

# 14 · Itineraries and Geographical Maps in the Early and Late Roman Empires

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Whereas Greek knowledge about the theory of map-making—as well as the map image of the known world—tended to accumulate and to build on previous writers, Roman efforts in both small- and large-scale mapping tended to be diluted over time. The record is also extremely fragmentary and drawn out over a period of some five hundred years. In this chapter, we discuss itineraries and small-scale geographical maps in both the early and the late empire and conclude with a review of the use of maps in the Roman period as a whole.

The relative decline in the theoretical aspects of Roman cartography cannot be disputed. Although emperors such as Hadrian and Caracalla (M. Aurelius Severus Antoninus) were great philhellenes (and Hadrian's principate—A.D. 117–38—coincided with much of Ptolemy's working life), they do not seem to have encouraged Roman scholars to build on the foundations of Greek geography and astronomy. Latin writers such as Pomponius Mela and the elder Pliny did little to modify Hellenistic concepts of the inhabited world, and in comparison with Greek writers such as Hipparchus or Strabo, the status of maps within their work is relatively ambiguous.

During the late empire, scholars became even further removed from the sources of Greek geographical culture and from the cartographical knowledge it had contained. It is true that mathematics continued to flourish at Alexandria—where Pappus, in the early fourth century, not only commented on Ptolemy's *Almagest* and *Planisphereium*, but also wrote a *Chorography of the Oikoumene* (now lost) based on Ptolemy's *Geography*<sup>1</sup>—but this did not lead to a revision of the maps. Following the Antonine and Severan dynasties (A.D. 138–235) there was a period of rapidly changing emperors, and, apart from legal writings, the arts and the sciences—including the knowledge that related to maps—cannot be said to have flourished much. If we take accuracy in geographical mapping as a yardstick, standards were declining when compared with the high point of Greek influence. For example, while the Peutinger map was of fourth-century origins but indebted to a first-century A.D. map, the earlier map may have positioned towns and roads with a closer resemblance

to reality. Since no ancient handbook of Roman roads, illustrated or not, has survived, this is difficult to ascertain. The bureaucrats' maps attached to the *Notitia Dignitatum*, a directory of officeholders and administrators, follows textual rather than topographical order, sometimes with confused results. Even the maps in the *Corpus Agrimensorum* tended to deteriorate with repeated copying, particularly in their jumbled nomenclature.

The late empire is thus often dismissed as of little consequence by historians of cartography. It is given short shrift in the standard authorities; only one or two surviving maps such as the Dura Europos shield or the Peutinger map are described.<sup>2</sup> However, once we start to evaluate a broader spectrum of evidence it becomes clear that the idea of the map was not only kept alive in western and northern Europe, but also transmitted to the eastern empire after the foundation of Constantinople on the site of Byzantium in A.D. 330. Set against an apparent lack of scientific progress in mapmaking, sound evidence for the widespread use of geographical maps is revealed in literary sources, found in images on coins or incorporated into mosaics, and even seen in the decoration of lamps. As much as in Hellenistic Greece, such maps continued to have meaning in Roman society.

## ITINERARIES AND THE PEUTINGER MAP

It is widely accepted that measured itineraries are of fundamental importance in the construction and development of geographical maps and marine charts. This was true of many societies that developed such maps,<sup>3</sup> and the Roman world is no exception, though a clear

1. Ivor Bulmer-Thomas, "Pappus of Alexandria," in *Dictionary of Scientific Biography*, 16 vols., ed. Charles Coulston Gillispie (New York: Charles Scribner's Sons, 1970–80), 10:293–304.

2. Armando Cortesão, *History of Portuguese Cartography*, 2 vols. (Coimbra: Junta de Investigações do Ultramar-Lisboa, 1969–71), 1:148–50; Leo Bagrow, *History of Cartography*, rev. and enl. R. A. Skelton, trans. D. L. Paisey (Cambridge: Harvard University Press; London: C. A. Watts, 1964), 37–38; Gerald R. Crone, *Maps and Their Makers: An Introduction to the History of Cartography*, 5th ed. (Folkestone: Dawson; Hamden, Conn.: Archon Books, 1978), 3–4.

3. P. D. A. Harvey, *The History of Topographical Maps: Symbols, Pictures and Surveys* (London: Thames and Hudson, 1980), 135–52.

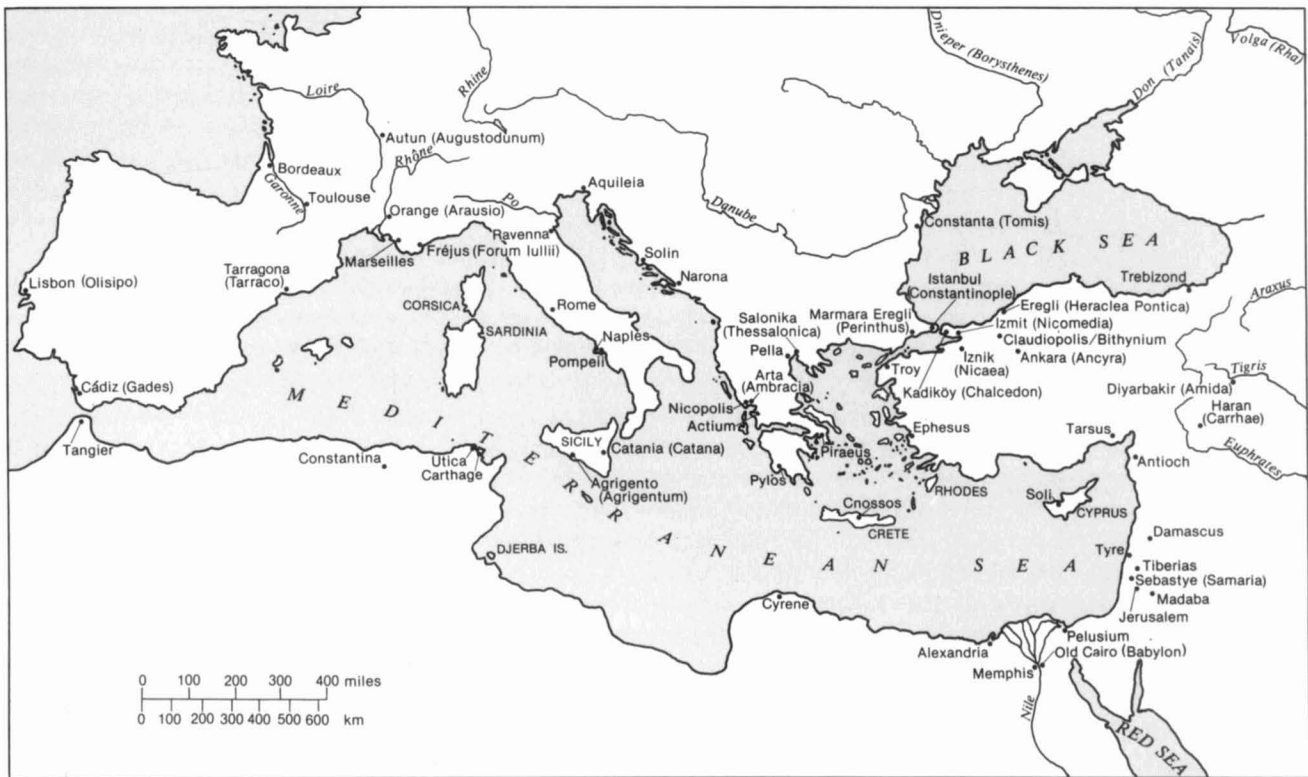


FIG. 14.1. PRINCIPAL PLACES ASSOCIATED WITH ITINERARIES AND GEOGRAPHICAL MAPS FROM THE ROMAN EMPIRE. See also figure 12.1.

distinction must be drawn between written itineraries and itinerary maps. In the Roman period the former were more common, being used for both military and civil purposes—and together with the portable sundial providing a principal aid to the well-informed traveler. The earliest surviving Roman itineraries are the Vicarello goblets, which give a list of stages from Cádiz to Rome via the Po valley, with the mileage between successive stages.<sup>4</sup>

The best-preserved examples are the Antonine itinerary, the Bordeaux itinerary, and the Ravenna cosmography that is associated with the Byzantine empire. The first two of these are simply lists of places along routes, giving the distances between them, but because of their close relationship to geographical mapping, all three will be examined alongside the Peutinger map—which remains as the sole surviving example of the itinerary map from the Roman period, unless we assign the Dura Europos shield to this category.

#### THE ANTONINE ITINERARY

The Antonine itinerary, the most important of the ancient list-type itineraries to be preserved (as opposed to the map or “painted itinerary”), is in two parts: land and sea.<sup>5</sup> The full titles of these are *Itinerarium pro-*

*vinciarum Antonini Augusti* and *Imperatoris Antonini Augusti itinerarium maritimum*. These titles make it clear that the journeys mentioned were, in origin at least, either planned for or completed by an emperor of the Antonine dynasty; and there is general agreement that this emperor was Caracalla. Since the longest single journey is overland from Rome to Egypt via the Bosphorus, it seems only reasonable to link this with such a journey undertaken by Caracalla in A.D. 214–15.<sup>6</sup> A long prestigious journey by an emperor would require careful planning by civil servants, with provision for supplies, changing of horses, and so on, at appropriate staging posts. Every contingency had to be foreseen, and local

4. Jacques Heurgon, “La date des gobelets de Vicarello,” *Revue des Etudes Anciennes* 54 (1952): 39–50; Raymond Chevallier, *Les voies romaines* (Paris: Armand Colin, 1972), 46–49, or for an English translation, *Roman Roads*, trans. N. H. Field (London: Batsford, 1978), 47–50. O. A. W. Dilke, *Greek and Roman Maps* (London: Thames and Hudson, 1985), 122–24.

5. Otto Cuntz, ed., *Itineraria Romana* (Leipzig: Teubner, 1929), vol. 1, *Itineraria Antonini Augusti et Burdigalense*; Konrad Miller, *Itineraria Romana* (Stuttgart: Strecker und Schröder, 1916), LV ff. and regional sections; Dilke, *Greek and Roman Maps*, 125–28 (note 4).

6. D. van Berchem, “L’annone militaire dans l’empire romain au III<sup>e</sup> siècle,” *Bulletin de la Société Nationale des Antiquaires de France* 80 (1937): 117–202.

representatives complained that they often had to make such provision at points where in fact the emperor never stopped at all.<sup>7</sup> Nevertheless, the existence in the Antonine itinerary of forms of place-names later than Caracalla's reign, such as Diocletianopolis for Pella and Heraclea for Perinthus (Marmara Ereğli), suggests that routes were reused, with or without amendment, over a long period (fig. 14.1). An example of addition is in Sicily, where between Catana (Catania) and Agrigentum (Agrigento) two routes are given, the second including the phrase *mansionibus nunc institutis* (by the staging posts now set up). The date of the final version of the Antonine itinerary may have been between A.D. 280 and 290.

The organization that planned such journeys was the *cursus publicus*,<sup>8</sup> set up by Augustus for transporting officials and their families and for carrying official mail. Hence the *cursus publicus* had its own lists, and in some cases straightforward journeys may well have been copied directly from these. But the Antonine itinerary cannot simply have been a version of those lists, because of the numerous omissions, duplications, and extremely roundabout routes. Thus the Peloponnese, Crete, and Cyprus are unrepresented, and considerable parts of Gaul, the Balkans, and Asia Minor are thinly covered. A good example of a circuitous route is the second journey in Britain, iter II, which reaches Richborough from Birrens via Carlisle, York, Chester, and London.<sup>9</sup> Such a route must have been tailor-made for a particular journey, stopping at the legionary fortresses of York and Chester among other places.

The method in the Antonine itinerary was to list the starting and finishing points of each journey and the total distance in Roman miles (in Gaul, leagues, as mentioned below). Then the individual stages were listed, with the mileage for each. The totals sometimes correspond to the added individual mileages, sometimes do not; in the latter case especially, one or more of the figures may well be corrupt.

The Antonine itinerary begins at Tangier and covers most of the provinces of the empire rather unsystematically. The British section, last before the sea routes, is self-contained and consists of fifteen journeys, some coinciding in the same or the opposite direction.<sup>10</sup> Except in cases where they are clearly corrupt, the mileages are fairly reliable. It has been shown, however, that distances from a settlement sometimes start from the center, sometimes from the outskirts.<sup>11</sup> Since Colchester is in one place called Camulodunum, in another Colonia (it was one of the four colonies of Roman Britain), one may suspect that the routes were not all contemporary.

An interpretation of the Antonine itinerary routes in northern Gaul encounters two difficulties. One is that distances in Gaul are sometimes reckoned in Roman

miles, sometimes in leagues, sometimes in both (1½ Roman miles = 1 *leuga*).<sup>12</sup> The other is that there are in some cases considerable differences of mileage between the same two places according to which journey is followed. More research is needed that will not only study the recorded distances on the modern map, but take account of archaeological and epigraphic evidence, together with such geographical factors as alterations in sea level or in the course of riverbeds.<sup>13</sup>

#### ITINERARIES FROM THE LATE EMPIRE

The vast extent of the empire, with its expansion of the bureaucracy, encouraged the production of many itineraries, which, since roads with milestones continued to be kept up, provided acceptable accuracy.<sup>14</sup> As barbarians pressed in from north and east, military requirements became more important than ever. Vegetius, the civil servant whose military manual dates from about A.D. 383–95 but draws on much older material, writes of the ideal general:

In the first place, a commander should have itineraries of all the war zones very fully written out, so that he may thoroughly acquaint himself with the intervening terrain, as regards not only distance but standard of

7. Dio Cassius *Roman History* 78.9.3 and 78.9.6–7; see vol. 9 of *Dio's Roman History*, 9 vols., trans. Earnest Cary, Loeb Classical Library (Cambridge: Harvard University Press; London: William Heinemann, 1914–27).

8. References in Konrat Ziegler and Walther Sontheimer, eds., *Der kleine Pauly*, 5 vols. (Stuttgart: Alfred Druckenmüller, 1964–75), s.v. “*cursus publicus*,” and in *Oxford Classical Dictionary*, 2d ed., s.v. “postal service (Roman).”

9. A. L. F. Rivet and Colin Smith, *The Place-Names of Roman Britain* (Princeton: Princeton University Press, 1979), 157–60, fig. 12.

10. Rivet and Smith, *Place-Names*, 148–82 (note 9).

11. Warwick Rodwell, “Milestones, Civic Territories and the Antonine Itinerary,” *Britannia* 6 (1975): 76–101.

12. Gallic leagues were officially recognized by Septimius Severus about A.D. 202.

13. Francis J. Carmody, *La Gaule des itinéraires romains* (Berkeley: Carmody, 1977), contents himself with criticizing Miller's early identification of Vetera, Germania Inferior, with Rheinberg and himself proposing Alpen. But in fact there has been no dispute for many years that Vetera was quite near the previous station, Colonia Traiana (Xanten). There may have been two successive sites, one three kilometers southeast of Xanten, on the Fürstenberg north of Birten, the other on land that in Roman times was on the opposite bank of the Rhine, east-northeast of Vetera I. See H. von Petrikovits, “Vetera,” in *Paulys Realencyclopädie der classischen Altertumswissenschaft*, ed. August Pauly, Georg Wissowa, et al. (Stuttgart: J. B. Metzler, 1894–), 2d ser., 8 (1958): cols. 1801–34, esp. 1813–14.

14. The emperor's name on a milestone often indicates substantial repair or improvement to a road rather than a new one. For milestones see the series *Itinera Romana*, ed. Gerald Sicilia Verbrugge, Ingemar König, and Gerold Walser, 3 vols. (Bern: Kümmerly und Frey, 1967–76); Jeffrey P. Sedgley, *The Roman Milestones of Britain: Their Petrography and Probable Origin*, British Archaeological Reports no. 18 (Oxford: British Archaeological Reports, 1975).

roads, and may study reliable descriptions of short-cuts, deviations, mountains, and rivers. In fact, we are assured that the more careful commanders had, for provinces in which there was an emergency, itineraries that were not merely annotated but even drawn out in color [*picta*], so that the commander who was setting out could choose his route not only with a mental map but with a constructed map to examine.<sup>15</sup>

Itineraries were also used by pilgrims and by soldiers rejoining their legions; they were expected to take good care of them, not to leave the route, and to stop at the *mansiones* (staging posts) indicated.<sup>16</sup>

The official recognition of the Christian church in A.D. 313 affected cartography as it did other branches of science; one direct result was that pilgrimages to Christian shrines created a new use for geographical itineraries. The principal itinerary of the late empire is that of the Bordeaux-Jerusalem pilgrimage, A.D. 333, of which the best manuscript is the Pithoeanus, now Par. Lat. 4808, of the ninth century (no maps).<sup>17</sup> Distances are recorded in leagues (2.22 km) as far as Toulouse, then in Roman miles (1.48 km). Another itinerary attached to this records a journey from the Holy Land to Chalcedon (Kadiköy), in Asia Minor opposite Constantinople, and back via Nicomedia (Izmit), Ancyra (Ankara), Tarsus, and Tyre. A third goes from Heraclea Pontica (Eregli) via Macedonia, Albania, and the east coast of Italy. In addition to this major document, there are fragments of itineraries from monumental inscriptions of various periods from several territories under the Roman Empire.<sup>18</sup>

A second category of written itineraries relates to journeys made by sea. It has already been noted that part of the Antonine itinerary consisted of an *itinerarium maritimum*, and in view of theories about an association between these periplois and the development of portolan charts,<sup>19</sup> such itineraries have been widely discussed in the literature of the history of cartography. An anonymous and incomplete Greek periplus of about the third or fourth century A.D. is known as the *Stadiasmus maris magni*.<sup>20</sup> It records distances in stades between harbors and watering facilities around most of the eastern Mediterranean, covering the North African coast as far west as Utica. Thus a fair amount of detail is given in the entry for even such a small area as Djerba Island, Tunisia. Rhodes is particularly well covered, with sea distances to twenty-seven harbors of the eastern Mediterranean and Aegean. But some areas, such as the Levant, are very poorly covered. Müller questionably attributed the whole work to a much later period.<sup>21</sup>

It is likely that writers in some ports specialized in the production of these aids to the mariner, and such was Marcianus of Heraclea Pontica, a Greek writer of periplois, who is thought to have been a contemporary of

Synesius of Cyrene, about 370–413. Among his sources he mentions the *Geography* of “the most divine and wise Ptolemy,” whose coordinates he clearly edited.<sup>22</sup> He accepts the size of the earth according to Ptolemy, not Eratosthenes’ measurement of the circumference of the earth. The surviving parts of his *Periplus maris exteri*<sup>23</sup> cover the southern coasts of Asia (which he may well have illustrated by a map based on Ptolemy’s coordinates) and the coasts of the less familiar parts of Europe; some, such as the Iberian Peninsula, are covered in

15. Vegetius *De re militari* (Military Institutions of the Romans) 3.6, author’s translation. No annotated itineraries are extant, but from Vegetius’s previous words they must have commented among other things on quality of road surface. The words “there was an emergency” render the past tense *gerebatur*, which, however, is a conjecture for the present *geritur* by Carl Lang in his edition of Vegetius, *Epitoma rei militaris*, 2d ed. (Leipzig: Teubner, 1885), 75. Pascal Arnaud (criticism at a seminar 12 December 1983 on “La Tabula Peutingeriana et le Corpus Agrimensorum” at Centre Jean Bérard, Institut Français de Naples) takes *picta* differently as referring to itineraries with paintings.

16. Saint Ambrose (bishop of Milan) *Expositio in psalmum 118 5.2*; see *Opera, pars quinta (V): Expositio psalmi CXVIII*, ed. Michael Petschenig in *Corpus Scriptorum Ecclesiasticorum Latinorum*, vol. 62 (Vienna: F. Tempsky; Leipzig: G. Freytag, 1913), 82–83.

17. Cuntz, *Itineraria Romana* (note 5); P. Geyer and Otto Cuntz, “Itinerarium Burdigalense,” in *Itineraria et alia geographica*, in *Corpus Christianorum*, Series Latina, vols. 175 and 176 (1965), 175: XVIII–26; Henri Leclercq, “Itinéraires,” in *Dictionnaire d’archéologie chrétienne et de liturgie*, 15 vols., ed. Fernand Cabrol and Henri Leclercq (Paris: Letouzey et Ané, 1907–53), 7.2 (1927): cols. 1841–1922, esp. 1853–58; Aubrey Stewart, trans., *Itinerary from Bordeaux to Jerusalem: “The Bordeaux Pilgrim,”* Palestine Pilgrims Text Society, vol. 1, no. 2 (London: Palestine Exploration Fund, 1896), 15 ff., abstracted by George Kish, ed., *A Source Book in Geography* (Cambridge: Harvard University Press, 1978), 156–58.

18. Wilhelm Kubitschek, “Itinerarien,” in *Realencyclopädie 9* (1916): cols. 2308–63, esp. 2314 ff. (note 13); Miller, *Itineraria Romana*, LIV ff. (note 5); Leclercq, “Itinéraires,” cols. 1841 ff. (note 17); Annalina Levi and Mario Levi, *Itineraria picta: Contributo allo studio della Tabula Peutingeriana* (Rome: Erma di Bretschneider, 1967), 27–28, n. 29. Two of these are on pilasters, one on a column, others on stone or terra-cotta tablets. An inscription from Solin, Yugoslavia, the town near Diocletian’s palace at Split, lists four roads leading from there. Of three Gallic inscriptions, one at Autun lists part of the road from there to Rome; one from Valence refers to the road to Vienna (Vienne, France); and one in Luxembourg covers part of the area between there and Mainz. A columbarium fragment at Vigna Codini is thought to refer to the main road from Cilicia or Syria to Rome.

19. See chapter 19 in this volume, “Portolan Charts from the Late Thirteenth Century to 1500,” pp. 371–436. The latest writer on periplois, Pietro Janni, *La mappa e il periplo: Cartografia antica e spazio odologico*, Università di Macerata, Pubblicazioni della Facoltà di Lettere e Filosofia 19 (Rome: Bretschneider, 1984), rightly stresses the lack of maps in periplois.

20. See Karl Müller, ed., *Geographi Graeci minores*, 2 vols. and tabulae (Paris: Firmin-Didot, 1855–56), 1:427–514.

21. Müller, *Geographi Graeci minores*, 1:cxxiii–cxxviii (note 20).

22. Marcianus *Periplus maris exteri* in Müller, *Geographi Graeci minores*, 1:515–62, quotation on 516 (note 20), author’s translation.

23. See note 22 above.

greater detail than others. For southern Asia he gives fuller measurements as far as Gedrosia (Pakistan west of the Indus), then in less detail.

#### THE PEUTINGER MAP

The road map known as the Peutinger map,<sup>24</sup> Codex Vindobonensis 324, was originally a long, narrow parchment roll, 6.75 meters long but only 34 centimeters wide. It is in the Nationalbibliothek, Vienna, and has been divided into sections for preservation. Its date of transcription is twelfth or early thirteenth century, but it has long been recognized as a copy of an ancient map. In his will of 1508, the humanist Konrad Celtes of Vienna left to Konrad Peutinger (in whose hands it had been since the previous year) what he called *Itinerarium Antonini*. This was not justified as a title: it is indeed a road map, but not connected with the Antonine emperors and different from the Antonine itinerary described above. It was first published in 1598 by Markus Welser, a relative of the Peutingers, and since 1618 it has generally been known as the *Tabula Peutingeriana* or translations of that phrase.<sup>25</sup> The original roll at the time of its transcription in the early Middle Ages was of eleven sheets, but as such it was incomplete, since much of Britain, Spain, and the western part of North Africa were already missing at the time of copying; there may also have been an introductory sheet forming part of an earlier prototype version. It was evidently not, as was once thought, the work of the Dominican monk Konrad of Colmar, who in 1265 quite independently produced a *mappamundi* that he says he copied onto twelve parchment pages; the paleography suggests an earlier date. The second sheet of the Peutinger map was treated as if it had been the first, with spellings of truncated names containing false initial capitals (for example, Ridumo for what was originally Moriduno). Hence a total of twelve sheets extant at the time of copying can be accounted for only by assuming that, when the copyist mentioned this number, he was including a title sheet.<sup>26</sup>

The Peutinger map was primarily drawn to show main roads, totaling some 70,000 Roman miles (104,000 km), and to depict features such as staging posts, spas, distances between stages, large rivers, and forests (represented as groups of trees). It is not a military map, though it could have been used for military purposes, but the words of Vegetius quoted above (pp. 236–37) give an indication of its possible function. They suggest that, whether or not the term *itinerarium pictum* (painted itinerary), was in current use, it is a convenient phrase for this unique map.<sup>27</sup> The distances are normally recorded in Roman miles, but for Gaul they are in leagues, for Persian lands in parasangs, and for India evidently in Indian miles.

The proportions of the Peutinger map are such that distances east-west are represented at a much larger scale than distances north-south; for example, Rome looks as though it were nearer to Carthage than Naples is to Pompeii. The archetype may well have been on a papyrus roll, designed for carrying round in a *capsa* (roll box). As such, its width would be severely limited, whereas its length would not. In the extant map a north-south road tends to appear at only a slightly different angle from an east-west one, and distances are calculated not by the map's scale but by adding up the mileages of successive staging posts.

The date of the archetype is likely to have been between A.D. 335 and 366. Such dating is suggested by the three personifications placed on Rome, Constantinople (labeled Constantinopolis, not Byzantium), and Antioch; and it fits in well enough with biblical references on the map. Sometime after the foundation of Constantinople in A.D. 330 as a new Rome on the site of Byzantium, Antioch was recognized as the important bastion against the Parthians. But the suggestion that this fourth-century archetype was based on a much earlier map would account for the inclusion of Herculaneum, Oplontis, and Pompeii, which had been destroyed in the eruption of Vesuvius in A.D. 79 and not rebuilt, except for parts of Pompeii. It is also perhaps easier, on this supposition, to see why certain roads are omitted, such as the major routes through the Parthian empire mentioned in the *Mansiones Parthicae* (Parthian stations) of Isidorus of Charax. This work is believed to have been compiled in the late first century A.D.<sup>28</sup>

24. Ekkehard Weber, ed., *Tabula Peutingeriana: Codex Vindobonensis 324* (Graz: Akademische Druck- und Verlagsanstalt, 1976); Konrad Miller, *Die Peutingerische Tafel* (Stuttgart: F. A. Brockhaus, 1962); Levi and Levi, *Itineraria picta* (note 18); Luciano Bosio, *La Tabula Peutingeriana: Una descrizione pittorica del mondo antico*, I Monumenti dell'Arte Classica, vol. 2 (Rimini: Maggioli, 1983). Dilke, *Greek and Roman Maps*, 113–20 (note 4).


25. *Tabula* is one Latin word for a map, but *forma* is more common. Inexplicably, the word *tabula* has been translated “table” rather than “picture” or “map” in popular usage. It is now time to call it the “Peutinger map” to avoid any misconception that the original image was somehow carved on a table or was like a statistical table. The alternative naming of the Peutinger map as the “world map of Castorius” has met with very little support. Castorius, a geographical writer of the fourth century A.D., is several times mentioned as a source in the Ravenna cosmography; but there is no evidence to link him directly with the Peutinger map.

26. During this century preservation has been a major problem, particularly since the green coloring used on the parchment has resulted in deterioration of the sea portions of the map. Photographing maps through the glass covers used for preservation has produced inaccurate colors in some reproductions.

27. Hence the title of Levi and Levi, *Itineraria picta* (note 18). For an alternative suggestion, see end of note 15.

28. For a discussion of the date and the significance of Isidorus of Charax, see Sheldon Arthur Nodelman, “A Preliminary History of

Around the personification of Rome—a female figure on a throne holding a globe, a spear, and a shield—are twelve main roads, each with its name attached, a practice not adopted elsewhere (plate 5). The Tiber is correctly shown with 90 percent of the city on its left bank. But owing to the personification the city surround is formally shown as a circle, enlarged in proportion to the very narrow width of the Italian peninsula. The Via Triumphalis is indicated as leading to a church of Saint Peter; the words *ad sc̄m [sanctum] Petrum* are given in large minuscules on the medieval copy. Ostia is shown with a harbor occupying about one-third of a circle, in a fashion similar to that of miniatures in the early manuscripts of Virgil's *Aeneid*.<sup>29</sup> Constantinople is represented by a helmeted female figure seated on a throne and holding in her left hand a spear and a shield (fig. 14.2). Nearby is a high column (rather than a lighthouse)<sup>30</sup> surmounted by the statue of a warrior, presumably Constantine the Great. Antioch has a similar female personification, perhaps originating in a statue of the Tyche (fortune) of the city, together with arches of an aqueduct or possibly of a bridge. Nearby is the park of Daphne, dedicated to Apollo and other gods and famous for its natural beauty and as a leisure center (fig. 14.3). Even though the temple of Apollo was burned down in 362, there were many other temples, so that this is not necessarily a guide to the dating. It has been claimed that in A.D. 365–66 all three personified cities were important, since the pretender Procopius had his seat of power in Constantinople, Valentinian I in Rome, and his brother Valens in Antioch.<sup>31</sup> But in fact, although Valens set out for Antioch, he was diverted to fight Procopius and he cannot be correctly associated with that last-named city.<sup>32</sup>

Throughout the map, mountains are marked in pale brown and principal rivers in green. Names of countries and of some tribes are recorded. Apart from the personifications, cartographic signs include representations of harbors, altars, granaries, spas, and settlements. A unique sign is that for a tunnel , used for the Crypta Neapolitana, near Pozzuoli. Harbors, if indicated, are given the arcuate shape mentioned in connection with Ostia. The sign for a spa is an ideogram of a roughly square building with an internal courtyard, often with a gabled tower at each end of the near side. There are fifty-two such buildings represented, of which twenty-eight are at places specifically called *Aquae*; in some other cases there is reason to think that a place so denoted had prominent baths.<sup>33</sup> There are also in the Peutinger map places with cartographic signs for granaries, denoted as rectangular roofed buildings. One such is *Centumcellae* (Civitavecchia), which had a corn-importing harbor of some size. Variants of a two-gabled building were used to depict some settlements, but most

were distinguished by no more than a name (fig. 14.4). Attempts to differentiate between types of settlements on the map and to establish criteria for the attribution of signs have not been entirely successful. Certain important cities are shown with walls: Aquileia, Ravenna, Thessalonica (Salonika), Nicaea (Iznik), Nicomedia, and Ancyra. But why should the triple-gable sign appear only at Forum Iulii (Fréjus), Augusta Taurinorum (Turin), Luca (Lucca), Narona (on the Neretva River), and Tomis (Constanta)?<sup>34</sup> It is interesting to see that, just as there is one personification in the West and two in the East, so two cities of the second rank, symbolically given walls, are in the West and four in the East. Important cities like Carthage, Ephesus, and Alexandria are not shown with a distinctive sign.

The road network is thought to have been based (at least within the empire) on information held by the *cursum publicum*, responsible for organizing the official transport system set up by Augustus.<sup>35</sup> This system, extended under the late empire to troop movements, relied very largely on staging posts at more or less regular intervals; couriers traveled an average of fifty Roman miles (74 km) a day.

The part of the British section of the Peutinger map that survives is so fragmentary that it covers only a limited area of the southeast, not even including London, and an even smaller area around Exeter.<sup>36</sup> Colchester, surprisingly, is given no cartographic sign. The most northerly place extant in Britain appears as “Ad Taum”;

Characene,” *Berytus* 13 (1960): 83–121, esp. 107–8, and Fergus Millar, “Emperors, Frontiers and Foreign Relations, 31 B.C. to A.D. 378,” *Britannia* 13 (1982): 1–23, esp. 16.

29. For example, Rome, Biblioteca Apostolica Vaticana, Vat. Lat. 3225, of about A.D. 420; the importance of its miniatures for the history of cartography has been recognized.

30. The latter is the interpretation of Levi and Levi, *Itineraria picta*, 153–54 (note 18).

31. Levi and Levi, *Itineraria picta*, 65 ff. (note 18).

32. Glanville Downey, *A History of Antioch in Syria: From Seleucus to the Arab Conquest* (Princeton: Princeton University Press, 1961), 399–400.

33. The closest parallel to the use of this convention is in a work of doubtful authenticity, the so-called Bellori picture, found on the Esquiline in 1668 but now lost. Which settlement was intended to be represented on that *veduta prospettiva* is uncertain; it may have been Pozzuoli. See P. S. Bartoli's drawing in Giovanni Pietro Bellori, *Ichonographia veteris Romae* (Rome: Chalcographia R.C.A., 1764), 1. *Ichonographia* is a word Vitruvius used for the drawing of a ground plan in *De architectura* 1.2.2; see *On Architecture*, 2 vols., trans. Frank Granger, Loeb Classical Library (Cambridge: Harvard University Press; London: William Heinemann, 1931–34).

34. Levi and Levi, *Itineraria picta*, 92–93 (note 18), compare this with an incised glass beaker depicting seaside houses with triple gables in the Bay of Naples (New York, Metropolitan Museum): R. W. Smith, “The Significance of Roman Glass,” *Metropolitan Museum Bulletin* 8 (1949): 56.

35. See above, p. 236 and n. 8.

36. Rivet and Smith, *Place-Names*, 149–50 (note 9).



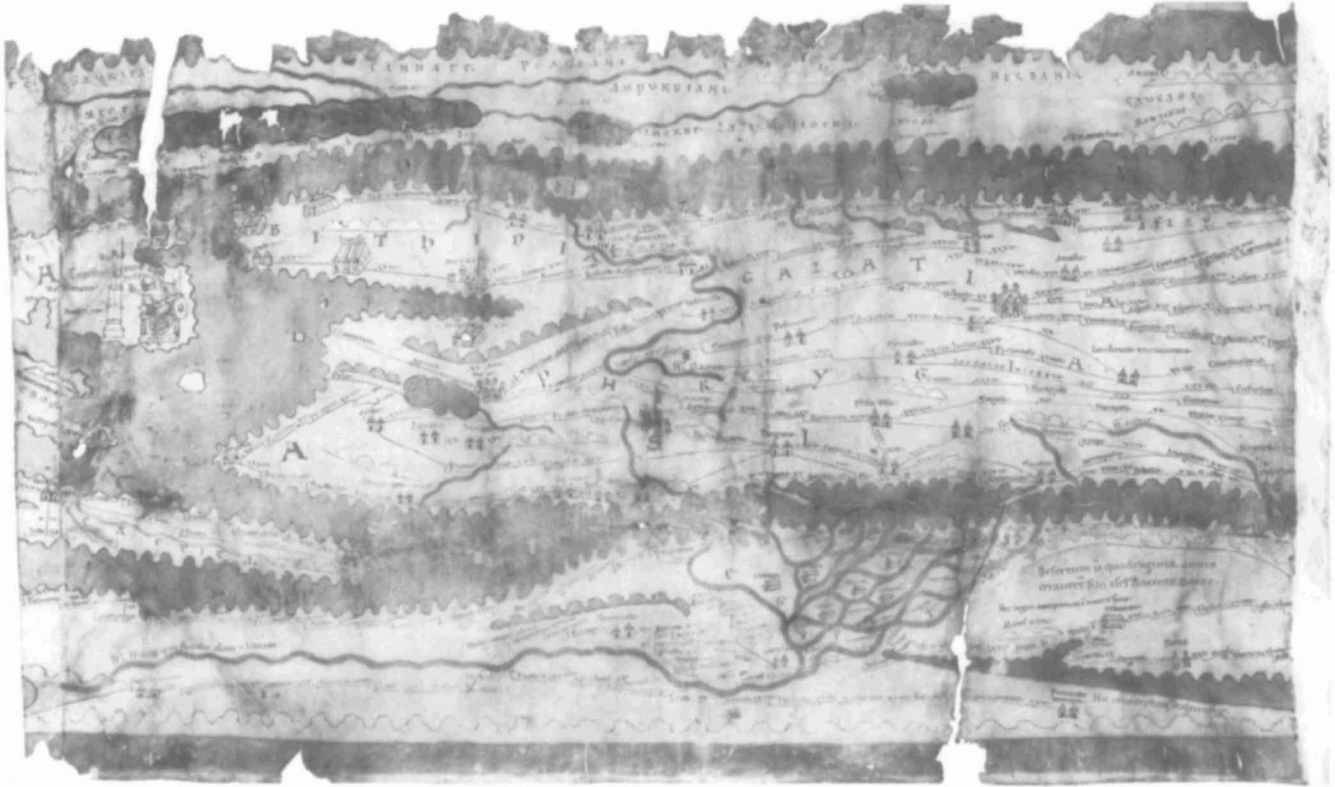


FIG. 14.2. THE PEUTINGER MAP: WESTERN ASIA MINOR AND EGYPT. The elongated deformation of the map is shown by the ribbonlike representation of (top to bottom) the Gulf of Azov and the Black, Aegean, Mediterranean, and Red seas. Constantinople is named as such and not as Byzantium, which confirms the pre-fifth-century date of the archetype. Its personification is in the form of a female warrior, enthroned with a shield and spear. Close by are a column and a statue, presumably of Constantine the Great.

but it is very far removed from the river Tay. This name, however, really consists of the ends of [Ven]ta [Icnor]um (Caistor Saint Edmund, Norwich), and the only unusual feature is *ad*, which may have belonged to an adjacent name.

One of the important features of the map is that it records so many small places. This can be well illustrated by a name in Italy otherwise recorded only (in corrupt form) in the Ravenna cosmography. On the Gulf of Naples, marked as being six Roman miles from Herculaneum and three miles each from Pompeii and Stabiae (Castellammare di Stabia), is shown a large building with the name Oplont(i)s. Until recently scholars could not place this name, like a number of others. But since 1964 a large palace, which probably belonged to Nero's empress Poppaea, has been excavated at Torre Annunziata, and it seems to authenticate the detail on the map.<sup>37</sup> Or

37. Alfonso de Franciscis, "La villa romana di Oplontis," in *Neue Forschungen in Pompeji und den anderen vom Vesuvausbruch 79 n. Chr. verschütteten Städten*, ed. Bernard Andreae and Helmut Kyrieleis

Size of the original: 33 × 56.3 cm. By permission of the Österreichische Nationalbibliothek, Vienna (Codex Vindobonensis 324, segment VIII).

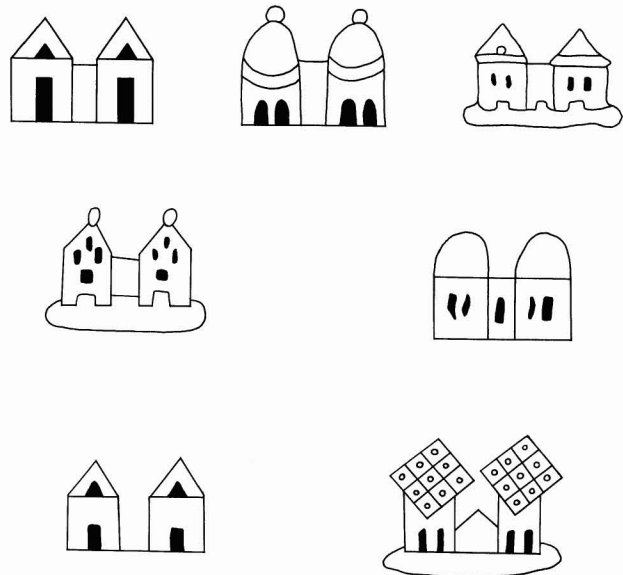


FIG. 14.4. TOWN SIGNS ON THE PEUTINGER MAP. Most towns are shown only by a name, but the more prominent are represented by signs.

After Annalina Levi and Mario Levi, *Itineraria picta: Contributo allo studio della Tabula Peutingeriana* (Rome: Erma di Bretschneider, 1967), 197–201.

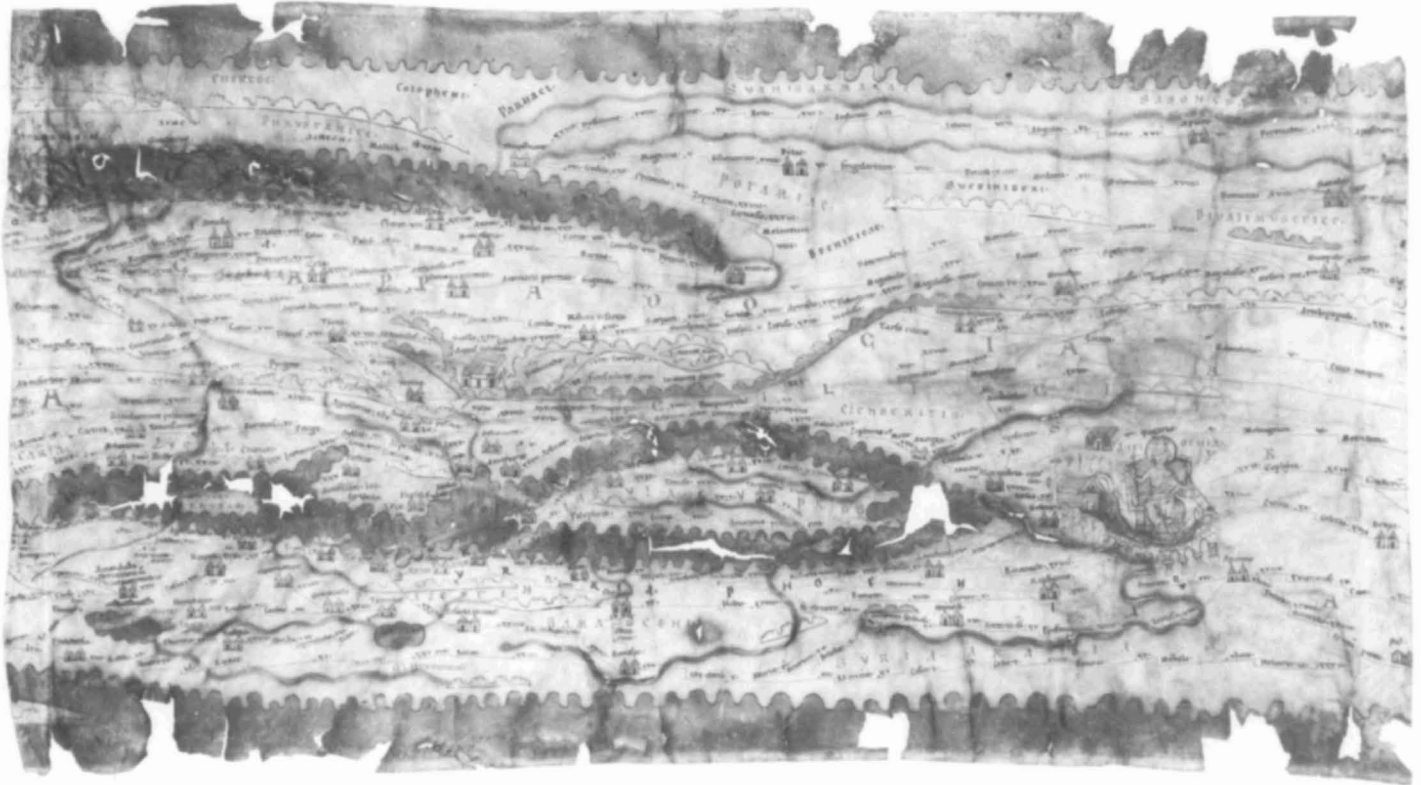


FIG. 14.3. THE PEUTINGER MAP: THE EASTERN MEDITERRANEAN. The north-south axis of Syria and the Holy Land is here shown parallel to Asia Minor and Cyprus. The prominent city to the right of Cyprus is Antioch, the third of the cities on the map personified as a seated figure with spear and shield.

Size of the original: 33 × 61.4 cm. By permission of the Österreichische Nationalbibliothek, Vienna (Codex Vindobonensis 324, segment IX).

again, a much earlier discovery near Aquileia in 1830 appears to correspond to an entry on the Peutinger map. A large bathing establishment, mentioned also by the elder Pliny, was discovered on the lower reaches of the river Isonzo.<sup>38</sup> This is probably the place given the cartographic sign for a spa, with the words *Fonte Timavi* (spring of the river Timavus). Its fresh waters by the sea were regarded as an unusual phenomenon and obviously worth mapping.

Owing to the shape of the map, the Nile could not be represented as a long river if it were made to flow northward throughout its course. Instead it is made to rise in the mountains of Cyrenaica and to flow “eastward” to a point just above the delta. The delta itself is shown in less compressed form from south to north than most parts of the Peutinger map (see fig. 14.2). The distributaries of the Nile are shown to have many islands, three of them marked with temples of Serapis, three with temples of Isis, while the roads are somewhat discontinuous. On the Sinai desert we find the words *desertum ubi quadraginta annis erraverunt filii Israelis ducente Moyses* (the desert where the children of Israel

wandered for forty years guided by Moses), and there are other biblical references. There is also an area in central Asia labeled *Hic Alexander responsum accepit usq[ue] quo Alexander* (Here Alexander was given the oracular reply: “How far, Alexander?”). Perhaps these ampler descriptions, whether Christian or pagan, were added on otherwise empty space about the fifth or sixth century A.D. In several areas research is in progress combining fieldwork with study of the Peutinger map and of the history of place-names. One such is the area between the Gulf of Aqaba and Damascus.<sup>39</sup> A question that emerges is the extent to which we can argue from silence: Does the absence of an important road on the

(Recklinghausen: Aurel Bongers, 1975), 9–38; Carlo Melandrinò, *Oplontis* (Naples: Loffredo, 1977).

38. Luciano Bosio, *La “Tabula Peutingeriana”: Una carta stradale romana del IV secolo* (Florence: 3M Italia and Nuova Italia, 1972), 16 (text accompanying filmstrip).

39. Dr. D. L. Kennedy of the University of Sheffield is researching on behalf of the Aerial Photographic Archive for Archaeology in the Middle East, and Professor G. W. Bowersock gave a talk on the subject at the University of London in 1980.



Peutinger map suggest that the mapmaker, perhaps of the fourth century A.D., was relying for less familiar areas on an earlier map, of the first or second century, made before such a road was built?

### THE LATIN GEOGRAPHICAL MANUSCRIPTS AND THEIR MAPS

Many of the geographical manuscripts of Roman origin are of less cartographic interest than their Greek counterparts. Whatever the reasons for this, no continuous tradition of writing in Latin about these subjects took root. It is often difficult to say if a Roman author composed with a map in front of him or indeed whether a map was drawn at all to illustrate a particular text. And in other Latin manuscripts with maps, such as the *Notitia Dignitatum*, the maps suggest that the compilers either did not have access to such standard maps as those of Agrippa or Ptolemy or lacked the cartographic knowledge to exploit these sources properly.

#### LATIN GEOGRAPHICAL WRITERS IN THE EARLY EMPIRE

This tendency to ignore maps, even when Greek influence was at its height, is probably shown in the work of Pomponius Mela (fl. A.D. 37–42), one of the few Latin geographical writers from the early empire whose text has come down to us. Mela was born in southern Spain. His *Chorographia*, in three books, written under Gaius or Claudius, is a brief world geography, but there is no evidence that it ever contained maps.<sup>40</sup> Mela's world is surrounded by seas and divided into two hemispheres, Asia in the eastern, Europe and Africa in the western. From north to south, as in Eratosthenes' poem *Hermes* and Virgil's *Georgics*, it is divided into five zones, two cold, two temperate, and one hot.

In much the same way, there is relatively little of explicitly cartographic interest in the geographical compendium of the elder Pliny (A.D. 23/24–79), a native of Como, who held important offices under Vespasian but who as admiral of the fleet at Misenum perished in the eruption of Vesuvius. His *Natural History* in thirty-seven books was completed in A.D. 77.<sup>41</sup> It is an encyclopedia based on one hundred major and a large number of subsidiary Greek and Latin authors. For each section he lists the major writers he has followed (often quite closely, as we can tell from extant works), and much research has been devoted to these sources. Pliny's information includes both useful up-to-date material and old travelers' tales. Of Latin writers, he mostly quotes Cornelius Nepos (author of—besides biographies—a lost geographical work) and Agrippa. He incorporates information from inscriptions, statistical data, and lists of tribes and places in provinces.<sup>42</sup> These lists are sometimes in geographical order (for Italy he follows Au-

gustus's division into eleven regions), sometimes alphabetical, though as often in antiquity only the first letter is necessarily in strict order.<sup>43</sup> Only book 2, mainly concerned with the universe (which Pliny calls a constantly revolving perfect sphere),<sup>44</sup> and books 3–6, covering the geography of the *oikoumene*, contain materials of potential cartographic interest.<sup>45</sup>

40. See Pomponius Mela, *De chorographia*, ed. Gunnar Ranstrand, *Studia Graeca et Latina Gothoburgensia* 28 (Gothenburg: Acta Universitatis Gothoburgensis; distribution Stockholm: Almqvist och Wiksell, 1971), and a newer edition, Pomponius Mela, *De chorographia libri tres*, ed. Pierngorgio Parroni, *Storia e Letteratura*, vol. 160 (Rome: Edizioni di Storia e Letteratura, 1984). Also see Nicolaus Sallmann, "De Pomponio Mela et Plinio Maiore in Africa describenda discrepantibus," in *Africa et Roma: Acta omnium gentium ac nationum Conventus Latinis litteris linguaeque fovendis*, ed. G. Farenga Ussani (Rome: Erma di Bretschneider, 1979), 164–73.

41. Pliny, *Naturalis historia*, 6 vols. in 3, ed. D. (S. D. F.) Detlefsen (Berlin: Weidmann, 1866–82; reprinted Hildesheim: Georg Olms, 1982); Pliny, *Natural History*, 10 vols., trans. H. Rackham et al., Loeb Classical Library (Cambridge: Harvard University Press; London: William Heinemann, 1940–63). For a French translation with notes of book 5, part 1, sections 1–46 (on North Africa), see Pliny, *Histoire naturelle*, ed. and trans. Jehan Desanges (Paris: Belles Lettres, 1980); of book 6, part 2 (on central and east Asia), see Pliny, *Histoire naturelle: L'Asie centrale et orientale, L'Inde*, ed. Jacques André and Jean Filliozat (Paris: Belles Lettres, 1980); and of book 7, Pliny, *Histoire naturelle, livre VII*, ed. and trans. Robert Schilling (Paris: Belles Lettres, 1977).

42. These include the Trophée des Alpes at La Turbie, quite wrongly located in the Loeb translation by Rackham, *Natural History* 2:100, note g (note 41).

43. The eleven regions are conveniently listed in the *Oxford Classical Dictionary*, 2d ed., s.v. "Italy," sec. 6.

44. Pliny *Natural History* 2.64.160 (note 41). After the section dealing with earth and water (2.66.166), he discusses, in no particular order, maritime exploration: the Sea of Azov (Palus Maeotis), he says, certainly exists, but is it a gulf of the ocean or an overflow from it? Africa had been circumnavigated by Hanno and several others (2.67.167 ff., esp. 169). He then discusses sundials and hours of daylight throughout the known world (2.77.186 ff.). There is also a section on earthquakes (2.81.191) and changes in the coastline; thus at the harbors of Ambracia and Piraeus the sea receded by ten and five miles respectively (2.87.201); no date is given, and in the case of Piraeus, at least, the measurement is inconsistent with known topography. A number of islands or mountains are known to have appeared or disappeared, and towns have disappeared; of these he quotes examples (2.89.202 ff.). Later in the second book he records sea depths, underground rivers, and other phenomena (2.105.224 ff.). The book concludes with some overall measurements: India to Gades is 8,568 or 9,818 miles according to Artemidorus and Isidorus (of Charax), respectively (2.112.242 ff.).

45. The material is organized thus:

Book 3 Western and central Europe bordering on the Mediterranean and the northern Atlantic.

Book 4 Greece and adjacent areas; the Black Sea and adjacent European areas; northern Europe.

Book 5 Africa bordering on the Atlantic and Mediterranean, including all of Egypt; Asia bordering on the Mediterranean and Aegean.

Book 6 The Black Sea and adjacent Asiatic areas; other parts of Asia; Ethiopia and the upper Nile valley.

As is evident from this summary, the Black Sea itself is treated twice.

From these books it is clear that Pliny was a user of maps rather than a contributor to the theory of their construction or compilation. Unfortunately, in giving his sources he does not distinguish between maps and written geographies. Thus we have to infer his use of maps by indirect means such as the cited measurements between places or his descriptions of countries and cities in terms of their shapes. With respect to the latter, for example, Italy is not as today described as boot-shaped but is said to be like an elongated oak leaf, bending to the left at the top and “ending in the shape of an Amazon’s shield”<sup>46</sup> (following Strabo and Eratosthenes); the Peloponnese has the shape of a plane tree leaf; and so on.<sup>47</sup>

There are two passages where the context may be considered fully cartographic. The first is where he criticizes the length and breadth of Baetica, southern Spain, as given in Agrippa’s map and approved by Augustus.<sup>48</sup> The second is where he says: “There are a number of segments of the earth which we Romans have called circles, while the Greeks have called them parallels.”<sup>49</sup> He then gives what we may define as seven *climata* (he does not use the word) from south to north, with lengths of gnomon shadows, numbers of hours in longest days, and principal countries or cities. These range from southern India and the two provinces of Mauretania (the latter are in fact at a very different latitude from southern India) to the north of the Black Sea and Aquitania. Pliny attributes these to earlier Greek theory, but he also gives three additional zones to the north, which he says later Greek geographers have added.

Other evidence is not quite so conclusive; it may depend on our interpretation of *posuere* (they have placed). Pliny may well be thinking of placing on a map, but we cannot be sure. Thus in one passage he writes: “Then there projects into the sea a promontory with a vast horn, which some have called Artabrum [from Cape Roca to Lisbon]. . . . The distance from here to the Pyrenees is given by quite a number as 1,250 miles, and they record there a non-existent tribe of Artabres: they have placed [*posuere*] in this area, by a change of lettering, the Arrotrebae whom I mentioned before the Celtic Promontory [Finisterre].”<sup>50</sup> Similarly in another passage, “Others have placed [*posuere*] the Gedrusi and Sires over a stretch of 138 miles, then the fish-eating Oritae, who do not speak the Indian language, for 200 miles.”<sup>51</sup> We may also feel that Pliny is more likely to have been looking at a map than a book when he compares the Arabian peninsula to Italy not merely for being surrounded by two seas but for having what he calls the same orientation.<sup>52</sup>

#### LATIN GEOGRAPHICAL WRITERS IN THE LATE EMPIRE

During the late empire, Latin geographical writing seems to have been confined to relatively few channels of trans-

mission. Indeed, although there are other manuscripts with maps, only three main writers—Avienus, Macrobius, and Julius Honorius—can be noted under the present heading.<sup>53</sup> Only the second of these can definitely be said to have written a work containing maps. This poverty in the Roman tradition may partly reflect the fact that some of the more important texts containing cartographic knowledge continued to be written in Greek rather than in Latin. This is shown by the work of Agathemerus, whose brief prose manual summarizes Greek mapmaking up to the first century B.C.<sup>54</sup> Rufus Festus Avienus,<sup>55</sup> a senator from Volsinii in Etruria, wrote two geographical works in Latin verse about A.D. 380–400. The first is a general work in hexameters, *Descriptio orbis terrae*, intended as a revision of the Greek work of Dionysius Periegetes. The second, *Ora maritima*, contains only 703 iambs but is thought to be incomplete.<sup>56</sup>

The commentary by Ambrosius Theodosius Macrobius (fl. A.D. 399–422) on Cicero’s *Somnium Scipionis* (The dream of Scipio, incorporated in his *Republic*) contains cosmology and Macrobius’s impression of the appearance of the world.<sup>57</sup> Whereas he accepts Eratosthenes’ sphericity and measurement, he turns to Crates

46. Pliny *Natural History* 3.5.43 (note 41). Shaped like a crescent but with two curves on the inner side and a promontory between them.

47. See chapter 10, “Greek Cartography in the Early Roman World,” esp. pp. 174–75.

48. Pliny *Natural History* 3.1.16–3.2.17 (note 41); see also above, pp. 207–8.

49. Pliny *Natural History* 6.39.211–20, esp. 212 (note 41), author’s translation.

50. Pliny *Natural History* 4.21.113–4.22.14 (note 41), author’s translation.

51. Pliny *Natural History* 6.25.95 (note 41), author’s translation.

52. Pliny *Natural History* 6.32.143 (note 41).

53. There are also several extant geographical manuscripts in Latin without maps. For example, Vibius Sequester, *De fluminibus, fontibus, lacubus, nemoribus, paludibus, montibus, gentibus per litteras libellus*, ed. Remus Gelsomino (Leipzig: Teubner, 1967), is an alphabetical gazetteer listing, under separate headings, rivers, springs, lakes, groves, marshes, mountains, and peoples. Similarly, two accounts are provided of the boundaries of provinces and of countries outside the empire, based on Agrippa’s map or a revision: *Dimensuratio provinciarum* and *Divisio orbis terrarum*, both in *Geographi Latini minores*, ed. Alexander Riese (Heilbronn, 1878; reprinted Hildesheim: Georg Olms, 1964), 9–14 and 15–23 respectively.

54. Agathemerus *Geographica antiqua*, ed. Jacobus Gronovius (Leiden: J. Luchtmans, 1700); and *Geographiae informatio*, in Müller, *Geographi Graeci minores* 2:471–87 (note 20).

55. Avienus, not Avienus, is the correct form: Alan Cameron, “Macrobius, Avienus, and Avianus,” *Classical Quarterly*, n.s., 17 (1967): 385–99, esp. 392 ff.

56. See Avienus, *Rufi Festi Avieni Carmina*, ed. Alfred Holder (Innsbruck, 1887; reprinted Hildesheim: Georg Olms, 1965), chap. 3 and chap. 4, which contains both works. For further references on the *Ora Maritima*, see chapter 9, p. 150 and n. 16.

57. Macrobius, *Commentary on the Dream of Scipio*, ed. and trans. W. H. Stahl (New York: Columbia University Press, 1952).

of Mallos for the concept of ocean and land masses: "Separating us from the people of the southern hemisphere, Ocean flows along the whole extent of the equator; again, as its streams branch out at the extremities of both regions, it forms two islands on the upper face of the earth and two on the underside."<sup>58</sup> Later he adds: "The accompanying diagram will lay everything before our eyes" and "from our diagram we shall also understand Cicero's statement that our quarter is narrow at the top and broad at the sides."<sup>59</sup> Macrobius's map of the world was circular (2.5.13), with north at the top and with cold, temperate, and hot regions, though perhaps its equatorial ocean was narrower in latitude than is shown in manuscripts and printed editions. The manuscript maps accompanying the commentary had a strong influence on zone maps of the Middle Ages.

The *Cosmographia* of Julius Honorius is an inaccurate compilation of about the fifth century; only excerpts survive.<sup>60</sup> His list starting *Seres oppidum*, *Theriodes oppidum* . . . totally confuses settlements, tribes, and even rivers, calling them all towns.<sup>61</sup> He selects a few places in northern Italy, partly in topographical order, partly not, before suddenly switching to Dalmatia. One of the most incorrect entries may be rendered: "The river Chrysorroas rises in the plains of Syria and flows through Syria, Antioch, and Palestine and the remaining cities of Syria. Its mouth is in the Aegean, where the island of Cyprus is. It runs for 830 miles."<sup>62</sup>

#### THE NOTITIA DIGNITATUM

The full title of this work may be translated "directory of officeholders and administration, both civil and military."<sup>63</sup> There are primary manuscripts at Cambridge, Frankfurt, Munich, Oxford, and Paris.<sup>64</sup> Some of these are known, and all are thought, to have been copied from a codex Spirensis (that is, of Speyer cathedral), which was written in the tenth century but disappeared in the sixteenth century. They are all illustrated, and the Munich manuscript has two sets of illustrations.<sup>65</sup>

The main divisions in the work are between the eastern and the western empires and between civil and military officials. The official list was kept by the head of the civil service in the West, though it is disputed whether the extant work is governmental or an amateur's copy. Its date is between 395 and 413, and it may have been revised even later.

Illustrations consist of insignia of officials, personifications of provinces, picture maps, and miscellaneous items. Many maps are such as only a bureaucrat unfamiliar with the areas could have produced; and it is considered likely that there has been much change or addition.<sup>66</sup> Thus the map of Britain under the heading "vicarius Britanniarum" has five provinces arranged 1, 2, 2, from north (top) to south, with "Britannia Prima"

in the southeast (plate 6).<sup>67</sup> But we know from the metrical epitaph of a governor that Corinium (Cirencester) was the capital of Britannia Prima; and it is likely that Maxima Caesariensis had the most important settlement, London, as its capital, yet this province is placed on the map somewhere near Lincoln. Probably, if the civil servant who compiled this list or its official counterpart had gone to the maps department, he could have been put right by the *comes formarum* (director of maps), who was under the Rome city prefect and who provided the only record from the Roman world of an official working for what must have been a civil service maps and plans department.<sup>68</sup>

The *comes Italiae* had as part of his command the region of Italy near the Alps, but this is illustrated in the *Notitia Dignitatum* only by a walled hilltop settlement. Isauria, western Cilicia, is likewise mountainous; it is given something approaching a perspective map, with south at the top. Mount Taurus, complete with a wild animal's hindquarters, is in the center, and Tarsus and the Mediterranean are in the background. Mesopotamia has the Tigris and Euphrates correctly placed, and also Carrhae, but there is a great deal of confusion. Thus Amida (Diyarbakir) and Constantina are each in-

58. Macrobius *Commentary* 2.9.5 (note 57); see also Kish, *Source Book in Geography*, 140–42 (note 17).

59. Macrobius *Commentary* 2.9.7–8 (note 57).

60. Julius Honorius *Excerpta eius sphaerae vel continentia*; see *Iulii Honorii Cosmographia*, in Riese, *Geographi Latini minores*, 24–55 (note 53).

61. Julius Honorius *Excerpta* 6 ff. (note 60).

62. Author's translation of Julius Honorius *Excerpta* 10 (note 60).

63. Otto Seeck, ed., *Notitia Dignitatum* (Berlin: Weidmann, 1876; reprinted Frankfurt: Minerva, 1962); R. Goodburn and P. Bartholomew, eds., *Aspects of the Notitia Dignitatum*, British Archaeological Reports, Supplementary Series 15 (Oxford: British Archaeological Reports, 1976); Erich Polaschek, "Notitia Dignitatum," in *Realencyclopädie*, 17.1 (1936): cols. 1077–116 (note 13).

64. This is the manuscript called Londiniensis by I. G. Maier, "The Giessen, Parma and Piacenza Codices of the 'Notitia Dignitatum' with Some Related Texts," *Latomus* 27 (1968): 96–141; it was presented to the Fitzwilliam Museum by Professor F. Wormald. Important manuscripts are: Oxford, Bodleian Library, MS. Canon. Misc. 378, A.D. 1436; Paris, Bibliothèque Nationale, MS. Lat. 9661, fifteenth century; Munich, Bayerische Staatsbibliothek, Clm. 10291, 1542–50; Cambridge, Fitzwilliam Museum, A.D. 1427; and Frankfurt, Stadt- und Universitätsbibliothek, Lat. qu. 76, fifteenth century. There are many other manuscripts, but without maps, the two labeled Tridentinus-Vindobonensis being not at Vienna but at Trento.

65. In 1548 Count Ottheinrich requested the loan of the *alt Exemplar* of the codex, but this was denied. Ottheinrich was clearly interested in seeing the original illustrations that accompanied the text and would not accept an untraced copy of them. In 1550 he received permission for his artist to make tracings—now lost—of the original illustrations on *geoldrenckt pappeir* (oiled paper). See I. G. Maier, "The Barberinus and Munich Codices of the *Notitia Dignitatum Omnium*," *Latomus* 28 (1969): 960–1035, esp. 995–99 and 1024–30.

66. Polaschek, "Notitia Dignitatum" (note 63).

67. Seeck, *Notitia Dignitatum*, 171 (note 63).

68. Seeck, *Notitia Dignitatum*, 113 (note 63).

cluded twice, because each has two entries in the list of military units.

Lower Egypt, sphere of the *comes limitis Aegypti*, has the Nile as a single water channel on its map (fig. 14.5). This is correct for the area around Memphis, but not for Pelusium; and Thamudeni should be east of the Red Sea. Upper Egypt, area of the Dux Thebaidos, is particularly muddled, with Syene (Aswan) shown incorrectly on a tributary and not as near the frontier as it should be. Coptos is shown in two different places, because both a legion and a cavalry unit are listed there under separate headings. The map follows neither topographical nor bureaucratic order and even, unlike the text, misspells and misplaces the famous temple of Philae. These shortcomings do not mean that the *Notitia Dignitatum* was a useless document, but in fact the useful information would have had to be gathered from the text rather than from the maps.<sup>69</sup>

### MAPS AS DECORATIVE AND SYMBOLIC IMAGES

From the Roman period, as from the classical world in general, the cartographic record extends to maps found as images on diverse artifacts and in other than textual sources. These maps have often gone unnoticed in the literature, but they add a further dimension to an understanding of cartography in the classical period. Examples include the well-known map on the Dura Europos shield, the incised and inscribed stone named as the Pesaro wind rose map, and the map images found on coins, in frescoes, as part of the design of mosaics, and even on Roman lamps. While such representations are perhaps peripheral to a reconstruction of the history of scientific mapmaking, they help in assessing the dissemination (and extent of understanding) of maps in the Roman period. Like the maps described in poems, they suggest one way the idea of the map (if not the formal knowledge underpinning the construction of maps) was kept alive in a period that lacked scientific innovation in the accepted sense. Their context, however, is usually an archaeological one, and the chance circumstances of their survival and discovery, often unrelated to the documentary record, have led us to organize the material typologically in terms of the artifacts carrying the map images.

#### COINS WITH PLANS OF ROME'S HARBOR

As earlier in the Greek period, there are Roman examples where maps were used emblematically to face coins.<sup>70</sup> About three kilometers north of ancient Ostia at the mouth of the Tiber, Claudius and Trajan constructed new harbors. These were commemorated on coins and medallions, some representations being in pictorial form,



FIG. 14.5. THE *NOTITIA DIGNITATUM*: LOWER EGYPT. The area controlled by the *comes limitis Aegypti* is schematically represented, complete with its major features such as the Nile, Babylon, Memphis, and the Pyramids. Size of the original: 31 × 24 cm. By permission of the Bayerische Staatsbibliothek, Munich (Clm. 10291, fol. 113r).

some in ground plan. The Claudian harbor appears in plan on a coin of Nero, about A.D. 64 (fig. 14.6).<sup>71</sup> Its two jetties are shown as arcs of a circle, part of the right jetty perhaps being shown on arches. The harbor is on an island, and at its mouth is a lighthouse surmounted by the statue of an emperor; ships are shown entering, leaving, or standing in the harbor. Trajan's harbor, in a hexagonal basin with sides of 358 meters, appears in plan on a coin of Trajan, about A.D. 113 or after.<sup>72</sup> On the right are shown warehouses, on the left what is

69. For example, for Britain see Rivet and Smith, *Place-Names*, 216–25 (note 9). We can plot the forts in northern England under the Dux Britanniarum, with the title of the army unit stationed at each; we can reconstruct with reasonable probability the names of all the Saxon Shore forts; and we can read of a *gynaeceum* (imperial textile factory) at Venta, but the question is whether it was at Venta Icenorum (Caistor Saint Edmund) or at Venta Belgarum (Winchester).

70. See pp. 158 and 164 above.

71. Russell Meiggs, *Roman Ostia* (Oxford: Clarendon Press, 1960), pl. XVIIIa.

72. Meiggs, *Roman Ostia*, pl. XVIIIb (note 71).



FIG. 14.6. SESTERCE OF NERO SHOWING OSTIA HARBOR. Issued ca. A.D. 64, this coin shows the Claudian harbor of Ostia. Two jetties are represented by arcs of circles, together with a lighthouse surmounted by a statue, Roman ships, and Neptune.



Diameter of the original: 3.5 cm. By permission of the Trustees of the British Museum, London (BMC Emp.I, Nero 132).

thought to be a series of buildings (excavated in the nineteenth century) including a temple, a small theater, and an atrium; but the detail is far less precise than on the Neronian coin.

#### MAPS IN MOSAICS

Although the mosaic map of Byzantine age at Madaba has appeared in many popular works on the history of cartography, it is by no means the earliest map to occur in this medium. An example dating to the early empire is found in Ostia, associated with the many mosaic floors that have been preserved there in situ.<sup>73</sup> They are in the "Forum of the Corporations," next to the theater, which had a temple of Ceres in the middle and a series of offices belonging to trading corporations around the sides. From the names of foreign ports within the mosaics it is possible to reconstruct many of Rome's trade routes. Only one of these mosaics is in map form, but unfortunately it has no inscription (fig. 14.7).<sup>74</sup> It shows a river spanned by a pontoon bridge, with three branches that could be either tributaries or distributaries. The bridge is supported by three vessels, and on each side of it is a gateway surmounted by military trophies. The Nile delta seems the most probable location. Another office in the same forum was occupied by an Alexandrian corporation, and corn imports from Egypt were considerable. If these two offices are linked, the likely interpretation is that the three principal ancient distributaries of the Nile are depicted, giving a more simplified version

of the delta than is to be seen in the Madaba mosaic. Since the pontoon bridge is above the lowest point on the undivided river, one may conjecture that it was between Memphis, the dynastic capital, which was still of some importance under the Roman Empire, and Babylon (Old Cairo). The military trophies would be appropriate to Babylon, which was fortified as a legionary camp under Augustus, while Memphis was the center for the export of wild animals from Egypt to Rome.<sup>75</sup>

73. Giovanni Becatti, ed., *Mosaici e pavimenti marmorei*; 2 pts. (1961); both are vol. 4 of *Scavi di Ostia* (Rome: Istituto Poligrafico dello Stato, 1953–).

74. Foro delle Corporazioni, Statio 27: Becatti, *Mosaici*, 74, no. 108 and pl. CLXXXIV (note 73).

75. The mosaic at the temple of Fortuna Primigenia at Praeneste (Palestrina), central Italy, mentioned in chapter 7, note 4 above, also gives a pictorial representation of scenes around the Nile. It has been given various dates but is perhaps of the second century A.D. The inscriptions, in Greek capitals, specify typical Egyptian animals. The attempt to show that it is a map in oblique perspective does not appeal to most art historians, and it must remain in the sometimes debatable borderland between the completely pictorial and the partly cartographic. See references in Wilhelm Kubitschek, "Karten," in *Realencyclopädie*, 10 (1919): cols. 2022–2149, esp. 2023 (note 13); Levi and Levi, *Itineraria picta*, 44 n. 65 (note 18). A black-and-white reproduction is found in Moses Hadas, *Imperial Rome* (Alexandria, Va.: Time-Life Books, 1979), 70–71. For the Alexandrian tradition of landscape painting, which may have influenced the Palestrina mosaic and others, see Roger Ling, "Studius and the Beginnings of Roman Landscape Painting," *Journal of Roman Studies* 67 (1977): 1–16, with bibliography in note on p. 1, and p. 14 n. 53.





FIG. 14.7. THE OSTIA RIVER MOSAIC. Preserved in the Forum of the Corporations in Ostia, this mosaic without an inscription depicts a river, with three tributaries or distributaries, and a pontoon bridge with a military gateway at each end. Of three possible locations—the Nile delta, the lower Tiber, and the Rhône delta—the first seems most likely. Museo Ostiense, near Rome.

Size of the original: 7 × 3.5 m. From Giovanni Becatti, ed., *Mosaici e pavimenti marmorei*, 2 pts. (1961); both are vol. 4 of *Scavi di Ostia* (Rome: Istituto Poligrafico dello Stato, 1953–), pt. 2, pl. CLXXXIV (no. 108).



What have been recognized as maplike designs, in addition to those of mazes described below, also occur occasionally in mosaics dated to the late empire. Mosaics with views of estates, one category of such images, can hardly be regarded even as picture maps: the most conspicuous is the fourth-century mosaic from Carthage, now in the Bardo Museum, Tunis, showing the estate of Julius.<sup>76</sup> But one temple scene, also from Carthage, is represented partly in plan. This is a late fourth- or fifth-century mosaic known as the Offering of the Crane.<sup>77</sup> In the center is a shrine facade with Apollo and Diana between two columns; at their feet is the sacrificial crane, and below it a series of almost concentric squares clearly representing the ground plan of this same shrine.

Some mosaics also contain celestial maps in the form of zodiac diagrams. The earliest Palestine zodiac mosaic, for example, thought to be of the third century A.D., is in the synagogue at Hammath, south of Tiberias.<sup>78</sup> It represents the twelve signs of the zodiac surrounding the sun, with personifications of the four seasons occupying the corners. The inspiration of this Hebrew mosaic is Greek, with the sun as Phoebus Apollo driving a four-horse chariot, Virgo as a veiled Persephone carrying a torch, and Libra as a king, clearly Minos or Rhadamanthys, holding a scepter and balance. Other similar mosaics are of very much later date, when Palestine was part of the Byzantine empire.

#### THE PESARO WIND ROSE MAP

In some cases an unusual physical object carries a map, so that there is a temptation to describe it as “unique” in artifactual terms although its image may also be familiar from other sources. Such an object is the “Boscovich” anemoscope,<sup>79</sup> a cylindrical block of Luna marble 55.3 centimeters in diameter and 6.8 centimeters in width, on which is engraved a wind rose map (fig. 14.8).<sup>80</sup> It was found near the Via Appia at Rome, outside the Porta Capena, in 1759. The name is inexact, since the astronomer R. G. Boscovich only helped the owner, P. M. Paciaudi, in his researches. Now in the Oliveriano Museum at Pesaro, it is thought to date from about A.D. 200. It is inscribed *Eutropius feci* (I, Eutropius [a Greek name], made it).

To construct his wind rose map, Eutropius engraved a meridian, divided this equally into six, contrary to Aristotle,<sup>81</sup> and from the dividing points drew five lines at right angles to the meridian. These are labeled, in descending order: TOTVS INFRA TERRA(M) (the Antarctic Circle); BRVMALIS (the Tropic of Capricorn); AEQVINOCTIALIS (the equator); SOLI(S)TITIALIS (the Tropic of Cancer); and TOTVS SVpra TERRA(M) (the Arctic Circle). At each end of the meridian and of each line are small holes intended for bronze pegs. From these twelve holes,

lines are drawn to the center, where a large depression presumably served to insert a metal base for the flag of the wind rose. On the rim, opposite the holes, are the names of the twelve winds.

The scheme probably arose from a reading of the passage from Aristotle mentioned above (pp. 145–46) without the benefit of a diagram.<sup>82</sup> Aparcias (Aparctias, Septentrio) occupies a far larger sector than neighboring Boreas; the two are identical in Aristotle. This is not important, since in antiquity the number, names, and directions of winds on a wind rose varied.<sup>83</sup> Neverthe-

76. Very frequently reproduced: references in Levi and Levi, *Itineraria picta*, 68 n. 3 (note 18); Katherine M. D. Dunbabin, *The Mosaics of Roman North Africa: Studies in Iconography and Patronage* (Oxford: Clarendon Press, 1978), 119–21, pl. 109.

77. Dunbabin, *Mosaics*, 57–58, pls. 35–37 (note 76).

78. Michael Avi-Yonah, *Ancient Mosaics* (London: Cassell, 1975), 51–53. For the difference in approach between Christian and Jewish mosaicists see Dunbabin, *Mosaics*, 232–33 and n. 174 (note 76), and for the zodiac in North African mosaics see her Index IV, s.v. “Zodiac.”

79. Italo Zicàri, “L’anemoscopio Boscovich del Museo Oliveriano di Pesaro,” *Studia Oliveriana* 2 (1954): 69–75; Robert Böker, “Windrosen,” in *Realencyclopädie*, 2d ser., 8.2 (1958): cols. 2325–81, esp. 2358–60 (note 13); Antonio Brancati, *La biblioteca e i musei Oliveriani di Pesaro* (Pesaro: Banca Popolare Pesarese, 1976), 210–11; Dilke, *Greek and Roman Maps*, 110–11 (note 4).

80. Wind rose maps are also found in textual sources. A wind rose, for example, is preserved in the oldest manuscript of Vitruvius *De architectura* (note 33), in which it is the only illustration (1.6.4 ff.). In the text he says it is “so delineated that it is clear where winds come from”: London, British Library, Harl. MS. 2767; see O. A. W. Dilke, *Roman Books and Their Impact* (Leeds: Elmet Press, 1977), 26–27, quotation on 26. A possible parallel to the Boscovich anemoscope is a small Greek world map to be found in manuscripts of the scholia to Ptolemy’s *Handy Tables*; see Otto Neugebauer, “A Greek World Map,” in *Le monde grec: Hommages à Claire Préaux*, ed. Jean Bingen, Guy Cambier, and Georges Nachtergaele (Brussels: Université de Bruxelles, 1975), 312–17 and pl. III.2. The manuscripts date from the thirteenth century onward, but the map clearly originated under the Roman Empire, probably in Egypt, since it names certain southerly places such as Syene (Aswan) and Hiera Sykaminos (above Syene on the Nile). These are places from which astronomical observations could be made. Ptolemy’s instructions for making tables were later worked up by Theon of Alexandria (fl. A.D. 364). Unlike the anemoscope, this world map, which is in the form of a rough sketch, does not have lines linking the wind points to the center. It may go back to an archetype earlier than Theon.

81. But a miniature in a manuscript of Aristotle’s *Meteorologica* at the Royal Library in Madrid makes the spacing of the zones rather even by attaching lines to small semicircles inscribed within the perimeter: Charles Graux and Albert Martin, “Figures tirées d’un manuscrit des *Météorologiques* d’Aristote,” *Revue de Philologie, de Littérature et d’Histoire Anciennes*, n.s., 24 (1900): 5–18.

82. In modern reconstructions of Aristotle’s diagram, four out of five of Eutropius’s horizontal lines are visible, though not equally spaced. Aristotle himself may have inserted only the diameters. Aristotle *Meteorologica* 2.6; see *Meteorologica*, trans. H. D. P. Lee, Loeb Classical Library (Cambridge: Harvard University Press; London: William Heinemann, 1952).

83. Vitruvius *De architectura* 1.6.4 ff. (note 33), discussed four, eight, and sixteen winds, the last corresponding to Etruscan usage. In

less, the anemoscope must have been intended as a meteorological device, partly to help the traveler who, as he set out from Rome on the Via Appia, would be facing south as the map does. The flag would show the name, origin, and direction of the wind.



FIG. 14.8. THE PESARO WIND-ROSE MAP. A diagram of winds engraved on a cylindrical marble block, probably dating from about A.D. 200. There is a central hole for a pole supporting a pennant and small holes near the rim for wooden pegs indicating the winds. Diameter of the original: 55 cm. By permission of the Museo Archeologico Oliveriano, Pesaro (inv. 3.302).

#### THE DURA EUROPOS SHIELD

At Dura Europos on the Euphrates a parchment fragment, now housed in the Bibliothèque Nationale, Paris, was excavated in 1923.<sup>84</sup> On the sheet of parchment, which had covered a soldier's shield, had been painted a rough map of the Black Sea and surrounding areas, the extant part showing the west and north coasts (fig. 14.9). Although the wording is in Greek, the shield must have belonged to a soldier in the Roman army. It is thought to date to shortly before A.D. 260, when the Romans withdrew from Dura Europos. The measurements of the portion discovered are forty-five (originally about sixty-five) by eighteen centimeters, and it has roughly west-southwest at the top.

On the left, in blue, is the Euxine (Black) Sea, which has two large ships and four heads appearing out of the water that may be those of sailors from other vessels. The shore is indicated by a pale curved line, with no promontories or indentations. Along the coastal route

are shown staging points, each having as a cartographic sign a building with courses of pale green stonework. After each place-name was added the number of Roman miles from the previous staging point for one traveling northward and then eastward. That coastal route ran from Byzantium via Tomis to the mouth of the Danube and beyond. On two distributaries of the Danube are written the names Istros and Danubis, whereas properly speaking Istros was the name given by the Greeks to the whole of the lower Danube.

After an illegible entry the stages shown, with mileages where preserved, are: Odessos, Bybona (Byzone), Kallatis, Tomea (Tomis) 33, river Histros 40, river Danubios, Tyra 84, Borysthenes (Olbia is meant), Chersonesos, Trap . . . , and Arta. Chersonesos is the Tauric Chersonese, the Crimea (fig. 14.10). But the following two have been misunderstood. Trap does indeed stand for Trapezus, but this is not Trebizond, which is on the southern shore of the Black Sea, but the "Table Mountain" of antiquity, the Krymskie Gory. Finally, Arta is not Artaxata, capital of Armenia, which is nowhere near the Black Sea, but the Latin word *arta* (narrows) transliterated into Greek.<sup>85</sup> This must obviously refer to the Straits of Kerch, where the chief ancient settlement was Panticapaeum (Kerch). We may therefore consider this a "painted itinerary" (if that and not a picture is what Vegetius had in mind by his phrase *itineraria picta*) taking the soldier to Panticapaeum, ruled by a native prince but with a Roman garrison.

The shield may be regarded then, like the Peutinger map, as an *itinerarium pictum*. Unlike the latter, it is reasonably orthomorphic, but somewhat oversimplified. It has some semblance of reliability on the northwest coast of the Black Sea, and even eastward of that it is more reliable than has been thought. From its ornamental character and the use of Greek rather than Latin, it is likely to have been an unofficial composition.

other cases, in addition to the cardinal points, summer and winter sunrises and sunsets often appear as directions, though these, as Strabo observes, vary according to latitude: Strabo *Geography* 1.2.20–21; see *The Geography of Strabo*, 8 vols., ed. and trans. Horace Leonard Jones, Loeb Classical Library (Cambridge: Harvard University Press; London: William Heinemann, 1917–32). See also Strabo, *Géographie*, ed. François Lasserre, Germaine Aujac, et al. (Paris: Belles Lettres, 1966–). But for mainland Greece the summer and winter sunrises, together with the summer and winter sunsets, make an angle of about 30° with the east-west axis; and it is likely that Aristotle situated the winds at 30° from the north-south axis: Aristotle *Meteorologica* 2.6 (note 82).

84. Bibliothèque Nationale, Gr. Supp. 1354, no. 5. Franz Cumont, "Fragment de bouclier portant une liste d'étapes," *Syria* 6 (1925): 1–15 and pl. I; idem, *Fouilles de Doura Europos (1922–1923)*, text and atlas (Paris: P. Geuthner, 1926), 323–37, pls. CIX, CX.

85. Richard Uhden, "Bemerkungen zu dem römischen Kartenfragment von Dura Europos," *Hermes* 67 (1932): 117–25. The suggested interpretation of *arta* given here is the author's.

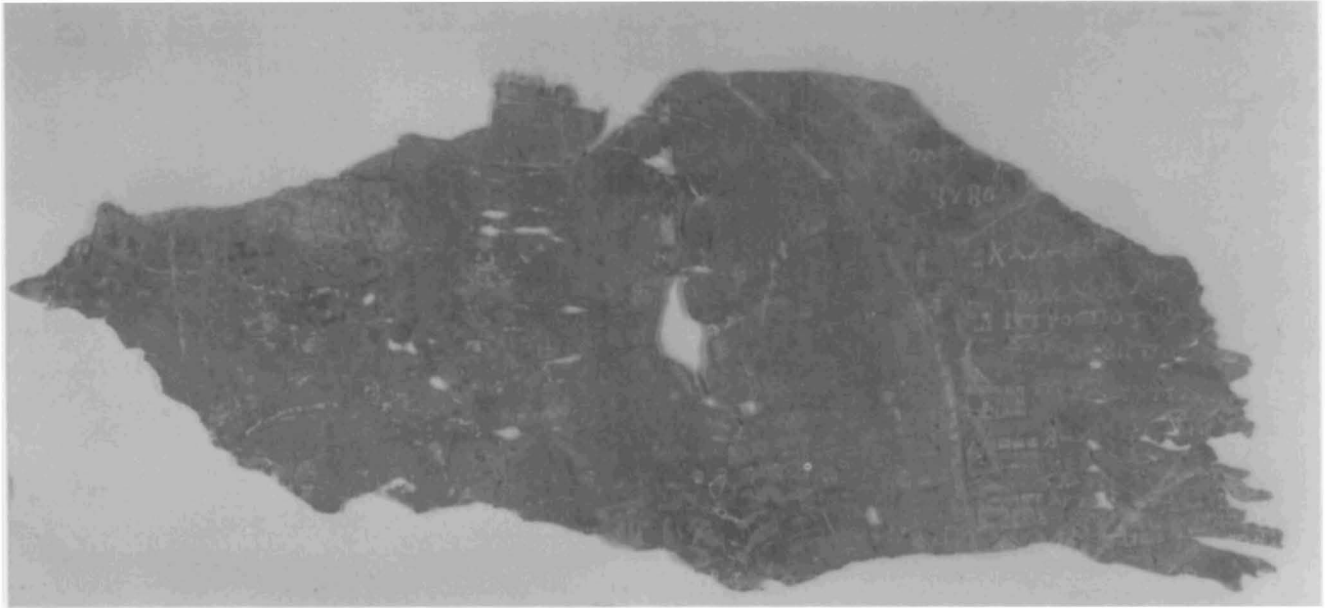


FIG. 14.9. THE MAP ON THE DURA EUROPOS SHIELD. Dating to shortly before the Roman withdrawal from Dura Europos in A.D. 260, this design was drawn upon parchment found covering a Roman soldier's shield. It shows the coastal route from Byzantium to the mouth of the Danube and beyond, complete with the mileages between staging posts.

Size of the original: 18 × ca. 65 cm. Photograph from the Bibliothèque Nationale, Paris (Gr. Suppl. 1354, no. 5).

#### PLANS ON LAMPS

An unusual series of designs on Roman lamps, incorporating rudimentary plans, has been discovered in Palestine, probably datable to the early fourth century A.D.<sup>86</sup> One from Samaria (Sebastye) shows what appears to be a Roman fort with rooms around the four sides and with intersecting central roads (fig. 14.11). The correctness of the identification as a military diagram is shown by the emblem of two crossed swords on similar lamps from the same area. A fragmentary lamp from the Ophel (near Jerusalem's Old City) appears to depict two L-shaped Roman road stations, and other less certainly identifiable plans exist.<sup>87</sup>

#### CLASSICAL PLANS OF MAZES

The maps associated with the artifacts described above show that they were adapted as motifs in a variety of historical contexts. Such maps should be thought of as different from, rather than historically less interesting than, the formal maps of the textual sources. They reflect alternative ways of thinking about maps and confirm their more general acceptance within Roman society. At the same time, this evidence is important in showing how some maps were recurrent motifs in the classical world. This is illustrated by a common category of clas-

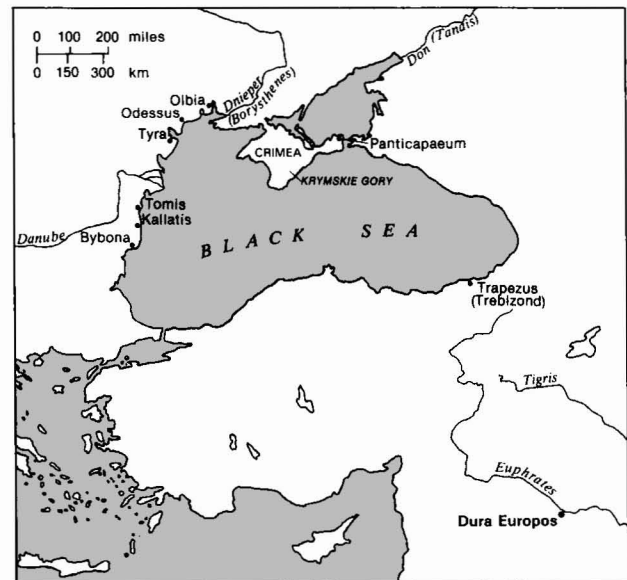


FIG. 14.10. PRINCIPAL PLACE-NAMES FROM THE DURA EUROPOS SHIELD.

86. Mordechai Gichon, "The Plan of a Roman Camp Depicted upon a Lamp from Samaria," *Palestine Exploration Quarterly* 104 (1972): 38–58, who also illustrates the lamp from the Ophel.

87. Robert Alexander Stewart Macalister, *The Excavation of Gezer, 1902–1905 and 1907–1909*, Palestine Exploration Fund, 3 vols. (London: John Murray, 1911–12), 3:pl. LXXII, 18.9: perhaps this depicts a barracks block.

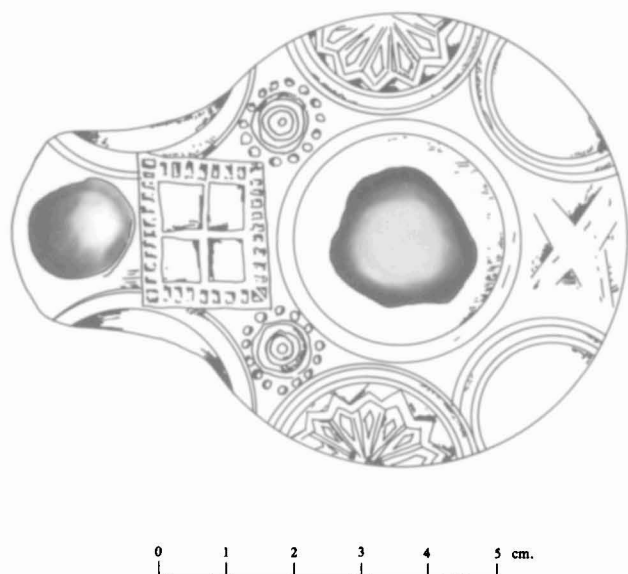


FIG. 14.11. PLAN ON A ROMAN LAMP. Found at Samaria (Sebastye), in Palestine, and dating from the early fourth century A.D.. The illustration is a view from above. Size of the original: 6.5 × 8.9 × 3.2 cm. After Mordechai Gichon, "The Plan of a Roman Camp Depicted upon a Lamp from Samaria," *Palestine Exploration Quarterly* 104 (1972): 38–58, esp. 39 (top).



FIG. 14.12. LABYRINTH DESIGNS ON CRETAN COINS. These silver coins show both a square maze (ca. 80 B.C.) and a rarer circular one (300–280 B.C.). Diameters of the originals: 2.3 cm and 3 cm respectively. By permission of the Trustees of the British Museum, London (BMC Cnossus 24 and 41).

sical map—the maze—that was associated with several forms of emblematic representation.

The maze, or labyrinth, a feature well known from dynastic Egypt and elsewhere, was particularly associated in classical antiquity with the palace of Minos at Cnossos.<sup>88</sup> Sir Arthur Evans thought it was connected there with the double ax (*labrys*), and a maze pattern appears on one of the wall frescoes of the palace.<sup>89</sup> The city of Cnossos, proud of its Minoan heritage, minted coins in the classical period with rough plans of mazes, mostly having rectilinear paths, though the circular type also exists (fig. 14.12).<sup>90</sup> An early artifact showing one is a clay tablet from the palace of Nestor at Pylos in the Peloponnese.<sup>91</sup> On the reverse is a maze, thought to have been incised earlier than the obverse, that contains a list of ten men in the same Linear B script as occurs at Cnossos. Another example from Greece is a tile of the classical period from the acropolis at Athens, where there had much earlier been a Mycenaean stronghold.<sup>92</sup>

An Etruscan vase found at Tragliatella, near Rome,<sup>93</sup> shows among other features infantry performing a dance and cavalry next to a circular maze labeled TPVIA (Etruscan Truia = Troy). Here we have an allusion not merely to an early palace but obviously to the "Game of Troy" that, whether rightly or wrongly attributed to that city, is described by Virgil as a Roman game having labyrinthine movements.<sup>94</sup>

88. "Labirinto," in *Enciclopedia dell'arte antica, classica e orientale*, 7 vols. (Rome: Istituto della Enciclopedia Italiana, 1958–66), W. H. Matthews, *Mazes and Labyrinths: A General Account of Their History and Developments* (London: Longman, 1922); Janet Bord, *Mazes and Labyrinths of the World* (London: Latimer New Dimensions, 1976); Karl Kerényi, *Labyrinth-Studien: Labryrinthos als Linienreflex einer mythologischen Idee* (Zurich: Rhein-Verlag, 1950).

89. Arthur Evans, *The Palace of Minos*, 4 vols. (London: Macmillan, 1921–35); Matthews, *Mazes*, 32, fig. 8 (note 88).

90. Jean N. Svoronos (Ioannes N. Sborōnos), *Numismatique de la Crète ancienne accompagnée de l'histoire, la géographie et la mythologie de l'île*, text and plates published separately (Macon: Imprimerie Protat Frères, 1890; reprinted Bonn: R. Habelt, 1972), 65 ff. and pls. IV–VIII; Warwick Wroth, *A Catalogue of the Greek Coins of Crete and the Aegean Islands*, ed. Reginald Stuart Poole (Bologna: A. Forni, 1963), 18–19, pls. 5 and 6; Matthews, *Mazes*, figs. 20–31 (note 88).

91. Mabel Lang, "The Palace of Nestor Excavations of 1957: Part II," *American Journal of Archaeology*, 2d ser., 62 (1958): 181–91. The clay tablet is Inventory Cn. 1287, discussed on p. 190 and pictured in pl. 46.

92. Ernst Buschor, *Die Tondächer der Akropolis* (Berlin and Leipzig: Walter de Gruyter, 1929–33), 1.45 ff., K 108; Hermann Kern, *Labirinti: Forme e interpretazione, 5000 anni di presenza di un archetipo manuale e file conduttore* (Milan: Feltrinelli, 1981), German ed., *Labirinte: Erscheinungsformen und Deutungen, 5000 Jahre Gegenwart eines Urbilds* (Munich: Prestel-Verlag, 1982).

93. Matthews, *Mazes*, figs. 133–35 and refs. (note 88).

94. Virgil *Aeneid* 5.580 ff.; see *The Aeneid of Virgil*, trans. Cecil Day-Lewis (London: Hogarth Press, 1952).

One of the best-known Roman specimens is a graffito at Pompeii showing a square mosaic with the wording Labyrinthus: hic habitat Minotaurus (Labyrinth: the Minotaur lives here), referring to the Cnossos palace.<sup>95</sup> In fact the most common use of the motif in Roman times is in mosaics.<sup>96</sup> One such is also at Pompeii, in the Villa di Diomede. Another particularly well preserved mosaic at Salzburg shows, in the center of a square maze, Theseus about to kill the Minotaur. This same theme in the center of a circular maze, with recumbent towers at the corners, is found on a mosaic at Cormerod, Switzerland.<sup>97</sup> A partly preserved square mosaic, with a vase and scrolls surrounding the maze, was found in the churchyard of Caerleon (Isca).<sup>98</sup> A lost specimen from Sousse (Hadrumetum), Tunisia, included Theseus's ship and the words HIC INCLUSUS VITAM PERDIT (one enclosed here loses his life).<sup>99</sup>

The early Christian use of maze mosaics can be exemplified from the fourth-century basilica of Saint Reparatus at al-Aṣnam, Algeria, where the center of the square maze has a play on words on SANCTA ECCLESIA.<sup>100</sup> The classical tradition of maze plans continued into the Middle Ages; the connection of the labyrinth with Theseus and the Minotaur, sometimes then misinterpreted as a centaur, was not forgotten in medieval church ornamentation.

## THE USE OF MAPS IN THE ROMAN PERIOD

Much has already been either said or implied about the widespread use of maps in Roman society. There is more evidence for the use of maps in the Roman period than in other periods of antiquity, but the evidence is still largely fragmentary. Such evidence is partly from literary or technical works and partly from inscriptions. It suggests that there was an expansion in the use of maps, even in periods that lacked marked technical or scientific advances in mapmaking. Thus, as a conclusion to the period as a whole, an attempt is made here to classify the uses of maps in Roman society, while accepting that there is clearly much overlap.

### MAPS AS CADASTRAL AND LEGAL RECORDS

It was probably for land survey that Rome produced its earliest working maps, one lost specimen (pp. 209–10) dating from the second century B.C. The Roman land survey treatises mention maps available both in Rome and locally; these were used among other purposes by lawyers (or surveyors experienced in land law) to contest property disputes, by emperors to decide boundary disputes between local authorities, and for levying central or regional taxes. One object of depositing two copies of survey maps, one in Rome and the other in a local

office, was to save users unnecessary travel. The map came to be recognized as a legal document, both in land survey and for determining the use of aqueducts by property owners. Both writers on water supply, Vitruvius and Frontinus, show themselves familiar with maps: Vitruvius mentions river sources as painted and written about in world cosmographies,<sup>101</sup> for the use of aqueduct maps as mentioned by Frontinus, see page 232.

Another function of mapping is shared by religious and legal or surveying aspects: often a tomb and surrounding plot were given their measurements on an inscription. An actual plan of these was only very rarely attached. Such a plan could have helped lawyers in any dispute, such as about whether the land around a tomb belonged to the heirs. The users of the *Forma Urbis Romae* were on the one hand public organizations, on the other hand private individuals living in Rome. It seems unlikely that builders of new roads normally consulted maps, though there was a civil service maps department under the late empire.<sup>102</sup>

### MAPS AS STRATEGIC DOCUMENTS

Contrary to Lloyd Brown's view, the story that a Phoenician captain was publicly rewarded for running his ship aground so as not to reveal to a following Roman ship his route from Gades (Cádiz) to the Cassiterides gives no indication of the use of maps.<sup>103</sup> It is thought

95. E. Pottier, "Labyrinthus," in *Dictionnaire des antiquités grecques et romaines*, 5 vols., ed. Charles Daremberg and Edmond Saglio (Paris: Hachette, 1877–1919), 3.2:882–83.

96. Pliny *Natural History* 36.19.85 (note 41) says one should not compare the Cretan labyrinth to "our mosaic pavements or to the mazes made in fields to amuse children"; author's translation.

97. C. Bursian, "Aventicum Helvetiorum," *Mitteilungen der Antiquarischen Gesellschaft zu Zürich* 16, no. 1 (1867–70), esp. pl. 29; Matthews, *Mazes*, fig. 36 (note 88).

98. George C. Boon, *Isca: The Roman Legionary Fortress at Caerleon, Mon.*, 3d ed. (Cardiff: National Museum of Wales, 1972); Matthews, *Mazes*, 42 (note 88).

99. Salomon Reinach, *Répertoire de peintures grecques et romaines* (Paris: E. Leroux, 1922), 214.1, fig. 1.

100. Henri Leclercq, "Labyrinthe," in *Dictionnaire d'archéologie chrétienne et de liturgie*, 8.1 (1928): cols. 973–82, esp. 974–75 and fig. 6549 (note 17).

101. Vitruvius *De architectura* 8.2.6 (note 33).

102. See p. 244 above and n. 68 of this chapter.

103. The story is in Strabo *Geography* 3.5.11 (note 83). The Cassiterides are called a group of islands, and their name is derived from the Greek word for tin; they are usually thought to have been the Scilly Islands, but Rivet and Smith, *Place-Names*, 42–43 (note 9), prefer to place them outside the British Isles. Lloyd A. Brown, *The Story of Maps* (Boston: Little, Brown, 1949; reprinted New York: Dover, 1979), 9, has a misleading account of this episode: in Strabo the sea captain is called Phoenician, not Carthaginian, and Strabo does not mention any ship's log or charts.



to refer to the period between the First and Second Punic Wars, 241–218 B.C. If Roman ships' captains wanted to consult a work that would help them navigate outside the Straits of Gibraltar, they could perhaps have turned to the periplus of pseudo-Scylax (p. 383), though in the form in which it has come down to us it contains nothing on sea areas north of Cádiz.

The only extant admonition to the soldier to use maps is in the late military writer Vegetius. Since, however, both Julius Caesar and Agrippa, the one a general, the other an admiral, were promoters of maps, there is good reason to think that the use of these, as well as of itineraries and periploi (see "Maps for Traveling," below) was established relatively early.

The Augustan period was one in which, perhaps for the first time in the Roman world, the use of maps by the man in the street was taken for granted. Rough ones could be traced on the spot. The first poem of Ovid's *Heroides* is supposedly a letter from Penelope to Ulysses, but typically the poet makes his Trojan heroes behave like contemporaries. One such, who has reached home after the sack of Troy, describes the course of events as he sketches the Troy area in wine on the table: "This is where the river Simois flowed; this is the land of Sigeum; here stood the high palace of old Priam; that is where Achilles encamped, that is where Ulysses encamped; this is the point where the mangling of Hector terrified the galloping horses."<sup>104</sup> Propertius (ca. 50 B.C. to ca. 16 B.C.) also uses the literary format of the letter, but from a Roman lady to her lover far away in the army. His Arethusa spends the winter nights studying maps: "I learn in what area the river Araxes, which is to be conquered, flows, how many miles the Parthian horse runs without water. I compel myself to learn painted worlds from the map [*tabula*] . . . ; which land freezes up, which crumbles from heat, which wind gives good sailing to Italy."<sup>105</sup> Editors mostly treat *tabula* here as map rather than picture, though the expression may include both a map and its commentary.

The extent to which Roman expeditions carried maps is open to dispute. If the word *forma* means "map" in several expedition accounts, both compilation and use are attested; but in any case there is at least one reference, and probably two, during the early empire to expedition maps sent back to Rome by commanders in the field.<sup>106</sup> The elder Pliny insists that the Caucasian Gates pass should be so called, not Caspian Gates. The mistake, he says, arose in expeditions to the East by Domitius Corbulo between A.D. 58 and 63; and "maps of the area [*situs*] painted and sent home have this name drawn on them."<sup>107</sup> The other reference is also in Pliny and concerns a party of Praetorian guards who explored the upper Nile south of Khartoum.<sup>108</sup> Unfortunately the word *forma* is ambiguous, since it can mean either

"shape" or "map." If it is taken to be the latter, the sentence may be rendered: "The map of Ethiopia became known, as mentioned, and when recently brought to the emperor Nero it showed that for 996 miles from Syene, the boundary of the empire, to Meroë there were few trees and that all of these were species of palm."<sup>109</sup> Since trees were often drawn on maps, though sometimes incorrect species, palms may have been drawn in as far as Syene and their dearth deduced from the appearance of very few upstream from there.

Such maps are likely to have been drawn by military surveyors but used with caution by strategists back in Rome. Certainly, by the second century A.D., educated Romans were becoming aware of the limitations of maps as a basis for action on the fringes of unexplored territory. Thus Plutarch (ca. A.D. 46 to after 120) dedicates his *Parallel Lives* to Sosius Senecio, consul four times between A.D. 98 and 107, with this simile: "Just as historians, Sosius Senecio, in their geographies squeeze onto the edges of their maps [*pinakes*] parts of the earth that escape their knowledge, with notes explaining 'Everything beyond is sandy desert with no water or full of wild animals' or 'unexplored marsh' or 'Scythian frost' or 'frozen sea,' so in writing my Lives . . . I might as well say of prehistory: 'Everything beyond is full of wonders.'"<sup>110</sup>

Such references suggest that the value of maps to the state and its generals was widely accepted. Together with coins and such monuments as Trajan's column, with its graphic representation of Rome's campaigns on the Danube, they could have had great propaganda value. But there were possible dangers also to an autocracy from knowledge that could be extracted from maps by movements hostile to the imperial system, so that in the wrong hands they could become a threat to security. Domitian, emperor from A.D. 81 to 96, was by nature autocratic, and knowing of previous conspiracies he was quick to

104. Ovid *Heroides* 1.33 ff., author's translation; see *Heroides [and] Amores*, trans. Grant Showerman, Loeb Classical Library (Cambridge: Harvard University Press; London: William Heinemann, 1958); cf. Tibullus *Elegies* 1.10.29–32; see *Elegies*, trans. Guy Lee, Liverpool Latin Texts 3, 2d ed. (Liverpool: Francis Cairns, 1982).

105. Propertius *Elegies* 4.3.33–40, author's translation; see *Propertius*, trans. H. E. Butler, Loeb Classical Library (Cambridge: Harvard University Press; London: William Heinemann, 1912).

106. Robert K. Sherk, "Roman Geographical Exploration and Military Maps," in *Aufstieg und Niedergang der römischen Welt*, ed. Hildegard Temporini (Berlin: Walter de Gruyter, 1972–), 2.1 (1974): 534–62, esp. 537–43.

107. Pliny *Natural History* 6.15.40 (note 41), author's translation.

108. Pliny *Natural History* 6.35.181 (note 41).

109. Pliny *Natural History* 12.8.19 (note 41), author's translation.

110. Plutarch *Theseus* 1.1; cf. Christian Jacob, "Lectures antiques de la carte," *Etudes Françaises* 21.2 (1985): 21–46, esp. 44–45.



suppress any hint of one against himself. Mettius Pomposianus was put to death by Domitian because, in addition to being born under an imperial constellation and giving Carthaginian generals' names to his slaves, he carried around a parchment map of the world, together with speeches of kings and generals from Livy.<sup>111</sup> This was a period when parchment was increasing in use as against papyrus;<sup>112</sup> it was certainly more transportable. Suspicious of spies, Domitian may have linked the map with fears of an uprising in North Africa; in an expanded empire there was plenty of scope for rebellion.

#### MAPS FOR TRAVELING

Ptolemy's *Geography*, with its tables of coordinates, was never intended for the traveler; but there is reason to think that the latitudes of Roman provinces on the reverse of portable sundials were indebted to Ptolemy, and these sundials were used by travelers and surveyors.

Itineraries for land journeys and simple periploi for sea journeys were also commonly used. A governor such as Arrian, second century A.D. (who was also a man of letters), chose to compile an expanded periplus for his sail around the Black Sea. This may have appeared in Latin for official purposes as well as in Greek for his reading public.<sup>113</sup> Whether it was based on a map we cannot be sure, but the Dura Europos shield proves that at least road maps of that area existed. It is also difficult to establish how far land itineraries were derived from maps; since road maps are called by Vegetius *itineraria picta*, painted itineraries, the priority may be the other way around. The most famous are the Antonine land and sea itineraries (pp. 235–36). These are not representative of the type carried around by the traveling public. They obviously detailed particular journeys made by people like the emperor Caracalla, whereas other travelers might want only a section of these. Among Christian itineraries, that of the journey from Bordeaux to Jerusalem (p. 237), by expanding on the basic list form, was designed to help the pilgrim traveling to the Holy Land.

Clearly anyone making a complicated road journey would have benefited from having an *itinerarium pictum* like the archetype of the Peutinger map. But ancient maps may not have stood up very well to travel, since they would normally be carried around loose, not in a *capsa* (cylindrical box), used for storing rolls of papyrus in the owner's house. Perhaps, however, the increasing use of parchment started to promote a greater mobility of maps in the late empire. Julian the Apostate, emperor 360–63, thanks his friend Alypius of Antioch thus: "I happened already to have recovered from my illness when you sent the geography; all the same I was glad to receive the map you sent. Not only does it have better

drawings [*diagrammata*] than previous ones, but you have made it more attractive by adding iambic verses."<sup>114</sup> This may have been a map of Britain, since Alypius was or had been *vicarius* of the British provinces. The Greek verses remind us of the Latin ones attached to the Theodosian map (see below, pp. 258–59).

#### RELIGIOUS AND PROPAGANDA FUNCTIONS FOR MAPS

One of the first Roman maps we hear of, the 174 B.C. map of Sardinia (p. 205), served both as a form of thanksgiving to the gods for victory and as a useful piece of propaganda showing Rome's expansion, just as Mussolini displayed maps of the Roman empire. Mosaics at Ostia (pp. 246–47) advertised a shipping corporation or the transport guild. A somewhat different element of public relations is visible in the chief Christian map of the early Byzantine period, the Madaba map (pp. 263–65), where Jerusalem is given specially enlarged and detailed treatment; the map was oriented so as to be easily seen by the congregation.

#### DIDACTIC AND SCHOLARLY USES FOR MAPS

It is clear from Varro that at least the more progressive landowners in Italy were regarded as being familiar with the use of maps. Both he and the elder Pliny were encyclopedic writers who absorbed vast quantities of Greek scholarly exposition. Varro may or may not have cited sources (his encyclopedic writing exists only in fragments). Pliny, in book 1, lists all his sources and thereafter frequently refers to them, but often in such a way that he does not tell us whether he is referring to a text or a map. Thus for the circumference of the Black Sea, apart from Agrippa's map and commentary (which he calls simply Agrippa), he cites four estimates, dating from about 50 B.C. to about A.D. 70, all of which may come from texts rather than maps. In the case of lengths of the shores of the Red Sea, his object seems to have

111. Suetonius *Domitian* 10.3, book 8 of *De vita Caesarum* (The lives of the Caesars), in *Suetonius*, 2 vols., trans. J. C. Rolfe, Loeb Classical Library (Cambridge: Harvard University Press; London: William Heinemann, 1913–14). Pascal Arnaud, "L'affaire Mettius Pomposianus, ou Le crime de cartographie," *Mélanges de l'École Française de Rome: Antiquité* 95 (1983): 677–99, prefers to follow the account of Dio Cassius and Zonaras. According to this, Pomposianus had a world map painted on the walls of his bedroom. See Dio Cassius *Roman History* 67.12.4 (note 7).

112. C. H. Roberts, "The Codex," *Proceedings of the British Academy* 40 (1954): 169–204.

113. Arrian *Periplus Ponti Euxini*, in Müller, *Geographi Graeci minores*, 1:370–423 (note 20).

114. Julian *Epistles* 7, author's translation; see vol. 3 of *The Works of the Emperor Julian*, 3 vols., trans. Wilmer Cave Wright, Loeb Classical Library (Cambridge: Harvard University Press; London: William Heinemann, 1913–23).

been to correct the mapping by Eratosthenes with references to the much higher figures given by Artemidorus of Ephesus (fl. 104–101 B.C.) and by Agrippa. Varro had illustrations in some of his works, but none has survived; Pliny is not known to have had any. After Pliny we have no extant encyclopedias until the fifth century A.D. and later (Martianus Capella, Boethius, and Isidore); of these only Isidore, bishop of Seville A.D. 602–36, dealt specifically with geography.<sup>115</sup>

Of purely geographical Latin writings, the lost commentary of Agrippa was intended (as the many fragments show) to explain his map; it would appeal mainly to those, including Strabo and Pliny, who visited his colonnade. Pomponius Mela's *De chorographia* was designed for the ordinary reading public and had no maps. But the writer probably had one before his eyes when, for example, he writes of the Baltic: "The Codanus Gulf . . . is dotted with large and small islands."<sup>116</sup>

An interesting insight into the teaching of geography with the use of a terrestrial globe is found in a pupil's addendum to the *Cosmographia* of Julius Honorius: "So as to avoid errors, as the teacher has said, this book of extracts should not be separated from the globe."<sup>117</sup> The use of the map in schools continued after the fall of Rome: Cassiodorus (ca. A.D. 490 to ca. 583), who after many years as an important administrator under kings of the Goths in Italy devoted himself to Christianity and education, recommended for teaching purposes the *pimax* (map) accompanying the geographical poem of Dionysius Periegetes.<sup>118</sup> In addition to maps in schools, the words quoted from the rhetorician Eumenius show that, in Gaul of A.D. 298 at least, an idealist wanting to foster culture among the young after the ravages of war included a large map on a balcony wall as an important teaching aid.

Mapmaking clearly constituted an essential part of the training of land surveyors under the late Roman Empire. First and foremost was drawing up centuriation maps, which, although to some extent diagrammatic, had to be very accurate from the legal and administrative point of view. For this purpose apprentice surveyors would consult the official copies; yet in the *Corpus Agrimensorum* we find some maps that are unrealistic in topographical terms. This must represent a tradition of decades of specimen teaching maps, in which topographical accuracy and the representation of real landscapes were of secondary importance.

It must, however, be admitted that educated Romans, although they respected Greek scientific research, did not always understand the mathematical principles behind it. We do know that about 168 B.C. Crates of Mallos gave many lectures in Rome, illustrated by a globe (see description above, pp. 162–64). Even so, his globe is reported not in extant Latin writings of the

republic but in the Greek geography of Strabo. Astronomical and mathematical instruments were introduced into Rome as contacts with the Greek world increased. But it often took a long time for the proper use of an instrument to be appreciated, as in the case of the sundial. In 263 B.C. one such was brought from Catania to Rome, where it was set up near the speakers' platform in the forum. Nevertheless, for ninety-nine years it displayed the wrong time, since the necessary adjustment for a different latitude had not been made: only in 164 B.C. did Q. Marcius Philippus put up by its side a sundial correct for the latitude of Rome.<sup>119</sup> Lucretius was exceptional in expounding Greek physical theory in Latin verse. Cicero's contribution of this type consisted only of a translation of the *Phaenomena* of Aratus of Soli (b. ca. 315 B.C.), a meteorological work. He did promise his friend Atticus a work on geography, but though Atticus sent him, evidently for this purpose, a work of mathematical geography by Serapion, it never materialized;<sup>120</sup> Cicero, in thanking him, commented, "Between ourselves, I hardly understand one line in a thousand."<sup>121</sup> This is not, however, to say that Cicero never consulted maps; he probably did in at least one case. When Atticus criticizes him for having written that almost all the city-states of the Peloponnese were by the sea,<sup>122</sup> he replies that he got this from the *tabulae* of Dicaearchus.<sup>123</sup> Since he goes on to refer to Dicaearchus's work on the underground oracle of Trophonius,

115. Isidore of Seville *Etymologies*; see *Etymologiarum sive originum libri XX*, 2 vols., ed. W. M. Lindsay (Oxford: Clarendon Press, 1911); idem, *De natura rerum*, in *Traité de la nature*, ed. Jacques Fontaine, Bibliothèque de l'École des Hautes Etudes Hispaniques, fasc. 28 (Bordeaux: Féret, 1960), 164–327.

116. Pomponius Mela *De chorographia* 3.31 (note 40), author's translation.

117. Julius Honorius *Excerpta* 50 (note 60), author's translation.

118. Cassiodorus *Institutiones divinarum et saecularium litterarum* 1.25.2; see *Institutiones*, ed. R. A. B. Mynors (Oxford: Clarendon Press, 1937), or, for an English translation, *An Introduction to Divine and Human Readings*, ed. and trans. Leslie Webber Jones (New York: Columbia University Press, 1946). For Dionysius Periegetes, see pp. 171–73.

119. Pliny *Natural History* 7.60.214; see corresponding notes in Schilling, *Histoire naturelle*, 261–62, esp. n. 214.3 (note 41). There was a dispute even in antiquity whether this was the earliest sundial erected in a public place in Rome: one of 293 B.C. is also mentioned by Pliny (*Natural History* 7.60.213); again, see Schilling, 261, n. 213.1. Cf. Censorinus *De die natali* 23.6–7 (cited by Schilling) in *De die natali liber*, ed. F. Hultsch (Leipzig: Teubner, 1867).

120. Cicero *Letters to Atticus* 2.4.3; see *Cicero's Letters to Atticus*, 7 vols., ed. and trans. D. R. Shackleton Bailey (Cambridge: Cambridge University Press, 1965–70).

121. Cicero *Letters to Atticus* 2.4.1 (note 120).

122. Cicero *The Republic* 2.4.8; see *La république*, 2 vols., trans. Esther Bréguet (Paris: Belles Lettres, 1980).

123. Cicero *Letters to Atticus* 6.2 (note 120).

the latest editor, Shackleton Bailey, doubts whether these *tabulae* were maps<sup>124</sup>; but Cicero is probably referring to Dicaearchus's lost *Gēs periodos*, a "geographical tour" of the world.

In general it may be concluded that, as far as we know at present, up to about 170 B.C. maps were relatively unfamiliar to most Romans. From that time onward their use steadily increased. By the time of Julius Caesar

or Augustus they were used by a wide range of people, had become indispensable for the surveying of land, public works, and other engineering projects, and were important for legal, strategic, traveling, scholarly, and didactic purposes.

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124. Shackleton Bailey, *Cicero's Letters*, 3:257 (note 120).

## BIBLIOGRAPHY

### CHAPTER 14 ITINERARIES AND GEOGRAPHICAL MAPS IN THE EARLY AND LATE ROMAN EMPIRE

- Avienius. *Ora maritima*. Edited by André Berthelot. Paris: H. Champion, 1934.
- Böker, Robert. "Windrosen." In *Paulys Realencyclopädie der classischen Altertumswissenschaft*, ed. August Pauly, Georg Wissowa, et al., 2d ser., 8.2 (1958): cols. 2325–81. Stuttgart: J. B. Metzler, 1894–.
- Bosio, Luciano. *La Tabula Peutingeriana: Una descrizione pittorica del mondo antico*. I Monumenti dell'Arte Classica, vol. 2. Rimini: Maggioli, 1983.
- Carmody, F. J. *La Gaule des itinéraires romains*. Berkeley: Carmody, 1977.
- Castagnoli, Ferdinando. "L'orientamento nella cartografia greca e romana." *Rendiconti della Pontificia Accademia Romana di Archeologia* 48 (1975–76): 59–69.
- Clemente, G. *La Notitia Dignitatum*. Saggi di Storia e Letteratura 4. Cagliari: Fossataro, 1968.
- Cumont, Franz. "Fragment de bouclier portant une liste d'étapes." *Syria* 6 (1925): 1–15.
- Cuntz, Otto, ed. *Itineraria Romana*. Vol. 1, *Itineraria Antonini Augusti et Burdigalense*. Leipzig: Teubner, 1929.
- Dilke, O. A. W. *Greek and Roman Maps*. London: Thames and Hudson, 1985.
- Elter, A. *Itinerärstudien*. Bonn: C. Georgi, 1908.
- Finkelstein, I. "The Holy Land in the Tabula Peutingeriana." *Palestine Exploration Quarterly* 111 (1979): 27–34.
- Frank, Johannes. "Beiträge zur geographischen Erklärung der *Ora maritima* Aviens." Dissertation, Würzburg. Sangerhausen: Schneider, 1913.
- Gichon, Mordechai. "The Plan of a Roman Camp Depicted upon a Lamp from Samaria." *Palestine Exploration Quarterly* 104 (1972): 38–58.
- Goodburn, R., and P. Bartholomew, eds. *Aspects of the Notitia Dignitatum*. British Archaeological Reports, Supplementary Series 15. Oxford: British Archaeological Reports, 1976.

- Gross, H. *Zur Entstehungs-geschichte der Tabula Peutingeriana*. Bonn: H. Ludwig, 1913.
- Itineraria et alia geographica*. In *Corpus Christianorum*, Series Latina, vols. 175 and 176 (1965).
- Janni, Pietro. *La mappa e il periplo: Cartografia antica e spazio odologico*. Università di Macerata, Pubblicazioni della Facoltà di Lettere e Filosofia 19. Rome: Bretschneider, 1984.
- Kubitschek, Wilhelm. "Itinerarien." In *Paulys Realencyclopädie der classischen Altertumswissenschaft*, ed. August Pauly, Georg Wissowa, et al., vol. 9 (1916): cols. 2308–63. Stuttgart: J. B. Metzler, 1894–.
- . "Karten." In *Paulys Realencyclopädie der classischen Altertumswissenschaft*, ed. August Pauly, Georg Wissowa, et al., vol. 10 (1919): cols. 2022–2149. Stuttgart: J. B. Metzler, 1894–.
- Levi, Annalina, and Mario Levi. *Itineraria picta: Contributo allo studio della Tabula Peutingeriana*. Rome: Erma di Bretschneider, 1967.
- Maier, I. G. "The Giessen, Parma and Piacenza Codices of the 'Notitia Dignitatum' with Some Related Texts." *Latomus* 27 (1968): 96–141.
- . "The Barberinus and Munich Codices of the *Notitia Dignitatum Omnium*." *Latomus* 28 (1969): 960–1035.
- Miller, Konrad. *Itineraria Romana*. Stuttgart: Strecker und Schröder, 1916.
- . *Die Peutingersche Tafel*. Stuttgart: F. A. Brockhaus, 1962.
- Pliny. *Natural History*. 10 vols. Translated by H. Rackham et al. Loeb Classical Library. Cambridge: Harvard University Press; London: William Heinemann, 1940–63.
- Polaschek, Erich. "Notitia Dignitatum." In *Paulys Realencyclopädie der classischen Altertumswissenschaft*, ed. August Pauly, Georg Wissowa, et al., 17.1 (1936): cols. 1077–116. Stuttgart: J. B. Metzler, 1894–.
- Reed, N. "Pattern and Purpose in the Antonine Itinerary." *American Journal of Philology* 99 (1978): 228–54.
- Riese, Alexander, ed. *Geographi Latini minores*. Heilbronn, 1878; reprinted Hildesheim: Georg Olms, 1964.
- Rodwell, Warwick. "Milestones, Civic Territories and the Antonine Itinerary." *Britannia* 6 (1975): 76–101.
- Seeck, Otto, ed. *Notitia Dignitatum*. Berlin: Weidmann, 1876; reprinted Frankfurt: Minerva, 1962.
- Stewart, Aubrey, trans. *Itinerary from Bordeaux to Jerusalem: "The Bordeaux Pilgrim"*. Palestine Pilgrims Text Society, vol. 1, no. 2. London: Palestine Exploration Fund, 1896.
- Temporini, Hildegard, and Wolfgang Haase, eds. *Aufstieg und Niedergang der römischen Welt*. Berlin: Walter de Gruyter, 1972–.
- Uhden, Richard. "Bemerkungen zu dem römischen Kartenfragment von Dura Europos." *Hermes* 67 (1932): 117–25.
- Van der Poel, Halsted B., et al., eds. *Corpus topographicum pompeianum*. Part 5, Cartography. Rome: Edizione dell'Elefante, 1981.
- Ward, J. H. "The British Sections of the Notitia Dignitatum: An Alternative Interpretation." *Britannia* 4 (1973): 253–63.
- Weber, Ekkehard, ed. *Tabula Peutingeriana: Codex Vindobonensis 324*. Graz: Akademische Druck- und Verlagsanstalt, 1976.
- Zicàri, Italo. "L'anemoscopio Boscovich del Museo Oliveriano di Pesaro." *Studia Oliveriana* 2 (1954): 69–75.