivotal millennium in the history of the region.

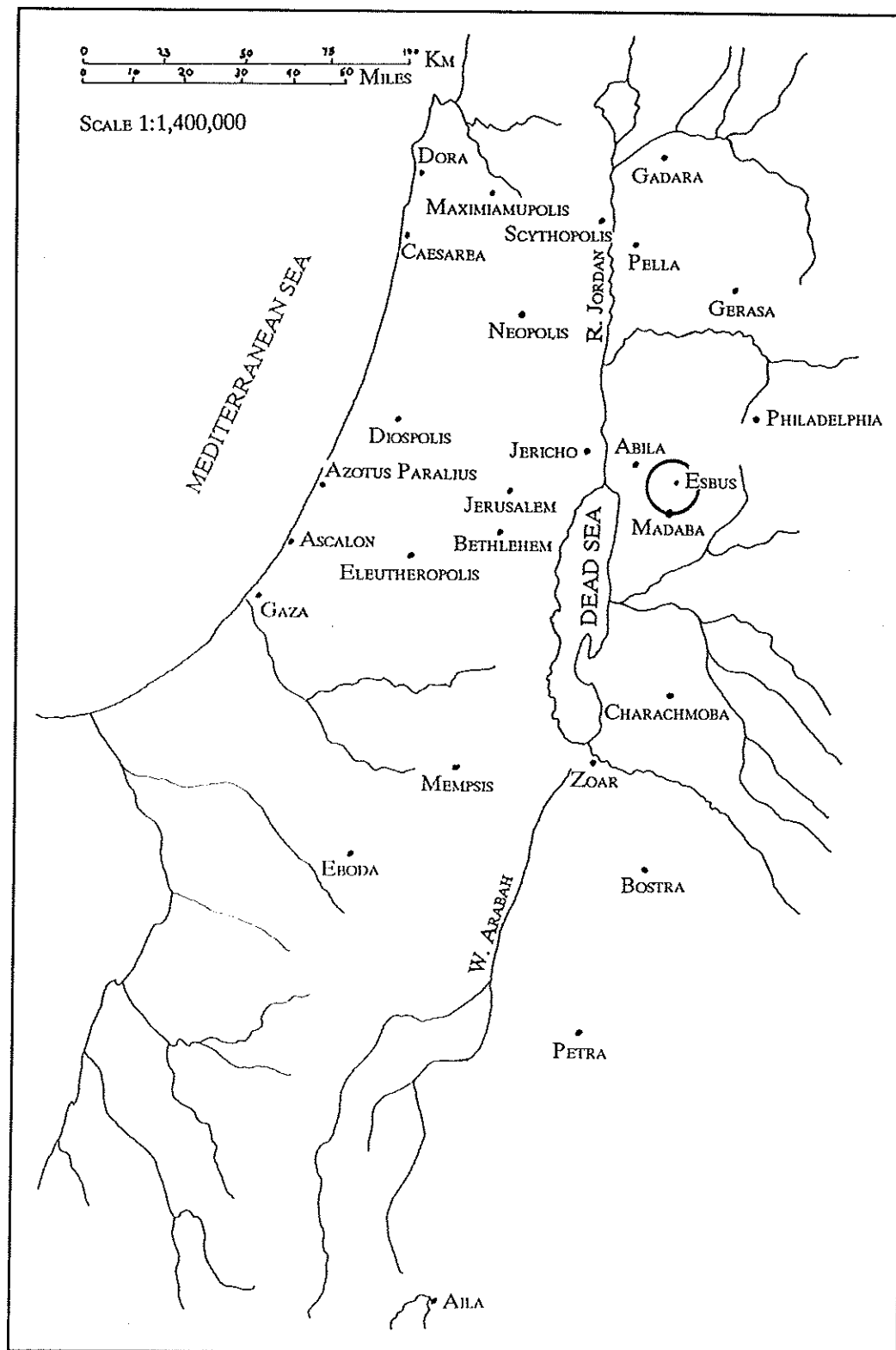
### The Sociopolitical Context

#### The Wider Sociopolitical Context

To interpret the archaeological remains encountered in the vicinity of Hesban from the Greco-Roman centuries, five transforming influences must be reckoned with which catalyzed and shaped the course of the sedentarization and nomadization processes which occurred side by side within the project area during this pivotal era in the history of Palestine and the world. They include first, *Hellenization* of Transjordan; second, *Nabataean sedentarization* in Transjordan; third, the *Romanization* of Transjordan; fourth, the *Christianization* of Transjordan; and fifth, the expansion of *long-distance trade* which resulted from these influences.

While the ways in which each of these influences transformed the lives of individuals and communities throughout this region are extremely wide ranging and certainly too many to enumerate in this brief overview, our aim here is to introduce each of them sufficiently to acknowledge their relevance as factors which must be reckoned with in accounting for alterations in the local food system. We would caution at the outset, however, against the impression that these influences represent sharply segregated and equally pervasive processes. Rather, they were all overlapping and merging developments and not all on parallel footing in terms of their impact on the way of life of the indigenous population.

Fig. 6.1. Palestine in the Greco-Roman period



*The Hellenization of Transjordan*

Hellenization is the process of assimilation of Greek cultural elements by various Oriental populations which followed in the wake of Alexander the Great's campaigns throughout the ancient Near East. The commonly agreed-upon date of Alexander's march through Syria and Palestine is 333 B.C. (Parr 1975: 947). Especially instrumental in carrying out this process in Palestine were two ruling families, the Ptolemies of Egypt and the Seleucids of Syria, who had both emerged as victors in the struggle for power which followed in the wake of Alexander's death. While the Ptolemies managed to maintain the upper hand in Palestine for about a century beginning ca. 301 B.C., in 198 B.C. this disputed region was annexed by the Seleucid Empire. Their control was short-lived, however, for it only lasted a little more than three decades until ca. 164 B.C., when the Seleucid Empire was divided between several rebelling and conquering peoples (Parr 1975: 947; Solomon 1971).

While the Ptolemies' approach to Hellenization emphasized "centralized bureaucratic control of trade, agriculture, industry, and local affairs in Palestine" (Parr 1975: 948), the Seleucids emphasized the development of semiautonomous Greek-style cities (fig. 6.1).

Rostovtzeff (1928b: 192), for example, points out that "in Transjordan side-by-side with the native sheikhs and their tribes, a group of towns with a mainly Greek population" were in existence during the Seleucid reign. Among these were Philadelphia (modern Amman), founded on the site of ancient Rabbath-Ammon (Harding 1960; Avi-Yonah and Stern 1979), located approximately 26 road km northeast of Tell Hesban. Philadelphia was later brought into a league consisting of ten cities which came to be known as the Decapolis (Applebaum 1971: 1449; for an alternative view on the administrative structure of these cities see Parker 1975: 437-441). It remained thus until it was annexed by the Romans during the reign of Domitian (A.D. 51-96; see Bowersock 1983: 91).

The Seleucids were more aggressive in propagating Greek thought and customs than were the earlier Ptolemies, thus creating more ill will. This was especially the case among the Jews, who eventually rebelled and managed to form their own state under the leadership of the priestly Hasmonean family (Tcherikover 1972a, 1972b; Bayer 1971: 1455-1458). This new Jewish state in Palestine prospered

under the leadership of a series of Hasmonean rulers and between ca. 164 B.C. and 37 B.C. came to control practically all of Palestine and Transjordan except for certain of the Decapolis cities, one of which was Philadelphia (Parr 1975: 948).

*Nabataean Sedentarization in Transjordan*

The sedentarization of the Nabataean Arabs in Transjordan appears to have been catalyzed by their initial successes as caravaneers and merchants. Various explanations have been suggested for why these nomadic tribesmen of the North Arabian desert were able to gain such a powerful hold on the overland trade routes of Arabia. On the one hand, the stimulus for trade and industry which resulted when Alexander the Great put into circulation "a vast amount of precious metals, which the Persian kings had hoarded," has been offered as an explanation (Parr 1975: 948). On the other hand, their success has been attributed to the competitive edge which they enjoyed because they had come into possession of the North Arabian saddle. This saddle gave the camel rider, for the first time in history, the ability to fight effectively from camel-back with sword and spear (Bulliet 1975: 92).

Whatever the outcome of the debate over the causes of Nabataean rise to power and influence, the fact remains that the dominance which they were able to exert over the trade routes of Arabia resulted in great profits finding their way back to their capital city, Petra, in southern Jordan (cf. Zayadine 1985; Khairy 1982). To supply food to their growing urban populations, in Petra and in their other major trading centers, increasing numbers of these tribesmen began to settle in the hinterlands behind these centers. There they began to expand and improve upon the agricultural accomplishments of the populations they gradually subjugated, such as the descendants of the Edomites and the Moabites (Glueck 1939: 48). In particular, they introduced deeper into the desert regions of their kingdom enhanced schemes for controlling and taking advantage of floodwaters.

Detailed investigations of the desert farming techniques of the Nabataeans and those who followed them have been carried out by Glueck (1939), Evenari (1956), Mayerson (1962) and by Evenari, Shanan, and Tadmor (1971). In order to take maximum advantage of the 100 mm rainfall which falls between December and March in the



dry regions which they cultivated, Nabataean farmers took full advantage of the natural watersheds which made up the catchment areas of the numerous desert wadis.

As was noted in Chapter Two, on the slopes of tributary wadis they constructed terraces consisting of a series of stone shelves. This prevented the floodwater from rushing violently down the slope and instead forced it to flow gently, irrigating each shelf and transporting nutrients to the soil. In the main wadis, into which the tributary wadis eventually emptied out, diversion conduits and dams were constructed of stone which served to divert some of the water to higher plots further down the wadi. In this manner the Nabataean farmer was able to overcome the problem of insufficient rainfall for agriculture in the dry regions in which he lived.

In addition to such floodwater irrigation schemes, the Nabataeans also collected rainwater in strategically located cisterns "fed by conduits which captured and led runoff from the slopes and gullies above them" (Mayerson 1962: 248). While most of these were near or beneath dwellings where they provided drinking water for people, others were adjacent to agricultural fields where they provided supplementary irrigation water after the winter rains had passed (Mayerson 1962: 240).

Where spring water was available, imaginative irrigation schemes were introduced as well. Thus Glueck (1939: 44, 1959: 201-204) has documented the existence of several Nabataean *garden cities* and *garden villages* which arose in the vicinity of springs. In the Wadi Arabah, for example, he discovered a *garden city* (et-Telah) which consisted of "several square miles of carefully walled fields" which were irrigated from spring waters stored in a large *birkeh* or reservoir. These "elaborately walled fields," when later observed from an airplane, "resembled a gigantic checker board" (Glueck 1959: 202). Smaller spring-fed garden villages, which apparently existed on the outskirts of the Nabataean capital, "helped supply the food-requirements of Petra's large population" (Glueck 1939: 44). Furthermore, the inhabitants inside the city watered their gardens by means of elaborate aqueducts and floodwater collection schemes as well (Hammond 1973).

The fact that Nabataean agriculture persisted despite the demise of Nabataean commerce in the 1st century A.D. may partially be attributed to a deliberate policy adopted by several Nabataean

kings which had emphasized "urban growth and a peaceful transition from commerce to agriculture" (Bowersock 1983: 69). Seeing evidences of attempts to divert their trade to cities further north such as Gerasa, Bostra, and Palmyra, these Nabataean kings apparently encouraged sedentarization especially along the fertile highland plateau of Transjordan so as to provide for an alternative economic basis for their government. Despite these efforts, however, in A.D. 106 Petra "lost her independence and was absorbed into the Roman Empire by the emperor Trajan" (Bulliet 1975: 101).

Two additional factors come to mind as well in thinking about the persistence of Nabataean agriculture. First, as Evenari *et al.* (1971: 325) have noted, the Nabataean farmers' practices were restorative rather than destructive to the available natural resource. Their maintenance of terraces, for example, helped tame the flood torrents from washing away the soil. Also, because their supply of water was so limited they were prevented from overirrigating. They were thus spared the damaging effects of salinization.

The other factor is that to a large degree, Nabataean agriculture was based on local self-sufficiency (cf. Glueck 1959: 253-254; Mayerson 1962). Each village and farmstead developed and maintained its own irrigation system rather than being linked to a region-wide floodwater management system, as was the case in Mesopotamia, for example. Thus, the livelihoods of the farmers were not so intimately tied to the fates of urban elites. Hence the persistence of the Nabataean farmer despite the sudden disappearance of his urban partners at Petra and the other centers of Nabataean commerce in the Negev.

#### *The Romanization of Transjordan*

Roman influence in Syria and Palestine began ca. 64 B.C. when Pompey and his legions arrived in Syria "to bring an end to the chaos that had followed upon the dissolution of the Seleucid dynasty" (Bowersock 1983: 28). The process of Roman annexation of Transjordan was not completed, however, until Trajan succeeded in annexing the Nabataean Kingdom in A.D. 106. During these intervening years, the Nabataean Arabs retained control of most of southern Transjordan and the desert regions to the east, while the fertile highland of central and northern Transjordan was administered by several competing Roman client states.



Although the Decapolis city of Philadelphia (modern Amman), along with the other cities of the *league*, had been incorporated into the province of Syria, which had been established by Pompey, it was allowed to continue in its autonomous status in the Hellenistic tradition until its annexation into the province of Arabia in A.D. 106 (Applebaum 1971: 1449; Bowersock 1983: 91).

The establishment of the province of Arabia by Trajan marks the completion of Roman annexation of Transjordan. Up to this time, Roman influence in the region had been buffered by the continuance of Arab and Hellenistic traditions kept alive by the Nabataeans and the inhabitants of the Decapolis cities of Gerasa and Philadelphia. Trajan's annexation of the Nabataean Kingdom in A.D. 106

was followed by the greatest piece of Roman road-building in the Orient, the construction of the *via nova* in the years A.D. 111-114. It was the work of Claudius Severus, the first governor of Provincia Arabia, and ran from Bostra to Aila (Aqaba) on the Red Sea (Avi-Yonah 1950: 56; cf. Bowersock 1983: 83).

Other roads were constructed as well, including one built ca. A.D. 129-130 by Hadrian connecting Hesban with Jerusalem via Livas and Jericho (Avi-Yonah 1950: 56, 59; see fig. 6.2).

For approximately two centuries, ca. A.D. 106 to 315, Transjordan remained unified as a political entity under Rome's *Provincia Arabia*. During this period, the rhythms of daily life in the rural hinterlands and cities had to be adjusted to the concerns and ambitions of the Romanized elite. Besides construction of a network of paved roads throughout the province, these included construction and maintenance of the *limes Arabicus*, the fortified garrisons along the eastern border of the province (Parker 1976; Bowersock 1983: 105). The development of the urban areas was also important. In Transjordan the cities of Petra, Bostra, Philadelphia, and Gerasa, all bear witness to Roman undertakings in the form of temples, theatres, baths, streets with colonnades and monumental gates, mausolea, masonry tombs, and cemeteries (Conder 1889; Brunnov and Domaszewski 1904; Kraeling 1938). Such buildings were also constructed in many of the smaller towns and villages, including, as we shall see, Madaba and Hesban.

The urban dominance of rural hinterlands which had begun to emerge during Hellenistic times throughout the Near East was strengthened during the centuries of Roman control in the re-

gion. Every free and settled person, whether living in the towns or in the country, belonged to a *polis*, a city. Even in Transjordan, where there were relatively few cities, this form of organization appears to have prevailed, except that certain villages also functioned as units of government. Thus, writing with reference to the province of Arabia, Jones (1964: 713) notes that the villages of this "backward area" functioned as

self-governing communities which managed their own revenues and possessed and erected public buildings: the governing body was a mass meeting . . . which elected annual magistrates and passed decrees. In fact, the villages seem to have differed from small cities only in lacking a council . . . and several were promoted to city ranking in the third and fourth centuries (Jones 1964: 713).

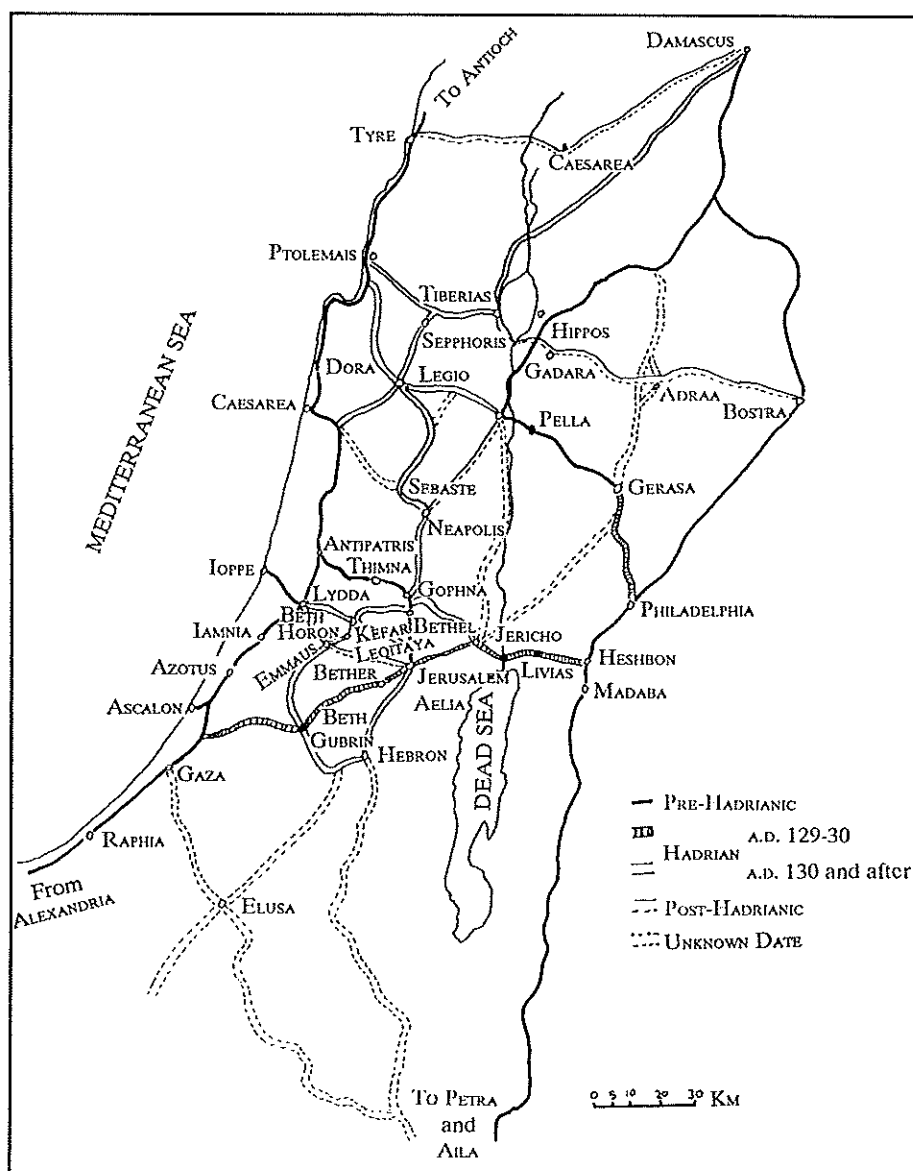
The consequence of this trend toward urban dominance for the rural peasant population was a gradual loss of personal freedom and proprietorship of lands (cf. Sperber 1972: 244, 1974). This pattern of social organization continued for the next four centuries until the end of the Byzantine Period.

It is important to note, however, that throughout this entire period, confederations of Arab tribes existed in Transjordan whose way of life did not conform to the lifestyles prescribed by the Romanized majority. The presence, for example, of the Safaitic Arabs in northern Transjordan and the Thamudic Arabs in the south has been noted by Caskel (1959), Beisheh (1973), Bowersock (1983: 97, 131), and Shahid (1984a: 128-141, 1984b). These were literate tribesmen on whom the Roman governors of this province may initially have relied to assist in the administration of inaccessible territories to the east (Bowersock 1983: 97). The role which these played in the local economy, and the polarization which occurred between them and the Roman elite, is a matter which until recently has largely been neglected by scholars concerned with Roman Palestine (cf. Banning 1986; Parker 1986, 1987).

#### *The Christianization of Transjordan*

The conversion in A.D. 312 of Constantine I to Christianity, along with his founding of Constantinople as the capital of the Eastern Roman Empire, had a profound effect on Syria and Palestine. In Transjordan, many temples were either destroyed or converted into churches, and, especially during the Late Byzantine Period, a number of new churches were built (Sauer 1980: 32). Further-

Fig. 6.2. Road map of Roman Palestine (after Avi-Yonah 1950)



more, "as protectors of the new religion Constantine and his successors evinced a special interest in Palestine, the land of its origins" (Parr 1975: 951). As Avi-Yonah has shown, this resulted in an influx of capital into Palestine which

revolutionized its position completely; from an obscure province it became the Holy Land, pampered by emperors whatever their treasurers might say. The stream of capital which then began to flow explains better than any other factor the astonishing prosperity of Palestine in the Byzantine Period; its cessation must be accounted among the main causes of its collapse (Avi-Yonah 1958: 41).

By the end of the 3rd century the Arab urban establishment in the Fertile Crescent had been almost completely replaced by a Romanized one; a situation which likely led to a diminished role for transhumants in the control of local affairs. Shahid (1984a: 137) has pointed out that this situation may have caused "a certain degree of nomadization" within the countries of the Fertile Crescent. Furthermore, this alienation of the indigenous population by the Romans no doubt goes a long way toward explaining the explosive conquests of Arabs under the banner of Islam three centuries later. Indeed, by their determination to rely on major sheikhs in the region for assistance in pacifying their fellow tribesmen, the Byzantine government may well have encouraged what had been disparate groups of tribes to join together into the larger social and administrative units which had come into existence by the time of the Arab conquest (Bowersock personal communication).

A new element in the social fabric of Palestine during the Byzantine Period was the monastic movement which no doubt played an important role in the Christianization of the Transjordan. Monasteries not only provided a refuge for persons seeking spiritual nourishment for their souls, they also provided places to stay for pilgrims. The agricultural sector of the economy was enlarged as well as a consequence of monks extending the cultivated areas into inaccessible regions (Avi-Yonah 1958: 48). Of the many monasteries in Jordan, the one at Mt. Nebo is perhaps the best known (Saller and Bagatti 1949). Its famous mosaics with depictions of orchards, game animals, and daily life support the impression that the Byzantine centuries in Palestine were indeed prosperous ones (Parr 1975: 951).

#### *Increased Long-Distance Trade*

Over the centuries between the conquests of Alexander and the conversion of Constantine I, long-distance trade in the ancient world was extended to where all four of Eurasia's major civilizations—China, India, the Near East, and Greece-Rome—were tied together by a network of interconnected sea and overland trade routes. During this period the famous caravan route known as the *Silk Road* came into existence and, as a result, greatly increased the movement of goods between China and the Middle East. Furthermore, sea routes were discovered which made mercantile shipping between the Mediterranean ports, Arabia, India, Malaysia, and China a matter of routine (McNeill 1963: 295-298).

As already noted, Transjordan and the Nabataeans played an important role in the development of long-distance trade during this period. To begin with they were among the chief suppliers of Arabian products such as incense, which was transported via the Arabian *incense route* through Petra, to Rome (Thorley 1969: 211). They also held a tight grip on the trade between the Mediterranean lands and the Far East. For example, they maintained a monopoly on the *timber route* whereby ebony and other woods, such as teak, blackwood, and sandalwood, were transported from India and other distant lands to the furniture manufacturers of the Eastern Mediterranean (Thorley 1969: 218). Petra was also one of principal distribution centers for silk imported overland from China (Thorley 1969: 217). Other products from India and the Far East which very likely passed through Nabataean hands included cinnamon, cassia, spikenard, costus, cardamum, betel, pepper, pearls, ivory, precious stones, parrots, animal skins, rice, cotton, and even tigers and snakes (Thorley 1969: 219-223; see also Raschke 1976).

In addition to such long-distance trade there was also extensive trade between the countries of the Mediterranean. For example, Sperber (1976) has shown that between the 1st and 5th centuries A.D. there was extensive commercial contact between Palestine and Egypt. While imports from Egypt consisted of beer, wheat, fish, linen, wine, natron, materia medica, baskets, and rope, exports from Palestine to Egypt included linen, tar, bitumen, hides, gum, wine, oil, and balsam (Sperber 1976: 147). The most active century in terms of this

commercial contact was the third. This century was for Palestine a time of rapid expansion in the wine industry (Sperber 1976: 113, 141).

#### *Varied Impact of Influences*

In concluding this overview of the wider sociopolitical context it is necessary to again reiterate what was briefly cautioned against at the outset, that the five transforming forces discussed above were not sharply segregated and equal in their influence. Not only did they represent merging and overlapping developments, the extent of their impact varied considerably. For example, as Bowersock (personal communication) has pointed out, the Roman presence in the East generally took a Hellenized form. Thus Romanization was effected in the Greek language and through the use of Hellenic institutions (*polis* organization, *agora*, etc.). Latin was scarcely used in the administration of the region. As for Christianization, while it represented a confrontation with Hellenized institutions insofar as it promoted a diversion of capital into ecclesiastical coffers for the construction of churches and monasteries, it cannot be regarded as being on parallel footing with either Romanization or Hellenization in terms of its overall impact on the way of life of the indigenous population.

#### *The Local Sociopolitical Context*

Throughout the first half of the Greco-Roman millennium, the Hesban region was as unstable politically as it had been during the previous Iron Age millennium. To fully appreciate how unstable and fragmented the situation in this region really was, it is instructive to scrutinize its changing boundaries as shown on political maps such as those prepared by Abel (1933), Amiran (1970), and Parr (1975). Summarized below (cf. fig. 6.1), is the changing political landscape within the 10-km radius Hesban project area as represented in the historical atlas prepared by Amiran 1970.

#### *500-333 B.C. (Persian Period)*

Except for the area to the north and west along the perimeter of the project area, which apparently was in the hands of the Tobiads during the Persian Period, the political situation which prevailed in the rest of the project area is uncertain (cf. Mazar 1957; Tcherikover 1972a, 1972b; Elazary and

Porten 1971). Only the town of Madaba is shown on the map from this period.

#### *333-198 B.C. (Early Hellenistic Period)*

Throughout the Early Hellenistic Period the project area remained divided between four different political entities. The northern hills region belonged to the hinterlands of the autonomous Decapolis city of Philadelphia. The eastern perimeter bordered on the lands of the Nabataean Arabs. The central and southern portions belonged to the Ptolemaic eparchy of Idumea and the western perimeter bordered on the hyparchy of the Tobiads, a predominantly Jewish settlement within the eparchy of Samaria. The map shows Madaba as a town and Esbus (Hesban) as a village during this period. However, no archaeological evidence exists for a village at Tell Hesban until the end of the 2nd century B.C.

#### *198-63 B.C. (Late Hellenistic Period)*

After the breakup of the Seleucid Empire which followed in the wake of the Hasmonean revolt, most of the project area was annexed by the Nabataean Kingdom. It remained thus until the conquests of John I Hyrcanus (Feliks 1971), leader of the new and rapidly expanding Hasmonean Kingdom of Judea between 135 and 104 B.C., brought most of the project area under Jewish rule. The northeastern portion, which belonged to the independent city of Philadelphia, was not conquered, however. During this period both Hesban and Madaba are represented as towns on the map, and Samage is shown as a village.

#### *63-40 B.C. (Early Roman Period)*

The breakout of civil war within the Hasmonean Kingdom and the simultaneous arrival of the Roman legions in Palestine resulted in the Hasmonean Kingdom being greatly reduced. Thus the towns of Esbus and Madaba along with most of the rest of the project area was handed over to the Nabataeans. Only the northeastern portion continued to be ruled as before, namely as part of the territory of the independent city of Philadelphia.

#### *40-4 B.C. (Early Roman Period Continued)*

In 40 B.C. the Hasmonean Kingdom became a client state under Rome when Herod, son of Antipater the Idumaeans, was proclaimed king of Judea. Under Herod's rule the boundaries of Judea again

expanded. To protect the eastern frontier of Herod's kingdom, Esbus and vicinity were turned into a military colony. Parker (personal communication) has suggested that the population which occupied Esbus during this period very likely were Hellenistic mercenaries of mixed origin. Madaba, however, remained in Nabataean hands and the northeastern portion continued as before under the rule of the independent city of Philadelphia.

#### 4 B.C.-A.D. 106 (*Early Roman Period Continued*)

After Herod's death in 4 B.C. Esbus and vicinity were again incorporated under Nabataean rule. The status of Madaba remained unchanged, continuing under Nabataean rule. The northeastern portion of the project area remained unchanged as well, continuing under the control of the independent city of Philadelphia. During this period of relative tranquility in Transjordan, however, Judea and Samaria underwent severe political upheavals, including the first of two Jewish revolts against Roman rule. That the peace may also have been disturbed at Hesban in A.D. 66 is suggested by the fact that the Jews apparently sacked Hesban and its region in that year (Josephus BJ 2.18.1, 458).

#### A.D. 106-365 (*Late Roman Period*)

In A.D. 106 Trajan annexed the Nabataean Kingdom and installed the Roman Province of Arabia in its place. Along with the cities of Philadelphia, Gerasa, and Bostra, the towns of Esbus and Madaba and their hinterlands were organized under one provincial government. Thus began the period of the *Pax Romana* in Transjordan.

#### A.D. 365-661 (*Byzantine Period*)

Throughout the three centuries of the Byzantine Period Palestine was divided among four provinces. One of these was again called Province of Arabia and to it belonged the towns of Madaba and Esbus (Hesban) along with the cities of Philadelphia and Gerasa. Each of these settlements represented a *polis* with its own local government and dependent agricultural population, as explained earlier.

#### Changes in Environmental Conditions

No major changes in the macroclimate appear to have taken place during the Greco-Roman millennium which would have significantly altered the

natural environment, making it, for example, more or less desert-like. This is evidenced, for instance, by the fact that species of wildlife such as the dorcas gazelle, fallow deer, wild boar, chukar partridge, houbara bustard, and other forms of indigenous wildlife continue to exist in the finds from this millennium (Boessneck and von den Driesch 1978a; von den Driesch and Boessneck forthcoming). This is not to say, however, that no changes occurred at all in the natural resource during this period. In fact, a number of cataclysmic events as well as long-term destructive processes did indeed occur which had great consequences for the human population in this region.

Mention must be made, for example, of a series of earthquakes which rocked the lands along the earthquake-prone Jordan rift valley during this period. Based on his examination of references to earthquakes and their consequences in various ancient sources, Amiran has put together an *Earthquake Catalogue of Palestine* (1950; Amiran et al. 1952; cf. Russell 1985) which gives the year and location of 27 earthquakes occurring at various locations throughout Palestine between 64 B.C. and A.D. 632. Earthquakes which apparently affected Palestine as a whole include those which occurred in A.D. 48, 130, 344, 362, 365, 394, 396, 419, 447, 551, 554, 580, 583, 631, and 632. Of these, the one in A.D. 130 is believed to have been responsible for the destruction of Early Roman Stratum 14 at Tell Hesban (Mitchel 1980: 96; cf. Sauer 1978a, 1978b); the one in 365 is blamed for the massive damages observed in Late Roman Stratum 11 (Mitchel 1980: 193); and one occurring "around the end of the first quarter of the 6th century" A.D. is mentioned by Storfjell (1983: 113; cf. Russell 1985: 37; Parker 1986) as a possible cause of the destruction evidenced in Byzantine Stratum 9.

Even though no major alterations in the macroclimate of Palestine appear to have taken place during the Greco-Roman centuries, as mentioned above, climatic ups and downs appear nevertheless to have been sufficient to cause a growing concern among the Jews of Palestine beginning in the 2nd century A.D. and especially during the 3rd. This is the impression which Sperber (1974) has communicated following his examination of references in the rabbinic literature from these centuries to communal concern about insufficient rainfall and drought. Apparently irregularities "of seasons and successive droughts, followed by famine and pesti-

lence, took their toll of both population and the land" (Sperber 1974). The partial retreat from the land by cultivators which occurred in the vicinity of Hesban during the Late Roman Period may be partially attributable to conditions such as these, as will be discussed below.

To these evidences of cataclysmic and extreme events must be added the cumulative damage to natural resources which resulted from the gradual, but constant destruction of trees and forests which took place also during the Greco-Roman millennium. This deforestation was attributable to a number of factors: First, to the plains and valleys already opened for cultivation during previous millennia, uplands and slopes were added as well, judging from the intensification of settlements in these subregions during the Roman Period. As will be discussed in greater detail below, in the vicinity of Hesban, formerly uncultivated uplands, slopes and ridges, especially in the western descent, were cleared and terraced for cultivation of tree and vegetable crops. Second, this expansion of cultivation reduced further the available pasturage, increasing the problem of overgrazing in the pastures still remaining. Third, as if the damage thus sustained were not enough, trees were also cut in great quantities for military purposes (Sperber 1972: 239).

The cumulative effect of this denudation, especially of the forests in hilly regions, was that more and more soil was washed away by the heavy seasonal rains. As a result, what had been perennial streams watering the lower areas became occasional torrents washing stones and boulders down into the plains and valleys below and generally worsening the situation for the farmer. This situation very likely contributed as much as did irregularities in rainfall to the drought, famine, and pestilence with which the local farmers had to contend during the latter half of the Greco-Roman millennium in Palestine.

#### Changes in Settlement and Landuse Conditions

##### Hellenistic Period (ca. 333-63 B.C.)

Pottery dating to the Hellenistic Period was found at 17 of the 148 sites visited by the Hesban Survey (fig. 6.3). In contrast to the quantities of pottery representing other periods, the number of Hellenistic sherds found at these sites was few. At

Umm es Sarab (Site 54), for example, Hellenistic pottery turned up in only one of the six pails of pottery from that site (Ibach 1987: 148). At other sites only two or three sherds were attested from this period.

Of the 17 Hellenistic sites, 15 were located on sites which had been settled during earlier periods. Possibly settled for the first time during Hellenistic times were Sites 130 and 142, both located in the northern hills region of the project area. Altogether 7 Hellenistic sites were located in this region, compared with 4 along the plateau ridge, 4 in the western descent, and 2 in the eastern plain. As would be expected, the majority of these sites are located in close proximity to either springs or cisterns. Caves and tombs are other features common to many of them. The modest level of settlement in the region surrounding Tell Hesban is reflected in the occupation of the site itself (Stratum 15). Judging from the pottery found, resettlement of the site began in the Late Hellenistic Period or between ca. 198-63 B.C.

Perhaps the most impressive evidence from this period, unearthed in Areas A and D, is "a massive 1.80-meter-thick stone wall that apparently completely surrounded the summit of the tell" (Mitchel 1980: 29). The discovery of this massive perimeter wall, along with the high proportion of artifacts from this period of a military nature, such as armor scales, slingstones, maceheads and arrowheads, has led the excavators to the conclusion that Hellenistic Hesban (Esbu) "began its life as a type of border fort" (Mitchel 1980: 67).

Inferences about landuse during the Hellenistic Period can be made on the basis of our knowledge of the local sociopolitical context, the location and density of settlements, and the plant and animal remains from the period. These lines of evidence point to a low-to-medium intensity configuration involving the production of field crops on the eastern plain and in the fertile valleys in the northern hills and western descent regions and the raising of sheep, goats, cattle, and camels on pastures and stubble fields throughout the entire project area.

To begin with, this inference makes sense in light of the local sociopolitical context which, as noted earlier, was very unstable during the Hellenistic Period. Esbu itself changed hands four times between 300 and 63 B.C. (Mitchel 1980: 21), and the project area as a whole was divided and redivided several times between the armies of the

Fig. 6.3. Hellenistic Period sites

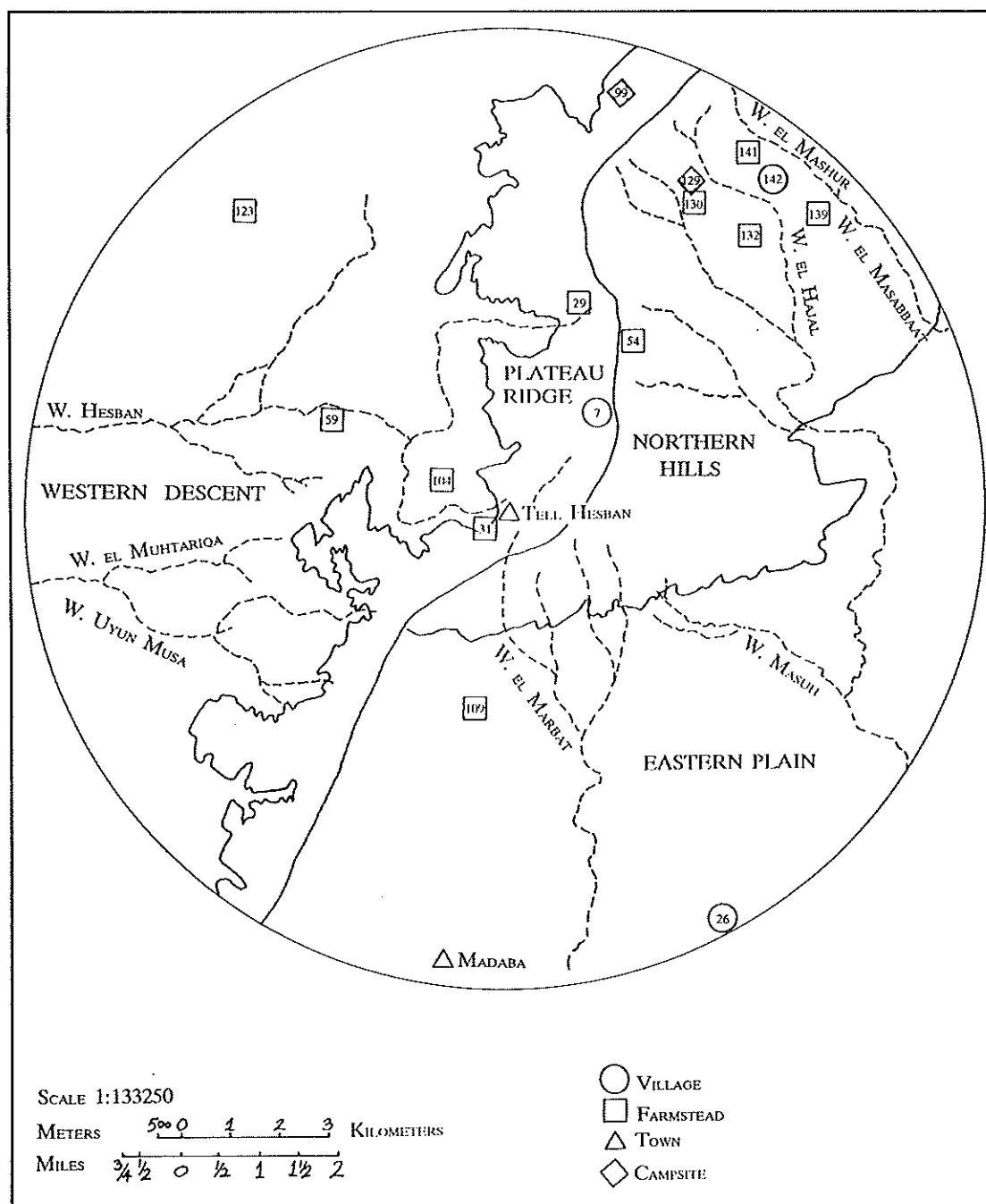




Table 6.1 Number of identified specimens of principal domestic animals from Greco-Roman strata

Strata	Period	Cattle		Sheep/Goat		Sheep		Goat		Pig		Camel		Equids		Horse		Donkey		Total		Accumulation Rates
		#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	
1	Modern	60	5.7	908	86.0	36	3.4	52	4.9	25	2.4	9	0.9	54	5.1	5	0.5	19	1.8	1,056	5.7	9.96
2-3	Mamluk	1,117	13.3	6,901	81.9	353	4.2	402	4.8	139	1.6	215	2.6	57	0.7	6	0.1	14	0.2	8,429	45.3	43.00
4	Ayyubid	9	10.7	71	84.5	4	4.8	6	7.1	--	--	2	2.4	2	2.4	--	--	--	--	84	0.5	1.40
5	Abbasid	8	3.9	188	91.7	14	6.8	11	5.4	2	1.0	5	2.4	2	1.0	--	--	--	--	205	1.1	0.73
6	Umayyad	68	10.4	494	75.3	47	7.2	33	5.0	80	12.2	8	1.2	6	0.9	--	--	3	0.4	656	6.5	7.80
7-10	Byzantine	162	12.5	932	71.6	58	4.5	48	3.7	130	10.0	14	1.1	63	4.8	5	0.4	10	0.8	1,301	7.0	4.39
11-13	Late Roman	286	11.7	1,892	77.6	140	5.7	115	4.7	183	7.5	17	0.7	58	2.4	2	0.1	6	0.2	2,436	13.1	10.36
14	Early Roman	131	15.0	682	78.1	67	7.7	36	4.1	43	4.9	7	0.8	10	1.1	--	--	3	0.3	873	4.7	4.12
15	Late Hellenistic	136	12.0	977	85.9	135	11.9	75	6.6	6	0.5	15	1.3	4	0.4	--	--	1	0.1	1,138	6.1	2.60
16-18	Iron 2	256	14.3	1,406	78.5	137	7.7	83	4.6	94	5.3	5	0.3	29	1.6	--	--	9	0.5	1,790	9.6	3.58
19	Iron 1	145	22.2	460	70.6	38	5.8	29	4.4	31	4.8	3	0.5	13	2.0	--	--	6	0.9	652	3.5	3.26
Sum	All	2,378	12.8	14,911	80.1	1,029	5.5	890	4.8	733	3.9	300	1.6	298	1.6	18	0.1	71	0.4	18,620	100	5.81

Table 6.2 Number of identified specimens of carbonized seeds from Greco-Roman strata

Strata	Period	Oats		Barley		Wheat		Lentil		Pea		Bitter Vetch		Broad Bean		Olive		Grape		Garden Heliotrope		Total	
		#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
1-6	Modern-Arabic	--	--	29	15.3	91	48.1	15	7.9	--	--	36	19.0	7	3.7	6	3.2	5	2.6	--	--	189	28.5
7-10	Byzantine	--	--	4	7.5	9	17.0	3	5.7	--	--	8	15.1	--	--	14	26.4	15	28.3	--	--	53	8.0
11-14	Roman	1	0.9	62	58.5	5	4.7	1	0.9	--	--	2	1.9	--	--	--	--	35	33.0	--	--	106	16.0
15	Late Hellenistic	2	1.0	12	5.9	43	21.3	8	4.0	1	0.5	126	62.4	2	1.0	6	3.0	2	1.0	--	--	202	30.4
16-19	Iron	5	4.4	6	5.3	14	12.3	2	1.8	--	--	--	--	--	--	82	72.0	3	2.6	2	1.8	114	17.2
Sum	All	8	1.2	113	17.0	162	24.3	29	4.4	1	0.2	172	25.9	9	1.4	108	16.3	60	9.0	2	0.3	664	100

Ptolemies, Seleucids, Nabataeans, Hasmoneans, Romans, and the independent city of Philadelphia. Under such unstable conditions landuse strategies permitting quick return on investments, as do field crops and pasture animals, would have represented the least risk to the producers.

Second, the low density of population, judging from the small quantity of settled sites, and the fact that most sites were located in the northern hilly region adds further weight to this impression. The location of the majority of the sites on natural hills and ridges enhanced possibilities for self-defense and permitted, at the same time, easy access to the fertile wadi bottoms for purposes of cultivation. Furthermore, most of the sites thus occupied already had cisterns to collect water in place, caves for use as temporary shelters for people and animals, and building stones for the construction of more permanent homes and facilities.

Third, both the substantial quantity of cattle (table 6.1) from this period and the range of plants (table 6.2) utilized by the inhabitants of Late

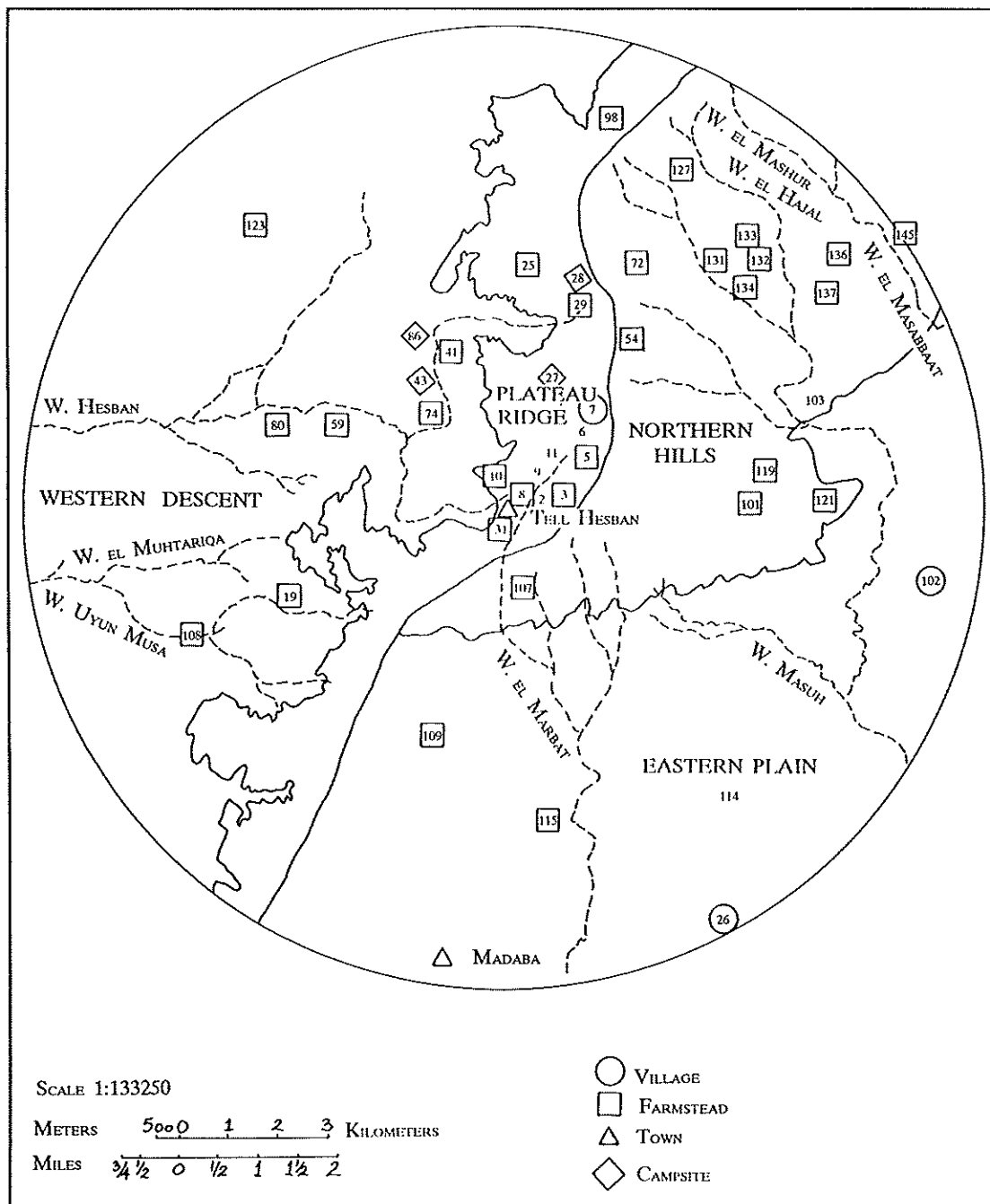
Hellenistic Tell Hesban (Esbus) are indicative of a people well acquainted with sedentary life. Indeed, the inhabitants of this site may well have been local leaders, along with the populations of Philadelphia and Madaba, in the drive to sedentarize and Hellenize the transhumant pastoralists and semisedentary mixed-farmers who no doubt made up the majority of the population in this region during these turbulent centuries.

#### Early Roman Period (ca. 63 B.C.-A.D. 130)

Pottery dating to the Roman Period was found at 118 of the 148 sites surveyed by the Hesban Survey (fig. 6.4). Of these 44 contained sherds datable to the Early Roman Period and 36 contained sherds from the Late Roman Period.

A total of 38 sites either could not be subperiodized into early or late or belonged to the Roman road which was dated to both periods. That an increase in sedentary activity took place during the Early Roman Period is evident from the significant

Fig. 6.4 Early Roman Period sites



rise in the number of sites with Late Roman Period sherds (44 sites) over sites with Hellenistic Period sherds (17 sites). While this intensification of settlement occurred throughout the whole project area, it is most marked along the plateau ridge, where there was an increase from 4 to 16 sites during this period. Increases in the number of sites in the other subregions went from 2 to 5 sites in the eastern plain, from 7 to 15 sites in the northern hills, and from 4 to 10 sites in the western descent. It is significant to note that all sites yielding Early Roman pottery also evidenced pottery from earlier periods. Thus, as was the case during previous centuries, reuse of old sites was the rule rather than the exception during this period as well. As during the earlier Hellenistic Period, a large proportion of the sites tended to be located on natural hills (22 sites) or plateau ridges (5 sites).

Also frequently encountered at these sites are cisterns (20 sites), tombs (17 sites), and caves (14 sites). The discovery of 10 sites containing remains of agricultural towers, especially along the plateau ridge and in the northern hills subregions, no doubt indicates the growing importance of permanent farmstead operations during the Early Roman Period. Farmstead sites are discussed below.

When attention is turned to the pattern of occupation at Tell Hesban itself during the Early Roman Period (Stratum 14), a situation reflecting that of the wider region and reminiscent of the earlier Hellenistic Period is clearly in evidence. On the one hand, the massive perimeter wall continues in use, suggesting the presence of a fort of some kind at the site also during the Early Roman Period (Mitchel 1980: 76). On the other hand, a prominent feature of the occupation pattern on the tell is that caves were extensively used as dwellings (Mitchel 1980: 71). One of these caves, as will be discussed further below, was entered via rock-cut steps (Mitchel 1980: 86). Other remains of sedentary life on the tell during this period included several cobblestone and soil surfaces, a few unconnected wall fragments, storage silos, a *tabun*, and a fire pit (Mitchel 1980).

The landuse pattern which characterized the Early Roman Period was much like that of the earlier Hellenistic Period, except that greater strides were made in the direction of increased production of field crops and, to a limited degree, tree crops. On the one hand, that landuse intensified somewhat is suggested, for example, by the discovery of

17 farmsteads from this period, compared with only 4 from Hellenistic times. Furthermore, the significantly higher number of settlements along the plateau ridge and in the western descent—in areas ideal for tree fruit production, but not for field crops—lends further support to this inference.

On the other hand, there is also evidence that transhumant pastoralists continued to live side by side with the more permanently settled population. This is suggested by the continued popularity of caves—relied upon for shelter in the winter months by transhumants—throughout the region. The presence of several possibly transhumant campsites containing only sherd scatters, two in the western descent region (Sites 43 and 86) and three along the plateau ridge (Sites 6, 27, and 28), adds further to this impression.

This side-by-side existence of transhumant pastoralists and settled farmers appears to have been the case at Esbus as well. On the one hand there were the occupants of the fort who, according to Josephus (cited in Mitchel 1980: 106), during Herod's reign may have been military veterans eager to take possession of their own plots of land. On the other hand, there were the inhabitants of the caves surrounding the fortress, and apparently also within it (whether contemporaneously with the veteran colony or before and after is not possible to say) whose livelihoods were less influenced by the ruling elite, dependent no doubt on more traditional enterprises for their survival.

Compared with the earlier Late Hellenistic Period, there is a drop-off of about 8% in the relative abundance rates for sheep and goats and slight increases in these rates for cattle and donkeys. This is suggestive of a general trend toward sedentarization in that reliance on flocks of sheep and goats now began to give way to greater reliance on oxen for plowing and donkeys for local travel. Furthermore, raising pigs became increasingly important because they would survive on the wastes and offal which are left over after the harvest of plants and animals and the preparation and eating of meals.

The pattern of side-by-side transhumance and village farming which appears to have persisted throughout the Early Roman Period, despite the steady advance of sedentarizing forces, is understandable in light of the continuing unrest which prevailed until the region was annexed by Rome. Not only did the fort at Esbus change hands several times again during this period; much of the

project area was alternately controlled by the Nabataeans and Herodian Judea.

Furthermore, the late-1st-century A.D. Jewish revolt against Rome very likely had repercussions which contributed to the uncertain political climate of the Hesban region as well. Under such unstable conditions, extensive investments in vineyards and orchards would simply not be worth the risk. Thus, there was a predominance of a medium-intensity food system based on field crops and pasture animals with at best limited orchard production during this period.

#### Late Roman Period (ca. A.D. 130-365)

Pottery dating to the Late Roman Period was encountered at 36 of the 148 sites surveyed by the Hesban Survey, not counting Roman road sites (fig. 6.5). This represents a reduction in settlements from the Early Roman Period in the eastern plain (from 5 to 3 sites), western descent (from 10 to 7 sites), and northern hills (from 15 to 8 sites), but an increase along the plateau ridge from 16 to 18 sites. As was the case in the previous period as well, every one of the Late Roman sites had been occupied in former times.

The most commonly encountered ruins at Late Roman sites were tombs and cemeteries found at 14 of the 36 sites (pls. 6.1, 6.2). Caves were relatively less common, for they were noted at only 7 sites. Farmstead sites appear also to have been reduced somewhat in number, from 10 to 8. But the most striking feature of the Late Roman settlement pattern is the intensification of sites along the plateau ridge. If we assume that the 21 sites which could not be distinguished as early or late all were occupied during Late Roman times, this pattern is even more apparent.

One factor which very likely contributed to the concentration of sites along the plateau ridge was the new Roman road which appears to have been built at the beginning of the 2nd century A.D. This road, which may have been a segment of the famous *via nova Traiana*, ran from Philadelphia (modern Amman) via El 'Al to Esbus and on to Madaba (Thomsen 1917: 34-57; Avi-Yonah 1977; Ibach 1987). Its passage along the plateau ridge of the project area no doubt accounts for the concentration of tomb and cemetery sites in this region, for it was a common Roman practice to locate such sites "alongside of, or at least in association

with, the roads that led from the gates into the open country" (Toynbee 1971: 73). Not surprisingly, therefore, 10 of the 14 tomb and cemetery sites were found along the route of this road between Esbus and present-day Naur.

In addition to cemeteries and tombs, this new road also appears to have accelerated urbanization in the project area. This is evident at Esbus itself, as has been shown by Mitchel (1980). For example, Late Roman Stratum 13 (ca. A.D. 130-193) reflects a "complete change in living patterns" (Mitchel 1980: 121). Filled in and/or sealed over were the caves which had been so prominent during Early Roman times. Nor did the fort continue to be used. Instead, walls outlining rooms are seen all over, and in Areas B and D were found a series of rooms surrounding a central plaza. After ruling out a number of possible alternative interpretations of these remains, Mitchel comes down in favor of viewing them as being the remains of an inn. As such it "would have provided housing and food—perhaps even some entertainment—for travelers and caravaners" (Mitchel 1980: 142) using the Philadelphia-Madaba road and the Esbus-Jericho road which branched off from it at Esbus.

Late Roman Stratum 12 (ca. A.D. 193-284) provides evidence of continuing build-up of the town of Esbus. The remains from this stratum attest "without much doubt the most extensive settlement of the site up to this time" (Mitchel 1980: 155). Indeed, according to Tristram (1865: 540) who visited the site before it was settled, "the whole city must have had the circuit of about a mile." Not only did the inn continue in use, a Roman temple (pl. 6.3) and very likely other public buildings as well were added in the acropolis area of the tell during this period. Furthermore, Esbus was granted the right to mint its own coins, several of which were found at the site (pl. 6.4). Thus it became a poor cousin, at least, of such famous Roman cities as Philadelphia and Gerasa.

The momentum which was built up during these earlier two Late Roman strata maintained itself to the end of the period, judging from the remains of Stratum 11 (ca. A.D. 284-365). For example, additions were made to the Roman temple and a monumental stairway was constructed leading up to the top of the acropolis area (see pl. 6.5), at the foot of which was laid down an "extensive plaza." Thus, in addition to the fact that earlier buildings and walls continued to be used, there are signs all over

Fig. 6.5 Late Roman Period sites

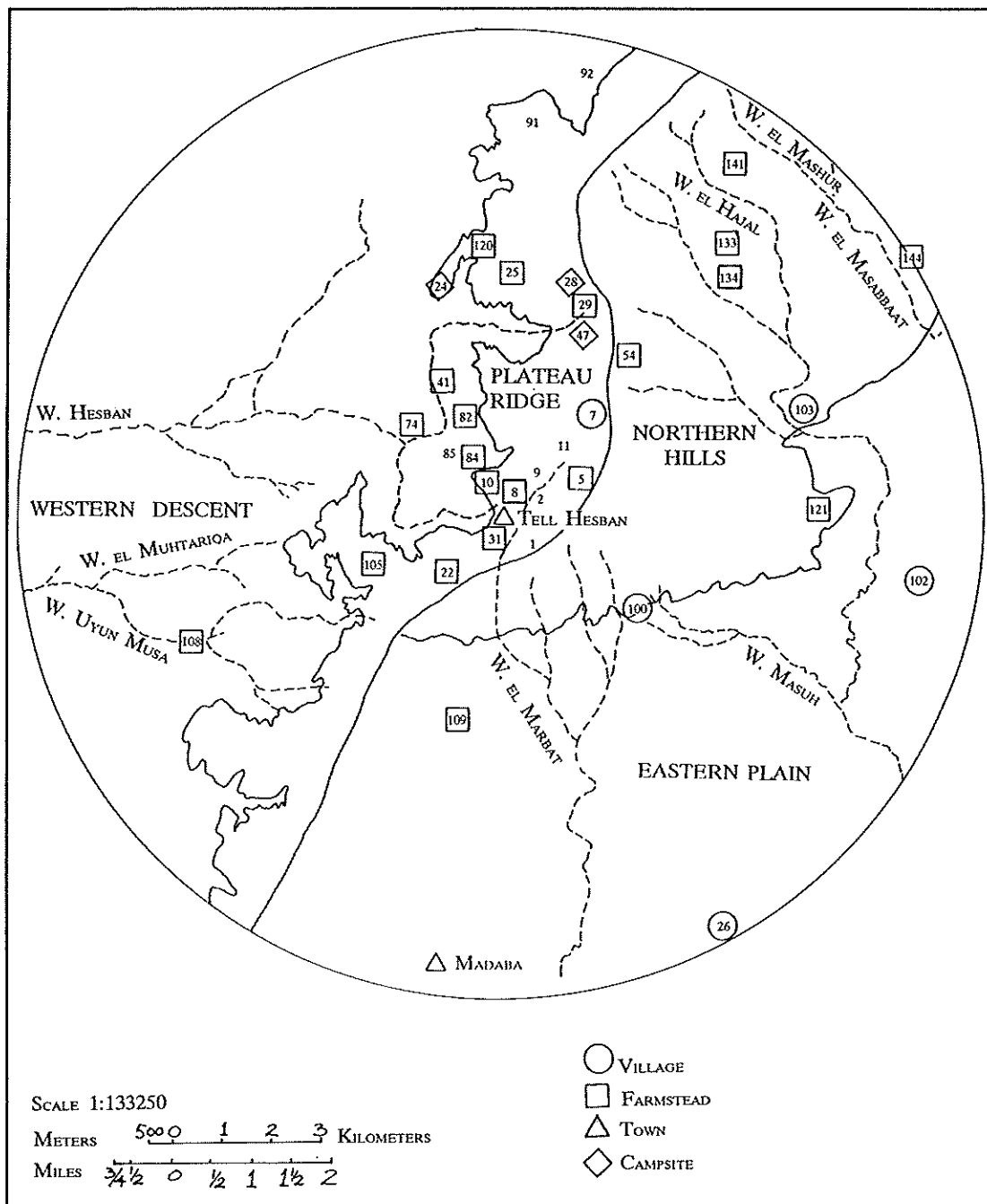


Plate 6.1 Entrance and forecourt of Early Roman chamber tomb with radiating loculi (Tomb F.1)

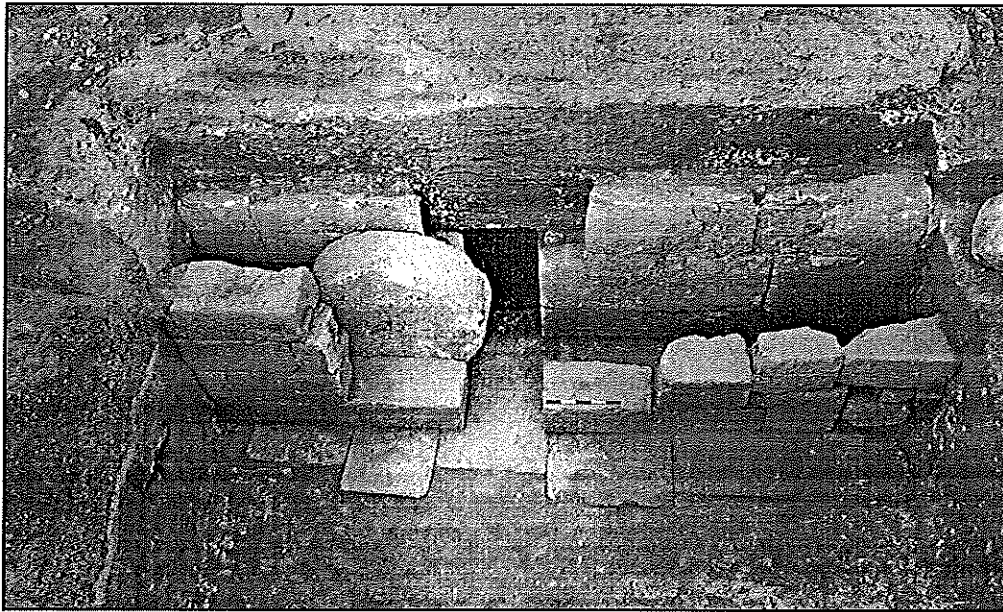


Plate 6.2 Interior doorway of Late Roman-Early Byzantine arcosolium Tomb F.5



Plate 6.3 Front foundation wall (A.6:65) of Roman temple portico; view south

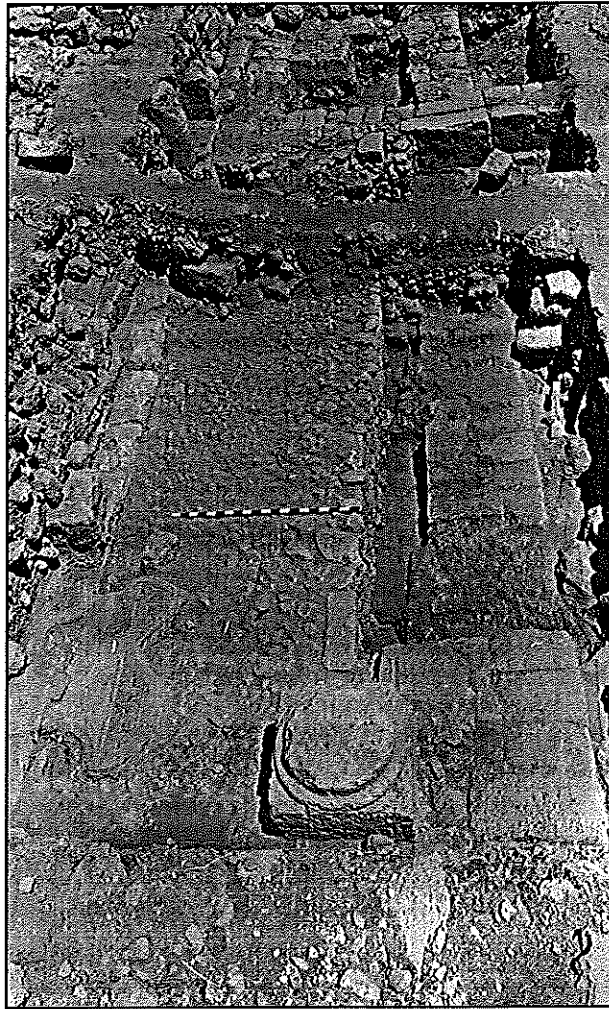


Plate 6.4 Reverse of Ebus coin (Object #1522) minted during the reign of Elagabalus (A.D. 218-222)

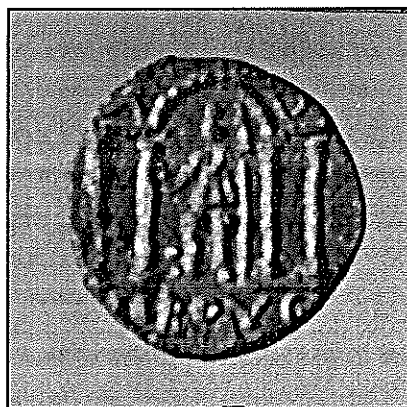




Plate 6.5 Part of Late Roman stairway (B.7:20) which led to temple precinct on the acropolis; view north

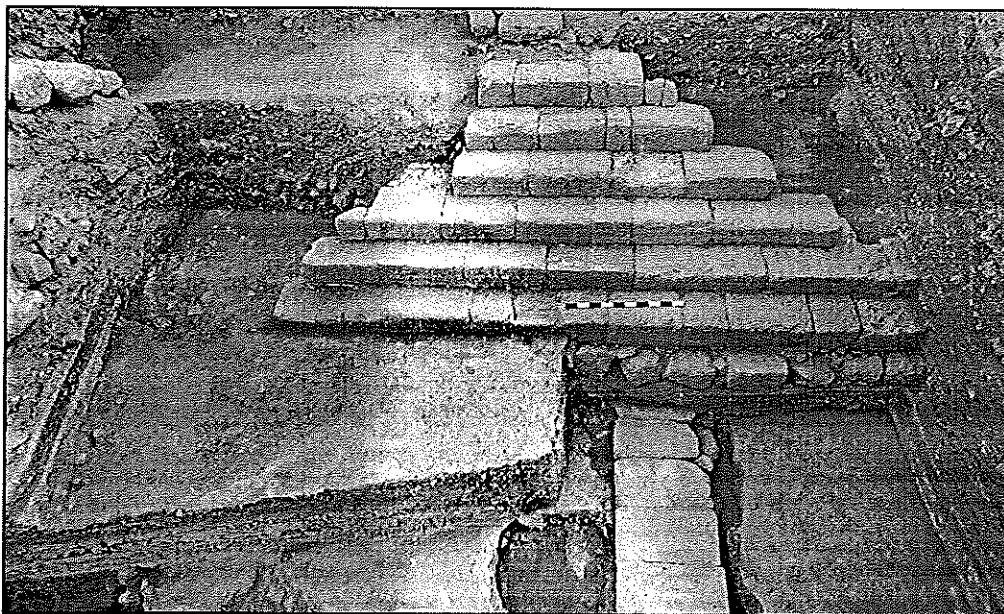


Plate 6.6 Interior doorway of Late Roman Cave A.1:44, part of a two-cave complex; view west



the tell that Stratum 11 was as active as any of the earlier ones in terms of construction and rebuilding (Mitchel 1980: 180-196).

Inferences about landuse throughout the Late Roman Period must be made with much caution. On the one hand, increase in settlements along the plateau ridge very likely reflects expansion in the orcharding sector of the local economy. On the other hand, reduction of settlements in the other subregions of the project area suggests that a certain amount of desertion might have occurred among the peasant cultivators in the more distant hinterlands of Esbus. Such desertions were indeed common in Palestine and Syria at the end of the Late Roman Period (Jones 1970; Sperber 1972; Mitchel 1980).

The most striking evidence for intensification of landuse in the direction of orcharding is the increased abundance of horses, mules, and donkeys for plowing on slopes and terraces: from 1.1% in the Early Roman Period to 2.4% in the Late Roman Period (table 6.1). These animals appear to have increased in abundance at the expense of the cattle, which declined in importance from 15% to 11.7% over the same period. Along with this increase in tree-crop production came increased reliance on pigs: from 4.9% during the Early Roman Period to 7.5% during the Late Roman Period.

#### Byzantine Period (ca. A.D. 365-661)

Pottery dating to the Byzantine Period was found at 107 of the 148 sites visited by the Hesban Survey (fig. 6.6). Minimally, this represents an increase of 50 sites over a maximum total of 57 Late Roman sites, assuming that the 21 Roman sites which could not be distinguished as to early or late were all Late Roman. This means that Byzantine pottery was present at 83% of all surveyed sites, not counting road sites. As in previous periods, the large majority of these sites had been settled in earlier times.

The most drastic changes occurred in the western descent region where the number of sites with Byzantine pottery increased fivefold: from 7 in Late Roman times to 35. A fourfold increase took place in the northern hills: from 8 to 31. Along the plateau ridge and in the eastern plain the increases were twofold: from 18 to 34 sites in the former case and from 3 to 7 sites in the latter case.

Since differentiation of the Byzantine sites into subperiods was not feasible, given the pottery readings on hand, not much can be said about how the regional settlement pattern of the Early Byzantine Period differed from that of the late on the basis of the survey data alone. Something about the temporal dimension can be learned, however, from the Byzantine strata at Tell Hesban. In this regard it will be recalled that the changes observed in the site survey data between the Early Roman and the Late Roman periods were generally reflected in stratigraphic evidence from the tell.

According to Storfjell (1983), whose dissertation covered the Byzantine strata at Tell Hesban, "there was no evidence of any clearly defined break between the Late Roman and the Early Byzantine periods." Stratum 10 (A.D. 365-408) represents, therefore, a continuation of the Late Roman culture encountered in the earlier Stratum 11.

Thus, the monumental stairway, the plaza below, and the Roman temple and colonnade all appear to have been in use during this stratum. Unlike the earlier stratum, however, there was no evidence of any new building activity at Esbus in Stratum 10, a situation which very likely reflects the hard times which seem to have come to Transjordan in the latter days of the Roman regime.

It was not until the 5th century A.D. that the effects of Constantine I's conversion became evident at Esbus. This is clearly seen in Stratum 9 (A.D. 408-551), which not only gives evidence of a build-up on the tell itself, as well as in its outlying areas, but also offers proof of the arrival of Christianity at Esbus. Erected on the acropolis, right on top of the Roman colonnade area and re-using much of the Roman masonry, was a Christian basilica with an inscribed apse and a mosaic floor (cf. pls. 6.7, 6.8). Although the precise date of its construction could not be ascertained, it is clear that it was built sometime during the period covered by Stratum 9.

Stratum 8 (A.D. 551-614) gives evidence of further expansion of Esbus onto surrounding slopes and hills. This growth in population was probably the reason for the construction of two additional Christian churches at Esbus during this period. Furthermore, the original basilica on top of the acropolis appears to have been rebuilt and possibly also enlarged. A peak of some sort appears to have been reached during the time of this stratum, however, for signs of neglect and retrenchment be-

Fig. 6.6 Byzantine Period sites

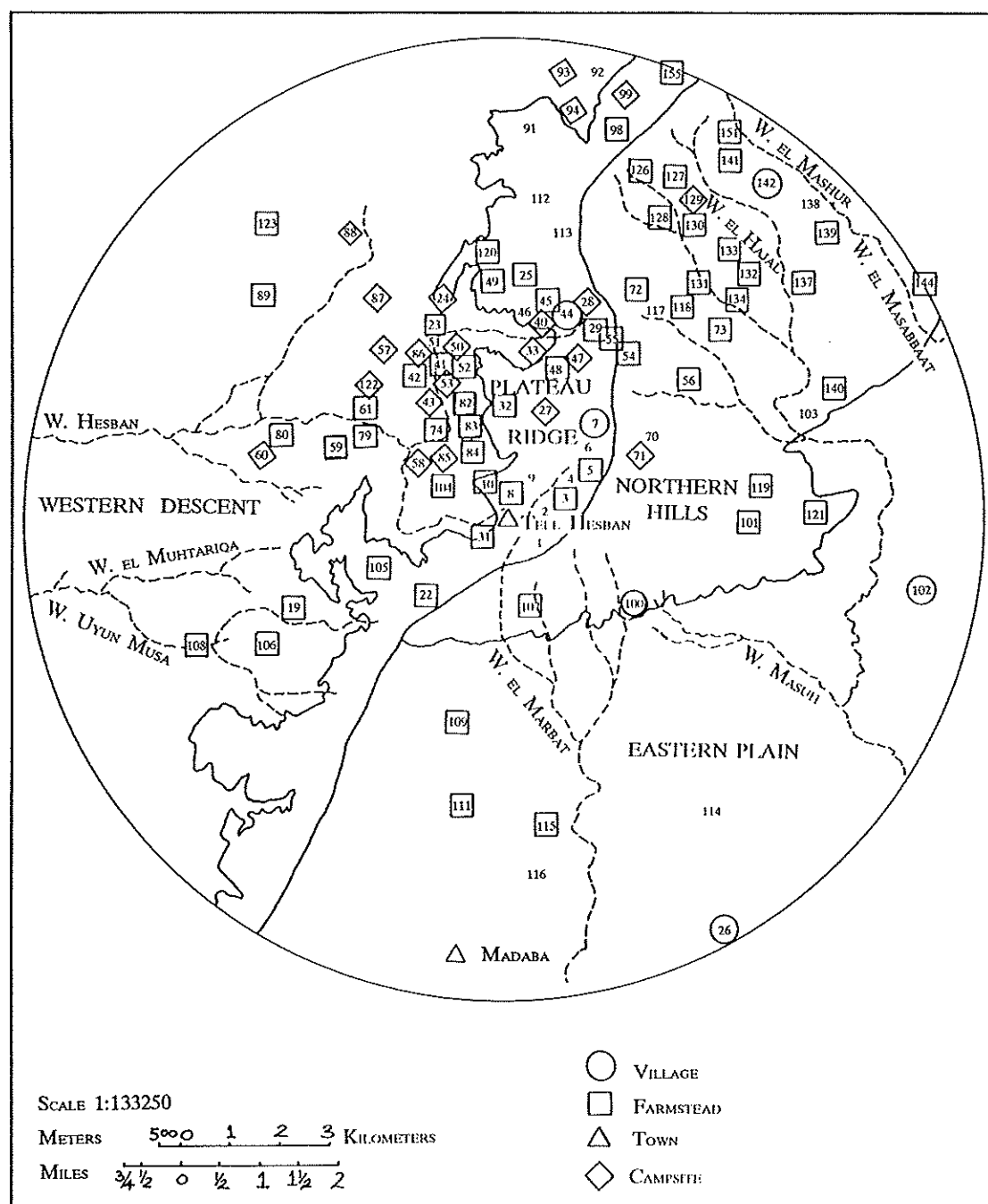


Plate 6.7 Architect's sketches of tentative reconstruction of Early Christian church at Heshbon (after Boraas and Horn 1969). Top: view southwest—entrance. Bottom: view northeast—apsidal end

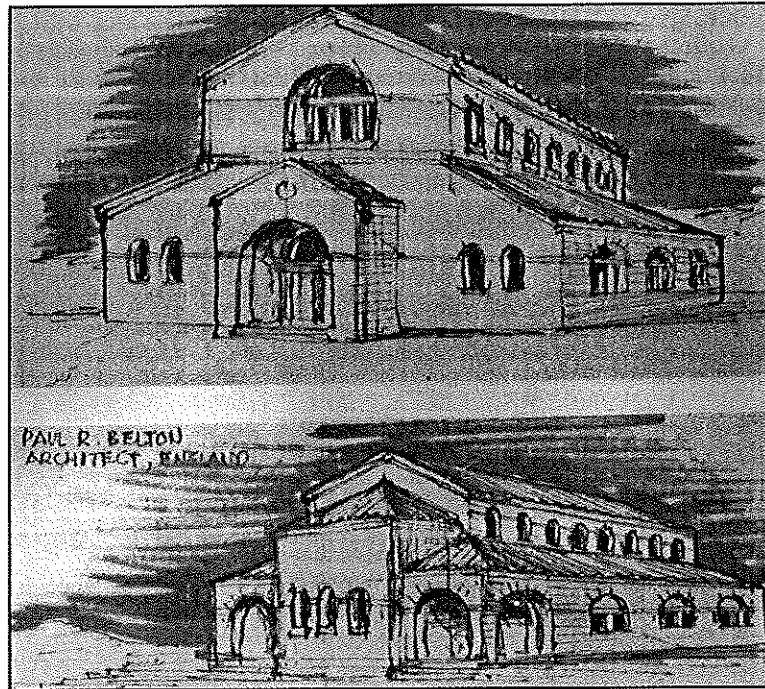
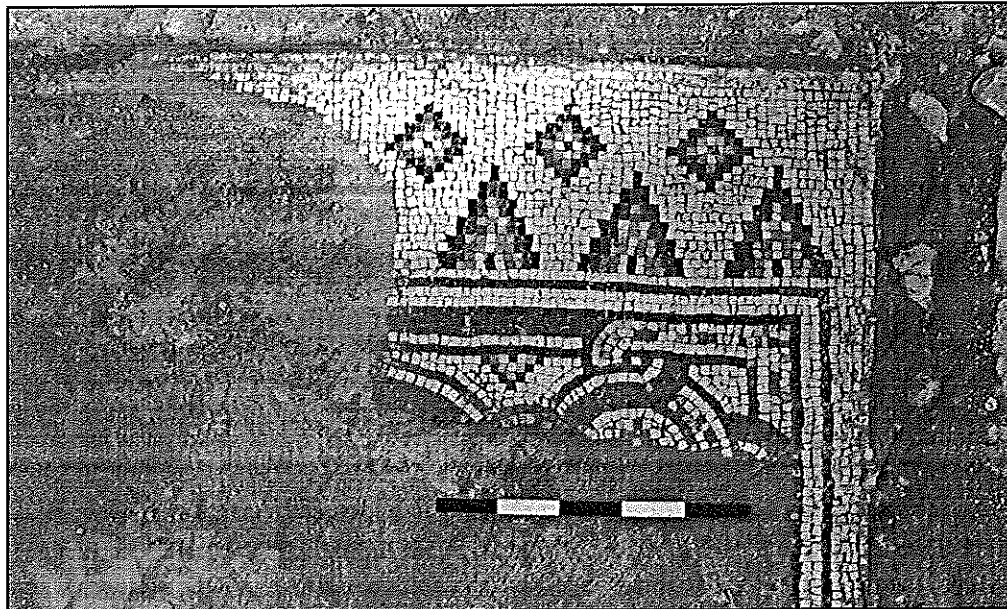


Plate 6.8 Byzantine mosaic Floor A.4:8 from Hesban



come noticeable in the upkeep of the church building itself and in the tapering off of activity in certain of the residential areas on and beyond the tell. Stratum 7 (A.D. 614-661) reinforces this impression. It covers three decades during which no new buildings were begun. People were living, it appears, in buildings constructed during earlier times, for only occupational debris was found.

At no other time in the history of the project area did land use intensify to the level it did during the Byzantine Period. To begin with, this is clearly evidenced in the quantity of farmsteads and villages which were occupied during this period. As already noted, there was a fivefold increase in the number of sites in the western descent region, the majority of which were farmsteads and villages, and a fourfold one along the plateau ridge. On the terraces and slopes above the springs and streams tree fruits were grown in larger quantities than ever before. Suggestive of the importance of tree fruits during this period are representations of scenes depicting orchards and harvesting of tree fruits which can be found in several mosaics discovered within the project area (cf. Saller and Bagatti 1949; van Elderen 1986; see also Piccirillo 1985). While grapes and olives were probably the most common, others, such as pomegranate, apricots, pears, and apples were also likely produced. Fruit tree production was also very likely important in the northern hills region, but there and in the eastern plain, staple crops like wheat and lentils probably continued to use up most of the land.

It is by no means a coincidence, then, that the quantity of donkeys, mules and horses reaches its highest peak (4.8%) during the Byzantine Period (table 6.1). These animals, as noted in earlier chapters, are much better suited than teams of oxen to plowing on steep and winding slopes. The continued high demand for pigs (10%) is also consistent with what we would expect, given the reduced availability of pastures.

### Changes in Operational Conditions

#### Caravan Routes and Roads

##### Caravan Routes

That a caravan route existed which ran along the path of the ancient King's Highway through the Wadi el Arabah, via Kerak, Dhiban, Madaba, and Umm el Amad to Amman, has been shown by

Glueck (1939: 113). While Nabataean sherds have been found at Madaba (Glueck 1939: 139), the Hesban Survey did not find any Nabataean sherds at Umm el Amad (Ibach 1987), a likely way-station along this route.

Another camel track running from Amman via El 'Al, Hesban, Mushaqqar, Khirbet el Mehatta, to Livias and across the Jordan to Jericho and Jerusalem no doubt also existed in Hellenistic-Early Roman times. It very likely followed the path of the Roman road which was subsequently built along this passageway. That Hellenistic and Early Roman pottery was attested to at most of these sites, including the fort at Khirbet el Mehatta, adds weight to this inference.

##### Roads

The road which connected Esbus to the West Bank via Livias and Jericho is well attested to in the survey results (cf. 6.7). This road is represented by curbstones, watchtowers, and ruins of buildings which probably belonged to way-stations (see pls. 6.9, 6.10). To the southeast of Tell Hesban is found a reservoir which probably served as a watering place for animals employed by travelers along this road. The approximate time when this road was constructed is believed to be about A.D. 130 (Avi-Yonah 1950: 59; Ibach 1987: 160), or during the first three decades after the establishment of the Roman Province of Arabia in A.D. 106. This road appears to have remained in use at least until the end of the Byzantine Period (cf. Ibach 1987).

The relationship of Esbus (Tell Hesban) to the *via nova Traiana* constructed by Emperor Trajan in the beginning of the 2nd century A.D. is a matter of some dispute (Mitchel 1980: 111). While Avi-Yonah (1977: 187) places Esbus on the route, as does Sauer (1973: 54), others have expressed doubts because of the complete absence of any milestones or other road remains in the vicinity of the site (Germer-Durand 1904: 4; Ibach 1987). The absence of remains, however, is not conclusive proof that this road did not pass by Esbus. Indeed, as Parker has noted (personal communication) the road was called the *via nova Traiana*, i.e., *Trajan's new road*, implying that it replaced an *old road* that existed before the early 2nd century A.D. This *old road* is almost certainly the *King's Highway* of the Old Testament and that later used by the Nabataeans through Edom and Moab northward.

Fig. 6.7 Eshbus-Livias road sites

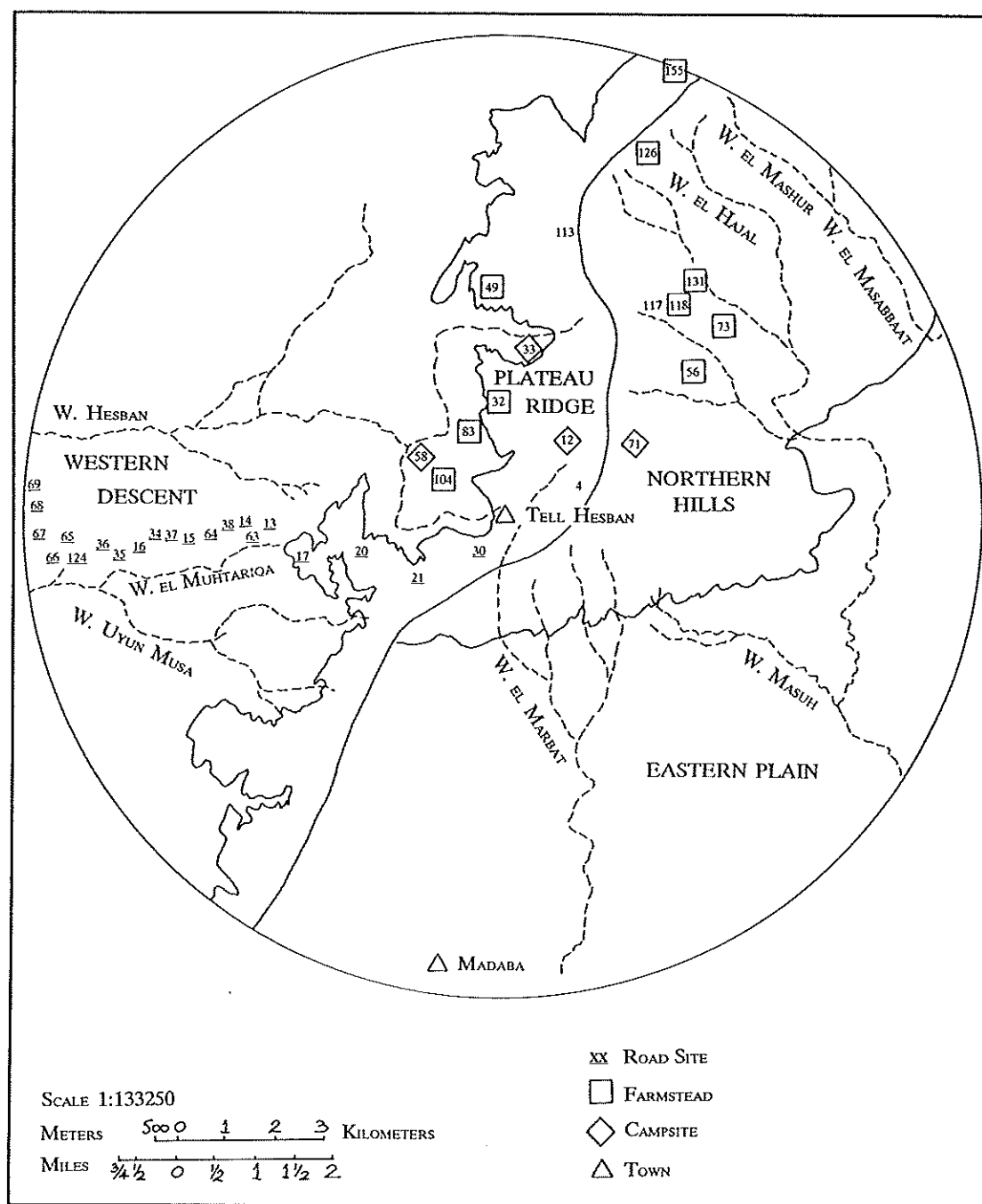




Plate 6.9 Roman cobblestone road east of Hesban Survey Site 35; view southeast

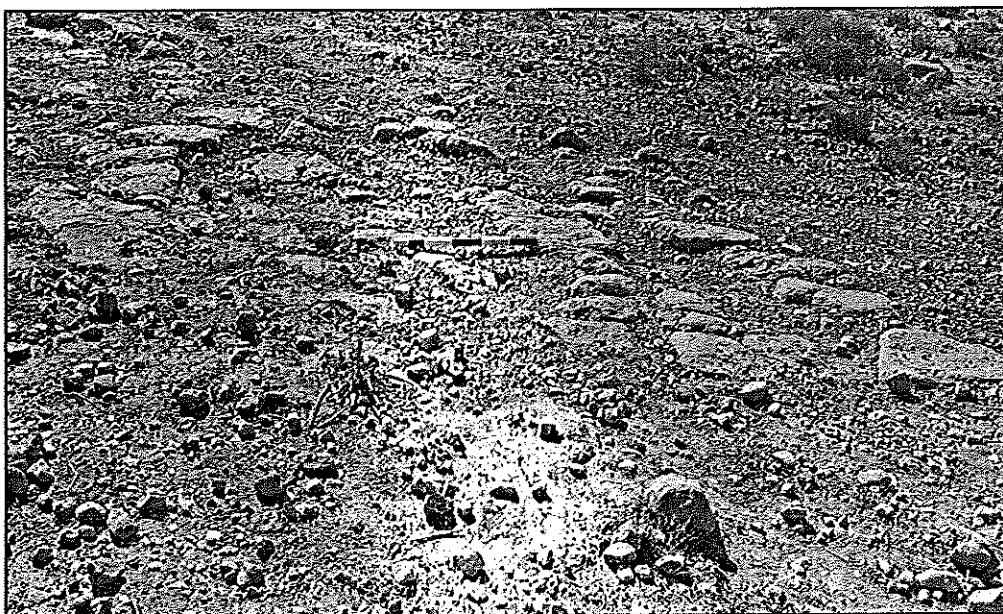


Plate 6.10 Roman curbstones between Hesban Survey Sites 13 and 17; view west





## Farmsteads, Farming Villages, and Monastic Settlements

### *Farmsteads*

The location of farm sites and farmsteads throughout Greco-Roman times corresponds pretty much to the pattern noted with regards to all sites from each of the different periods discussed above. During the Hellenistic centuries, 11 sites were occupied, more than half of which were located in the northern hills region. During the Early Roman centuries, 31 sites were occupied, the majority along the plateau ridge and in the northern hills regions. During Late Roman times 21 sites were occupied, this time primarily along the plateau ridge; and during Byzantine times, 61 sites were occupied, including 18 in the western descent region. Throughout the Greco-Roman centuries, therefore, there appears to have been a fairly steady intensification in sedentary farming activity along the plateau ridge, whereas in the other sub-regions such intensification was interrupted at least once by a century or two of abatement.

In terms of buildings and facilities, much of what had been utilized in the earlier Iron Age Period continued to be used during the Greco-Roman Period. For example, a typical, well-established farmstead would be located on a natural hill or on the slopes of a wadi above a fertile field of land. It would be surrounded by a perimeter wall with an opening leading onto a private access road, which, in the case of some larger estates, was paved (Geraty *et al.* 1986). Within the walls could be found one or more rectangular buildings of varying sizes (10 m x 20 m, 13 m x 20 m, 19 m x 21 m), a round or square agricultural tower ranging about an average of 11 m in diameter, one or more cisterns, and in some instances, a wine press, and a cave or two. In the case of some estates, even a family tomb was located nearby. Where the hillsides inside the perimeter walls were steep, some terrace walls would also be found. Sites fitting this pattern existed in varying quantities, as we have seen, throughout all of the centuries of the Greco-Roman Period within the project area.

In the absence of any detailed excavation data pertaining to either Iron Age or Roman farms in the project area, we can only speak in general terms about some of the ways in which the latter differed from the former. It is safe to assume, however, that the Roman and Byzantine farmsteads

were more advanced in terms of how they collected and stored water, in their methods of storing, processing, and transporting foodstuffs, and also with regard to methods of cultivation and animal husbandry. Not only did the farmers of this period have the experience of the Nabataean farmers to draw upon right in their own backyard—including the opportunity in some instances to benefit directly where Nabataean terraces and farmsteads were reuseable—they also benefited from the farming know-how, new seeds, and new species of domestic animals introduced into the region by Nabataean merchants and Greek and Roman administrators and settlers in the region (cf. White 1970).

### *Farming Villages and Towns*

In addition to the isolated farmsteads, farming villages and towns played an important role in the local economy. During the Hellenistic and Early Roman periods, Tell Hesban was the site of one such village, and Madaba was perhaps a slightly larger version of the same. Not only did these villages provide shelter for people and animals, they also served an important role as local centers of trade and manufacture of farm implements and ceramic storage vessels. While these two villages grew to become municipalities in their own right during the later Roman and Byzantine periods, other villages sprang up which took their place, as seen on the map from each of the periods.

The role of villages and towns as places of refuge for the farmstead population during times of uncertainty and trouble explains, perhaps, the persistence of such settlements during Late Roman times. As has already been noted, during this period there appears to have been a retreat of farming families from the farmsteads to the larger towns and villages. By contrast, the town of Hesban actually expanded during Late Roman times and all of the other major tell settlements within the project area (Sites 7, 26, 100, 102, 103)—sites where smaller villages and towns very likely existed—continued to survive as well. Indeed, there may actually have been an increase in the number of such village settlements between the Early and Late Roman periods.

An idea of the extent to which people were settled in villages and towns during the Late Roman and Byzantine periods can be gained from analysis of the detailed descriptions of settlements



from this period recorded by Conder (1889). At the time of his visit to the Hesban region, the ruins from these periods (and also from the more recent Ayyubid-Mamluk period) were apparently much better preserved than they are today. One reason for this state of affairs, was, of course, that where he witnessed the ruins of houses with "vaults and barrel roofs"—the tell-tale mark of Roman and Byzantine construction—we today encounter villages and towns. Indeed, these were the vaults reused by the late 19th-century settlers in this region—at Madaba, Hesban, Umm el Hanafish, and so many of the other recently settled villages and towns—as framing for their first houses, as discussed in this chapter. Based on the information provided by both Conder (1889) and Ibach (1987), therefore, a much more complete picture can be gained of the Late Roman and Byzantine settlement pattern within the project area (fig. 6.8).

That Esbus and Madaba were sizable settlements during the Late Roman and Byzantine periods can be seen from the town plans prepared by Musil (1907) on his visit to both in 1902 (figs. 6.9 and 6.10). The fact that their ruins were much

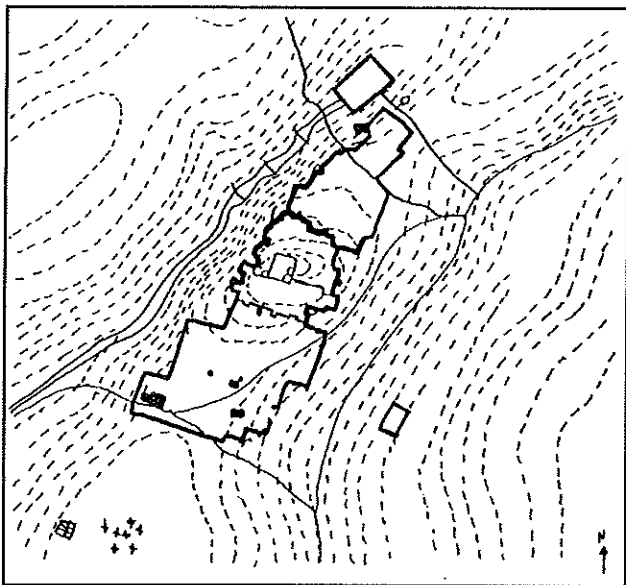


Fig. 6.9 Byzantine Esbus as sketched by Musil in 1902 (1907)

more extensive at the time of his visit is evident not only from the details he is able to include in his sketch, but also from his discussion in the text and that of others who spent some time inspecting the ruins, such as Conder (1889) and Brunnow and Domaszewski (1904).

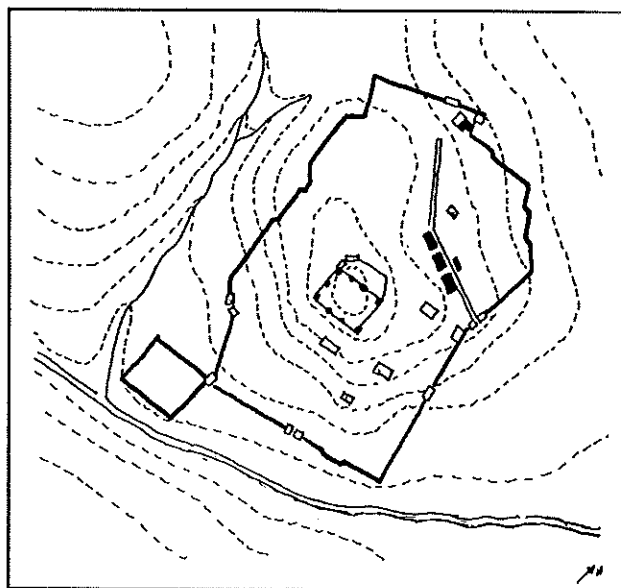


Fig. 6.10 Byzantine Madaba as sketched by Musil in 1902 (1907)

#### *Hermitages and Monasteries*

During Byzantine times, Christian hermitages and monasteries were established in several locations within the project area, including Mount Nebo, Uyun Musa, Umm el Qanafid, and Ain Sumia. Regarding the hermitages at Uyun Musa and the monastery at Mount Nebo, Saller and Bagatti (1949) have written in considerable detail. According to a 4th-century pilgrim account, monks had originally taken up residence in the caves surrounding Uyun Musa, but had by the 5th century "established themselves near the memorial of Moses on the top of Mount Nebo" (Saller and Bagatti 1949: 109). There they constructed a basilica with several chapels and a monastery complex consisting of a series of courtyards with buildings grouped around them. Both at Uyun Musa and on Mount Nebo, monks survived in monasteries and hermit caves from the 4th through the 7th centuries. In these places they cultivated gardens and "grew fruit and vegetables for the benefit of pilgrims" (Avi-Yonah 1958: 48). Perhaps some of them also engaged in pig breeding, especially in the vicinity of the springs at Uyun Musa (Avi-Yonah 1958: 48).

At Ain Sumia, Conder (1889: 221) encountered a building measuring

120 feet along its east wall, and 80 feet along the south wall. . . . There was a courtyard, with a vault or cistern beneath, and with chambers to

the north and south. On the east was an entrance-gate, approached by a narrow path on the face of a very steep slope.

These, according to Conder, may be the remains of either a fort or a monastery dating to Byzantine times. At Umm el Qanafid (Umm el Kenafid), Conder (1889: 249) encountered another monastic site, namely the remains of a hermit's cave. He offers no further details, however.

### Marketplaces

Throughout the entire Greco-Roman millennium the settlements at Madaba and Hesban appear to have played an important role as local marketplaces. Their role as centers of trade is evidenced both by their comparatively large size and by the presence of public buildings of various kinds among their ruins. At Hesban, the remains of a "public plaza" are found in the Late Roman Period (Mitchel 1980: 150), and in subsequent periods, as has already been pointed out, the summit of the tell was turned into an acropolis with a paved colonnade, streets, and stairs. The same kind of facilities were located at Madaba as well during the Late Roman and Byzantine periods. Their strategic location on important highway crossings in Transjordan no doubt also contributed to their role as market towns. Furthermore, both towns also minted their own coins during Late Roman times, another sign of their status as centers of commerce.

Other locations within the project area which very likely served as local marketplaces during the Late Roman and Byzantine periods are those sites which have been designated as towns on fig. 6.8. These include the ruins located at Umm es Summaq (313), Umm el Hanafish (309), Jalul (26), Masuh (100, 257), El 'Al (7, 215), Ain Sumia (59, 303), Mushaqqar (105, 258), and Qaryat el Mukheiyat (172). At all of these locations, the remains of numerous buildings and monumental architecture are suggestive of their role as gathering places for the surrounding population.

### Fortifications

The most famous fortification located within the project area is the one at Khirbet el Mehatta (36). Located on a high ridge overlooking the Jordan Valley, it has the shape of a triangular structure

which was traced by Ibach (1987) for over 600 m. A popular site with visitors to this region, it has been commented upon frequently in reports by Tristram (1865), Thomson (1880), Conder (1889), and Henke (1959). As already noted, this site was settled already in Hellenistic times and continued in use right through to the end of the Byzantine Period.

Other than this major military installation which, as was noted earlier, may also have been converted into a monastery in Byzantine times, only one other site is described as being a "fort" in Conder's (1889) account, namely the one at Shunet edh Dhiabeh (300). It is "a small fort built on the hillside west of the stream of Wadi Hesban" which "measures 35 paces square outside, with a courtyard on the south, measuring 150 feet by 100 feet" (Conder 1889: 27). Mention has already been made of the fort which apparently existed at Tell Hesban during the Hellenistic Period.

### The Water Supply System

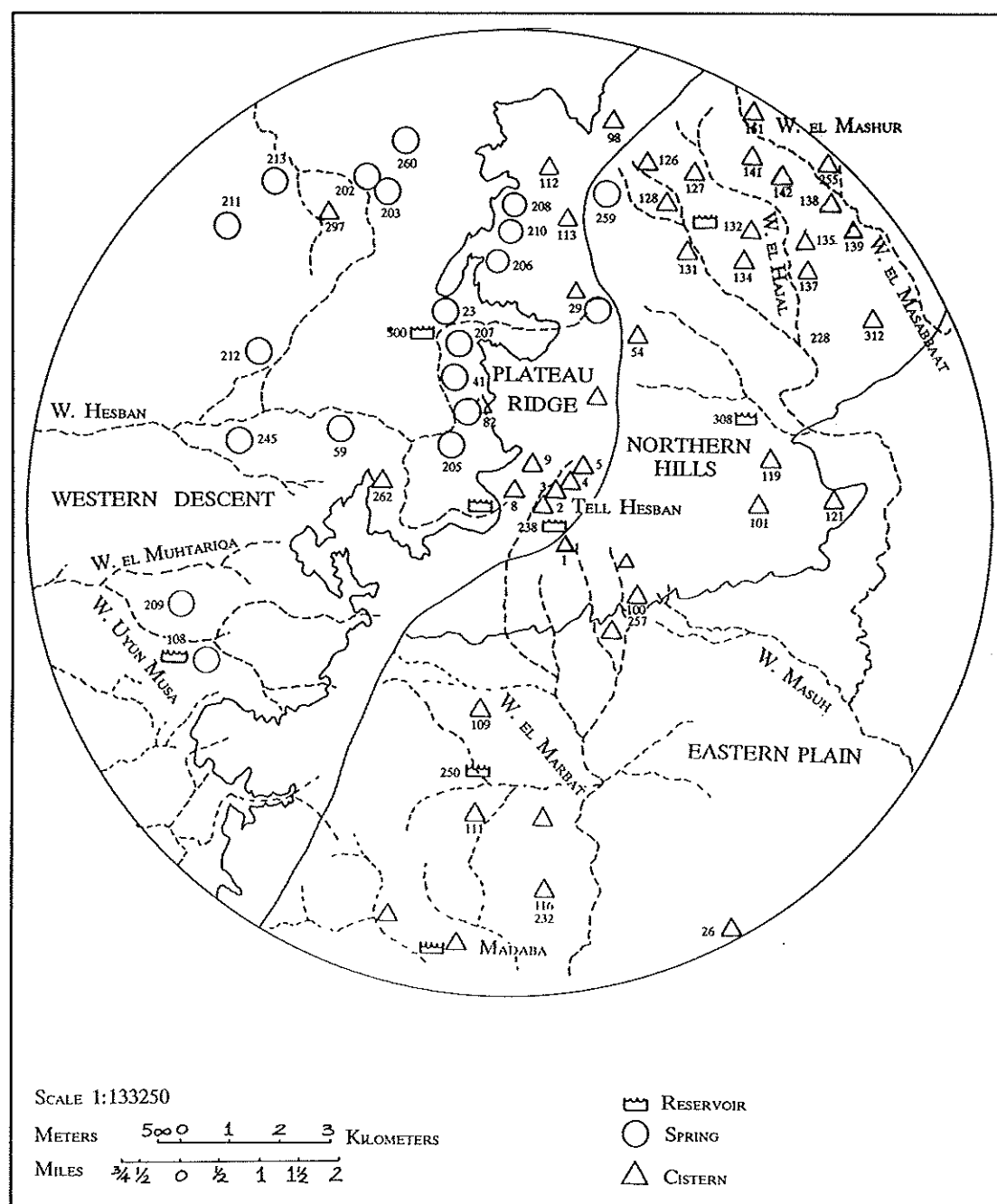
Crucial to the sedentarization which occurred in the project area during the Greco-Roman millennium was the construction of facilities for collecting and storing water (fig. 6.11). This was particularly the case at places like Hesban and Madaba where large concentrations of people had to survive the dry season without having easy access to a spring or stream. To begin to meet this challenge, the Romans undertook the construction of several large reservoirs in the major towns, and cisterns were added in great profusion.

### Reservoirs

The largest reservoir discovered in the project area is the one at Madaba which is commented upon by almost every one of the explorers who visited the place (Tristram 1880: 252; Thomson 1880: 637; Conder 1889: 182; Brunnow and Domaszewski 1904: 19; Musil 1907: 113). Thomson's description of it highlights both the massiveness of the undertaking it represents and its likely uses in antiquity:

Between the hill on which the church stood and the city in the shallow vale is a large reservoir or tank. It is about three hundred and thirty feet long from east to west, and three hundred and twelve feet broad from north to south, measuring from the inside. It is over fifteen feet deep from the top of the wall to the soil which now covers

Fig. 6.11 Project area water supply



the bottom, and which is often planted with tobacco.

At the south-east and north-east corners stone steps led down to the water, and on the latter corner was a strongly built tower, probably for the defence of the reservoir. The wall is in excellent preservation, and is about twenty feet high and twelve feet thick; but on the east side at the base it is over eighteen feet wide, diminishing to twelve feet at the top, and further strengthened by a massive embankment, as it was exposed on that side to the heaviest pressure from the great body of water within the reservoir.

A strong dam was carried across the shallow valley southward to lead the water into the tank during the rainy season. It has long since been washed away, and the reservoir is now always empty. It would require but little expense to put that large reservoir into complete repair, and thus secure an abundant supply of water, not only for all necessary domestic purposes but also to irrigate the fertile fields below it to the south-east (Thomson 1880: 637).

Other dams as well were found at Madaba. Tristram (1880: 252) reports seeing a reservoir in the town itself "that had been roofed over, which was thirty feet deep, and still another which was one hundred feet in one direction; but in the other direction it could not be measured, as it had been covered by fallen ruin." In the vicinity of Tell Hesban the remains of at least two reservoirs were noted by explorers at the turn of the century (Warren 1869: 289; Fish 1876: 320; Conder 1889: 104; Musil 1907: 384). For example, Musil's account includes the measurements of two reservoirs, one to the north of the tell in the Wadi Majarr and another in the Wadi el Marbat to the south. The one to the north of Tell Hesban measured 14 m or 46 ft<sup>2</sup> (cf. Conder 1889: 104) and it had four wide stairs leading down into it (Musil 1907: 386). The one to the south of the tell was 67 m (219 ft) long and 46 m (150 ft) wide. Additional details about it were recorded by Conder (1889: 105):

On the south of the Tell is the flat open valley which leads to the southern plateau, the city being mainly on a saddle dividing this valley head from the true watershed. In the open valley is the great tank to which the name "Alwan" appears to apply. It measures 191 ft. north and south by 139 ft. east and west, and is about 10 ft. deep. The masonry is well dressed, but the stones are not drafted; the walls have been apparently shaken by earthquake; stones were measured 15 in. long by 11 in. high, and 10 in. by 15 in., representing

the average dimensions of the ashlar. In the south-east corner of this tank lies a trough measuring 6 ft. 2 in. by 3 ft. outside, and 5 ft. by 20 in. inside; the height 18 in. outside and 12 in. inside. It has probably fallen from above, and was no doubt used for watering animals when the tank was full of water.

In 1974 a probe was carried out in this reservoir by the Hesban excavation staff (Herr 1976: 107-108; Storfjell 1983: 107, 171). Measurements taken at that time correspond roughly to those taken by Conder and Musil. Excavations revealed that this reservoir had been constructed in Early Byzantine times (Stratum 9) and that it had a plastered bottom. Because of damages sustained as a result of an earthquake, its walls were repaired again in Late Byzantine times (Stratum 8).

Elsewhere in the project area reservoirs of varying sizes can be found as well, especially in the vicinity of ruins of larger settlements. Between Conder's (1889) and Ibach's (1987) surveys, a total of 19 sites containing reservoirs have been found within the project area, including those at Hesban and Madaba. Of these 5 sites were located in the western descent region, 2 along the plateau ridge, 6 in the northern hills, and 6 in the eastern plain.

Not only were these reservoirs used to collect drinking water for animals, they were also frequently used as tanks for holding irrigation water. This type of use was clearly the case with the reservoirs at Hesban. The one in the Wadi Majarr, for example, had a step-wise series of cultivable shelves below it, each shelf being held in place by a retaining wall of stones. A similar use was no doubt also made of the tank to the south of the tell, although traces of retaining walls have still to be searched for.

#### *Cisterns and Water Channels*

Throughout the project area are cisterns of varying shapes and sizes, the majority of which were no doubt in use during Late Roman and Byzantine times. The combined sightings of Conder (1889) and Ibach (1987) yielded a total of 49 sites containing cisterns within the project area. Of these, 3 are located in the western descent, 14 along the plateau ridge, 22 in the northern hills and 10 in the eastern plain. More often than not several cisterns existed at each of these sites.

The manner in which concern with water collection intensified over the Greco-Roman millennium is exemplified in the stratigraphic evidence from

Plate 6.11 Byzantine plastered floor (Locus 26) of Reservoir G.5A; view west

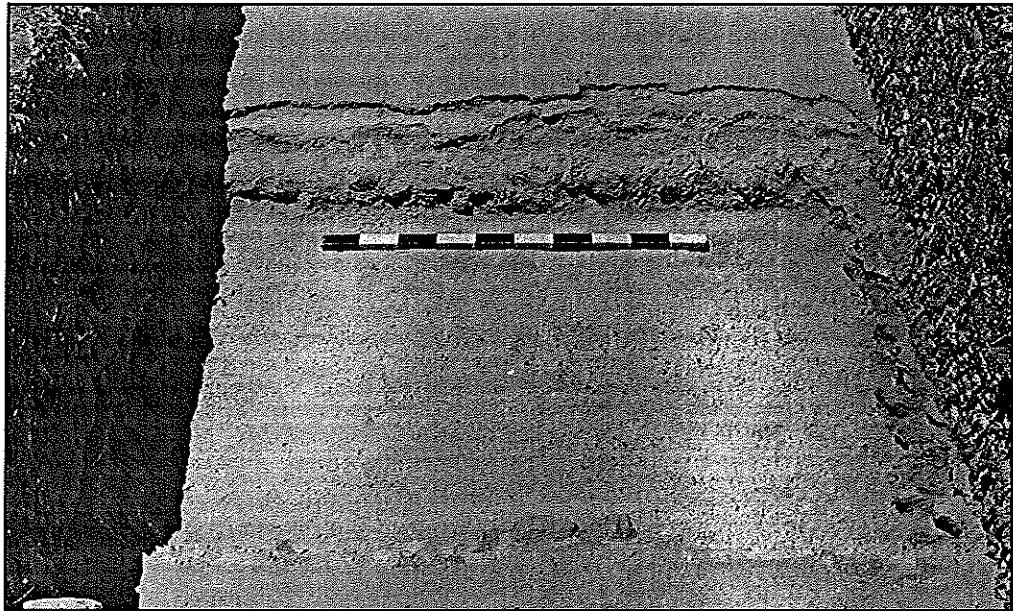


Plate 6.12 Late Hellenistic underground plastered circular Pool B.4:265 cut in bedrock Cave B.4:247; view southeast

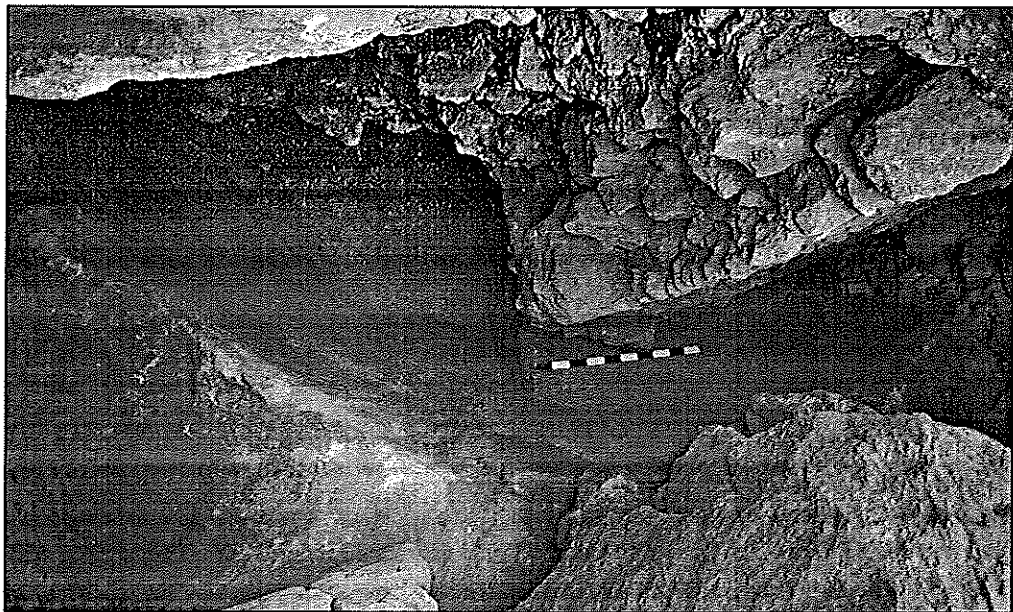




Plate 6.13 Water system in C.4. In right foreground are Water Channels C.4:68; mouth of Cistern C.4.7 on left; opening to Basin C.4:71 visible in center of picture in south balk; view south

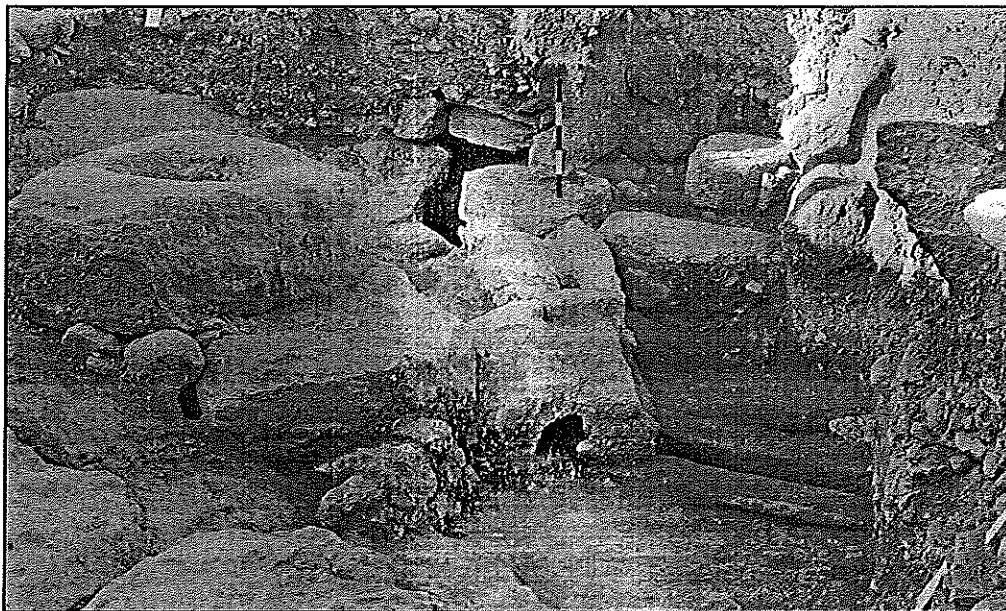
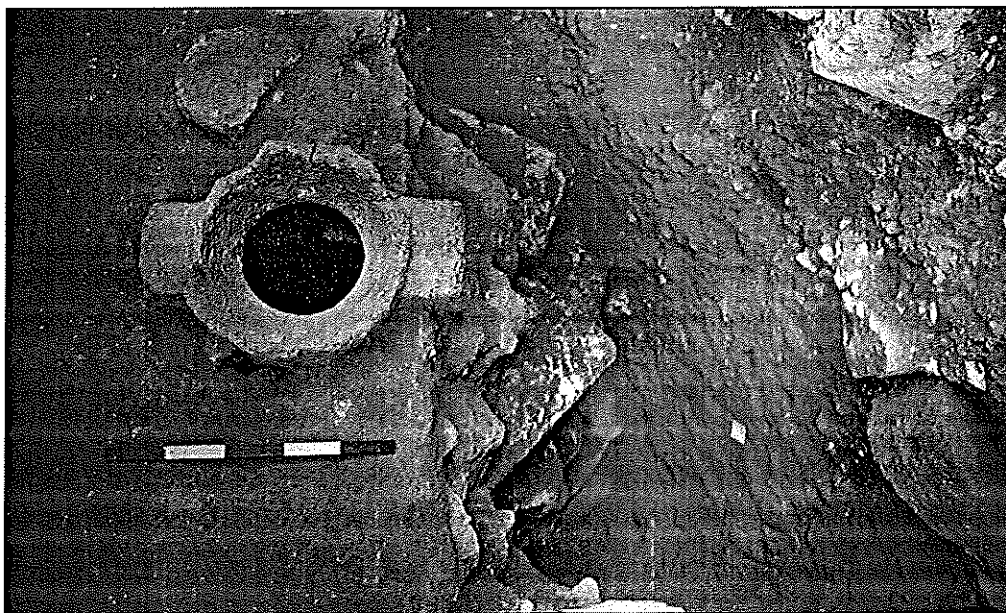


Plate 6.14 Mouth of Cistern C.5:228; view east down



Tell Hesban, despite the limited horizontal exposure of the excavations. Thus, neither during the Late Hellenistic (Stratum 15), nor during the Early Roman times (Stratum 14) was any evidence of construction activity having to do with water collection encountered. Very likely, the population was taking advantage of cisterns already constructed in Iron Age times to meet their water supply needs.

As could be expected, perhaps, it was during Late Roman times (Strata 13-11) that construction activity aimed at improving the water supply appears. This concern is evidenced by the discovery of two drainage channels which "were installed in the uppermost Stratum 13 layers or surfaces." One of these "was built of side stones and capstones" (Mitchel 1980: 136). Another such channel was found in Stratum 12, while in Stratum 11 a large cistern (C.5:228) was discovered (Mitchel 1980: 159, 191, 194).

This concern with water supply clearly escalated during Byzantine times. In the four strata dating to this period (Strata 10-7) at least nine separate water channels were found to be in use (C.4:68; A.7:65; D.6:63; D.5:20; D.1:89; D.2:30; D.6:53; D.5:16; and C.1:15). One of these was actually a catch basin for rain water (D.6:63), others were simply channels draining water into cisterns, and in one case (C.4:68—see pl. 6.13), the channel actually served as an overflow drain directing the water to cisterns below (Storffjell 1983: 31, 39). Several cisterns were also uncovered which were in use during this period.

The fact that many cisterns are located in places where there are no other ruins except, perhaps, a wine press, suggests that in addition to serving as storage places for drinking water, many of these cisterns were also used to hold water for irrigation of crops and watering of animals. By this means, fruit trees and vegetables could be produced in the absence of any other perennial sources of water. This was very likely the case in the northern hills region during Late Roman and Byzantine times. In this region several of the farmsteads very likely irrigated fruit and vegetable crops by means of cistern water.

### *Springs and Streams*

There can be no doubt that the springs and streams which are abundant in the western descent region remained a constant resource for the trans-

humant population of the project area throughout the entire Greco-Roman millennium. During the Roman, and especially the Byzantine Period, however, many springs such as those at Uyun Musa, Ain Sumia, Ain Hesban, Ain el Fudeli, Ain Jamus, and El Rawda became sources of irrigation water for cultivators growing fruits and vegetables on terraced slopes below them. Even some of the nearby slopes above these springs were often terraced and watered by means of animals hauling water in skins to the cultivated areas. The best example in the project area of this type of use of spring waters is found at Uyun Musa.

### *Aqueducts*

Evidence of aqueducts is sparse in the project area. That they were used in a limited way to transport water from certain of the springs in the western descent region is possible, however. Conder (1889: 4-5) discovered near the spring at Ain el Fudeli, for example, that "numerous dams and lades lead from the spring towards the remains of former irrigated places. Traces of one little aqueduct lead to the Jineinet Belkis, or 'Zenobia's garden,' which is a mere barren plot."

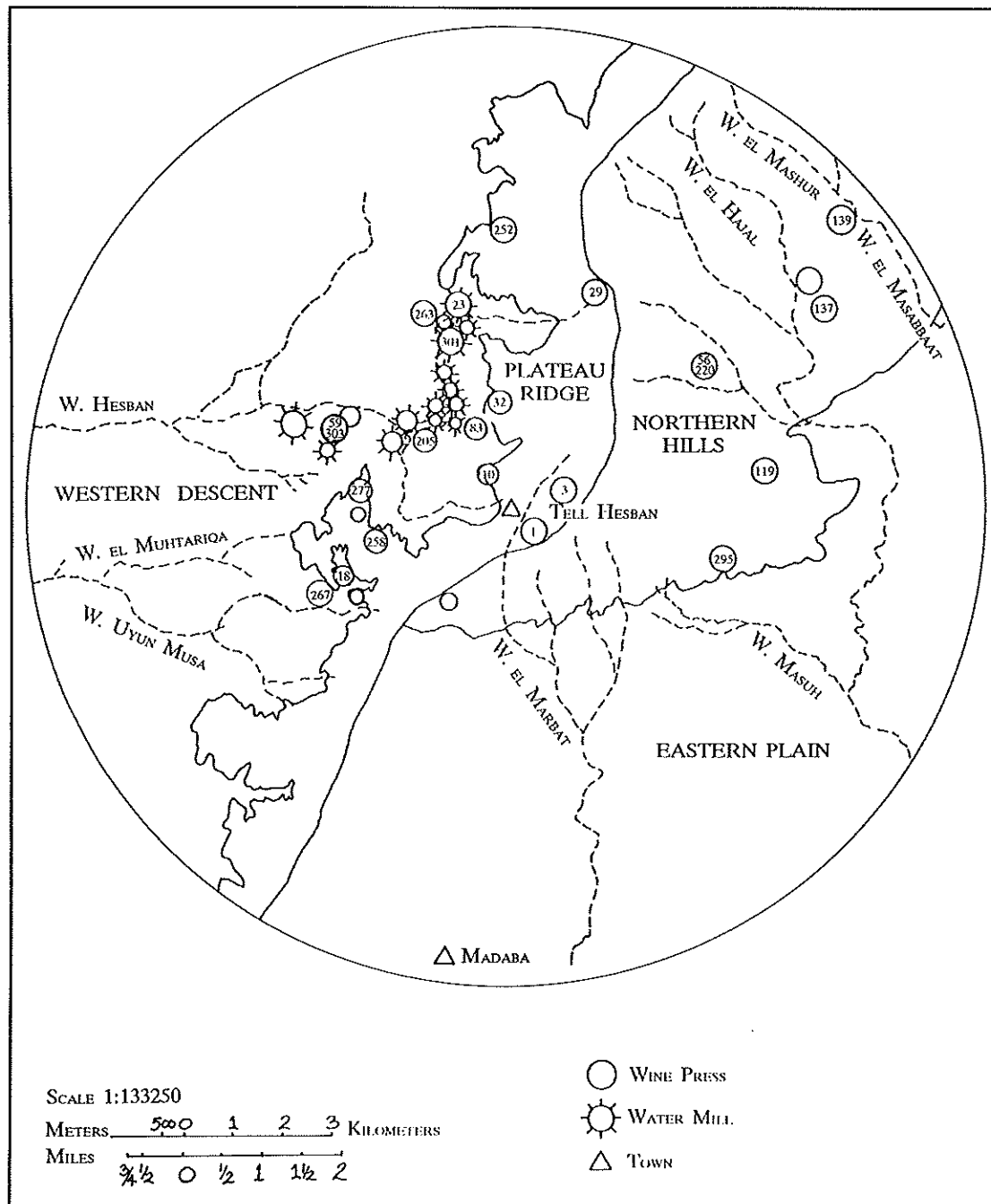
### *Wine Presses*

In the vicinity of ancient farmsteads, villages and vineyard sites throughout the project area can be found the remains of numerous rock-cut wine presses (fig. 6.12). As could be expected, such presses are most abundant along the plateau ridge and in the western descent subregions, although they occur also on certain of the slopes in the northern hills subregion.

Such presses are particularly abundant in the vicinity of the town of Nebo and at Siyagha where the Byzantine monastery is located. Here dozens of presses of varying shapes and dimensions have been found, including ones with fan-shaped basins, rectangular basins, and "irregular" basins (Saller and Bagatti 1949: 13). A similar variety was noted by Conder at other sites throughout the western descent and plateau ridge subregions (cf. Conder 1889: 146, 151, 157, 171).

As with so many other agricultural installations in this region, it is not possible to say exactly when these wine presses were built and when they were used. Certainly, some of them predate the Greco-Roman millennium, having been built sometime during the Iron Age or possibly even earlier. There

Fig. 6.12 Project area wine presses and water-driven mills



can be little doubt, however, that the vast majority of them were in use during the Byzantine Period. Thus, of the 10 presses sherded by Ibach's team (Ibach 1987), Byzantine pottery was found at 9 of them. This was evidently also a period during which some of the finest presses were built. In the monastery at Mount Nebo, for example, a press was uncovered which had a mosaic floor and masonry lining (Saller and Bagatti 1949: 13).

#### *Water-driven Mills*

While nearly a dozen water-driven flour mills were noted by the Hesban Survey (Ibach 1987) in the Wadi Hesban, most were not sherded or catalogued as sites except for one, namely the one at Ain Hesban (Site 23); and it turned up Roman and Byzantine pottery. The possibility that most of these mills might originally have been constructed during the 4th or 5th century A.D. should be seriously considered, however, despite the limited pottery evidence on hand. This is because water-driven flour mills of various kinds became a widespread phenomenon throughout the Roman Empire during these times (Dalman 1964: 243-249; Forbes 1955 vol. 2: 88-111; Landels 1981: 16-26; Parker 1982: 18, 1985: 19).

Of all the wadis in the project area, the Wadi Hesban was certainly the most natural place to install these mills, given its perennial flow. Furthermore, given the intensity of human settlement in the vicinity of this wadi during the 4th and 5th centuries, the conditions were unquestionably right for the adoption of a device which would harness the springs and streams of this wadi to the benefit of people. Finally, it might also be pointed out that the Wadi Hesban was not the only stream in Jordan thus exploited. At least a dozen such mills are located in the Wadi Ajlun further north in Jordan as well (Merrill 1881: 374).

#### *Storage Facilities*

Of all the various operational facilities encountered on the tell and in the survey territory, none are more varied than are the arrangements for storing food supplies. On the one hand are the installations which apparently were specifically constructed for the purpose of food storage, such as the storage silos discovered at Late Hellenistic Hesban (Stratum 15). These silos, which the excavator believes were used for grain storage, can with confidence be distinguished from cisterns because

they were connected by a network of tunnels and showed no signs of plastering (Mitchel 1980: 35).

On the other hand are the great range of make-shift storage facilities such as caves, tombs, rooms restored from ruined buildings, and so forth. Of these, caves were the most frequently encountered both on the tell and in the survey territory. Such caves were represented at Tell Hesban in strata from both Roman and Byzantine times as well as at dozens of the sites with pottery from these periods. Inside these storage installations and make-shift facilities, flour and other dry goods, along with supplies of drinking water and wine, were preserved in pottery storage jars, a great variety of which have been uncovered in the finds from Tell Hesban (Lugenbeal and Sauer 1972).

The near absence of storage silos in the Late Roman and Byzantine strata at Tell Hesban does not necessarily mean that they did not exist elsewhere on the tell during these periods. Indeed, they very likely did. What accounts for this is very likely the fact that much of what was excavated from these periods came from the acropolis area of the town. Domestic storage installations of this type, therefore, were not likely to be encountered. Public and commercial buildings specifically constructed for the purpose of food storage would be more likely occurrences in this location during these periods. Such may well have been the case in Early Byzantine Stratum 9 where a storage facility of a "commercial nature" may have existed, judging from the remains in Square B.4 (Storffjell 1983: 106). Other types of buildings devoted primarily to food storage which could be expected during the Late Roman and Byzantine periods would be public granaries, although no such facilities have been discovered either on the tell or in the project area to date.

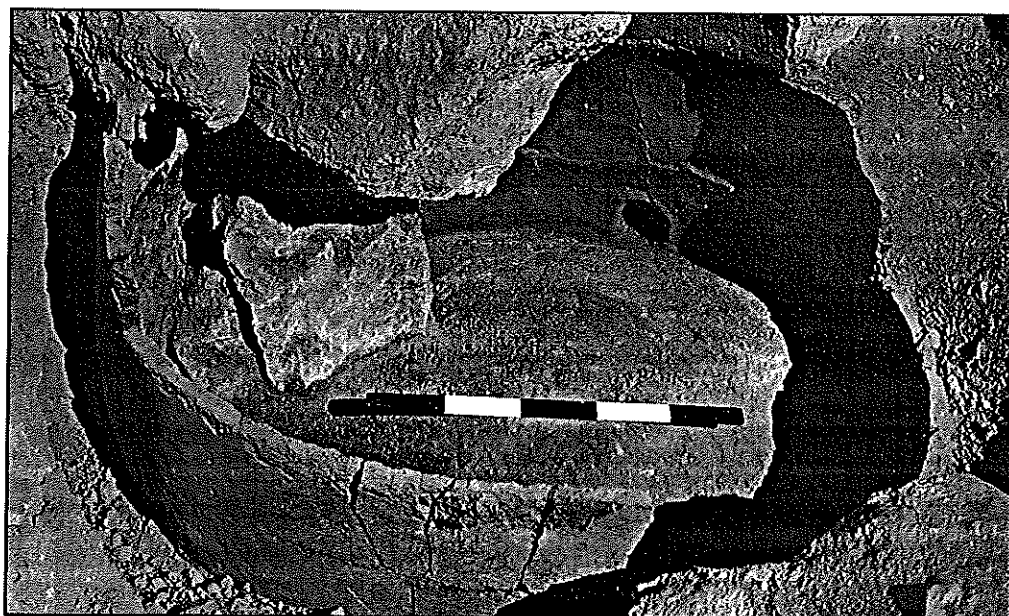
#### *Fire Pits and Tabuns*

Several fire pits were encountered at Tell Hesban, one in Late Hellenistic Stratum 15 (C.2:46), one in Early Roman Stratum 14 (D.3:54), one each in Late Roman Strata 12 (A.7:77) and 11 (A.1:62), and one in Early Byzantine Stratum 10 (A.5:23). Typically these fire pits consisted of deposits of ash or burnt materials indicating that fires had once been burned in this spot. The fact that only one fire pit was found in strata from the Byzantine Period is another sign of the gradual evolution of occupational activity on the summit of the tell away

Plate 6.15 Wine press at Hesban Survey Site 36 (Ateyig); view west



Plate 6.16 Early Roman *Tabun* B.4:84 with air intake hole at bottom; view north



from domestic toward public and commercial affairs.

Baking ovens or *tabuns* were encountered only in Early Roman Stratum 14 (B.4:66, 84, 261, 262). Whereas *Tabun* B.4:261 measured ca. 0.50 m in diameter, the one in B.4:262 had a diameter of ca. 0.35 m (Sauer 1976: 51). The presence of four *tabuns* in this Early Roman stratum suggests that a sizable population had come to rely on the oven-baked bread of villagers rather than the pan-baked bread of transhumants. The process of sedentarization was clearly well on its way by the Early Roman Period.

#### *Enclosure Walls*

During Greco-Roman times, as in other times, enclosure walls played an important role in keeping animals and people from entering orchards, gardens, and private courtyards. As already noted, such walls surrounded the farmsteads and orchards in the survey territory. They also make up a significant proportion of the structures encountered in the various strata on the tell. Although the evidence on hand does not permit any quantitative statement about the increase in the density of walls per unit of land, that such an increase occurred over the Greco-Roman millennium is very likely. As the food system intensified, more land was set aside for intensive orcharding and vegetable production. Such uses of the land necessitated greater concern with protection of the crops, something which, in part at least, could be achieved by the raising of increasing numbers of walls and fences.

#### *Animal Folds and Shelters*

The most common form of shelters for animals since prehistoric times in the survey territory has no doubt been caves. Indeed, most caves found in this region have surfaces which consist of layers of dung, mostly sheep and goat dung. In addition to these, make-shift shelters are sometimes constructed in partially standing ruins. That animals and people shared the same shelters is very likely. One of the tombs in Cemetery F, for example, appears to have served as a shelter for both people and animals during the Early Roman Period.

That numerous animal folds existed throughout the project area during the Greco-Roman millennium can safely be assumed. Conder (1889: 208), for example, makes brief mention of the existence of a "Byzantine cattle enclosure" at Rujm Serarah.

On his map he also pinpoints several "goat folds." Typically, folds consist of enclosures made of unhewn stones. In many cases these enclosures are divided into several distinct partitions for separating herds into smaller groups (cf. Murray and Chang 1980).

#### *Draft Power*

Besides people themselves, the most important source of draft power during all periods in the project area was cattle. As already noted, oxen were harnessed to the plow primarily on the eastern plain and on the gentle slopes, whereas horses, asses, and especially mules were preferred on the steep slopes. The increase in use of horses, mules, and donkeys which is evident in the Late Roman and Byzantine periods is, as has already been suggested, a sign of the more intensive exploitation of steep slopes for vineyards during these periods. As can still be seen today, mounted transport was provided by camels, horses, mules, and donkeys in the Greco-Roman millennium as well.

#### *Sanitation*

Of the structures uncovered in the Greco-Roman strata from Tell Hesban none appear to have been built specifically for the purpose of sewage drainage, as can be found at Gerasa, for example (Kraeling 1938). That sanitary measures were taken by the people of this site can be inferred, however, from the fact that the bones of traditionally unclean animals such as horses, mules, and donkeys were deposited away from the settled areas. The remains of these animals, therefore, are less plentiful in the bone finds than are the remains of cattle, sheep, and goats. What was found of equine bones in deposits on the tell owes its location there to dogs and other scavenging animals that took the bones back into the settled area.

Indeed, the most important agency in getting rid of scraps of food and other organic garbage were, no doubt, the domestic cat, dog, pig, and chicken. Between these and other wild scavengers, such as jackals and hyenas, anything edible would be disposed of which was within their reach. As has been noted elsewhere (LaBianca 1978a), it is thanks to the cisterns and other subterranean installations on the tell into which literally hundreds of bones were washed during the rainy season in this region that bones of any kind survived to be included in this study.



Table 6.3 Weight of principal meat-yielding species from Greco-Roman strata (in kg)

Strata	Period	Cattle		Sheep/Goat		Pig		Camel		Total		Accumulation Rates
		kg	%	kg	%	kg	%	kg	%	kg	%	
1	Modern	1.4	27.45	3.0	58.82	0.2	3.92	0.5	9.80	5.1	4.65	0.05
2-3	Mamluk	14.2	30.67	25.2	54.43	0.8	1.73	6.1	13.17	46.3	42.21	0.24
4	Ayyubid	0.1	33.33	0.2	66.67	--	--	--	--	0.3	0.27	0.01
5	Abbasid	0.2	16.67	0.8	66.67	--	--	0.2	16.67	1.2	1.09	0.01
6	Umayyad	1.6	33.33	2.4	50.00	0.6	12.50	0.2	4.17	4.8	4.38	0.06
7-10	Byzantine	2.3	31.51	3.7	50.68	1.1	15.07	0.2	2.74	7.3	6.65	0.02
11-13	Late Roman	4.4	31.43	7.6	54.28	0.9	6.43	1.1	7.86	14.0	12.76	0.06
14	Early Roman	1.9	33.33	3.3	57.89	0.3	5.26	0.2	3.51	5.7	5.20	0.03
15	Late Hellenistic	3.1	46.27	2.8	41.79	--	--	0.8	11.94	6.7	6.11	0.05
16-18	Iron 2	4.6	40.00	6.3	54.78	0.3	2.61	0.3	2.61	11.5	10.48	0.02
19	Iron 1	3.1	45.59	2.9	42.65	0.3	4.41	0.5	7.35	6.8	6.20	0.03

Table 6.4 Number of identified specimens of fish from Greco-Roman strata

		Family Cichlidae Combs		Family Clariidae Catfish		Family Cyprinidae Minnows		Family Muraenidae Grey Mullech		Family Sciaenidae Parrot Fish		Family Scombridae Drums & Croakers		Family Scombridae Mackerel-like Fish		Family Serranidae Bass		Family Sparidae Sea Breams		Total	
Strata	Period	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
1	Modern	1	50.0	1	50.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2	0.3
2-3	Mamluk	18	12.3	33	22.6	5	3.4	4	2.7	84	57.5	1	0.7	--	--	--	--	1	0.7	146	19.5
4	Ayyubid	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
5	Abbasid	--	--	3	75.0	--	--	--	--	1	25.0	--	--	--	--	--	--	--	--	4	5.6
6	Umayyad	25	59.5	8	19.0	--	--	1	2.4	7	16.7	--	--	--	--	1	2.4	--	--	4	0.5
7-10	Byzantine	8	33.3	8	33.3	--	--	--	--	5	20.8	1	4.2	1	4.2	--	--	1	4.2	24	3.2
11-13	Late Roman	1	1.2	1	1.2	--	--	--	--	1	1.2	--	--	79	96.3	--	--	--	--	82	10.9
14	Early Roman	1	1.4	1	1.4	--	--	--	--	1	1.4	62	89.9	4	5.8	--	--	--	--	69	9.2
15	Late Hellenistic	--	--	1	0.3	--	--	--	--	--	--	--	--	372	99.7	--	--	--	--	373	49.8
16-18	Iron 2	--	--	--	--	--	--	--	--	1	14.3	--	--	--	--	1	14.3	5	71.4	7	0.9
19	Iron 1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sum	All	54	7.2	56	7.5	5	0.7	5	0.7	100	13.3	64	8.5	456	60.9	2	0.3	7	0.9	749	100

## Changes in Dietary Conditions

### Introduction

The first point to keep in mind as the evidence for dietary changes during the Greco-Roman millennium is evaluated, is that direct evidence in the form of plant and animal remains is available only from the excavations at Tell Hesban and not from any other sites in the surrounding project area. Given, as we have seen, the existence of a heterogeneous population in this region throughout the Greco-Roman millennium, it is obvious that the practices attested to in the remains from Tell Hesban cannot be attributed to the population of the project area as a whole. Indeed, as we shall see, Tell Hesban offers information primarily regarding the dietary preference of a Hellenized, Romanized and Christianized population respectively. The site has little to offer in understanding dietary changes which occurred

among other, more traditional members inhabiting the hinterlands of the site.

A second point to keep in mind is the changing occupational context from which the data on hand were recovered. As we noted earlier, the activity pattern on the tell's summit where most of the excavation areas were located underwent a gradual transformation away from domestic use toward public use during this millennium. This transformation, as we have seen, gained considerable momentum in Late Roman times and continued until the latter part of the Byzantine Period. This situation is partially to blame for the diminishing rate at which both plant and animal remains accumulated in tell deposits during the latter part of this millennium.

A third point to keep in mind is that the best represented food remains are the bones of domestic ungulates, especially sheep, goats, and cattle. This is due, of course, to the fact that their remains are more resistant than plant remains to destruc-



tion. Thus, the fact that animal remains generally receive more attention in this discussion than do plant remains should not be taken as a sign that they were more important in meeting the nutritional needs of the population. Indeed, to a large degree, the diets in antiquity consisted for the most part of plant foods, as do those of most people in the nonindustrialized world today. In the discussion which follows, reference will be made to the data presented in tables 6.1-6.5.

#### The Late Hellenistic Diet at Ebus (Tell Hesban)

The diet of the Late Hellenistic inhabitants at Tell Hesban is clearly reflective of the Greek palate and, therefore, as discussed earlier, of the role of these inhabitants as agents of Hellenization in this corner of Palestine. In support of this impression is the discovery in Late Hellenistic Stratum 15 of 372 bone fragments belonging to the *Scombridæ* family of fish (mackerels and tunnies). As has been noted by von den Driesch and Boessneck (forthcoming), and also by Tannahill (1973: 96-100), mackerels and tunnies were used in the production of *liquamen* (or *garum*), a type of Greek, and later Roman, fish sauce used to season foods. This sauce was possibly transported to the site in Rhodian amphora jars, several of which were found in Late Hellenistic deposits at Tell Hesban (Cox 1976: 149-155).

Another possible evidence of the Greek palate at Tell Hesban in the Hellenistic Period is the high proportion of pulses, especially peas and vetches. As the Brothwells (1969: 106) have noted, "the Greeks made great use of the pulses in their diet, indeed they even had a god of Beans, and held a 'bean feast' in honour of Apollo. Pea soup was made and could be bought hot in the streets."

Another important feature about the Late Hellenistic diet at Ebus was the relative importance of camel meat in it. As noted earlier, transhumant camel nomads existed side by side with settled cultivators in this region during Hellenistic times. These nomads were very likely the producers of much of the camel meat consumed by the Greek settlers at Ebus.

The fact that cattle are represented so prominently in the Late Hellenistic stratum is suggestive not only of their importance as draft animals, but also of their importance in the diet. Beef appears, in fact, to have been consumed in greater propor-

tions during the Hellenistic Period than during any subsequent period in this millennium. Mutton and goats' meat were also consumed, but in proportionately smaller quantities than during later centuries.

Other items in the Late Hellenistic diet at Ebus included, of course, wheat, barley, and oats. These were used by the Greeks to make various kinds of breads, pastes, and porridges (Tannahill 1973: 80). Chicken and swine were eaten as well, but not in the quantities they were consumed in the subsequent Roman and Byzantine centuries (cf. Boessneck and von den Driesch forthcoming). Olives and grapes were also eaten, but again, not in the amounts they were consumed in these later centuries.

Strata	Period	# of Bones		Min # of Individuals		% Young
		#	%	#	%	
1	Modern	---	---	---	---	---
2-4	Ayyubid-Mamluk	1566	65.83	128	58.44	22.0
5-6	Umayyad-Abbasid	127	5.34	13	5.94	8.0
7-10	Byzantine	231	9.71	27	12.33	13.5
11-14	Roman	410	17.23	41	18.72	14.2
15	Late Hellenistic	41	1.72	7	3.20	14.6
16-18	Iron 2	3	0.13	2	0.91	---
19	Iron 1	1	0.04	1	0.46	---
Sum	All	2379	100	219	100	---

Table 6.5 Number of identified specimens of chicken from Greco-Roman strata

#### The Roman Diet at Ebus

The most distinctive feature of the changes in dietary preferences which occurred during the Roman centuries, judging from the data on hand, was increased eating of swine. Between the Late Hellenistic and Late Roman periods the rate of swine consumption jumped from 0.3% to 14%.

Along with this came an increase in the eating of poultry, especially chicken, but also geese and pigeons (Boessneck and von den Driesch 1978a: 266-267). The use of *garum* appears to have continued as well. In addition, a wider variety of both fresh-water and salt-water fish was being imported, including combs (family *Chiclidæ*), parrotfishes (family *Scaridæ*), catfishes (order *Cypriniiformes*), drums and croakers (family *Sciaenidæ*), sea breams (family *Sparidæ*), mackerels and tunnies (family *Scombridæ*). The fact that Mediterranean species, especially drums, croakers, and mackerels, are the

most abundantly represented is an indication of the active trade which went on between Transjordan and coastal cities in Palestine during the Roman Period. More will be said about the implications of the fish finds for our understanding of ancient trade routes in Chapter Eight.

This increased reliance on swine, poultry, and exotic items like the various types of fish, is to be expected, especially during Late Roman times, when Esbus was transformed from a small village into a moderate-sized town located at the crossing of several major highways. The Esbus-Livias-Jerusalem road would have been especially important in facilitating the transportation of fish from the Mediterranean and the Jordan River to Esbus.

Increases in the eating of swine and poultry appears to have gradually diminished the use of beef in the diet, especially during Late Roman times. The shifts in the pattern of consumption of camels' meat are, as we have suggested earlier, understandable in light of the side-by-side existence of transhumant camel nomads and settled cultivators in this region during Roman times as well. Thus, the increased percentage of camels' meat in the diet during the latest Roman stratum can be viewed as being a reflection of a return to camel nomadism by disinherited tribes in the hinterlands. This process would have led to an increase in the supply of camels' meat.

The diminishing importance of sheep and goats between the Early Roman strata and the later ones is probably reflective of a combination of factors, including the increasing role of swine and poultry raising in the towns and villages, and the aforementioned return to camel nomadism among hinterland tribes. Regarding grains, pulses, vegetables, and fruits, not much can be said given the meagerness of the plant remains on hand. It can safely be inferred, however, from the other lines of evidence discussed above, that the principal field crops of antiquity were used in the diet, including wheat, barley, oats, lentils, peas, and beans.

Besides grapes and olives, other fruits, including figs, dates, apples, apricots, and pears, were also very likely consumed (Forbes 1955 vol. 3: 54). The variety of such grains, pulses, fruits, and vegetables in the Roman diet very likely increased, just as was the case with the fish, poultry, and meat supply, after the Roman road network made interregional exchange of produce more feasible and profitable.

### The Byzantine Diet at Esbus

The Byzantine diet was, to a large degree, much like that of the earlier Roman Period. Thus swine, poultry, and fish remained popular substitutes for beef, mutton, and goats' meat, the latter being in relatively short supply in this era of orchards, gardens, and field crops. The drastic increase, however, in equine remains during this period, and the fact that butchering marks were encountered on the pelvis bones of at least one equine find, may be indicative of the consumption of horse meat by certain classes at Esbus during Byzantine times (Boessneck and von den Driesch 1978a: 265).

The sharp drop-off in the percentages of camel remains from the Byzantine strata may be a measure of the extent to which camel pastoralists were excluded from their traditional pastures in the hinterlands of Esbus. Given the density of human settlement during this period, and the wide extent to which cultivation was pushed, there simply were not sufficient grazing areas left in the plains and valleys to permit large herds of camels to graze. Instead, herds of sheep and, especially goats were kept which could better exploit the less accessible grazing lands along the steep slopes and ridges of the western descent region. A slight rise in the quantity of sheep and, especially goats gives added support to this explanation.

The diversity which characterized the Late Roman diet, and the reliance on imported items such as fish, may have been even more apparent during Byzantine times. This is the impression gained, at least, from the fish finds which show comparatively higher quantities across the various species represented than during previous periods.

While field crops like wheat, barley, oats, lentils, peas, beans, and vetch no doubt continued to play a role as staple items in the diet, it is very likely that fruits and vegetables were eaten in greater quantities as well, given the widespread presence of gardens and orchards throughout the project area during Byzantine times. Exotic foods and spices were also very likely more common than ever before, given the trade network to which the people at Esbus had access.

### Sedentarization and Nomadization

The foregoing analysis of the changes which took place in the food system of Esbus (Tell Hes-

ban) and vicinity between ca. 333 B.C. and A.D. 661 has focused attention on the changes which were introduced as a result of the Greco-Roman power drive in this region as well as on the response to this situation by the rural population. Specifically, data gathered by means of surface surveys and stratigraphic excavations were examined to ascertain what changes were observable with reference to five interrelated aspects of the food system, namely environment, settlement, landuse, operational facilities, and diet. On the one hand, the evidence available reveals a gradual process of intensification of the food system. This was brought about as the result of several powerful forces set in motion by the Greeks and the Romans. To begin with, the process of Hellenization which followed Alexander the Great's conquest of the Orient in 333 B.C. led to new markets and long-distance trade opening up from India and China to Egypt and Greece. In Transjordan, this catalyzed the rise to power of the Nabataean Arabs who with their camels and knowledge of the desert caravan routes were able to capitalize on the new opportunities for caravaneering and commercial exchange.

With the arrival of the Romans in Palestine ca. 63 B.C., the Nabataeans were slowly forced to relinquish their control of the trade routes. Gradually they turned their skills to the improvement of the desert agricultural techniques for which they have also become famous. Their accomplishments in agriculture laid the foundation for the subsequent development and expansion of floodwater cultivation techniques in Transjordan in the Greco-Roman millennium, especially during the Late Roman and Byzantine centuries.

During the Hellenistic centuries, the Hesban region was the home of both settled villagers and transhumant camel nomads. Tell Hesban or Esbus itself was not settled until Late Hellenistic times. Its rebuilders were persons with Greek tastes and concerns, for the site functioned primarily as a fort and appears to have been occupied by soldiers who also were farmers. Extensively cultivated were field crops including wheat, barley, oats, peas, lentils, beans, and vetch. The inhabitants of Esbus may very well have played an important role not only as agents of Hellenization, but also as local leaders in reintroducing sedentary agriculture in this region.

During the Early Roman Period, Esbus continued to be used as a fort and as a temporary place of shelter and work for semisedentary cul-

tivators and transhumant pastoralists. The Late Roman Period, however, was a time of rapid urbanization at Esbus and intensification of landuse in its hinterlands. An important catalyst in this transformation was that during this period Esbus became a way-station on the Esbus-Livias road. The town was also connected to the *via nova Traiana*, the main highway running north-south in Transjordan.

The process of urbanization which took hold during the Late Roman Period was accompanied by expansion of the tree-fruit production sector of the local economy, especially in the vicinity of Esbus and along the road between it and Amman. At the same time, however, there are signs of cultivators actually abandoning their farms in the northern hills and on the plains to the east of Esbus. Thus a process of polarization appears to have gained momentum in the region during Late Roman times as well. While certain of the rural population migrated to the larger towns and villages, others returned to pastoral pursuits.

The Hesban region reached the height of its maximization drive during the Early Byzantine Period. Not only is there evidence of extensive use of Nabataean-style floodwater irrigation technology during this period, Roman-style reservoirs and water mills were added on a scale never before seen in the region as well. This is also the period during which more villages and towns were settled than in any previous age. What catalyzed this intensification was, among other factors, the influx of capital to the region in the wake of Constantine I's conversion to Christianity. As Avi-Yonah (1958) has pointed out, this event led to a new influx of capital to Palestine, as pilgrims and pious men and women in other lands bestowed their wealth on the region.

One apparent consequence of this intensification was that there was little room left for the traditional camel nomads in Transjordan. Their way of life could no longer be accommodated because of the intensity with which every potential plot of pasture was exploited for cultivation or herding of swine, goats, and sheep. This alienation of the camel-pastoralists in Transjordan and elsewhere in the Byzantine world led, as is well known, to the build-up of a reservoir of Arab tribesmen in the desert, which, in time, became the rallying point for the Muslim takeover of the ancient Greco-Roman world under the banner of Islam.