20 · Local and Regional Cartography in Medieval Europe

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SCOPE AND CHARACTERISTICS

This chapter covers all terrestrial maps from medieval Christendom that are neither world maps nor portolan charts nor the rediscovered maps of Ptolemy.[1] They are relatively few in number but highly varied in character. They range from maps of the whole of Palestine carefully constructed on a measured grid to a painted picture of three villages and their surrounds on the border of Burgundy; from Francesco Rosselli's detailed view of Florence to a few sketched lines representing strips in a field in East Anglia. Despite their variety, they have features in common. Whether they show a large area or a small one, they are all conceived as showing it from above, either vertically or obliquely, viewed from a position often unattainable in reality; this has been taken as defining a map for our purpose. These are the products of medieval Europe that are typologically, historically, or conceptually the precursors of the large-scale and topographic maps of the sixteenth century and later. A very few are maps of entire countries: the maps of Palestine, the Matthew Paris and Gough maps of Britain, the maps of Germany and central Europe by Nicolas of Cusa and Erhard Etzlaub. But most are maps of small areas: local maps covering an area, whether a single field or half a province, that would lie within the normal experience of an individual. Where these maps show features above ground level they nearly always take pictorial form; the most elaborate, like Rosselli's map of Florence, are straightforward bird's-eye views, realistic, fully detailed pictures of landscape as seen from above, and indeed medieval local maps are related as much to the bird's-eye views as to the large-scale maps of later centuries (fig. 20.1). In bringing together these very diverse representations of landscape and calling them all maps, we are acting with the hindsight of later cartographic development; no one in the Middle Ages would have seen them as a single class of objects, and no language of medieval Europe had a word corresponding exactly to our *map*. Representations of this kind were in any case very unusual.

Medieval Europe was in fact a society that knew little of maps. It was not just that the regular use of maps and plans for government or business was confined to a very few particular areas and crafts. The idea of drawing a casual sketch map to show some topographical relationship—the way from one place to another, the layout of fields, the sequence of houses in a street—was one that seldom occurred to people in the Middle Ages. That this was so, and that in the sixteenth century people suddenly became aware of the value of maps, can be shown by the numbers of local maps (of every kind, down to the very roughest sketches) that survive from medieval England: from the mid-twelfth to the mid-fourteenth century we have only three in all, from each half-century between 1350 and 1500 about ten, and from the half-century 1500–1550 about two hundred.[2] These figures point to changes in the actual production and use of maps, not merely to their better chance of survival as time went on: the survival of other sorts of documents from medieval England follows quite a different pattern.[3] Medieval maps of small areas or regions were in their own time quite abnormal productions, often displaying great originality and imaginative ingenuity on the part of the draftsman, who may never have seen a map drawn by anyone else. In the Middle Ages, the normal way of setting out and recording topographical relationships was in writing, so in place of maps we have written descriptions: itineraries, urban surveys, field terriers, and so on. These might be of great complexity; a terrier might list hundreds, even thousands, of individual plots of land in a set of fields, giving the exact location

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1. A fuller account of the topographical maps from medieval Europe, with many illustrations, is in P. D. A. Harvey, *The History of Topographical Maps: Symbols, Pictures and Surveys* (London: Thames and Hudson, 1980), esp. chaps. 3–5 and 9. I am most grateful to Messrs. Thames and Hudson for permission to repeat here the evidence and the conclusions on medieval maps that are presented in that book.

2. P. D. A. Harvey, "The Portsmouth Map of 1545 and the Introduction of Scale Maps into England," in *Hampshire Studies*, ed. John Webb, Nigel Yates, and Sarah Peacock (Portsmouth: Portsmouth City Records Office, 1981), 33–49, esp. 35.

3. R. A. Skelton and P. D. A. Harvey, eds., *Local Maps and Plans from Medieval England* (Oxford: Clarendon Press, 1986), 4, 34–35.
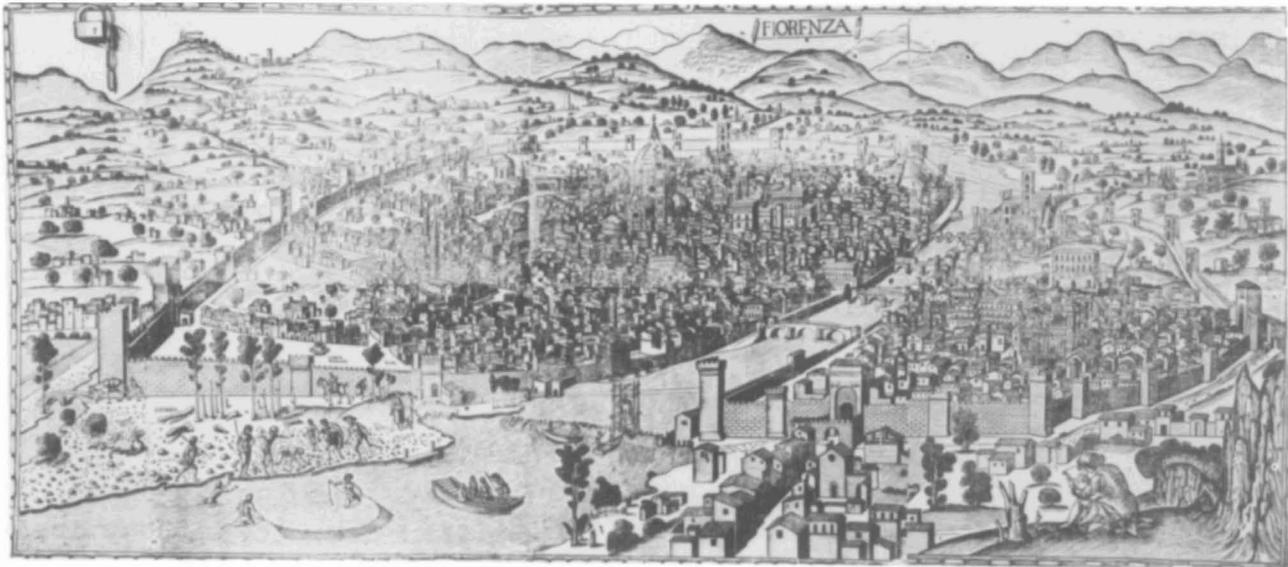
FIG. 20.1. ROSSELLI'S MAP OF FLORENCE, CA. 1485. One of the finest oblique pictorial views surviving from the fifteenth century, this "map with the chain" by Francesco Rosselli shows the city from a southwesterly vantage point. Buildings are shown in elevation, as on many maps during the medieval period.

Size of the original: 58.5 × 131.5 cm. By permission of the Staatliche Museen zu Berlin, DDR, Kupferstichkabinett.

of each,[4] so that it was a veritable "carte parlante" as de Dainville put it.[5] But that this should be preferred to putting the information graphically on a map points to a way of thought quite different from our own. It is with this in mind that we should view those regional and local maps and plans that we have from the Middle Ages.

Nor was it a matter of a gradual but steady increase in mapmaking, with growing awareness of the value of maps. With hindsight we can see in the fifteenth century some small pointers to the change that was to come in the sixteenth. But no more than that; the growth of mapmaking after 1500 was as sudden as it was rapid. The numbers of local maps surviving from England are significant here: there seems to have been no increase in production between 1350 and 1500. But it is significant too that there are hardly any English local maps earlier than 1350. The fact is that if we have few maps of small areas from medieval Europe, we have very few indeed earlier than the mid-fourteenth century: nearly all date from the last 150 years before 1500. Almost certainly this is a change not just in the pattern of survival but in the pattern of production, reflecting some sort of modest and restricted spread of the idea of drawing maps. But we can do little more than guess how or why this happened. Here, as in other questions about medieval maps of small areas, we are hampered by the patchiness of the research so far done on them. Some groups of maps,

such as those from the Low Countries and Britain or the regional maps from northern Italy, have been recorded and studied fairly systematically and can thus be viewed comprehensively. Others, such as those from France and Germany, have been brought to light more or less casually, so that we cannot tell how far those known are typical of the entire surviving corpus. From some areas, such as Spain and Portugal, no medieval maps of small areas have been reported, but this need not mean that none exist. There and elsewhere many such maps may have escaped notice simply because it has not been generally appreciated how unusual maps of any sort were before the sixteenth century, how the merest sketch map, of no cartographic importance in later periods, may be of great significance if it dates from the Middle Ages. Because our knowledge is so patchy, it is difficult to reach general conclusions about the mapping of small areas in medieval Europe; future discoveries may radically change the picture.

4. For example, Catherine P. Hall and J. R. Ravensdale, eds., *The West Fields of Cambridge* (Cambridge: Cambridge Antiquarian Records Society, 1976), a mid-fourteenth-century terrier.

5. François de Dainville, "Rapports sur les conférences: Cartographie Historique Occidentale," in *Ecole Pratique des Hautes Etudes, IVe section: Sciences historiques et philologiques. Annuaire 1968–1969* (Paris, 1969), 401–2.

However, one conclusion can be safely drawn from the evidence now available. Scale, the observance of a fixed proportion between distances on the map and distances on the ground, played practically no part in medieval maps of small areas; they were scarcely ever based on measured surveys. Sometimes, indeed, we find a broad correspondence in shape and distance between the map and the actual terrain. But often the mapmaker is concerned only to show the sequence of features along a very few routes, or some other topographical relationships that can be set out diagrammatically without any regard to scale at all. And sometimes consistency of scale is deliberately ignored, as in some northern Italian regional maps where the city at the center is drawn to a far larger scale than the rest of the map, to emphasize its importance. Apart from, just possibly, some Italian city plans, scale maps of small areas were unknown for most of our period, perhaps making a hesitant appearance only at its start in the ninth century with the Saint Gall plan, and its finish in the fifteenth. Conceptually related to the lack of scale is the fact that these maps are essentially picture maps: any detail above ground level is shown pictorially, not in plan. The form and artistry of this pictorial element vary enormously. At one extreme it may consist of no more than a roughly sketched outline or perspective view of a single feature, shown conventionally or even by means of a sign: a church for a village, or walls for a town. At the other extreme the entire map may be a realistic and accurate bird's-eye view, drawn in strict perspective throughout. The picture maps of the Middle Ages were the ancestors not only of the large-scale maps of the sixteenth century and later, but of the bird's-eye views as well, and they are all probably best thought of as a particular sort of topographical picture, drawn as though from a viewpoint (or often, indeed, more than one viewpoint) above ground level. Certainly many of the changes we see in the medieval picture maps are simply developments in artistic styles and techniques.[6]

Origins and Development

It may seem surprising that scale maps were virtually unknown in medieval Europe in view of the extremely competent and complex scale maps produced by the Roman surveyors from the first to the third century A.D.[7] What debt, if any, medieval mapping of small areas owed to classical Roman precedent is very difficult to determine. If some medieval Italian city plans were based on measured surveys (and this is far from certain), we should not rule out the possibility of a direct line of tradition from the Roman surveyors. But it seems more likely that the Roman tradition of scale maps died out altogether, leaving as its latest surviving relics Arculf's

plans of the holy places and the monastic plan in Saint Gall Abbey library. Both of these are like the Roman surveyors' maps, and unlike any other medieval maps, in showing buildings simply in outline ground plan and possibly also in being drawn to a fixed scale.[8] The plans of Arculf, a Frankish bishop, are of four buildings in the Holy Land: the Churches of the Sepulcher (fig. 20.2), of Mount Zion, and of the Ascension in Jerusalem, and the Church of Jacob's Well at Nablus. They illustrate the account of his pilgrimage there in 670, an account written out for posterity by Adamnan, abbot of Iona, where Arculf is said to have stayed after his ship had been carried far off course when returning to Gaul. The plans are described as having been drawn by Arculf on wax tablets, but they were not copied in all the surviving medieval manuscripts of the text, and the earliest in which they are found dates from the ninth century. Imprecise copying makes it impossible to tell whether the original plans were drawn to scale; we can only say that their style is entirely that of the Roman surveyors' scale plans.[9] Of the plan at Saint Gall (fig. 20.3), on the other hand, we have only the single original that was sent, as its dedicatory inscription tells us, to Gozbert, who was abbot there from 816 to 837. There has been much scholarly research on the plan, culminating in the recent work of Horn and Born, who have shown how the buildings and plots of ground it depicts conform to a single unit of length, so that all their alignments coincide with the grid that underlies the entire plan.[10] These buildings

6. Harvey, *Topographical Maps*, 48 (note 1).

7. Gianfilippo Carettoni et al., *La pianta marmorea di Roma antica: Forma Urbis Romae*, 2 vols. (Rome: Comune di Roma, 1960); besides the plan of Rome that is the subject of this work, other Roman scale plans are discussed and reproduced on pages 207–10 and pl. Q. André Piganiol, *Les documents cadastraux de la colonie romaine d'Orange, Gallia* suppl. 16 (Paris: Centre Nationale de la Recherche Scientifique, 1962).

8. Harvey, *Topographical Maps*, 131–32 (note 1).

9. Titus Tobler and Augustus Molinier, eds., *Itinera Hierosolymitana et descriptiones Terrae Sanctae* (Paris: Société de l'Orient Latin, 1879), xxx–xxxiii, 149, 160, 165, 181; related plans are in manuscripts of Bede's *De locis sanctis*, for example, London, British Library, Add. MS. 22653, fols. 44–46v; see Reinhold Röhricht, "Karten und Pläne zur Palästinakunde aus dem 7. bis 16. Jahrhundert, II," *Zeitschrift des Deutschen Palästina-Vereins* 14 (1891): 87–92, esp. 91–92.

10. Walter Horn and Ernest Born, *The Plan of St. Gall: A Study of the Architecture and Economy of, and Life in, a Paradigmatic Carolingian Monastery*, 3 vols. (Berkeley: University of California Press, 1979). A different interpretation of the underlying grid is given by Eric Fernie, "The Proportions of the St. Gall Plan," *Art Bulletin* 60 (1978): 583–89. Of earlier writings on the plan, Walter Horn and Ernest Born, "New Theses about the Plan of St. Gall," in *Die Abtei Reichenau: Neue Beiträge zur Geschichte und Kultur des Inselklosters*, ed. Helmut Maurer (Sigmaringen: Thorbecke, 1974), 407–76, is a guide to recent discussion, while Hans Reinhardt, *Der St. Galler Klosterplan* (Saint Gall: Historischer Verein des Kantons St. Gallen, 1952), is a useful short introduction to the plan.
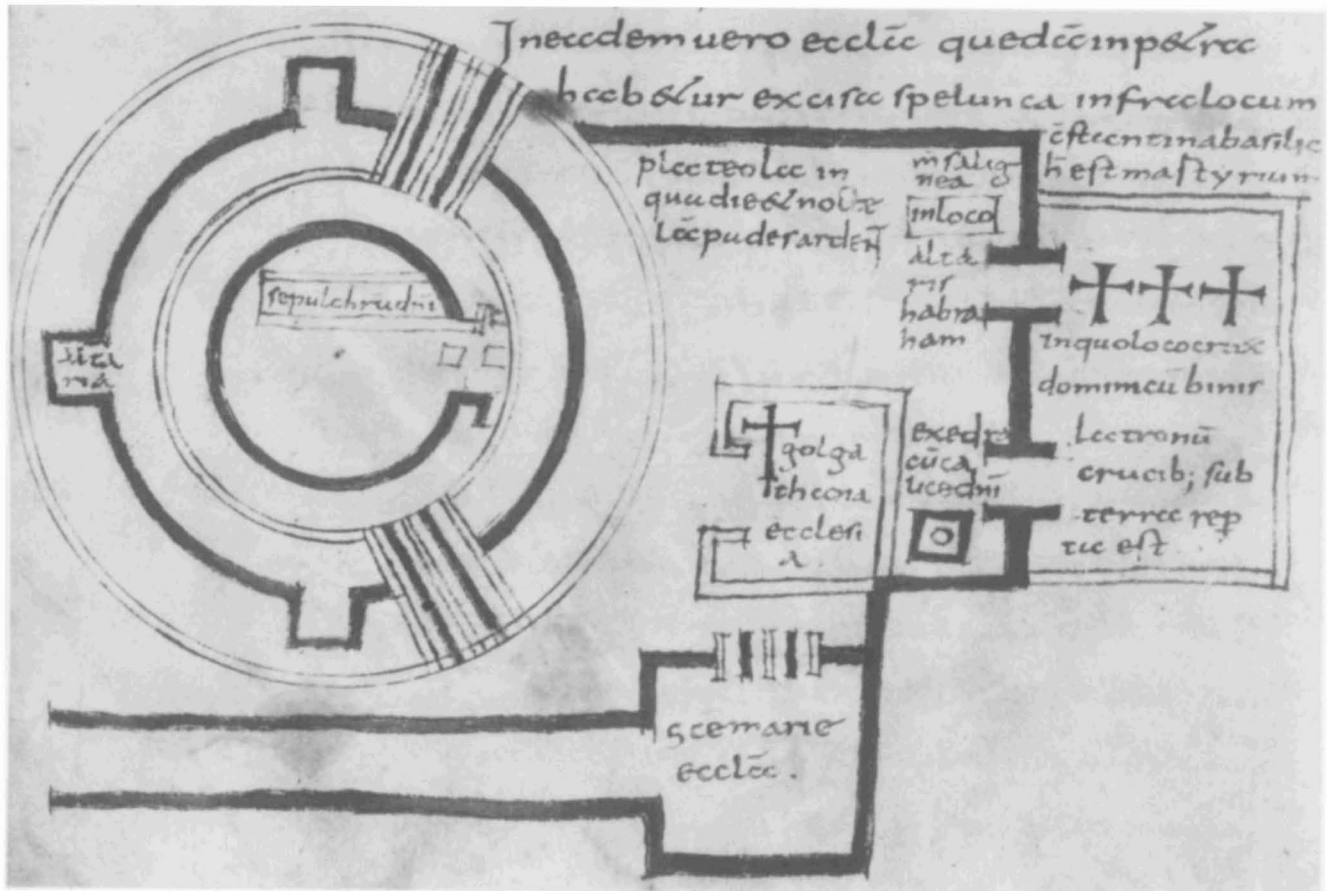
FIG. 20.2. PLAN OF THE HOLY SEPULCHER. This and other plans of holy places were drawn by Arculf, a Frankish bishop, to illustrate his pilgrimage to Jerusalem in 670. Like the monastery plan from Saint Gall, it belongs to the Roman tradition of surveyors' plans.

Size of the original: 11.5 × 17.5 cm. Photograph from the Bibliothèque Nationale, Paris (MS. Lat. 13048, fol. 4v).

and grounds are an abbey church and its precincts, with accommodation for the monks and their servants, cloisters, gardens, and houses for the estate workers and livestock. It has been much debated whether this was an existing monastery, a plan for one intended to be built, or simply an ideal schema. Nor is it certain that it was drawn as a scale map; the measurements entered on it for certain features are not entirely consistent with the proportions of the map itself.[11] It is in any case an impressive monument to the art and thought of the Carolingian age, and one of the outstanding cartographic productions of medieval Europe. But it had no direct successor. It is possible, even likely, that knowledge of the Saint Gall plan lies behind the plan of Canterbury cathedral and its priory that was drawn in the mid-twelfth century—the style of the inscriptions particularly suggests a connection—but if so it was only the idea of a plan that was transmitted, not its cartographic concept

or method, for the Canterbury plan is a picture map, showing the buildings in elevation, not an outline ground plan (fig. 20.4).[12] The Saint Gall plan was linked to the past, not the future. It is the last known surviving map in the tradition of the Roman surveyors.

If the idea of drawing maps to scale failed to pass from ancient Rome to medieval Europe, did any other aspects of cartography meet with better success? Did any traditions of mapping survive from classical times? Einhard, Charlemagne's courtier and biographer, tells us that when Charlemagne died he had among his pos-

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11. See, for instance, the doubts expressed by David Parsons, "Consistency and the St. Gallen Plan: A Review Article," *Archaeological Journal* 138 (1981): 259–65.

12. Cambridge, Trinity College, MS. R.17.1, fols. 284v–285r; William Urry, "Canterbury, Kent, *circa* 1153 × 1161," in Skelton and Harvey, *Local Maps and Plans*, 43–58 (note 3).
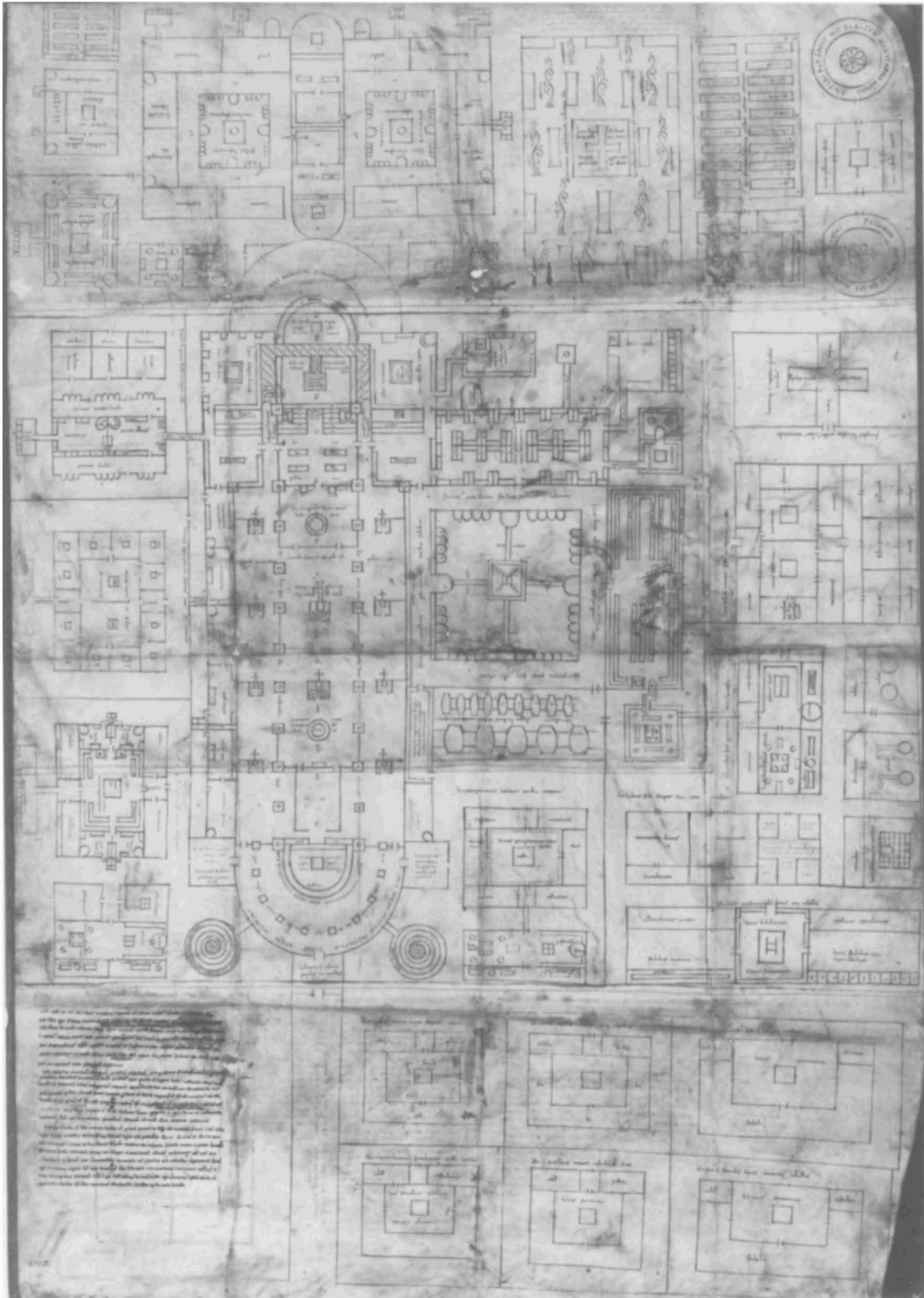
FIG. 20.3. THE PLAN OF SAINT GALL. This architectural plan of an idealized monastery and its associated buildings, dated 816–837, is remarkable in its consistent unit of measurement and planimetric style, reminiscent more of Roman than of medieval cartography.

Size of the original: 114 × 74.5 cm. By permission of the Stiftsbibliothek, Saint Gall (Codex 1092).
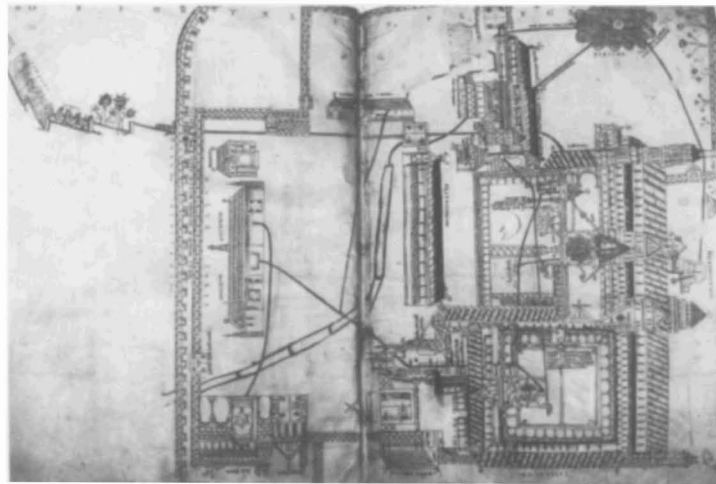
FIG. 20.4. PLAN OF CANTERBURY CATHEDRAL AND ITS PRIORY. Drawn in the mid-twelfth century, this is a picture map depicting features above the ground in elevation. Only the water supply, which consists of pipes from springs not on the map, is shown in plan.

Size of the original: 45.7 × 66 cm. By permission of the Master and Fellows of Trinity College, Cambridge (MS. R.17.1, fols. 284v–285).

sessions tables of gold and silver engraved with representations of the world and of Rome and Constantinople.[13] There may have been a continuing tradition of plans of both these cities, but those surviving to us from the Middle Ages give no hint of classical antecedents. It is more likely that we have a continuous tradition of maps of Palestine. From the twelfth century onward we have various maps of the Holy Land, drawn in western Europe; since we also have from the earlier period both written itineraries and maps (the Peutinger map, the Madaba mosaic) covering the same area, it should be possible to discover whether they owe anything to precedent.[14] Certainly there are at least superficial similarities between the sixth-century Madaba mosaic and the medieval tradition that includes the early fourteenth-century maps by Pietro Vesconte of Venice; but the exact relationships between even the medieval maps have not been fully worked out—the question is not a simple one—and this would be an essential preliminary to detailed comparison with the earlier material. Medieval plans of Jerusalem, which also date from the twelfth century onward, may well also owe something to classical tradition, though this would be harder to determine. There is a diagram of Jerusalem with Arculf's seventh-century text, but otherwise the only earlier plan is the representation of the city on the Madaba mosaic.

It is thus possible, but very far from certain, that medieval maps of Palestine and perhaps of other areas derived from Roman models. But it is only when we look at the detailed features of medieval maps that we find an element that can convincingly be shown to lie in a direct tradition from classical antiquity. This is the way of showing a town by a stylized picture of city walls, seen in bird's-eye view, usually with towers and some-

times with one or more buildings inside. It is a very natural convention to adopt; indeed, it occurs in Chinese cartography as well as European.[15] But it can be traced in all sorts of contexts from ancient Greece down to the High Middle Ages, and there seems no doubt that it reached medieval maps through a continuing artistic tradition of great antiquity.[16] Lavedan has well named it the city ideogram ("l'idéogramme urbain"), and we shall see that it formed the basis for very much more elaborate plans of some of the towns of medieval Europe.

If the maps of small areas that were drawn in medieval Europe owed little to the classical past, where did they draw their inspiration? One answer lies in the diagrams that medieval writers used to illustrate all kinds of relationships—philosophical, scientific, administrative, and so on. Many of the maps, especially the earliest ones, were simply applications of the same kind of drawing to topographical relationships. An early thirteenth-century English plan showing the source of Waltham Abbey's water supply at Wormley (Hertfordshire) (fig. 20.5) is very like the diagrams that Matthew Paris was drawing at Saint Albans Abbey at about the same time to illustrate astrological and other works, and a direct

13. Einhard, *Early Lives of Charlemagne*, ed. and trans. A. J. Grant (London: Moring, 1905), 54; but see F. N. Estey, "Charlemagne's Silver Celestial Table," *Speculum* 18 (1943): 112–17, who interprets the world map as being of the heavens.

14. Otto Cuntz, ed., *Itineraria Romana* (Leipzig: Teubner, 1929–), vol. 1, *Itineraria Antonini Augusti et Burdigalense*; Ekkehard Weber, ed., *Tabula Peutingeriana: Codex Vindobonensis 324* (Graz: Akademische Druck- und Verlagsanstalt, 1976); Michael Avi-Yonah, *The Madaba Mosaic Map* (Jerusalem: Israel Exploration Society, 1954).

15. For example, Harvey, *Topographical Maps*, pls. V, VI (note 1).

16. Pierre Lavedan, *Représentation des villes dans l'art du Moyen Age* (Paris: Vanoest, 1954), 33–35, pl. XVII; Carl H. Kraeling, ed., *Gerasa, City of the Decapolis* (New Haven: American Schools of Oriental Research, 1938), 341–51.

connection is not impossible.[17] One early map of Palestine shows Jerusalem as a series of large concentric circles, surrounded by tiny circles linked with straight lines to represent other towns, roads, the river Jordan, and the coastline.[18] The oldest known map from the Netherlands, dated 1307, consists simply of place-names and other notes, written in an arrangement corresponding to their positions on the ground, with drawn outlines of gable ends representing two churches (fig. 20.6).[19] Nor is it difficult to find later maps that show just as clearly the techniques of the diagram applied topography. One example from 1441 shows an estate on both sides of the Rhine at Wantzenau, north of Strasbourg: drawn in red and black ink, it shows the estate as a square, divided by wavy lines representing the river and subdivided into rectangles to mark the individual farms.[20] One English topographical diagram is a list of all the houses in Gloucester in 1455, arranged in two columns to correspond with the two sides of each street and with thumbnail sketches of principal buildings and other landmarks drawn in at the appropriate places.[21] Here the line between map and noncartographic diagram becomes difficult to draw, and we can see how the use of diagrams for quite different purposes could easily lead to the topographical diagram and the map.

Building plans too could well have led to the idea of drawing maps. We have abundant evidence that drawing plans on parchment or paper was a normal technique of the late medieval architect or builder—indeed from the fifteenth century we have substantial numbers of plans surviving. One notable collection is from Saint Stephen's, Vienna, but it includes plans of other buildings, even as far away as the Rhine, that were probably brought to Vienna by itinerant masons.[22] Earlier, in the thirteenth century, the notebook of Villard de Honnecourt confirms that architects were accustomed to think in terms of drawn outline ground plans.[23] From England only a single medieval building plan survives, showing part of Winchester College and dating from about 1390 (fig. 20.7), but we have references to plans in written
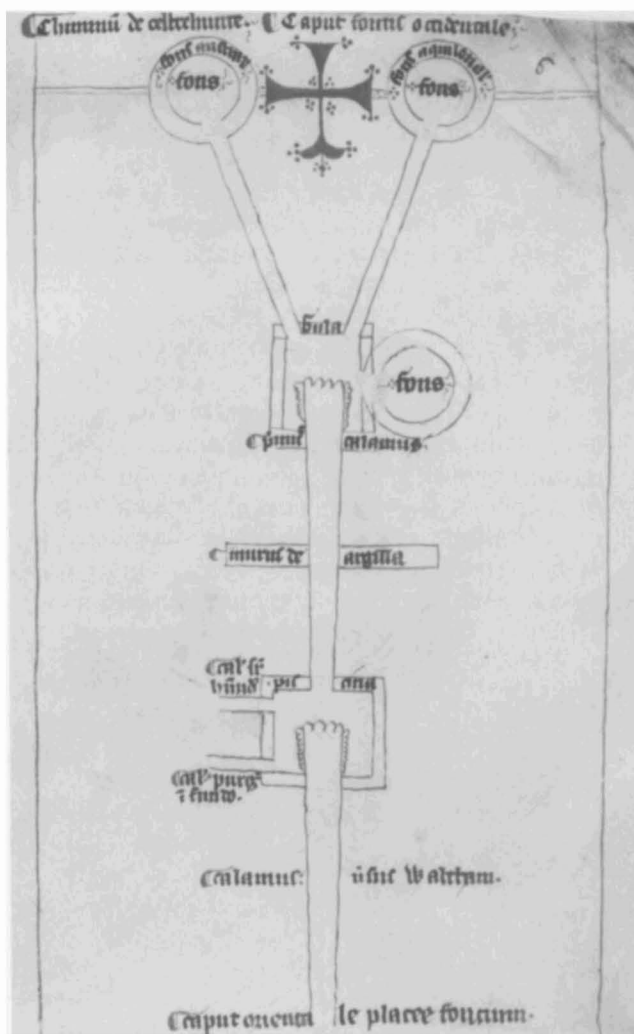

FIG. 20.5. PLAN OF A WATER SUPPLY. This schematic early thirteenth-century plan shows the source, at Wormley, Hertfordshire, of the water supply for Waltham Abbey. The cross flanked by the northern and southern springs has a splayed foot representing the east, perhaps the earliest direction pointer known on any map. It is possible that the style of this plan was inspired by the work of Matthew Paris, of nearby Saint Albans Abbey, who drew many schematic diagrams to illustrate various philosophical relationships at the time.
Size of the original: 21.8 × 14.7 cm. By permission of the British Library, London (Harl. MS. 391, fol. 6r).

17. London, British Library, Harl. MS. 391, fol. 6r; P. D. A. Harvey, "Wormley, Hertfordshire, 1220 × 1230," in Skelton and Harvey, *Local Maps and Plans*, 59–70 (note 3); Richard Vaughan, *Matthew Paris* (Cambridge: Cambridge University Press, 1958), 254–55, 257–58, pls. XX, XXIb.

18. London, British Library, Harl. MS. 658, fol. 37v; Reinhold Röhricht, "Karten und Pläne zur Palästinakunde aus dem 7. bis 16. Jahrhundert, III," *Zeitschrift des Deutschen Palästina-Vereins* 14 (1891): 137–141, esp. 140–41, pl. 5.

19. Lille, Archives Départementales du Nord, B 1388/1282 bis; M. K. Elisabeth Gottschalk, *Historische geografie van Westelijk Zeeuws-Vlaanderen*, 2 vols. (Assen: Van Gorcum, 1955–58), vol. 1, *Tot de St-Elizabethsvloed van 1404*, 148–49; Harvey, *Topographical Maps*, 89 (note 1).

20. Strasbourg, Archives Départementales du Bas-Rhin, G 4227 (8);

Franz Grenacher, "Current Knowledge of Alsatian Cartography," *Imago Mundi* 18 (1964): 60–61.

21. Gloucester, Gloucestershire Records Office, GDR 1311; W. H. Stevenson, ed., and Robert Cole, comp., *Rental of All the Houses in Gloucester A.D. 1455* (Gloucester: Bellows, 1890); Harvey, *Topographical Maps*, 90–91 (note 1).

22. Hans Koepf, *Die gotischen Planrisse der Wiener Sammlungen* (Vienna: Böhlau, 1969).

23. Paris, Bibliothèque Nationale, fr. 19093; H. R. Hahnloser, ed., *Villard de Honnecourt: Kritische Gesamtausgabe des Bauhüttenbuches*, 2d ed. (Graz: Akademische Druck- und Verlagsanstalt, 1972).
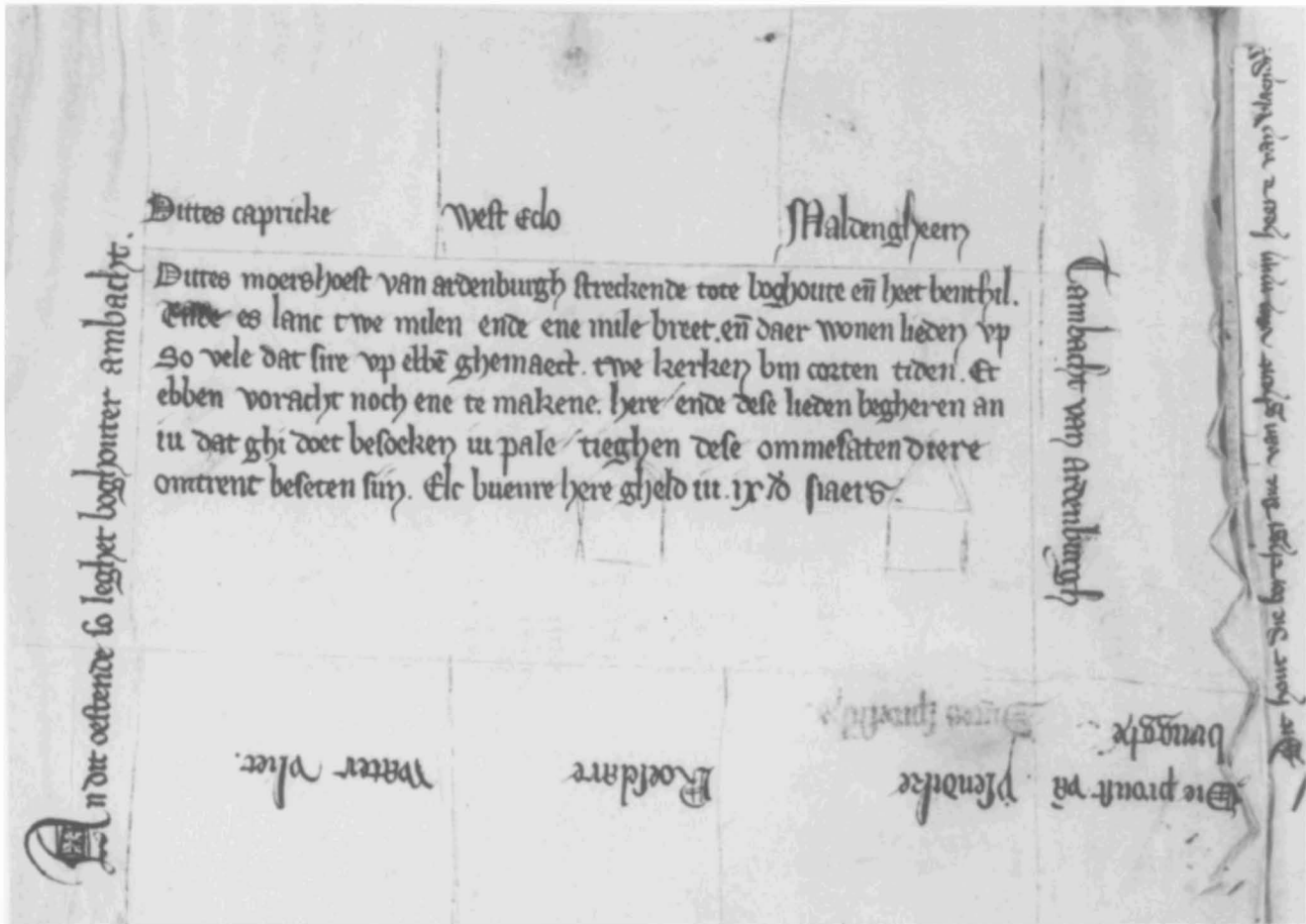
FIG. 20.6. MAP OF AN AREA NEAR SLUIS, ZEELAND. The oldest extant map from the Low Countries, dated 1307, uses place-names and notes arranged geographically. Two gable ends, representing churches, are faintly visible.

By permission of the Archives Départementales du Nord, Lille (B 1388/1282 bis).

building contracts from 1380 onward.[24] The modest increase in mapmaking that we find in England from the mid-fourteenth century may well reflect, if not the introduction of drawing plans as a technique of the builder's craft, at least a growing custom of showing these plans to their clients so that more people became familiar with this sort of representation. Whether consciously or not, building plans may well have inspired the mapping of small areas in the Middle Ages.

It is natural to ask whether these maps of small areas owed anything to other types of medieval map—to the world maps, to portolan charts, or, in the fifteenth century, to the reintroduction of Ptolemy's maps to the West. Nearly all the world maps of every sort, from the simplest to the most complex, belong to the diagram-drawing traditions of the Middle Ages, just like many of the maps of smaller areas. A few of the most elaborate

represent Jerusalem at the center by a plan recognizably in the tradition of local maps of the city.[25] But beyond this there seems to be no connection between the two types of map; the world maps were so different in origin and concept that it is difficult to see what influence they can have had on the mapping of smaller areas. On the other hand, personal links suggest that at least some medieval draftsmen did not see these two types of map as entirely unconnected. In the thirteenth century Matthew Paris of Saint Albans drew a world map and maps

24. Winchester, Winchester College Muniments, 22820, inside front and back covers; John H. Harvey, "Winchester, Hampshire, *circa* 1390," in Skelton and Harvey, *Local Maps and Plans*, 141–46 (note 3); Louis Francis Salzman, *Building in England down to 1540* (Oxford: Clarendon Press, 1952), 14–22.

25. Even if only in its circular battlemented walls, as on the Ebstorf map.
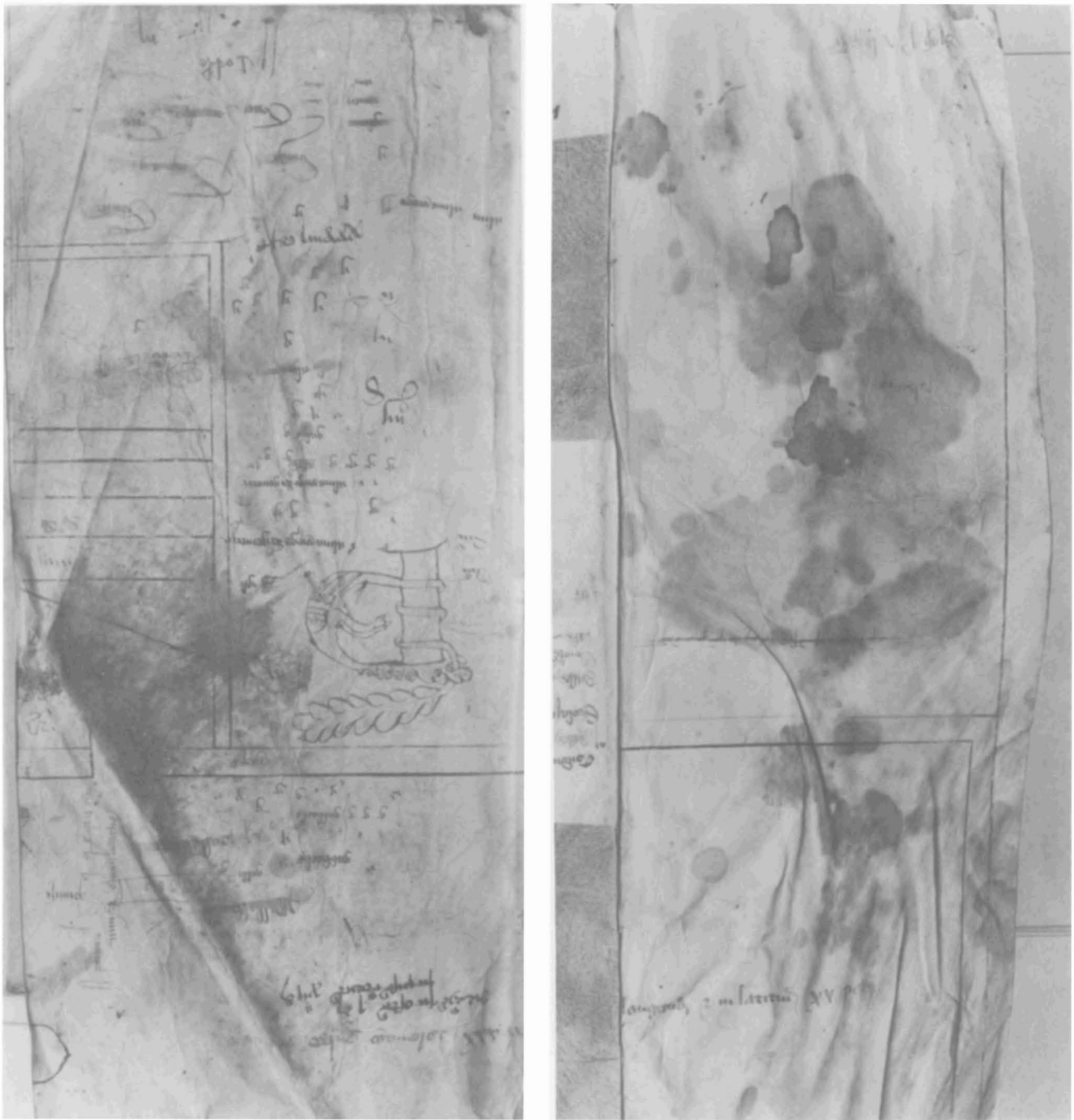
FIG. 20.7. PLAN FROM WINCHESTER COLLEGE. Although we have references to plans in building contracts from 1380 onward, this plan of about 1390 seems to be the sole survivor of the English tradition.

Size of the original: 31.2 × 26.0 cm. By permission of the Warden and Fellows of Winchester College (Winchester College Muniments, 22820, inside front and back covers).

of Britain, the Holy Land, and the route from England to southern Italy and, as we have seen, may have inspired the production of an English local map.[26] In the early fourteenth century Pietro Vesconte, who came from Genoa but worked in Venice, not only drew portolan charts but also provided a world map, a map of the Holy Land, and plans of Acre and Jerusalem for Marino Sanudo's *Liber secretorum fidelium crucis*; a little later the similar collection of maps illustrating Paolino Veneto's *Chronologia magna* included a world map, a portolan chart, maps of Italy and the Holy Land, a regional map of the lower Po, and plans of towns in both Italy and Palestine.[27] Certainly the *isolarii* (island books) of the fifteenth century suggest a clear link between the portolan charts and the mapping of small areas, but an earlier one can be found in the maps of peninsular Italy from the early fourteenth century onward, though the exact relationship has still to be demonstrated in both cases. In Italy at least, the portolan charts probably served as a model or inspiration for other maps of smaller areas; some of the plans of cities and the northern Italian regional maps may well have owed something to them, even though there was no direct borrowing of information. Outside Italy there seems to be no trace of a connection between portolan charts and the mapping of small areas, and it is unlikely that they helped to disseminate even the idea of drawing maps elsewhere in Europe. In the mid-fifteenth century English local maps suddenly begin to show a decided preference for northern orientation; it is conceivable that this shows the influence of Ptolemy's maps, but a more likely explanation would be the growing use of the land compass with north-pointing needle.[28] One further point of contact between local maps and maps of large areas is late fifteenth-century Germany. Here we see both types of map in the work of Erhard Etzlaub of Nuremberg, physician and instrument maker and author not only of general maps of central Europe from the Baltic to Rome, but also of a regional map of the area around Nuremberg and probably also of local estate maps (though none has survived).[29] Earlier there may have been a connection between the scale plan of Vienna and Bratislava that was drawn about 1422 (fig. 20.8) and geographical work at the monastery of Klosterneuburg that may have included mapmaking;[30] probably, however, the plan derived from the city plans that were being drawn in Italy.

All this might seem to point to strong connections between the maps of small areas and other types of medieval map and even to suggest that local and regional mapping in the Middle Ages was an offshoot of small-scale geographic mapping. This would be misleading. The clearest connections between the two sorts of map are in the work of a few outstanding individuals: Matthew Paris, Pietro Vesconte, Erhard Etzlaub. The tra-

ditions and concepts of geographic maps underlie only a few of the maps of small areas, and it is neither arbitrary nor artificial to draw a clear distinction between the two. Most of the maps of small areas took their inspiration from other sources; we may reasonably suppose that among these were diagrams and building plans, but others may still come to light.

MAPS OF PALESTINE AND ITS CITIES

Many medieval maps of small areas seem to have been individual productions, drawn for a particular purpose from first principles, owing nothing to precedent or example. We can, however, distinguish several clear traditions of mapmaking. Of these, maps of the Holy Land and of Jerusalem were the earliest to appear. Indeed, as we have seen, they may well owe something to classical models, and we have an early precursor of the medieval tradition in the plans of Jerusalem and the holy places that accompany the account of Arculf's pilgrimage in 670. However, a regular sequence begins only in the twelfth century after the capture of Jerusalem in 1099 and the establishment of the Crusader states. One of the earliest plans of the city to survive from this period, dating from the 1140s, is also one of the most impressive, for it is clearly based on direct knowledge. It shows the city walls in rhomboid outline, naming the gates and some of the towers and other features; inside it shows a few of the main streets, but only the principal buildings and churches are marked, so that much of the area is simply left blank. The walls, buildings, and hills are all shown pictorially, in elevation.[31] Another outstanding plan of Jerusalem, with the irregular outline of the medieval walls drawn fairly accurately and showing more

26. Vaughan, *Matthew Paris*, 235–50, pls. XII–XVII (note 17).

27. Bernhard Degenhart and Annegrit Schmitt, "Marino Sanudo und Paolino Veneto," *Römisches Jahrbuch für Kunstgeschichte* 14 (1973): 1–137, esp. 60–87, 105–30.

28. P. D. A. Harvey's Introduction in Skelton and Harvey, *Local Maps and Plans*, 36–37 (note 3).

29. Fritz Schnelbögl, "Life and Work of the Nuremberg Cartographer Erhard Etzlaub (†1532)," *Imago Mundi* 20 (1966): 11–26.

30. Vienna, Historisches Museum, I.N.31.018; S. Wellisch, "Der älteste Plan von Wien," *Zeitschrift des Oesterreichischen Ingenieur- und Architekten-Vereines* 50 (1898): 757–61; Max Kratochwill, "Zur Frage der Echtheit des 'Albertinischen Planes' von Wien," *Jahrbuch des Vereins für Geschichte der Stadt Wien* 29 (1973): 7–36; Harvey, *Topographical Maps*, 80–81 (note 1); Dana Bennett Durand, *The Vienna-Klosterneuburg Map Corpus of the Fifteenth Century: A Study in the Transition from Medieval to Modern Science* (Leiden: E. J. Brill, 1952); Ernst Bernleithner, "Die Klosterneuburger Fridericuskarte von etwa 1421," in *Kartengeschichte und Kartenbearbeitung*, ed. Karl-Heinz Meine (Bad Godesberg: Kirschbaum Verlag, 1968), 41–44; Fritz Bönisch, "Bemerkungen zu den Wien-Klosterneuburg-Karten des 15. Jahrhunderts," in *Kartengeschichte und Kartenbearbeitung* (above), 45–48.

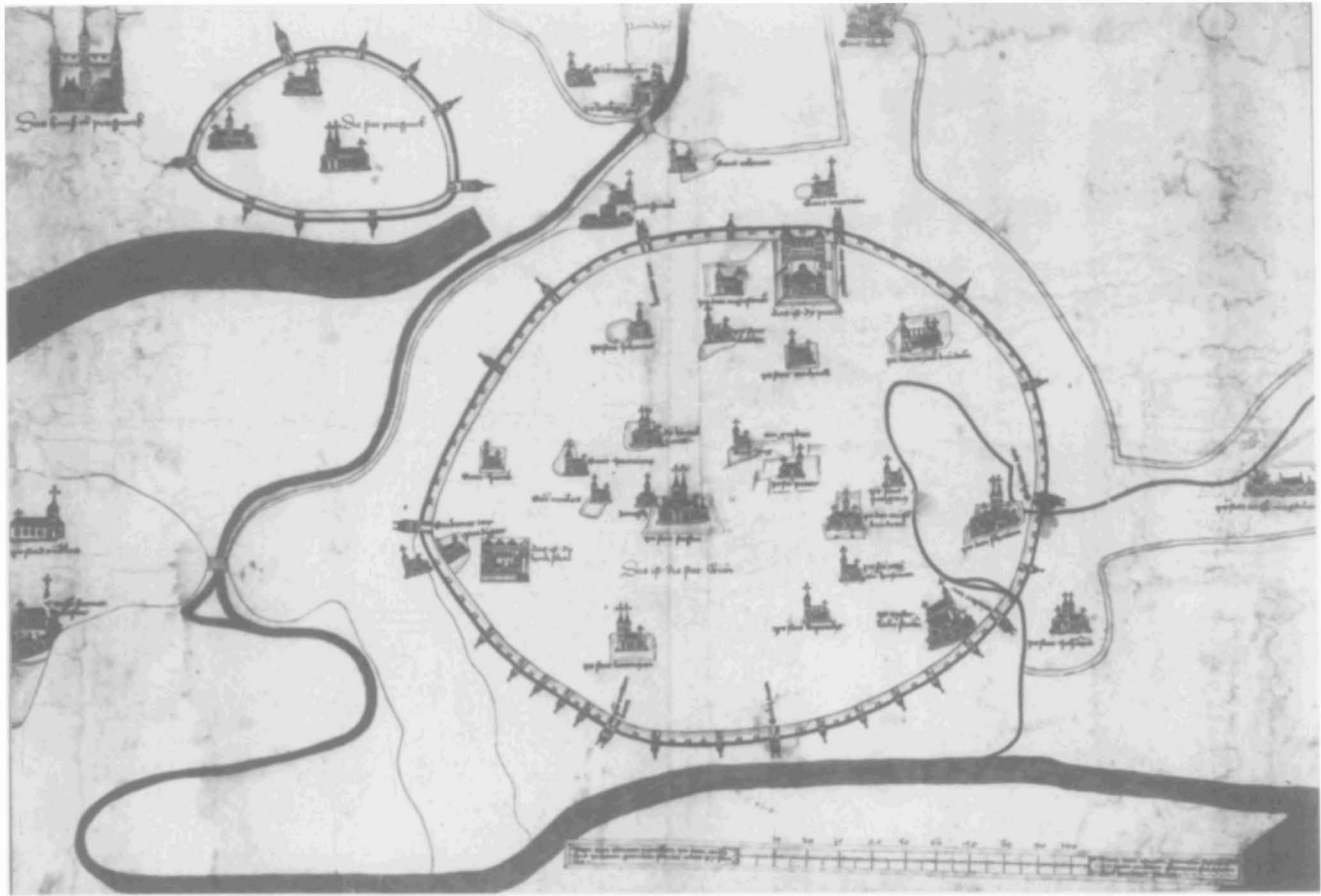31. Cambrai, Bibliothèque Municipale, MS. 466, fol. 1r; Ludwig

FIG. 20.8. PLAN OF VIENNA AND BRATISLAVA. The earliest European local map to be explicitly drawn to scale, the "Albertinischer plan," as it is called, is a mid-fifteenth-century copy of a 1421–22 original. The graphic scale (bottom right) is graduated in paces. Bratislava is shown in the upper left, with its castle beside it in a style reminiscent of Italian city plans.

Size of the original: 39.7 × 57.6 cm. By permission of the Historisches Museum der Stadt Wien (I.N. 31.018).

streets but fewer buildings than the plan of the 1140s, must date from before the Crusaders' final loss of the city in 1244 but is known only in early fourteenth-century copies in the works of Marino Sanudo and Paolino Veneto (it is accompanied there by a similarly impressive plan of Acre and, in Paolino Veneto's work, by one of Antioch too).[32] But most medieval maps of Jerusalem—and many dozens survive—give it a circular form and though likewise showing its walls and a selection of its chief monuments are mostly much more stylized and diagrammatic in appearance (fig. 20.9).[33] The Holy Land had long been lost to the Christians by the time more detailed and realistic plans of Italian towns were being drawn in the form of bird's-eye views, but we have one such view of Jerusalem, owing nothing to earlier plans, in the account of Bernard von Breydenbach's jour-

ney to the Holy Land, published in 1486; it was drawn by Erhard Reuwich of Utrecht, who accompanied him.[34]

H. Heydenreich, "Ein Jerusalem-Plan aus der Zeit der Kreuzfahrer," in *Miscellanea pro arte,* ed. Joseph Hoster and Peter Bloch (Cologne: Freunde des Schnütgen-Museums, 1965), 83–90, pls. LXII–LXV; Harvey, *Topographical Maps,* 70–71 (note 1).

32. Reinhold Röhricht, "Marino Sanudo sen. als Kartograph Palästinas," *Zeitschrift des Deutschen Palästina-Vereins* 21 (1898): 84–126, pls. 2–11; Degenhart and Schmitt, "Sanudo und Veneto," 78–80, 105, 120–22 (note 27).

33. For example, those reproduced in Reinhold Röhricht, "Karten und Pläne zur Palästinakunde aus dem 7. bis 16. Jahrhundert, IV," *Zeitschrift des Deutschen Palästina-Vereins* 15 (1892): 34–39, and esp. pls. 1–5.

34. Bernard von Breydenbach, *Peregrinatio in Terram Sanctam* (Mainz: Reuwich, 1486); Reinhold Röhricht, "Die Palästinakarte Bernhard von Breitenbach's," *Zeitschrift des Deutschen Palästina-Ver-*
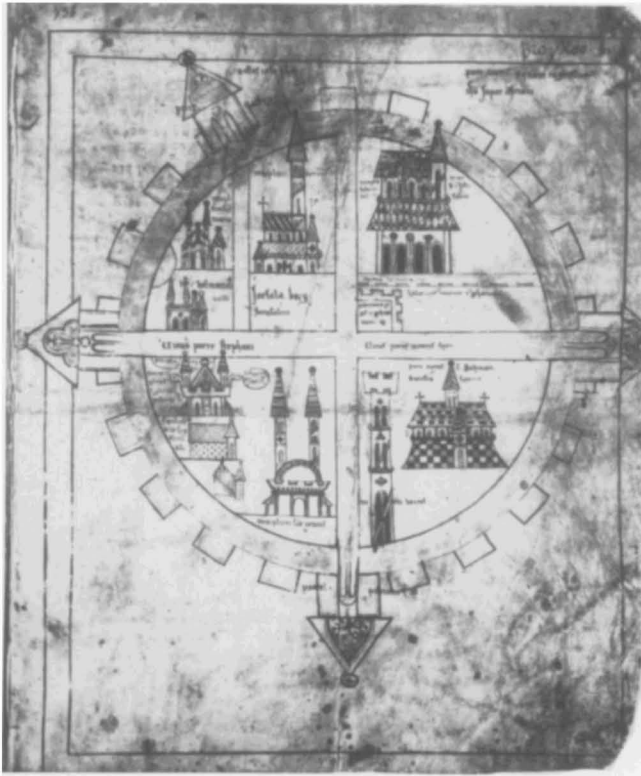
FIG. 20.9. JERUSALEM. This stylized map of Jerusalem—a fourteenth-century copy of a ca. 1180 original—is typical of the many that survive from the Middle Ages: within the circular diagrammatic wall are shown two main thoroughfares in the form of a cross and a selection of landmarks.
Size of the original: 26.2 × 21.7 cm. By permission of the Arnamagnæan Commission, Copenhagen (MS. 736 I, 4to, fol. 2r).
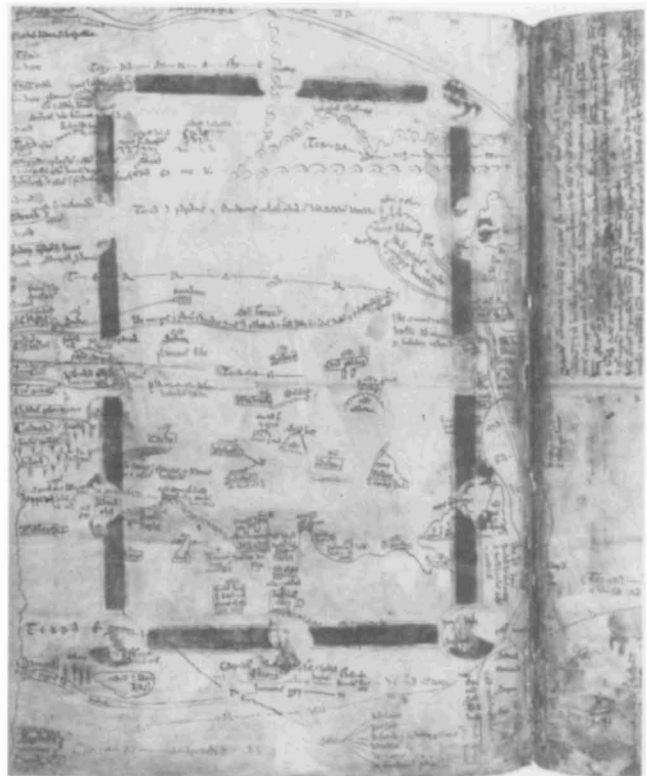

FIG. 20.10. PALESTINE. Unlike most general maps of the Holy Land, which are oriented to the east, this thirteenth-century example by Matthew Paris has north at the top. Along the coast are measurements in days of travel or leagues.
Size of the original: 47.5 × 35.0 cm. By permission of the President and Fellows, Corpus Christi College, Oxford (MS. 2, fol. 2v).

The view of Jerusalem in Breydenbach's work is set, though vastly out of scale, in a general map of the Holy Land. One thirteenth-century diagram map of Jerusalem, showing other places from the Mediterranean to the river Jordan, has already been mentioned. Of the two maps of the Holy Land by Matthew Paris one is dominated by a plan of Acre (city walls with principal buildings), with the few other marked places shown conventionally and to a quite different scale.[35] But these are exceptional productions: the plans of towns in Palestine and maps of the Holy Land belonged to quite separate medieval traditions. Among the early general maps of Palestine the other map by Matthew Paris is of particular interest, though we have only what seems to be a draft (fig. 20.10); most maps of the Holy Land had east at the top, the direction of the pilgrim's approach by sea, but this one is oriented to the north, and along the coast it marks distances between towns as so many day's journeys or leagues.[36] However, the most detailed medieval map of the Holy Land comes from Italy and is known

in several versions. The first exists only in a late thirteenth-century copy, at Florence;[37] of the second we have some nine copies in the early fourteenth-century works of Marino Sanudo and Paolino Veneto, and it may well have originated in the workshop of Pietro Vesconte.[38] This second version marks many more places

eins 24 (1901): 129–35; Ruthardt Oehme, "Die Palästinakarte aus Bernhard von Breitenbachs Reise in das Heilige Land, 1486," *Beiheft zum Zentralblatt für Bibliothekswesen* 75 (1950): 70–83; Harvey, *Topographical Maps,* 82–83 (note 1).

35. For example, London, British Library, Royal MS. 14.C.vii, fols. 4v–5r (three other versions survive); Charles Raymond Beazley, "New Light on Some Mediæval Maps IV," *Geographical Journal* 16 (1900): 319–29, esp. 326; Vaughan, *Matthew Paris,* 241, 244–45, pl. XVI (note 17); Harvey, *Topographical Maps,* 56–57 (note 1).

36. Oxford, Corpus Christi College, MS. 2, fol. 2v; Vaughan, *Matthew Paris,* 245–47, pl. XVII (note 17).

37. Florence, Archivio di Stato; Reinhold Röhricht, "Karten und Pläne zur Palästinakunde aus dem 7. bis 16. Jahrhundert, I," *Zeitschrift des Deutschen Palästina-Vereins* 14 (1891): 8–11, pl. 1.

38. Röhricht, "Marino Sanudo," 84–126, pls. 2–11 (note 32); Degenhart and Schmitt, "Sanudo und Veneto," 76–78, 105, 116–19 (note

FIG. 20.11. PALESTINE BY VESCONTE. There are nine versions of this map found in the fourteenth-century works by Marino Sanudo and Fra Paolino Veneto, probably illustrated by Pietro Vesconte. One outstanding feature of this version is the use of an equidistant grid underpinning the whole map.

Size of the original: 51 × 81 cm. Photograph from the Bibliothèque Nationale, Paris (MS. Lat. 4939, fols. 10v–11).

than the first and (a feature of great interest, to which we shall return later) sets the whole map on a grid of equidistant lines (fig. 20.11). At the same time both versions are closely related: their patterns of hills and rivers are very similar, and the Twelve Tribes are named on both. Also related to them are the large maps that accompany William Wey's account of his journeys to the Holy Land in 1457–58 and 1462, and some other fifteenth-century maps.[39] Some inscriptions from these maps are echoed on the map illustrating Breydenbach's book of 1486, though this seems to be a quite new compilation by Reuwich, mostly independent of earlier models.[40] Certainly there was a clear tradition, perhaps more than one tradition, of medieval maps of the Holy Land, although their relationships to each other and to other sources have not yet been fully worked out.

MAPS OF ITALIAN CITIES

Besides these traditions of maps and plans of Palestine and its cities, which seem to have been known through-

out western Europe, there were several distinct traditions of small-area maps that were confined to Italy. The earliest was of plans of cities, and it is quite possible that the plans of Jerusalem served as models. Most fall within a single genre—the bird's-eye view. At its start are two of the three Italian town plans that survive from before the thirteenth century; they show tenth-century Verona and twelfth-century Rome as bird's-eye views of city walls—the city ideogram of ancient origin—with, crowded inside and around them, a recognizable selec-

27). For a description of a larger version of the Vesconte map, see Frederick B. Adams, *Seventh Annual Report to the Fellows of the Pierpont Morgan Library* (New York: Pierpont Morgan Library, 1957), 14–17.

39. Röhricht, "Marino Sanudo," 101–4, pl. 6 (note 32); idem, "Die Palästinakarte des William Wey," *Zeitschrift des Deutschen Palästina-Vereins* 27 (1904): 188–93; Adams, *Annual Report*, 16–17 (note 38); Sotheby and Company Sale Catalogue, 11 July 1978, lot 34 (in a manuscript of Gabriele Capodilista, *Itinerario di Terra Santa*, ca. 1475; I am grateful to M. Henri Schiller for telling me of this).

40. Röhricht, "Die Palästinakarte Bernhard von Breitenbach's," 131–32 (note 34).
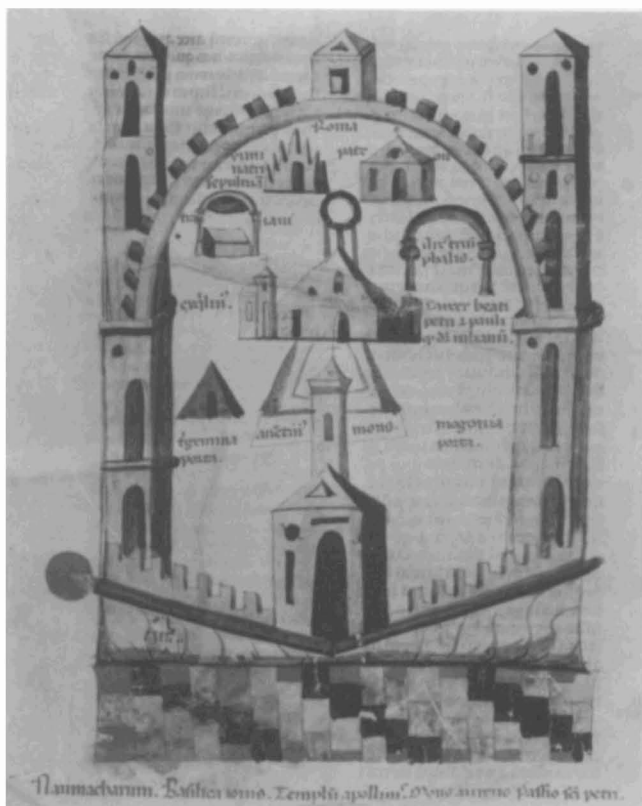
FIG. 20.12. BIRD'S-EYE VIEW OF ROME. This twelfth-century bird's-eye view—the beginning of a tradition of maps of ancient Rome—shows the stylized city walls and a selection of seven principal monuments contained within them.
Size of the original: 20.8 × 13.9 cm. By permission of the Biblioteca Ambrosiana, Milan (MS. C246 Inf., fol. 3v).

tion of each city's principal monuments (seven at Rome, over twenty at Verona; fig. 20.12).[41] At the end of the sequence, in the late fifteenth century, we have realistic bird's-eye views showing entire cities in full and fairly accurate detail: of Rome and Florence by Francesco Rosselli in the 1480s (apart from one section of the Florence view, we know both only from derivative versions; those he produced of Pisa and Constantinople are entirely lost) and, an outstanding masterpiece, of Venice by Jacopo de' Barbari in 1500.[42] Between these extremes comes a range of representations, varying widely in artistry and accuracy, having in common only that they show cities as if from a height with at least a few of the most distinctive buildings visible within the walls. Among them are the view of Rome on a seal of the emperor Ludwig the Bavarian that was first used in 1328[43] and another, very much more elaborate, which appears at about the same time in Paolino Veneto's *Chronologia magna* but which is a far cruder production than the plans of Jerusalem and Acre in the same work.[44] Among them too are the first plan of Florence, a fresco of the 1350s in

the Loggia del Bigallo,[45] plans of Rome based on the account of its antiquities written by Flavio Biondo in 1444–46,[46] and a whole series of plans included in the various manuscripts of Ptolemy's *Geography* that were produced in the late fifteenth century in Pietro del Massaio's workshop at Florence: Rome (plate 33), Florence, Milan, Volterra, Jerusalem, Damascus, Constantinople, Adrianople, Alexandria, and Cairo.[47] Again, some maps of larger areas include miniature versions of town plans in this style; Genoa and Venice, for instance, appear on some portolan charts.[48] A turning point came in the fourteenth century, when the new realism in Italian painting came to be applied to topographical representations; a view in 1382 by Giusto de' Menabuoi, showing Padua as though from a small height, may mark its introduction to the tradition of city plans,[49] but a hundred years later plans were still being drawn in the

41. Verona, Biblioteca Capitolare, MS. CXIV, fol. 187 (eighteenth-century copy of the lost original); Vittorio Cavallari, Piero Gazzola, and Antonio Scolari, eds., *Verona e il suo territorio*, 2 vols. (Verona: Istituto per gli Studi Storici Veronesi, 1964), 2:39–42, 232–33, 481–85, pl. opp. 192; Vittorio Galliazzo, "Il ponte della pietra di Verona," *Atti e Memorie della Accademia di Agricoltura, Scienze e Lettere di Verona* 146 (1968–69): 533–70, esp. 564. Milan, Biblioteca Ambrosiana, MS. C246 Inf., fol. 3v; Annalina Levi and Mario Levi, "The Medieval Map of Rome in the Ambrosian Library's Manuscript of Solinus," *Proceedings of the American Philosophical Society* 118 (1974): 567–94.

42. L. D. Ettlinger, "A Fifteenth-Century View of Florence," *Burlington Magazine* 94 (1952): 160–67; Marcel Destombes, "A Panorama of the Sack of Rome by Pieter Bruegel the Elder," *Imago Mundi* 14 (1959): 64–73; Roberto Weiss, *The Renaissance Discovery of Classical Antiquity* (Oxford: Blackwell, 1969), 92–93; Juergen Schulz, "Jacopo de' Barbari's View of Venice: Map Making, City Views, and Moralized Geography before the Year 1500," *Art Bulletin* 60 (1978): 425–74.

43. Wilhelm Erben, *Rombilder auf kaiserlichen und päpstlichen Siegeln des Mittelalters*, Veröffentlichungen des Historischen Seminars der Universität Graz, 7 (Graz: Leuschner und Lubensky, 1931), 57–83, pl. III; Harvey, *Topographical Maps*, 74 (note 1).

44. G. B. de Rossi, *Piante iconografiche e prospettiche di Roma anteriori al secolo XVI* (Rome: Salviucci, 1879), 81–83, 139–41, pl. I; F. Ehrle and H. Egger, *Piante e vedute di Roma e del Vaticano dal 1300 al 1676*, illus. Amato Pietro Frutaz (Rome: Biblioteca Apostolica Vaticana, 1956), 9, pls. I, II; Degenhart and Schmitt, "Sanudo und Veneto," 86–87, 105, 125–27 (note 27); Harvey, *Topographical Maps*, 72–73 (note 1).

45. Rodolfo Ciullini, "Firenze nelle antiche rappresentazioni cartografiche," *Firenze* 2 (1933): 33–79, esp. 35; Schulz, "Moralized Geography," 462–63 (note 42).

46. Gustina Scaglia, "The Origin of an Archaeological Plan of Rome by Alessandro Strozzi," *Journal of the Warburg and Courtauld Institutes* 27 (1964): 137–63; the view that Biondi himself drew the prototype is, however, questioned by Weiss, *Renaissance Discovery*, 92 (note 42).

47. De Rossi, *Piante di Roma*, 90–92, 144–46, pls. II, III (note 44); Scaglia, "Origin of an Archaeological Plan," 137–40 (note 46).

48. Paolo Revelli, "Figurazioni di Genova ai tempi di Colombo," *Bollettino del Civico Istituto Colombiano* 3 (1955): 14–23, esp. 21–22.

49. Schulz, "Moralized Geography," 462–63 (note 42).

older stylized form. Of all the town plans in this tradition, we have far more of Rome than of any other city; but as we have seen, Italian draftsmen produced plans of this sort for quite a number of other cities in Italy and around the eastern Mediterranean.

But not all town plans from medieval Italy conformed to this pattern of conventional or realistic bird's-eye views. The third plan to survive from before the thirteenth century, of Venice, is quite different from those of Rome and Verona. We know it only in three fourteenth-century copies,[50] but as long ago as 1781 it was argued, from internal evidence, that its basic outline dates from the first half of the twelfth century and that the demonstrably later features that appear on it are copyists' additions.[51] This conclusion has been generally accepted, and it is interesting that a sixteenth-century note on one copy of the map says it was drawn up for the doge Ordelaffo Falier (1102–18). Cartographically it is a relatively advanced production; it marks churches (and some other buildings) by tiny sketches, but it sets these not on a supposed or actual bird's-eye view but on an outline plan of the city's major and minor waterways. This outline plan is startlingly accurate; its draftsman had clearly mastered the concept of consistent scale, and it raises the very interesting possibility that it derives from a measured survey. On the other hand it is not so accurate as to make this a certainty, and another possibility is that the outline was developed over a long period by gradually adjusting and correcting maps that were in official keeping.[52] That such a plan comes from Venice probably rules out a simple sequence of copying from scale plans of the classical Roman surveyors, for the city was not fully established until the seventh century; the measured survey, if any, was made in the Middle Ages. That maps of Italian cities might be drawn on the basis of measurement on the ground is suggested too by a letter written (250 years later, it should be noted) between 1377 and 1381 by Lapo di Castiglionchio, a lawyer at Florence, in which he describes how a young judge, Francesco da Barberino, had made a drawing of the whole city showing, among other things, "all the walls and their measurements" (*tutte le mura e la loro misura*).[53] Certainly the idea of a ground plan drawn to a uniform scale seems to underlie the way some of the fifteenth-century district maps from northern Italy show the cities on which they are centered; this is particularly clear in one of Verona (plate 34 and fig. 20.13).[54] In all these cases the measured survey need have consisted of no more than pacing out key distances on foot. Possibly we should see as part of this same Italian tradition certain plans of cities in the Holy Land (notably those of Jerusalem and Acre in the works of Marino Sanudo and Paolino Veneto) and also the scale plan of Vienna and Bratislava in about 1422. What gives all these city plans

such interest is not the techniques that were used; they can only have been rudimentary. Rather, it is their apparent acceptance of the basic cartographic concept of a map drawn to scale. In these plans we may have, as we have nowhere else in medieval Europe, a long tradition of large-scale maps. The earliest Italian town plan drawn specifically to scale is one of Imola by Leonardo da Vinci in 1502–3;[55] it in no way belittles his achievement to suggest that he may have been simply improving on an existing Italian tradition of outline city plans.

NORTHERN ITALIAN DISTRICT MAPS

Maps of particular districts in northern Italy, from Piedmont to Venice, form a tradition that we can trace back to the thirteenth century (they are listed below, appendix 20.1). A map of the area around Alba and Asti in a manuscript of 1291 is very badly damaged, but we have an intact copy from the fourteenth century; it marks over 160 settlements.[56] We have contemporary references to fourteenth-century maps of the area around Padua and of the whole of Lombardy,[57] but the only other to survive is of Lake Garda, showing in some detail the lakeside villages and fortifications.[58] The other surviving examples of this tradition of district maps—eleven in all—date from the fifteenth century (listed in appendix 20.1). One dated 1440 and another of about the same time both cover the whole of Lombardy (fig. 20.14),[59] while a third, dating from the end of the century, is a

50. Juergen Schulz, "The Printed Plans and Panoramic Views of Venice (1486–1797)," *Saggi e Memorie di Storia dell'Arte* 7 (1970): 9–182, esp. 16–17; Degenhart and Schmitt, "Sanudo und Veneto," 83, 86, 105, 124 (note 27); Harvey, *Topographical Maps*, 76–79 (note 1).

51. Tommaso Temanza, *Antica pianta dell'inclita città di Venezia delineata circa la metà del XII. secolo* (Venice: Palese, 1781).

52. Schulz, "Moralized Geography," 440–41, 445 (note 42).

53. Attilio Mori, "Firenze nelle sue rappresentazioni cartografiche," *Atti della Società Colombaria di Firenze* (1912): 25–42, esp. 30–31; Harvey, *Topographical Maps*, 78 (note 1).

54. Venice, Archivio di Stato; Harvey, *Topographical Maps*, pl. IV (note 1).

55. Windsor, Royal Library, MS. 12284; John A. Pinto, "Origins and Development of the Ichnographic City Plan," *Journal of the Society of Architectural Historians* 35, no. 1 (1976): 35–50, esp. 38–42, fig. 1; Harvey, *Topographical Maps*, 155 (note 1).

56. Roberto Almagià, "Un'antica carta del territorio di Asti," *Rivista Geografica Italiana* 58 (1951): 43–44.

57. Almagià, "Antica carta del territorio di Asti," 44 (note 56).

58. Verona, Biblioteca Civica; Roberto Almagià, *Monumenta Italiae cartographica* (Florence: Istituto Geografico Militare, 1929), 5, pl. VII; Harvey, *Topographical Maps*, 59 (note 1).

59. Paris, Bibliothèque Nationale, Rés. Ge.C.4990; Treviso, Museo Comunale; Almagià, *Monumenta*, 9, pl. VIII (note 58).

FIG. 20.13. VERONA. A detail of plate 34, it appears that a uniform scale was applied to the representation of the town itself, but not to the surrounding countryside.

Size of the original detail: 110 × 160 cm. By permission of the Archivio di Stato, Venice.

stylized map of the Venetian mainland territories, showing simply the main rivers, the lines of mountains, and towns with their fortifications, mostly as more or less elaborate city ideograms.[60] All the rest have a particular city at the center, showing it in its region; thus one of Brescia in 1469–70 includes Lakes Garda and Iseo and names some 280 places.[61] They are elaborate colored productions, showing a great deal of local topographic detail: woods, mountains, bridges, mills, and so on. Three of these fifteenth-century maps are signed by the author; one, of the area around Padua, is by Francesco Squarcione, a known Paduan painter (fig. 20.15).[62] On nearly all of them fortifications and roads are prominent, with distances between places marked either along the roads themselves or in tables beside the central city. Some show other features of military significance: the "Fossa Bergamasca" that marked the boundary between the lands of Bergamo and Milan, or a picture of an event in the war of 1437–41 between Milan and Venice, when

the Venetians carried six ships overland from the river Adige to Lake Garda.[63]

These northern Italian maps form a single tradition, but not in the sense that they were directly based on one another. Some minor links can be seen; there are, for instance, similarities between the two Lombardy maps

60. Istanbul, Topkapi Sarayi Muzesi; Rodolfo Gallo, "A Fifteenth Century Military Map of the Venetian Territory of *Terraferma*," *Imago Mundi* 12 (1955): 55–57; Harvey, *Topographical Maps*, 60–61 (note 1).

61. Modena, Biblioteca Estense; Mario Baratta, "Sopra un'antica carta del territorio bresciano," *Bollettino della Reale Società Geografica*, 5th ser., 2 (1913): 514–26, 1025–31, 1092.

62. The others are of Lombardy, 1440, by "Ioanes Pesato" and of the Padua area, 1449, by Annibale de Maggi of Bassano; Almagià, *Monumenta*, 9, 12 (note 58).

63. Almagià, *Monumenta*, 9 (note 58); Roberto Almagià, "Un'antica carta topografica del territorio veronese," *Rendiconti della Reale Accademia Nazionale dei Lincei: Classe di Scienze Morali, Storiche e Filologiche* 32 (1923): 63–83, esp. 74–75.

FIG. 20.14. MAP OF LOMBARDY. This is one of two maps, both produced about 1440, that cover the whole of Lombardy. Unlike most of the extant district maps of this period from northern Italy, neither has a particular city as its focus.
Size of the original: 38.5 × 55 cm. Photograph from the Bibliothèque Nationale, Paris (Rés. Ge. C 4990).

FIG. 20.15. THE DISTRICT OF PADUA. One of three fifteenth-century Italian district maps to have been signed, this was produced by Francesco Squarcione, a well-known Paduan painter.
Size of the original: 115 × 100 cm. By permission of the Museo Civico, Padua.

of about 1440 both in general style and in certain details including some (not all) of the distance figures. But it is only in the two early maps of the Alba and Asti area that we find one map copied from another. The tradition consists rather in the idea of maps of this kind, the idea that maps could serve a practical purpose in administration and government. The peculiarity (and, in the history of cartography, the importance) of this tradition is shown by the fact that we have no similar maps from other parts of late medieval Italy. The emphasis on fortifications and on other features of military significance suggests that it was the value of these maps in warfare that was particularly understood, and it seems that by the mid-fifteenth century this was especially appreciated at Venice. There is a clear Venetian emphasis in the later maps; they relate to Venetian wars or Venetian territories—apart from Parma all the cities on which these maps are centered were under Venetian rule. In 1460 the Venetian Council of Ten ordered local governors to have maps made of the areas under their control and to send them to Venice; none of the city-centered maps has been dated to just this time, but historians have associated several of them with this decree.[64] It seems that for official purposes Venice developed an existing tradition of mapmaking in northern Italy, thus becoming the only state in fifteenth-century Europe to make regular use of maps in the work of government.

Another map that might be thought to belong to the same northern Italian tradition is one from the early fourteenth century showing the Po delta and the lands behind; it is found in two manuscripts of Paolino Veneto's *Chronologia magna*, and in one it is entitled "Mapa Lombardie et Ferrarie."[65] In fact it belongs to a quite separate tradition of medieval Italian cartography—maps based on coastal outlines deriving from portolan charts but with often a great deal of added detail both on the coast and inland. One other regional map from medieval Italy belongs to the same tradition. This is of Tuscany; its earliest version, by Pietro del Massaio, is in a 1456 manuscript of Ptolemy's *Geography*, and others of 1469 and 1472 derive from this.[66] Otherwise the tradition consists of maps of the whole of Italy. The

64. With some uncertainty, however, over which are the relevant maps. Cf. Almagià, *Monumenta*, 11, 12 (note 58); Gallo, "Fifteenth Century Military Map," 55 (note 60); Roberto Almagià, *Scritti geografici* (Rome: Edizioni Cremonese, 1961), 613.

65. Venice, Biblioteca Marciana, Lat. Z 399, and Rome, Biblioteca Apostolica Vaticana, Vat. Lat. 1960; Almagià, *Monumenta*, 4–5 (note 58); Degenhart and Schmitt, "Sanudo und Veneto," 83–84, 105 (note 27).

66. Roberto Almagià, "Una carta della Toscana della metà del secolo XV," *Rivista Geografica Italiana* 28 (1921): 9–17; idem, *Monumenta*, 12, pl. XIII (note 58); Lina Genoviè, "La cartografia della Toscana," *L'Universo* 14 (1933): 779–85, esp. 780.
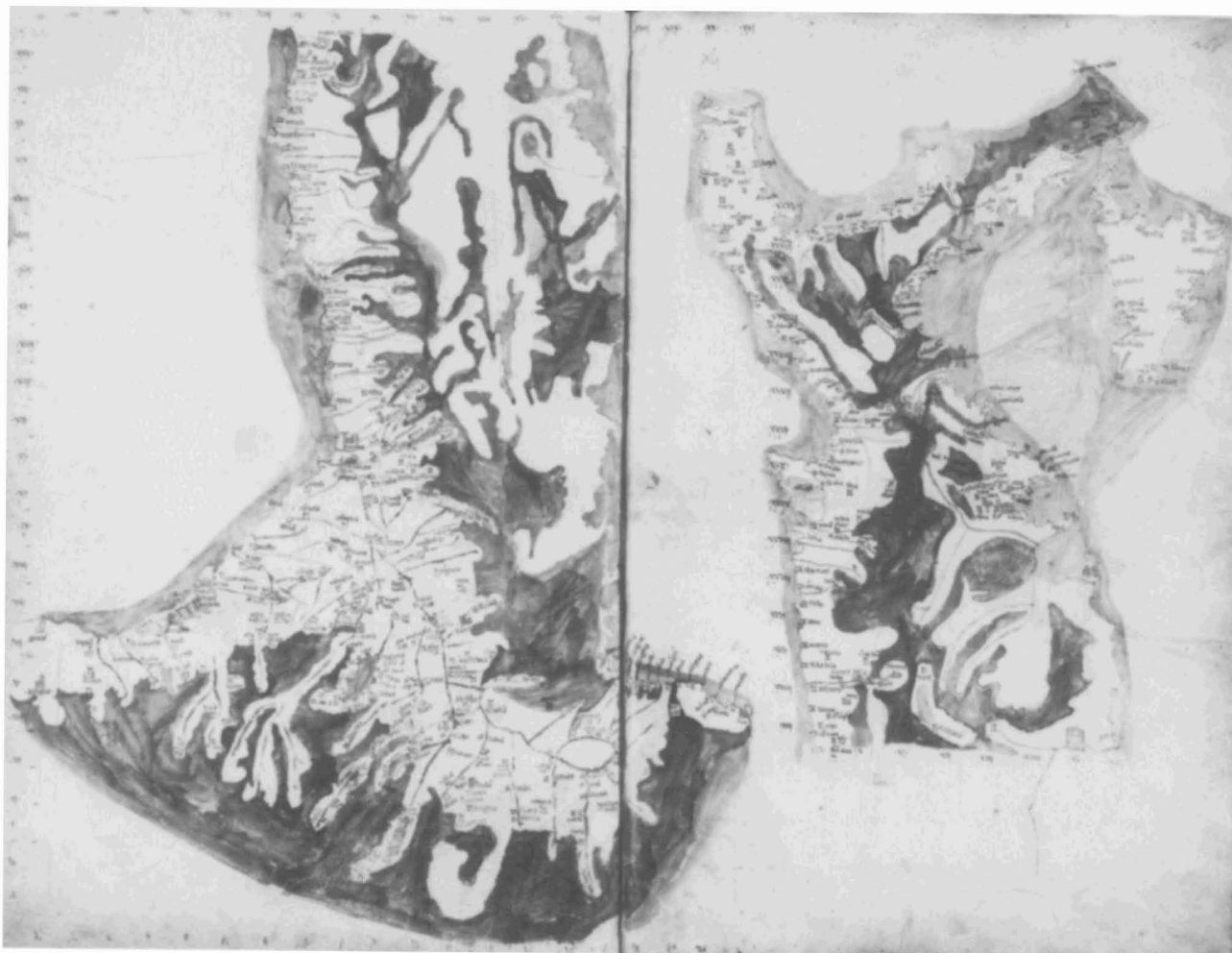
FIG. 20.16. MAP OF ITALY, CA. 1320. This is the larger and more detailed of two maps of Italy found in Paolino Veneto's work. The coastal information seems to have been drawn from the contemporary portolan charts, with added details of inland Italy. Oriented to the south, both maps use a notional grid.

Size of original: 34 × 74.5 cm. Photograph from the Biblioteca Apostolica Vaticana, Rome (Vat. Lat. 1960, fols. 267v–268r).

two earliest examples are both found in an early fourteenth-century manuscript of Paolino Veneto's work; one occupies a single page, the other shows the peninsula on a larger scale, divided between facing pages (fig. 20.16). The manuscript is thought to have been given by Paolino to King Robert of Naples, and it may be that the fifteenth-century writer Flavio Biondo had it in mind when he wrote of a map of Italy (*pictura Italiae*) drawn up by King Robert and his friend Francesco Petrarch.[67] Both maps are based on the same notional grid of equidistant lines (their positions are marked and numbered along the edge of each), and they are very alike in style and content, though the larger one gives more detail; it has been suggested even so that it is incomplete.[68] They show relief and rivers over the whole country, but settlements and names are given only along the coasts and

in the northern Italian plain. This underlines their origin in nautical maps, but it suggests too that they drew on a northern Italian tradition of district maps that was already well established. We find some internal detail, notably the principal rivers, on some fourteenth-century portolan charts of the Italian coasts, but it is not until the fifteenth century that we find further detailed maps of the whole of Italy. Two seem to be unique productions, but five others form a single series of closely related maps from which further maps were indeed derived in

67. Rome, Biblioteca Apostolica Vaticana, Vat. Lat. 1960, fols. 266v, 267v, 268r; Almagià, *Monumenta*, 4–5 (note 58); Degenhart and Schmitt, "Sanudo und Veneto," 81–85, 105, 128–30 (note 27). Almagià considers it more likely that the map given to King Robert was a picture map drawn from classical Roman sources.

68. Almagià, *Monumenta*, 4–5 (note 58).

the early sixteenth century. Three of the five occur in copies of Ptolemy's *Geography*, one of them (in three versions) by Pietro del Massaio in the same manuscripts as the regional map of Tuscany.[69] All these maps are cartographically more advanced than any of the others discussed in this chapter; in concept as well as in origin they are related more closely to the portolan charts and to geographic maps than to the other medieval maps of small areas. That they come from Italy is significant, for Italy was by far the most map-conscious part of medieval Europe.

THE *ISOLARII*: BUONDELMONTI'S *LIBER INSULARUM ARCIPELAGI*

One distinctive cartographic phenomenon that has its roots in this period is the *isolario* (plural *isolarii*), or island book. As the name suggests, the *isolario* is essentially a collection of island materials, each island usually having its own map and associated text. Some *isolarii* also contain world or regional maps, showing the location of islands relative to each other and to the adjacent mainland. Some have extra illustrative material on individual islands—for example, perspective views, city and fortress plans, or drawings of inhabitants in local costume.

There are at least twenty different *isolarii* extant; the exact number depends on the precise definition used. The style, content, and accuracy of both the maps and the texts vary greatly from work to work. Some *isolarii* have the character of prototype atlases, others are more encyclopedic in nature, yet others have been put together by, and sometimes for, seamen and travelers, leading some authors to regard the maps from *isolarii* as sea charts. *Isolarii* exist dating from the early fifteenth century through the sixteenth and seventeenth centuries. Only one clearly belongs to the period before 1470. For this reason the main account of the *isolarii* will be found in volume 3. Problems of definition are there considered more fully; the main *isolarii* are listed, their contents are analyzed, and their possible relationships are discussed. This brief introductory account is restricted to a general description of the earliest *isolario* known to us: the *Liber insularum arcipelagi* by Cristoforo Buondelmonti, written about 1420.

The *Liber* was evidently a popular work in fifteenth-century Europe. Originally written by Buondelmonti and sent to his patron Cardinal Giordano Orsini in Rome, it was frequently copied and widely circulated. Many manuscript copies survive today, of varying dates and styles, and with some differences in content.[70] Buondelmonti also wrote a detailed account of Crete, the *Descriptio insule Crete*, and it is from this that his description of Crete in the *Liber* is derived.[71]

In the prologue to the *Liber*, Buondelmonti describes his work as: "an illustrated book of the islands of the Cyclades and of other islands scattered around them, together with [an account of] the actions that have taken place in them in ancient times [and] down to the present day." The seventy-nine islands and other localities included, and their sequence in the book, probably reflect the pattern of their author's travels over a period of several years. Written in debased Latin, the text is a disorderly mixture of fact, fiction, and fantasy, compiled from personal observation, hearsay, and a variety of historical and poetic sources whose authors are frequently named. In all the text there is no mention of a source or sources for the maps. If these are Buondelmonti's own work, it seems probable on stylistic grounds that the island outlines were derived at least in part from nautical charts carried on board the ships in which he traveled. Within the outlines, topographical details are shown in pictorial style: they may represent what was actually seen; they may be a visual interpretation of the information assembled in the text; or they may be a mixture of the two (figs. 20.17 and 20.18). Certainly there is an extremely close correlation between the details shown on individual maps and those described in their related texts.

When considering the content of the *Liber*, it is important to remember by whom and for whom it was compiled. Buondelmonti, "an ecclesiastic with a taste for antiquities,"[72] was traveling on behalf of his patron, a prince of the church and a scholar. His main purpose is said to have been to search for early Greek manuscripts.[73] Although this cannot be conclusively demonstrated, such an aim may have influenced the pattern of his travels within the Aegean, which included monastic retreats on remote rocky islets as well as the great urban repositories of Byzantine civilization. In his account of his travels, Buondelmonti is at pains to demonstrate his diligence, but his main aim is to interest and entertain his patron. The resulting descriptions of historical and natural wonders, interspersed with tales of storms at sea

69. Almagià, *Monumenta*, 7, 9–11 (note 58); Roberto Almagià, "Nota sulla cartografia dell'Italia nei secoli XV e XVI," *Atti della Accademia Nazionale dei Lincei: Rendiconti, Classe di Scienze Morali, Storiche e Filologiche*, 8th ser., 6 (1951): 3–8, esp. 4–5.

70. See discussion in volume 3 of the present *History*.

71. Cristoforo Buondelmonti, *"Descriptio insule Crete" et "Liber Insularum,"* cap. *XI: Creta*, ed. M.-A. van Spitael (Candia, Crete: Syllagos Politistikēs Anaptyxeōs Herakleiou, 1981).

72. Benedetto Bordone, *Libro . . . de tutte l'isole del mondo*, introduction by R. A. Skelton (Amsterdam: Theatrum Orbis Terrarum, 1966), V.

73. See, for example, A. E. Nordenskiöld in *Periplus: An Essay on the Early History of Charts and Sailing-Directions*, trans. Francis A. Bather (Stockholm: P. A. Norstedt, 1897), 59.

FIG. 20.17. CORFU BY CRISTOFORO BUONDELMONTI. Written in about 1420, Buondelmonti's *Liber insularum arcipelagi* is the only example of an extant *isolario* (island book) from before 1470. The book describes seventy-nine islands around the eastern Mediterranean and Aegean seas, illustrating the accounts with small vignettes. The style used to portray the coasts is derived from portolan charts.
Size of the original: 20.6 × 14 cm. Photograph from the Biblioteca Apostolica Vaticana, Rome (Rossiano 702, fol. 2r).

FIG. 20.18. COS BY CRISTOFORO BUONDELMONTI. A map of the island of Cos in the Aegean from the *Liber insularum arcipelagi*.
Size of the original: 25 × 14.6 cm. Photograph from the Biblioteca Apostolica Vaticana, Rome (Chigiano F.V.110, fol. 31v).

and dietary deficiencies and backed up by quotations from poets and historians, will be familiar to any reader of modern travelogues. The *Liber* is an early example of the genre, written with the interests of one particular armchair traveler in mind. As Buondelmonti puts it to Cardinal Orsini: "I have wished to send it to you . . . so that when you are tired you can, with this book, bring pleasure to your mind."

Although it was addressed to one man, the wider appeal of the *Liber* is evident from the relatively large number of manuscript copies of differing dates that have survived. There is also a manuscript of a translation into Greek.[74] The popularization of the work in its own time not only ensured its survival but led to its becoming a model for later *isolarii*, many of which are partially derived from it and exhibit close structural, textual, and

cartographic similarities. Widening horizons during the Renaissance resulted in the addition of much new material, but for some time this was little more than an accretion round the medieval core of Buondelmonti's *isolario*.

The question inevitably arises: Is Buondelmonti's the first *isolario* or merely the earliest example known to us of a tradition already well established by the early fifteenth century? The possibility, even the probability, of such a tradition must be acknowledged. Islands have a unique appeal that invites special treatment. More specifically, the islands of the Aegean and Adriatic seas had

74. Cristoforo Buondelmonti, *Description des îles de l'archipel*, ed. and trans. Emile Legrand, L'Ecole des Langues Orientales, ser. 4, 14 (Paris: Leroux, 1897).

been for many centuries the natural foci of a series of civilizations and the stepping stones of empires and kingdoms based on maritime trade. Periploi, portolani, and early portolan charts all bear witness to the detailed island knowledge that had been accumulated. Island shores were charted, island histories written: the data for an *isolario* as we know it had long been available. Only an assembly job was required, and the organization of the data into the characteristic *isolario* format, with its island-by-island, text-map sequence. Buondelmonti may have been the first to do this; alternatively, his *isolario* may have had its predecessors.

OTHER LOCAL MAPS

So far we have been looking at conscious traditions of mapmaking. The maps may have been copies or improvements of earlier maps or they may have been entirely original compilations, but in either case they were following well-established precedents. In looking at medieval maps of small areas outside these defined traditions, we must remember that not only were there normally no models for the map of any particular place, but there were no precedents for the idea of drawing maps at all.

Setting aside the vestiges of ancient cartography represented by Arculf's work and the Saint Gall plan, and setting aside too the traditions of maps from Palestine and Italy, it is only from England that we have maps of small areas earlier than the fourteenth century (fig. 20.19). The earliest English map is the plan, already mentioned, of Canterbury Cathedral with its attached priory, which probably dates from the 1150s (see fig. 20.4).[75] Strictly speaking it is a pair of plans; a continuation on a separate sheet shows the source of the water supply whose distribution around the cathedral precinct is one of the principal features of the main plan. It is an elaborate and detailed production, showing all buildings in elevation. The two thirteenth-century English plans are less impressive. One, already mentioned, is the plan of springs at Wormley (Hertfordshire) (see fig. 20.5); an intriguing detail is its inclusion of a direction pointer in the form of a cross with the foot splayed to mark the east, but this is probably evidence of ingenuity in diagram drawing rather than of the influence of any other sort of map. The other is another small, diagram-like plan showing the layout of pastures on Wildmore Fen in Lincolnshire.[76] All other local maps and plans from medieval England are later than 1350; in all there are thirty-two individual items or closely related groups (they are listed below, appendix 20.2).[77] They form a highly varied collection. The areas they cover are of every size and type: strips in arable fields, house plots in towns, rivers with mills and fisheries, whole tracts of country-
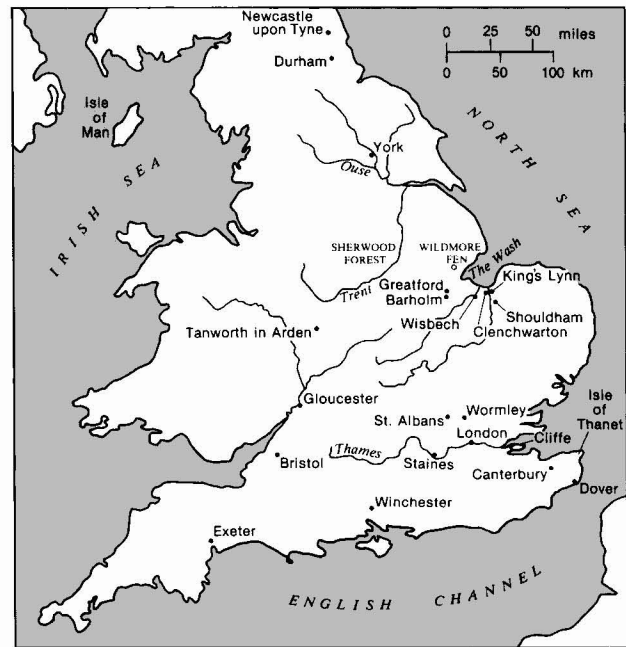

FIG. 20.19. PRINCIPAL PLACES IN ENGLAND ASSOCIATED WITH MEDIEVAL LOCAL MAPS.

side including towns and villages. There is no consistency in treatment. Some are in cartularies or other books, some are on separate sheets or rolls. Some are the merest rough sketches in ink, a few drawn lines with some added names, such as the plans of waterways at Cliffe (Kent) and of the village of Clenchwarton (Norfolk), which both date from the late fourteenth or early fifteenth century (fig. 20.20).[78] Others are substantial artistic works, carefully drawn and colored, such as the map of the Isle of Thanet (Kent) (plate 35) at the same period or the map of Dartmoor (Devon) about 1500.[79]

75. Cambridge, Trinity College, MS. R.17.1, fols. 284v–286r; William Urry, "Canterbury, Kent, *circa* 1153 × 1161," in Skelton and Harvey, *Local Maps and Plans*, 43–58 (note 3).

76. London, British Library, Harl. MS. 391, fol. 6r; P. D. A. Harvey, "Wormley, Hertfordshire, 1220 × 1230," in Skelton and Harvey, *Local Maps and Plans*, 59–70 (note 3); Loughlinstown (county Dublin), Library of Sir John Galvin, Kirkstead Psalter, fol. 4v; H. E. Hallam, "Wildmore Fen, Lincolnshire, 1224 × 1249," in Skelton and Harvey, *Local Maps and Plans*, 71–81 (note 3).

77. They are reproduced and fully discussed in Skelton and Harvey, *Local Maps and Plans* (note 3).

78. Canterbury, Archives of the Dean and Chapter, Charta Antiqua C.295; London, British Library, Egerton MS. 3137, fol. 1v; F. Hull, "Cliffe, Kent, Late 14th Century × 1408," 99–105, and Dorothy M. Owen, "Clenchwarton, Norfolk, Late 14th or Early 15th Century," 127–30, both in Skelton and Harvey, *Local Maps and Plans* (note 3).

79. Cambridge, Trinity Hall, MS. 1, fol. 42v; Exeter, Royal Albert Memorial Museum; F. Hull, "Isle of Thanet, Kent, Late 14th Century × 1414," 119–26, and J. V. Somers Cocks, "Dartmoor, Devonshire, Late 15th or Early 16th Century," 293–302, both in Skelton and Harvey, *Local Maps and Plans* (note 3).
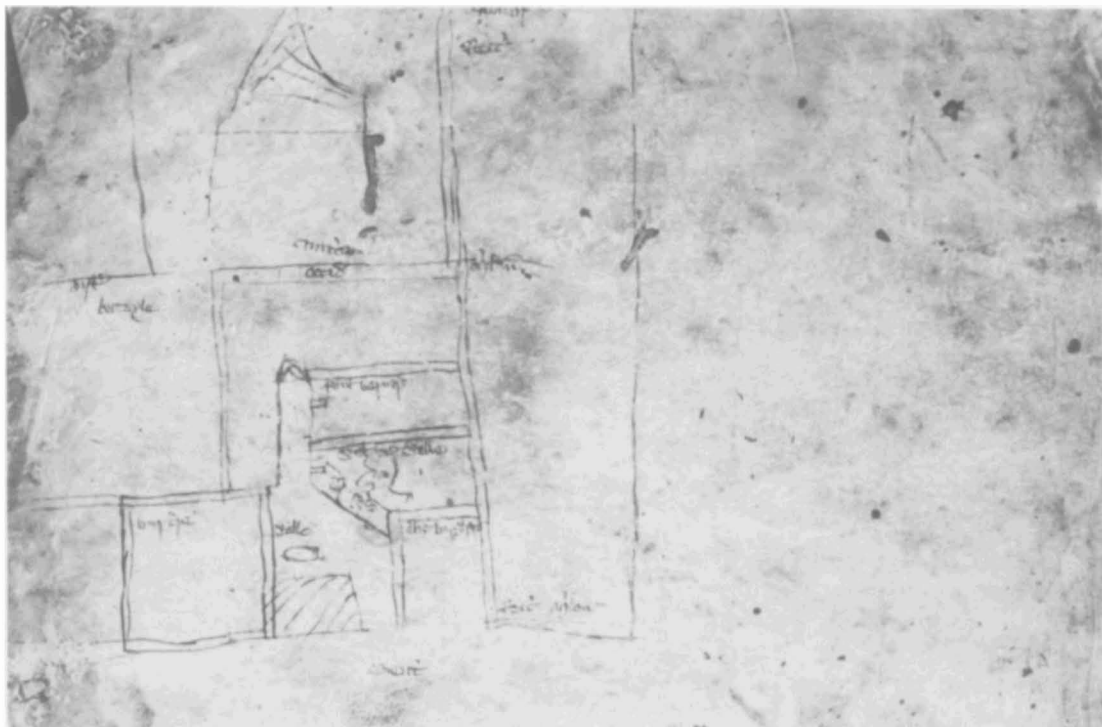
FIG. 20.20. PLAN OF CLENCHWARTON, NORFOLK. Produced ca. 1400, this map is an example of a simple sketch with few names that forms one stylistic extreme of medieval English maps.

Size of the original: 24.5 × 31.8 cm. By permission of the British Library, London (Egerton MS. 3137, fol. 1v).

Nor is there any consistency of style, except that features above ground level are nearly always shown pictorially; the extent and form of this pictorial element vary from the full (if stylized) bird's-eye view of Bristol about 1480 to the crude outlines of churches on the map accompanying the contemporary history of Barholm and Greatford (Lincolnshire).[80] The inscriptions on the maps also vary widely. Overall it is impossible to discover any traces of uniformity, any hint of a genuine tradition of mapmaking among these English local maps. Apart from the very few that have a common origin (two from Westminster Abbey, four from Durham cathedral priory), each seems a wholly individual production.

We find rather less variety among the medieval local maps from the Low Countries (listed below, appendix 20.3, see also fig. 20.21), though here too there is unlikely to have been any clear tradition of mapmaking. There are fewer surviving maps than from England: fifteen have so far been recorded. The earliest, already mentioned, is the diagram map of 1307 setting out the settlements of the area between Aardenburg (Zeeland) and Boechoute (East Flanders) (see fig. 20.6).[81] The next was drawn in 1357 in France, in a register of the University of Paris; dispute had arisen over which of the

university's *nationes* a student from Geertruidenberg belonged to, the Picard or the English (the latter included students from the Netherlands), and the map set out one party's view of the customary boundary between the two. It consists of no more than lines marking the river Meuse (Maas) and a few place-names (fig. 20.22).[82] Another map has been dated 1358 because it seems to be connected with an agreement made then between the bishop of Tournai and Saint Peter's Abbey at Ghent; it shows diagrammatically an area between Oostburg and IJzendijke (Zeeland), with lines marking the dikes and boundaries and with the names of the dikes and the

80. Bristol, Bristol Record Office, MS. 04720, fol. 5v; Lincoln, Lincolnshire Archives Office, Lindsey Deposit 32/2/5/1, fol. 17v; Elizabeth Ralph, "Bristol, *circa* 1480," 309–16, and Judith A. Cripps, "Barholm, Greatford, and Stowe, Lincolnshire, Late 15th Century," 263–88, both in Skelton and Harvey, *Local Maps and Plans* (note 3).

81. Lille, Archives Départementales du Nord, B 1388/1282 bis; Gottschalk, *Historische geografie*, 148–49 (note 19); Harvey, *Topographical Maps*, 89 (note 1).

82. Paris, Bibliothèque de la Sorbonne, Archives de l'Université de Paris, Reg. 2, vol. 2, fol. 35v; Gray C. Boyce, "The Controversy over the Boundary between the English and Picard Nations in the University of Paris (1356–1358)," in *Etudes d'histoire dédiées à la mémoire de Henri Pirenne* (Brussels: Nouvelle Société d'Editions, 1937), 55–66.
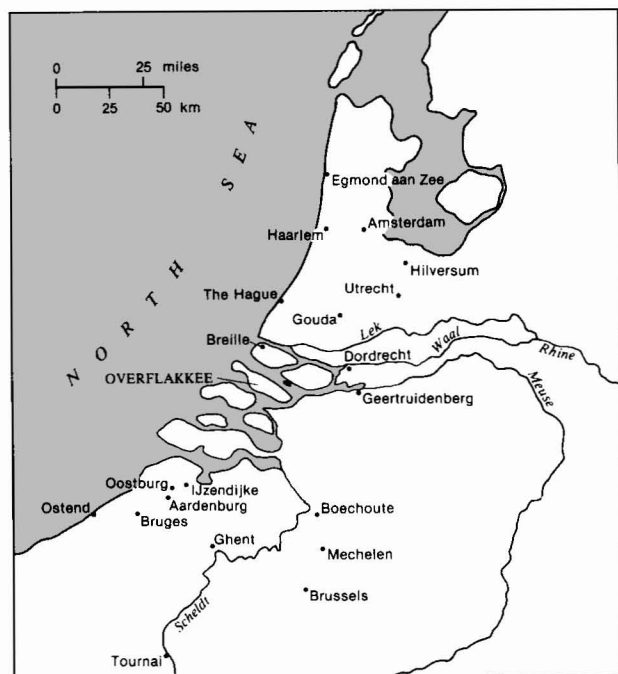
FIG. 20.21. PRINCIPAL PLACES IN THE LOW COUNTRIES ASSOCIATED WITH MEDIEVAL LOCAL MAPS.

landholders and some other notes.[83] These three are the only maps of small areas in the Low Countries earlier than the second half of the fifteenth century, though we have copies, made in 1565 from the original in the Gouda town archives, of a map dating from before 1421 of an area at the mouths of the Waal and Meuse.[84] Most of these fifteenth-century maps are no more than rough sketches in pen and ink. Thus one of 1471–72 shows the boundary, in a peat-cutting area, between lands of Elten Abbey and Gooiland (North Holland): a few lines with rough drawings of woods, a church, and a few other features.[85] Another map of part of Overflakkee (South Holland) in 1487 marks streams and boundaries with, again, a rough drawing of a windmill (fig. 20.23).[86] However, some are more elaborate, among them a panoramic painting of about 1480 showing Dordrecht and the surrounding country at the time of the so-called Saint Elizabeth's Day Flood in 1421,[87] and a map of the lower Scheldt in 1468, with its many pictures of ships and full perspective views of towns, villages, and castles (fig. 20.24).[88] Some confusion has been caused by sets of maps, rightly or wrongly associated with Egmond Abbey (Egmond aan Zee, North Holland) and often copied in the seventeenth and eighteenth centuries, showing areas of Zeeland and Flanders at various dates from 600 to 1288;[89] they are in fact historical reconstructions, but some scholars, notably F. C. Wieder, have taken them as stemming from genuine medieval maps and have thus

assumed that there was a strong tradition of local cartography in the Low Countries long before the sixteenth century.[90]

In the Low Countries medieval maps, even of the sketchiest sort, have long been the subject of local antiquarian and scholarly interest. In Britain there has recently been a general search for this type of material. In both these areas, therefore, we can assume that, although more medieval maps may still come to light, enough have been found for us to view them comprehensively and to draw fairly confident conclusions on their numbers, their variety, and their chronology. This is not the case anywhere else in Europe (fig. 20.25). The number of English local maps previously unknown that were revealed by very straightforward search suggests that many may be waiting to be discovered in other countries. So too does the work of François de Dainville in France.[91] His systematic search in the departmental

83. Ghent, Rijksarchief; M. K. Elisabeth Gottschalk, "De oudste kartografische weergave van een deel van Zeeuwsch-Vlaanderen," *Archief: Vroegere en Latere Mededelingen Voornamelijk in Betrekking tot Zeeland Uitgegeven door het Zeeuwsch Genootschap der Wetenschappen* (1948): 30–39.

84. Jan Henricus Hingman, *Inventaris der verzameling kaarten berustende in het Rijks-Archief* (The Hague: Nijhoff, 1867–71), 2:96 (nos. 811, 812); cf. A. J. H. Rozemond, *Inventaris der verzameling kaarten berustende in het Algemeen Rijksarchief zijnde het eerste en tweede supplement op de collectie Hingman* (The Hague: Algemeen Rijksarchief, 1969), suppl. 2, nos. 232, 476.

85. The Hague, Algemeen Rijksarchief, Grafelijkheid van Holland, Rekenkamer no. 755f; D. T. Enklaar, "De oudste kaarten van Gooiland en zijn grensgebieden," *Nederlandsch Archievenblad* 39 (1931–32): 185–205, esp. 188–92, pl. I.

86. Brussels, Archives Générales du Royaume, Grand Conseil de Malines, Appels de Hollande 188, sub G; A. H. Huussen, *Jurisprudentie en kartografie in de XVᵉ en XVIᵉ eeuw* (Brussels: Algemeen Rijksarchief, 1974), 7–8, pl. 1.

87. Amsterdam, Rijksmuseum, A 3147a,b; Rijksmuseum, *All the Paintings of the Rijksmuseum in Amsterdam: A Completely Illustrated Catalogue* (Amsterdam: Rijksmuseum, 1976), 633.

88. Brussels, Archives Générales du Royaume; M. K. Elisabeth Gottschalk and W. S. Unger, "De oudste kaarten der waterwegen tussen Brabant, Vlaanderen en Zeeland," *Tijdschrift van het Koninklijk Nederlandsch Aardrijkskundig Genootschap*, 2d ser., 67 (1950): 146–64; Johannes Keuning, "XVIth Century Cartography in the Netherlands (Mainly in the Northern Provinces)," *Imago Mundi* 9 (1952): 35–64, esp. 41.

89. For example, C. de Waard, *Rijksarchief in Zeeland: Inventaris van kaarten en teekeningen* (Middelburg: D. G. Kröber, Jr., 1916), XXIX, L, 1–6.

90. Frederik Caspar Wieder, *Nederlandsche historisch-geographische documenten in Spanje* (Leiden: E. J. Brill, 1915), 305–6; cf. S. J. Fockema Andreae and B. van 'tHoff, *Geschiedenis der kartografie van Nederland van den Romeinschen tijd tot het midden der 19de eeuw* (The Hague: Nijhoff, 1947), 12, and B. van 'tHoff, "The Oldest Maps of the Netherlands: Dutch Map Fragments of about 1524," *Imago Mundi* 16 (1962): 29–32, esp. 29.

91. His conclusions are given in de Dainville, "Rapports," 397–408 (note 5), and François de Dainville, "Cartes et contestations au XVᵉ siècle," *Imago Mundi* 24 (1970): 99–121.

FIG. 20.23. MAP OF PART OF OVERFLAKKEE, SOUTH HOLLAND. Like most fifteenth-century maps from the Netherlands, this 1487 map is little more than a pen-and-ink sketch. It was drawn for a legal dispute concerning the ownership of waterways and embankments. Streams and boundaries are shown as well as a windmill.
Size of the original: 21.5 × 29 cm. By permission of the Archives Générales du Royaume, Brussels (Grand Conseil de Malines, Appels de Hollande 188, sub G).
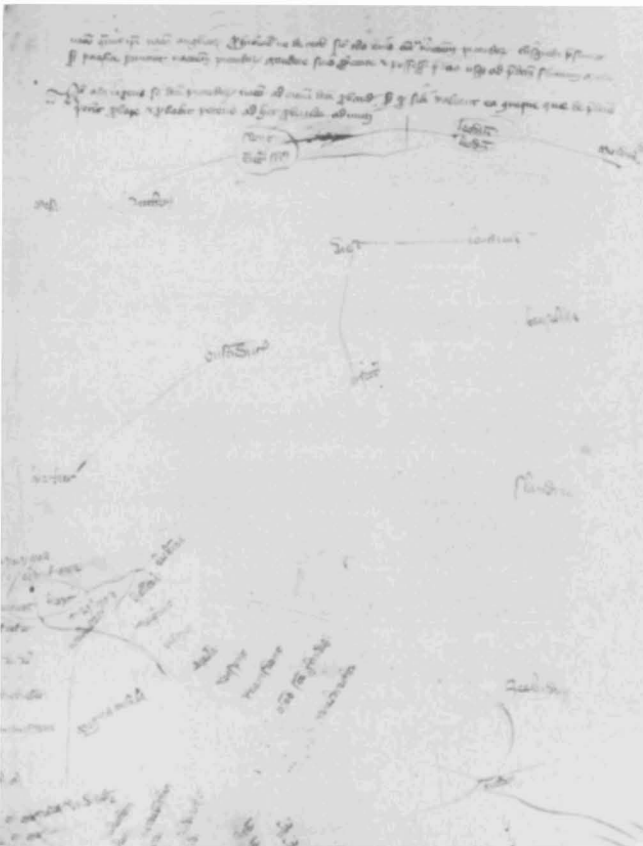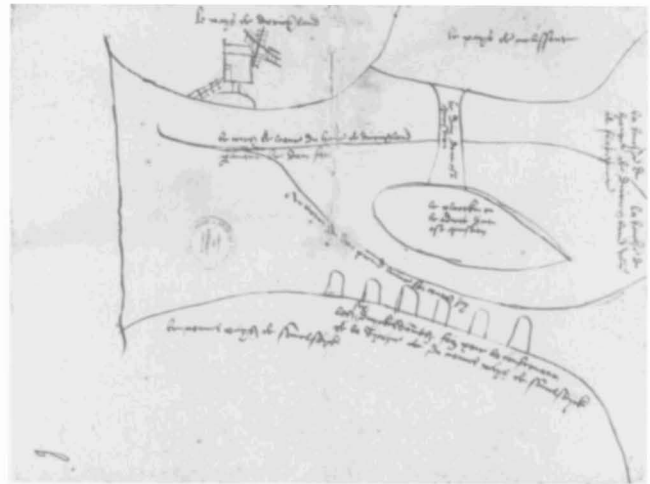
FIG. 20.22. MAP OF THE PICARDY-NETHERLANDS BORDER, 1357. This plan was produced as part of a legal dispute concerning the residence of students attending the University of Paris. The map shows the river Maas (Meuse), the border between the *nationes* of Picardy and of the English.
Size of the original: 30 × 23 cm. By permission of the Bibliothèque de la Sorbonne, Paris (Archives de l'Université de Paris, Reg. 2, vol. 2, fol. 35v).

archives of southern and eastern France produced a most interesting collection of some ten medieval local maps, but this work has not been continued since his death, and we thus cannot tell whether other regions would produce similar material and can draw no general conclusions about local maps in medieval France. None yet found is older than the 1357 map of the boundary between *nationes* in the register of the University of Paris. Jehan Boutillier wrote in 1395 that maps ("figure et pourtraict") might be used in presenting cases to the Parlement, but the oldest in the group that de Dainville has described dates from 1422.[92] The medieval local maps from France are as varied in subject and style as those from England. They include plans of towns—one, now lost, of Avignon was commissioned in 1491, one survives of Rodez in 1495—and of large tracts of countryside, such as the mid-fifteenth-century map of the county of Gâpençais (Drôme, Basses Alpes, Hautes

Alpes), which covers an area some forty miles square (fig. 20.26).[93] But they also include some plans of very small areas: some pastures at Tillenay (Côte-d'Or) in 1467, for instance, or the pool of Scamandre in the Camargue (Bouches-du-Rhône) in 1479.[94] Some, as in England and the Low Countries, are no more than the roughest of sketches; one of the Valentinois and Diois region (Drôme, Isère) consists only of variously positioned notes with lines drawn between them.[95] Others are more elaborate. The plan of Rodez, an ink drawing, gives full elevations of street frontages throughout the town, showing architectural details, and is inscribed with many names and other notes. A map of 1460 showing the boundary of the duchy of Burgundy between Heuilley, Maxilly, and Talmay (Côte-d'Or) is painted with perspective views of the three villages (drawn to three horizons) with the river Saône and the stumps of

92. De Dainville, "Cartes et contestations," 99, 117 (note 91).
93. Rodez, Archives Départementales de l'Aveyron, FF 2; Grenoble, Archives Départementales de l'Isère, B 3751; Lavedan, *Représentation des villes*, 30, pl. XX (note 16); de Dainville, "Cartes et contestations," 107–9, 112–14 (note 91); Harvey, *Topographical Maps*, 81 (note 1).
94. Dijon, Archives Départementales de la Côte-d'Or, G 880; Nîmes, Archives Départementales du Gard, G 1181; de Dainville, "Cartes et contestations," 112, 113, 116 (note 91).
95. Grenoble, Archives Départementales de l'Isère, B 3495; de Dainville, "Cartes et contestations," 104–5 (note 91).

some cleared woodland in the background (plate 36).[96] Here again there is no consistent style that would suggest even a regional tradition of mapmaking.

From Italy, in view of the traditions of city plans and of northern Italian district maps, we might expect local maps of other kinds to appear in some numbers. In fact only five are recorded: a seal of the emperor Frederick II, used in 1226, bearing a map of the Straits of Messina; a thirteenth-century picture map of the Chiana valley (Tuscany); a plan of 1306 showing the harbor with projected building plots, at Talamone (Tuscany) (fig. 20.27); a fifteenth-century sketch that is part view, part map, of the lagoon near Venice; and, also from the fifteenth century, a small group of maps of areas around Ravenna.[97] It may well be that the relative profusion of medieval maps from Italy, proficiently drawn in well-defined traditions, has led historians to overlook lesser, apparently trivial productions. But little too has been recorded from Germany and central Europe. The plan of Vienna and Bratislava drawn to scale about 1422 (see fig. 20.8) and the map of 1441 showing estates at Wantz-enau (Bas-Rhin and South Baden) have both been mentioned already.[98] The latter should perhaps be grouped with other maps from southwestern Germany that appeared at the end of the fifteenth century: a plan of Ulm has been dated 1480, and two picture maps of Berings-weiler (Württemberg-Baden) are from about 1500.[99] Certainly a superb and elaborate maplike engraving of Lake Constance must have been produced very soon after the war of 1499, since it includes scenes of its battles and other incidents.[100] As a more technical type of cartography (discussed below) we have, from the fifteenth century, not only the general maps of Nicolas of Cusa and Erhard Etzlaub, but also Etzlaub's map of the region around Nuremberg and Konrad Türst's map of Switzerland. From Poland come two sketch maps of 1464 showing the Pomeranian lands of the Teutonic order and marking simply the coastline, rivers, and settlements; and we have also an interesting reference to a map, painted on cloth, of the northern provinces of Poland, which royal envoys gave Pope Martin V in 1421 to further a claim against the Teutonic order.[101] For the Balkans nothing is recorded beyond an Italian map of 1453 showing the lower Danube with its delta.[102]

96. Dijon, Archives Départementales de la Côte-d'Or, B 263; de Dainville, "Cartes et contestations," 112, fig. 10 (note 91); Harvey, *Topographical Maps*, 97 (note 1).

97. Gustave Schlumberger, Ferdinand Chalandon, and Adrien Blanchet, *Sigillographie de l'Orient Latin* (Paris: Geuthner, 1943), 22, pl. I; Vittorio Fossombroni, "Illustrazione di un antico documento relativo all'originario rapporto tra le acque dell'Arno e quelle della Chiana," *Nuova raccolta d'autori italiani che trattano del moto dell' acque*, 6 vols., ed. F. Cardinali (Bologna: Marsigli, 1824), 3:333, 337, pl. 8; Siena, Archivio di Stato di Siena, Caleffo Nero, 4 April 1306; Wolfgang Braunfels, *Mittelalterliche Stadtbaukunst in der Toskana* (Berlin: Mann, 1979), 77–78; Modena, Biblioteca Estense; Almagià, "Antica carta topografica," 81 (note 63); Ravenna, Biblioteca Classense, Carte nn.520–24; Almagià, *Documenti cartografici dello stato pontificio* (Rome: Biblioteca Apostolica Vaticana, 1960), 10 n. 1.

98. Above, pp. 470, 473–74, 478.

99. Ruthardt Oehme, *Die Geschichte der Kartographie des deutschen Südwestens* (Constance: Thorbecke, 1961), 97; Karl Schumm, *Inventar der handschriftlichen Karten im Hohenlohe-Zentralarchiv Neuenstein* (Karlsruhe: Braun, 1961), 5.

100. Wilhelm Bonacker, "Die sogenannte Bodenseekarte des Meisters PW bzw. PPW vom Jahre 1505," *Die Erde* 6 (1954): 1–29.

101. Bolesław Olszewicz, *Dwie szkicowe mapy Pomorza z połowy XV wieku*, Biblioteka "Strażnicy Zachodniej" no. 1 (Warsaw: Nakładem Polskiego Związku Zachodniego, 1937); Karol Buczek, *The History of Polish Cartography from the 15th to the 18th century*, trans. Andrzej Potocki, 2d ed. (Amsterdam: Meridian, 1982), 22–24.

102. Marin Popescu-Spineni, *România în istoria cartografiei pâna la 1600* (Bucharest: Imprimeria Naţionala, 1938), 2:33.

It seems likely that more—perhaps many more—medieval local and regional maps will come to light not only in Italy but in all these areas, and in others where so far we know of none at all; Spain and Portugal are obvious omissions. At the same time we should not take this for granted. It may well be that in many parts of medieval Europe no maps of small areas were ever drawn. The search for such maps in Britain substantially increased the number known from England but produced none at all from Wales, Scotland, or Ireland. The drawing of maps, even of the simplest sort, may have been confined to particular areas. We have seen how the northern Italian district maps cannot be paralleled in other parts of Italy, and there are clear signs of regional concentrations among the local maps elsewhere. Thus in England seven of the thirty-two fourteenth- and fifteenth-century maps come from an area around the Wash that can be defined as lying within twenty miles of Wisbech or King's Lynn. In the Low Countries the concentration is even more marked: nearly all the recorded maps come from within thirty miles of the coast in a long strip drawn from Haarlem and Hilversum in the north to Ostend and Ghent in the south. The few medieval maps recorded from Württemberg and Baden in southwestern Germany, taken with Martin Waldsee-

müller's maps of 1507 and 1513, may point to another concentration in this area. We should not dismiss these concentrations as mere accidents of survival or discovery simply because the maps in any one of these groups do not look alike. We should remember that drawing any sort of map was a very unusual thing to do in the Middle Ages; it may have been that particular local circumstances especially favored the production of maps, not that there was any conscious tradition that would produce maps with traces of uniform style.

PURPOSE AND USE

What were the circumstances that led to the drawing of local and regional maps in the Middle Ages? Many seem to have been made to put to a court of law either as general evidence or in support of one side or the other in a particular case. The map shown to Pope Martin V by the Polish envoys in 1421 can be paralleled by others known to have been produced in lesser courts. The Rodez plan of 1495 was drawn for a case over fairs. The map of the lower Scheldt in 1468 was commissioned by a committee that was collecting evidence from both parties to a suit. The 1487 sketch map of part of Overflakkee comes from the ju-

FIG. 20.25. PRINCIPAL PLACES IN CENTRAL EUROPE
AND ITALY ASSOCIATED WITH MEDIEVAL LOCAL
AND REGIONAL MAPS.

dicial archives of the Great Council at Mechelen. We
have seen that Jehan Boutillier in his treatise of 1395
spoke of using maps in cases before the French Parle-
ment; in fact we have earlier and weightier authority for
drawing maps to put before courts of law. Local maps
of this sort were known in Burgundy as *tibériades,* and
de Dainville has shown that this refers to a treatise writ-
ten in 1355 by the distinguished Italian lawyer Bartolo
da Sassoferrato, *De fluminibus seu tiberiadis;* in it he
discusses legal problems arising from rights in rivers and
streams and shows how they can be solved by using
plans.[103] The plans in the treatise itself are simply dia-
grams, and it is clear that even if the idea of using maps
in law courts stemmed from da Sassoferrato's work, he
cannot be given credit for the great variety of styles
among the maps drawn for this purpose.

However, none of the maps from medieval England
seems to have been intended for use in a court of law.
This may well reflect the distinctive practice and tradi-
tions of the English legal system. Interestingly, the only

English medieval map known to have been drawn for
legal purposes dates from the very end of the fifteenth
century and forms part of a document by a public notary,
working in the traditions of the continental civil law: a
statement of title to properties in Exeter in 1499, with
a plan of their bounds and elevations of the frontages
at the top.[104] On the other hand, several of the English
maps can be connected with particular disputes and law-
suits. One of Inclesmoor (near the confluence of the
Trent and Ouse rivers, Yorkshire), for instance, seems
to have been drawn between 1405 and 1408 when a
case was in progress between the duchy of Lancaster
and Saint Mary's Abbey, York, over rights to pasture
and peat in the area; there are two versions of this map,
both in the duchy's archives, and they will have served

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103. De Dainville, "Cartes et contestations," 117–20 (note 91).
104. Exeter, Devon Record Office (East Devon Area), Exeter City
Archives, ED/M/933; H. S. A. Fox, "Exeter, Devonshire, 1499," in
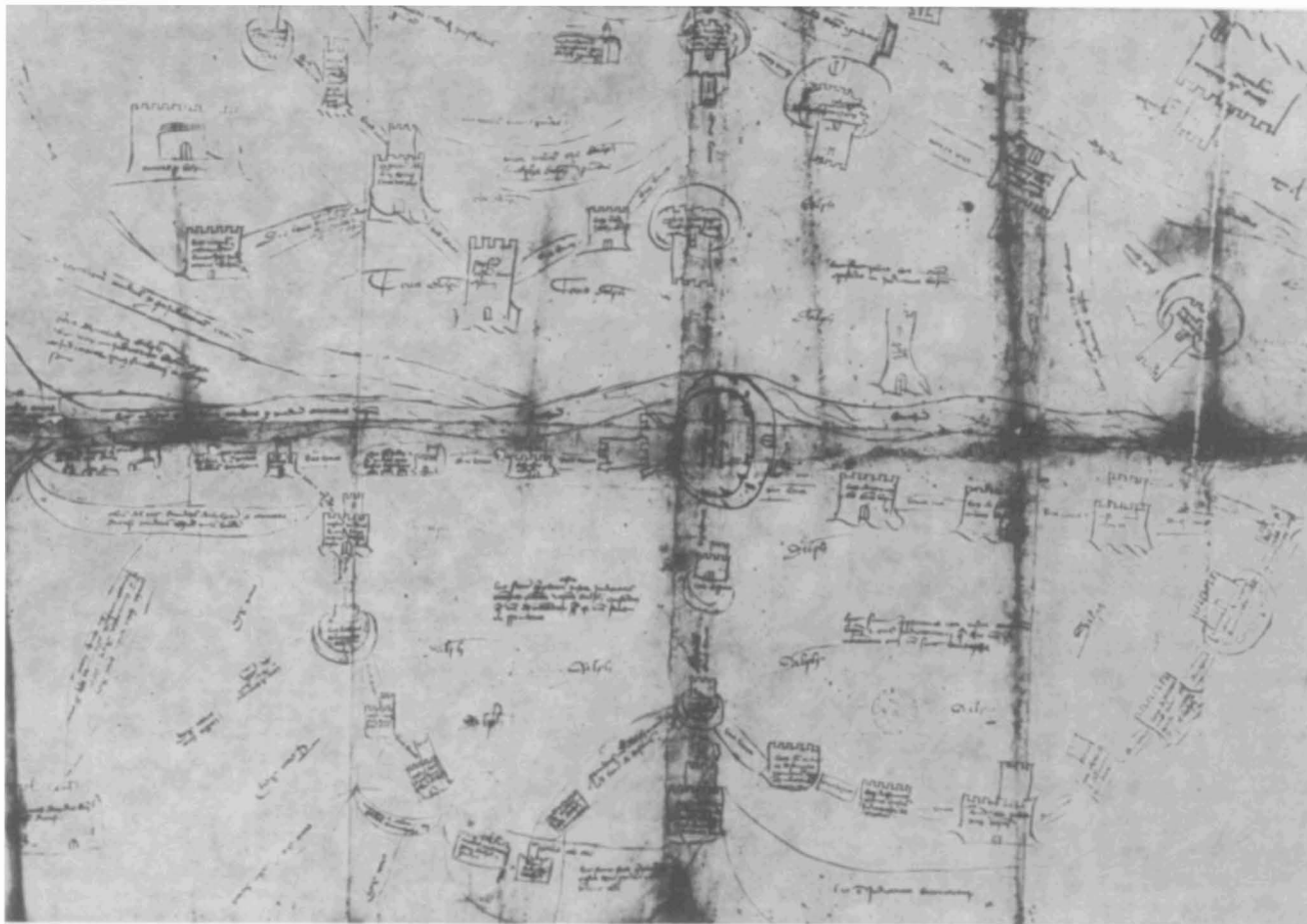Skelton and Harvey, *Local Maps and Plans,* 329–36 (note 3).

FIG. 20.26. MAP OF THE COUNTY OF GÂPENÇAIS. This mid-fifteenth-century map in four sheets covers an area of about forty by forty miles across the Drôme, Basses Alpes, and Hautes Alpes.

Size of the original: 59 × 86 cm. From F. de Dainville, "Cartes et contestations au XVᵉ siècle," *Imago Mundi* 24 (1970), fig. 7.

both as a guide to the officials conducting the case and as a permanent record of what was claimed (plate 37).[105] Outside England too some maps were drawn simply as a record for one party to a dispute rather than for formal submission to a court; thus in 1444 the duke of Burgundy, Philip the Good, disputing the duchy's boundary with the lands of the king of France, paid to have maps made "so as to see clearly the towns and villages that are included in the duchy, and also those that belong to the kingdom . . . so as to avoid and guard against the encroachments that are made every day by the people and officials of the king."[106]

Some maps served other administrative purposes. The Talamone plan of 1306 was drawn at a time when the city of Siena was concerned to develop and build up this recently acquired coastal site. But it is the English maps that met the most varied needs in administration. The two earliest (of Canterbury cathedral and of Waltham Abbey's springs at Wormley) both served as guides to

buried or concealed water pipes, and so too did a mid-fifteenth-century plan showing the water supply of the London Charterhouse.[107] Others were added to copies of documents simply to illustrate the relative positions of properties: of tenterframes at Exeter for instance, or of lands beside a stream at Staines (Middlesex).[108] Out-

105. London, Public Record Office, DL 42/12, fols. 29v–30r, and MPC 56, ex DL 31/61; M. W. Beresford, "Inclesmoor, West Riding of Yorkshire, *circa* 1407," in Skelton and Harvey, *Local Maps and Plans*, 147–61 (note 3).

106. De Dainville, "Cartes et contestations," 109 (note 91), author's translation.

107. London, Muniments of the Governors of Sutton's Hospital in Charterhouse, MP 1/13; W. H. St. John Hope, "The London Charterhouse and Its Old Water Supply," *Archaeologia* 58 (1902): 293–312; M. D. Knowles, "Clerkenwell and Islington, Middlesex, Mid-15th Century," in Skelton and Harvey, *Local Maps and Plans*, 221–28 (note 3).

108. London, Muniments of the Dean and Chapter of Westminster, 16805; Susan Reynolds, "Staines, Middlesex, 1469 × *circa* 1477," in Skelton and Harvey, *Local Maps and Plans*, 245–50 (note 3).
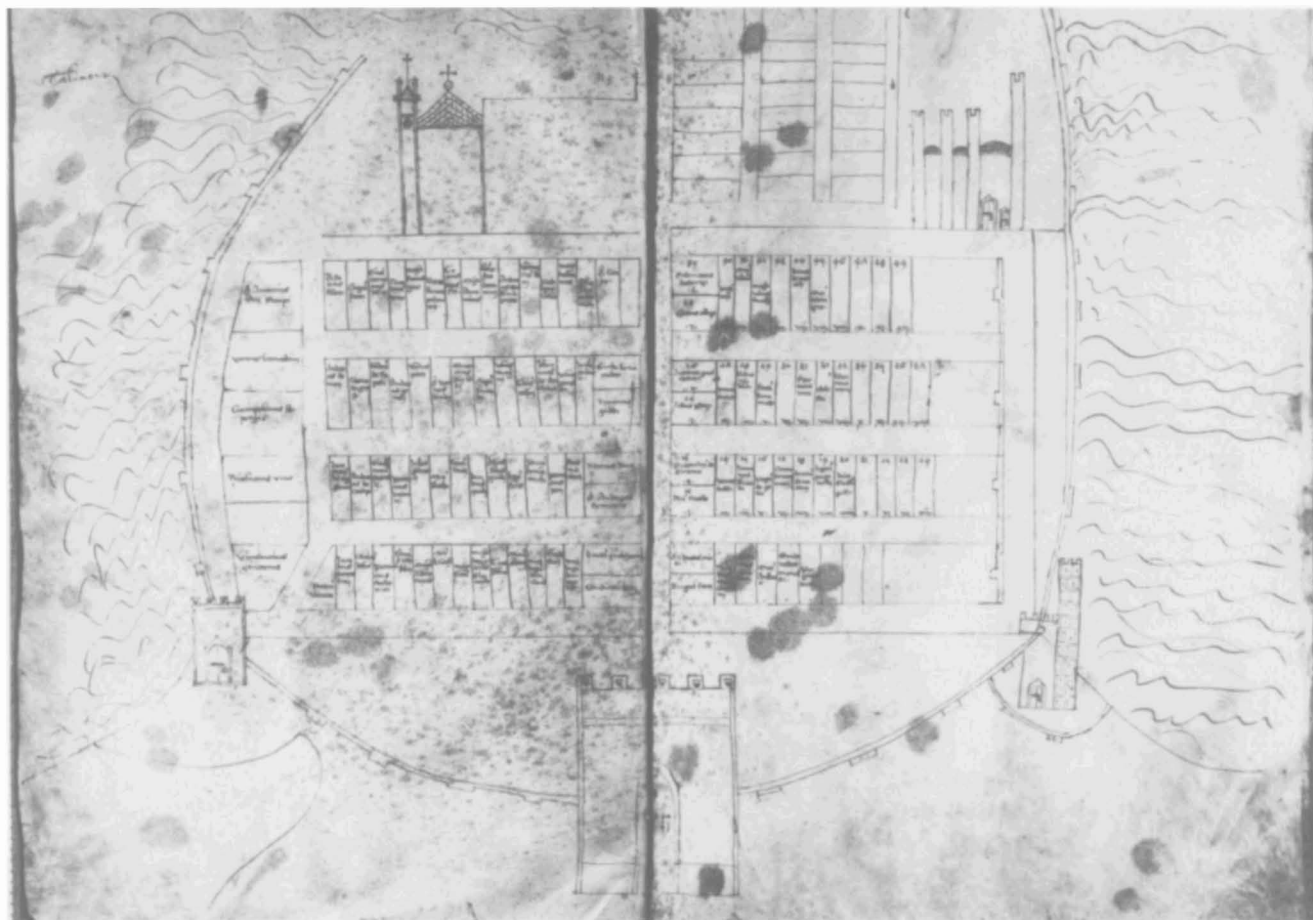
FIG. 20.27. TALAMONE HARBOR, 1306. This is one of few local maps known to have survived from Italy, despite the extensive traditions of city plans and northern Italian district maps. It shows existing (named) and projected (numbered) building plots within the Tuscan harbor and so might have been produced to fill some planning or administrative need.

Size of the original: 43.5 × 58.5 cm. By permission of the Archivio di Stato, Siena (Capitoli 3, fols. 25v–26).

line plans of four plots of land belonging to the Bridge House estates of London were entered in a register in the 1470s, apparently as a guide to their shape and dimensions.[109]

In the Italian tradition of city plans we find a certain antiquarian bias: where only a selection of buildings appears within the walls, they seem often to have been chosen not just because they are the city's most distinctive buildings, but because they are monuments of antiquity. This is particularly obvious in the late fifteenth-century maps of Rome by Alessandro Strozzi and Pietro del Massaio, which draw on Flavio Biondo's account of the city's antiquities, *Roma instaurata*, written in 1444–46.[110] There may be something of the same bias in the

medieval plans of Jerusalem, though here it is difficult to distinguish between the antiquarian and the pious interest in the city's ancient buildings. Several local maps from medieval England were drawn specifically to illustrate antiquarian works. Thomas of Elmham's history of Saint Augustine's Abbey, Canterbury, written at the

109. London, Corporation of London Records Office, Bridge House Deeds, Small Register, fols. 9r–11r; John H. Harvey, "Four Fifteenth-Century London Plans," *London Topographical Record* 20 (1952): 1–8, figs. 1–4; Philip E. Jones, "Deptford, Kent and Surrey; Lambeth, Surrey; London, 1470–1478," in Skelton and Harvey, *Local Maps and Plans*, 251–62 (note 3).

110. Scaglia, "Origin of an Archaeological Plan," 137–63 (note 46); Weiss, *Renaissance Discovery*, 5–6, 90–93 (note 42).

beginning of the fifteenth century, includes not only careful facsimiles of some of the abbey's early charters, but also a plan of the chancel of the abbey church, showing the layout of its altars, and a map of the Isle of Thanet (Kent) with the complicated line of the "run of the hind," the path which reputedly was followed by a pet deer of Queen Domneva of Mercia and which formed the boundary of the abbey's manor there.[111] The bird's-eye view of Bristol is another case in point; it was drawn in the chronicle written by Robert Ricart, the town clerk, and though it seems to show fifteenth-century Bristol, it was probably meant to represent the town at the time of its legendary foundation.[112] These antiquarian maps cannot be paralleled among the medieval maps so far recorded from France or the Low Countries. They anticipate the association between mapmaking and antiquarian interests that is so often found in the sixteenth and seventeenth centuries.

Another aspect of the Italian traditions of medieval mapping that was echoed elsewhere in Europe was the use of maps for permanent display. Clearly this was the purpose of the large, realistic bird's-eye views of cities in the late fifteenth century, such as de' Barbari's woodcut of Venice or the painting of Rome in the ducal palace at Mantua that derives from Rosselli's lost engraving.[113] But we find earlier examples too, such as the mid-fourteenth-century fresco showing Florence in the Loggia del Bigallo or the view of Rome that Taddeo di Bartolo painted in the Palazzo Comunale at Siena in 1413–14.[114] Outside Italy we have the large woodcut of Lake Constance showing scenes from the war of 1499 (it measures 50 by 110 cm) and, from the Netherlands, the painting of about 1480 of the Saint Elizabeth's Day Flood. None of the English maps falls in this category. But we have two references from France to maps of this sort that have failed to survive: one showing the course of the Loire, with its towns and bridges, that was on a cloth roll given to the duke of Orleans in 1440, and three maps painted on cloth that were recorded in 1472 among the contents of the castle at Angers.[115]

Behind these maps made for display lay very much more than the idea of providing simple decoration. They were products of the artistic tradition of their times and, despite the graphic realism of the later Middle Ages, the art of medieval and Renaissance Europe was not simply representational: it conveyed a wealth of connotation and implication, of symbolic, metaphorical meaning that attached to the visual image. In some maps this is obvious: the woodcut of Lake Constance with its battle scenes was a glorification of Swiss successes in the war of 1499. Usually it is subtler: Juergen Schulz has analyzed the complex of ideas presented by de' Barbari's view of Venice and other sixteenth-century panoramas of cities.[116] It would of course be absurd to read meanings of this kind into sketch maps that were demonstrably drawn for practical and ephemeral purposes. But the more elaborate maps of even quite small areas may often have done more than just convey topographical information: such carefully drawn productions as Canterbury cathedral's plan of its water system or the duchy of Lancaster's maps of Inclesmoor should be seen, as was probably intended, as reflecting pride of ownership and assertion of rights. The Gough map of Britain may possibly have been compiled for functional official use; Matthew Paris's maps were not, and to appreciate their significance they must be seen in the context of the artistic and intellectual works of thirteenth-century England.[117] Beyond the factual information, the outwardly simple medieval map may have conveyed what contemporaries would see as a straightforward message but what to us can only be painfully worked out as a hidden inner meaning.

SURVEYING AND MAPPING

It may seem surprising that among these medieval maps of small areas there are no maps compiled as part of a survey, that is, a general description of a piece of property, whether a single field, an individual holding, a village community and its lands, or an entire estate. Where maps were drawn for administrative purposes it seems to have been always in order to make a single point: to show the arrangements of water pipes, for instance, or the line of a disputed boundary. The many surveys of landed property that survive from medieval Europe were drawn up as written descriptions, often extremely long and detailed ones, without mapping at any stage. Only two possible exceptions to this have come to light, both from England. One is a pair of plans showing small groups of strips in the fields of Shouldham (Norfolk) in

111. Cambridge, Trinity Hall, MS. 1, fols. 77r, 42v; William Urry, "Canterbury, Kent, Late 14th Century × 1414," 107–17, and F. Hull, "Isle of Thanet, Kent, Late 14th Century × 1414," 119–26, both in Skelton and Harvey, *Local Maps and Plans* (note 3).

112. Bristol, Bristol Record Office, MS. 04720, fol. 5v; Elizabeth Ralph, "Bristol, *circa* 1480," in Skelton and Harvey, *Local Maps and Plans*, 309–16 (note 3).

113. Schulz, "Moralized Geography" (note 42); de Rossi, *Piante di Roma*, 104–7, pls. VI–XII (note 44); C. Hülsen, "Di una nuova pianta prospettica di Roma del secolo XV," *Bullettino della Commissione Archeologica Comunale di Roma*, 4th ser., 20 (1892): 38–47; Ehrle and Egger, *Piante e vedute di Roma*, 14, pl. XI (note 44).

114. Ciullini, "Firenze rappresentazioni," 35 (note 45); Ehrle and Egger, *Piante e vedute di Roma*, 10–11, pl. IV (note 44).

115. De Dainville, "Rapports," 402–3 (note 5).

116. Schulz, "Moralized Geography," 441–72 (note 42); cf. J. B. Harley, "Meaning and Ambiguity in Tudor Cartography," in *English Map-Making, 1500–1650*, ed. Sarah Tyacke (London: British Library, 1983), 22–45.

117. Below, pp. 495–96.

1440–41.[118] The other is a pair of plans of a small area divided into closes at Tanworth in Arden (Warwickshire), drawn between 1497 and 1519.[119] In neither case are the plans part of the finished survey, which is solely a written description; they are found among the preliminary notes and drafts. It might be thought that sketch maps of this sort were a normal way of gathering information for a field survey, to be discarded once the final version had been set out in writing. This seems unlikely; the Shouldham plans are of only a tiny portion of the lands covered by the draft survey, and they are drawn with a lack of expertise, as though the draftsman was experimenting with a novel technique. In England there was no recognized profession of surveyors before the sixteenth century. In the Low Countries, on the other hand, we find people referred to as surveyors, suggesting that this was their full-time calling, from the thirteenth century on.[120] Yet despite this professionalism there is no evidence that they ever drew maps as a part of their craft, whether as a finished product or as a working technique. The earliest instructions on surveying from the Low Countries, in the early fifteenth-century lawbook from the town of Brielle (South Holland) by Jan Matthijssen, describe the surveyor's duties in some detail but give no hint that drawing maps or plans was part of his work.[121]

What the surveyor had to do was to produce a description of landed property, and from the ninth century onward we have more or less elaborate surveys of estates; the earliest come from the triangle between the mouths of the Seine and Rhine and the Bavarian mountains.[122] The Domesday Book, drawn up in England for William I in 1086, is the unique surviving survey of an entire kingdom, but from the early twelfth century onward surveys were an increasingly common record of estate management. These written surveys need not involve measurement of land: property might be described simply in terms of the rents and services it produced for the landlord or, if lands were described in more detail, they might be defined by referring to the number of selions, or plowing strips, they contained. In England precise measurement of land was known by the late ninth century, but it was only in the early thirteenth that surveys in general began to give the measured areas of the lands they described. It is unlikely that any more sophisticated methods were used to produce these figures than simple measurement by rod or cord followed by calculations of area by actual or assumed rectangles and, perhaps, right-angled triangles; this is what is described in Richard Benese's treatise of 1537, and we have many copies from the thirteenth century onward of tables that give the length of an acre of land for any given width. By the late fifteenth century the land compass was probably being used to define the alignment of lands; the

earliest printed English treatise on surveying, by John Fitzherbert in 1523, recommends its use.[123] Certainly we have much more to learn about the medieval surveyors of continental Europe, but if they in fact used more exact or more elaborate methods than their English counterparts, the evidence has still to come to light; the professional status of the surveyors of the medieval Netherlands probably reflected an enhanced legal standing rather than more skilled techniques.

But this is not to say that the Middle Ages had no knowledge of the methods of the ancient Roman surveyors or of geometric theory. The Roman surveying treatises were still being copied in the twelfth, thirteenth, and fourteenth centuries. A series of treatises on geometry gave medieval Europe access to both classical and Islamic methods, including the use of instruments: the *Geometria* of Gerbert (who was Pope Sylvester II in 999–1003) and the early twelfth-century *Liber embadorum* of Abraham bar Chiia are early examples that were heavily drawn on by later medieval writers. These treatises were practical in their approach: the early thirteenth-century *Practica geometriae* of Leonardo Pisano was the earliest to describe the plumb-bob level, used in finding the horizontal area of sloping ground, and the quadrant, applied to various exercises in surveying.[124] But despite their practical implications, these were works of scholarship and learning, and it need not follow that their precepts were known or used by those who were involved in the everyday business of surveying, of measuring and describing lands. Very much later in England Leonard Digges in 1556 and George Atwell in 1658 were to comment on the lack of contact between geometric theory and practical surveying in their own times, and

118. Norwich, Norfolk Record Office, Hare 2826, fols. 16v, 34v; P. D. A. Harvey, "Shouldham, Norfolk, 1440 × 1441," in Skelton and Harvey, *Local Maps and Plans*, 195–201 (note 3).

119. Stratford upon Avon, Shakespeare Birthplace Trust Records Office, DR37/box 74, B ii b,c; B. K. Roberts, "North-west Warwickshire; Tanworth in Arden, Warwickshire, 1497 × 1519," in Skelton and Harvey, *Local Maps and Plans*, 317–28 (note 3).

120. P. S. Teeling, "Oud-Nederlandse landmeters, III," *Orgaan der Vereniging van Technische Ambtenaren van het Kadaster* 7 (1949): 126–34, esp. 126–27; A. Viaene, "De landmeter in Vlaanderen, 1281–1800," *Biekorf* 67 (1966): 7; Cornelis Koeman, "Algemene inleiding over de historische kartografie, meer in het Bijzonder: Holland vóór 1600," *Holland* 7 (1975): 230.

121. Koeman, "Algemene inleiding," 231 (note 120).

122. Robert Fossier, *Polyptyques et censiers* (Turnhout: Brepols, 1978), 33.

123. Eva G. R. Taylor, "The Surveyor," *Economic History Review*, 1st ser., 17 (1947): 121–33; A. C. Jones, "Land Measurement in England, 1150–1350," *Agricultural History Review* 27 (1979): 10–18; P. D. A. Harvey's Introduction in Skelton and Harvey, *Local Maps and Plans*, 11–15 (note 3).

124. Edmond R. Kiely, *Surveying Instruments: Their History* (New York: Teachers College, Columbia University, 1947; reprinted Columbus, Ohio: Carben Surveying Reprints, 1979), 50–54.

in the eighteenth century some writers on surveying were still recommending methods that avoided measurement of angles.[125] Knowledge of sophisticated surveying methods among the learned in medieval Europe is no evidence of their actual use.

The surveyors of medieval Europe were not its mapmakers. Did the mapmakers—those who produced our few medieval local and regional maps—draw on the methods of either the practical surveyors or the theoretical geometricians? This is a harder question to answer. For most surviving maps it is clear that even the simplest measurements on the ground played no part in their construction. The fully detailed city views from late fifteenth-century Italy were more likely built up from mosaics of sketches from high buildings than based on actual measurement.[126] But we have seen that some form of measurement played a part in constructing probably some city plans from Italy and Palestine, and certainly the 1422 plan of Vienna and Bratislava. In the 1440s the Italian humanist scholar and architect Leon Battista Alberti wrote an account of Rome and its monuments, *Descriptio Urbis Romae*, in which he set out a method for placing the city's principal features on a scale map by means of measured radii from a central vantage point; in later works, *Ludi matematici* (1450) and *De re aedificatoria* (1452), he described more elaborate ways of constructing maps to scale, including triangulation. Although in his first work he provides such specific application of his method, including the coordinates of some features, it is not certain that he actually drew the map of Rome that he describes.[127] If he did it is now lost; it is no longer thought, as formerly, that Alberti's work underlies the map of Rome by Alessandro Strozzi in 1474.[128] Some other fifteenth-century maps may be based on measurement, even on a knowledge of geometric theory, but we should be cautious and not assume this without the strongest evidence.

ITINERARY MAPS AND THE DEVELOPMENT OF MAPS DRAWN TO SCALE

The remaining maps to be considered cannot be said to form a coherent, conscious tradition. On the other hand, there is a clear conceptual relationship between them, and in their particular approach to cartographic problems we see the gradual reemergence in later medieval Europe of the notion of strict scale applied to maps. What they have in common is that they are essentially maps of routes, itinerary maps, that take as their basis the simple sequence of places between one point and another. Several of the maps already discussed are of this sort: some of the northern Italian district maps with their emphasis on roads, or the water supply plans from Waltham Abbey and the London Charterhouse, where

the line of the conduit can be seen as the route. An outstanding English example is a map of Sherwood Forest (Nottinghamshire); it consists of little more than roughly radiating lists of places along about a dozen routes through the forest, an efficient guide to any one of these routes, but not meant as a general map of the area and quite inadequate as a means of finding one's way across from one of these routes to another.[129] It was of course exceptional for an itinerary to take the form of a map; normally it would be set out in writing, and we have a number of written itineraries listing routes often over long distances—an outstanding example is the fourteenth-century Bruges itinerary, which lists places and the distances between them along routes from Bruges to almost every part of Europe.[130] But the itinerary map seems to have been better understood in medieval Europe than some other kinds of cartography, and it is interesting that our knowledge of the Peutinger map, a fourth-century itinerary map of great elaboration, should stem from an apparently faithful copy made in the twelfth or early thirteenth century.[131]

It is interesting too, though it may be mere accident, that several of the most significant early itinerary maps come from England: the maps of Matthew Paris and the Gough map. We have four versions of the map of the route from London to Apulia (Italy) that Matthew Paris drew up in the mid-thirteenth century. It is a straightforward series of vertical strips showing the successive staging points by tiny thumbnail sketches, some based on the places' actual appearance; between the staging points are notes of the distances in terms of day's journeys, and for part of the way alternative routes are shown (plate 38).[132] This is the most obvious itinerary map by Matthew Paris, but it is by no means his only one. As we have already seen, of his two maps of the

125. H. C. Darby, "The Agrarian Contribution to Surveying in England," *Geographical Journal* 82 (1933): 529–35, esp. 532–33; A. W. Richeson, *English Land Measuring to 1800: Instruments and Practices* (Cambridge: Society for the History of Technology and MIT Press, 1966), 125–26, 152–53, 158.

126. Schulz, "Moralized Geography," 431–41 (note 42).

127. Joan Gadol, *Leon Battista Alberti: Universal Man of the Early Renaissance* (Chicago: University of Chicago Press, 1969), 167–78; Pinto, "Ichnographic City Plan," 36–38 (note 55).

128. Scaglia, "Origin of an Archaeological Plan," 137–41 (note 46); Weiss, *Renaissance Discovery*, 90–92 (note 42).

129. Belvoir, Archives of the Duke of Rutland, map 125; M. W. Barley, "Sherwood Forest, Nottinghamshire, Late 14th or Early 15th Century," in Skelton and Harvey, *Local Maps and Plans*, 131–39 (note 3).

130. Joachim Lelewel, *Géographie du Moyen Age*, 4 vols. and epilogue (Brussels: Pilliet, 1852–57; reprinted Amsterdam: Meridian, 1966), *Epilogue*, 281–308.

131. Above, pp. 238–42.

132. Vaughan, *Matthew Paris*, 242, 247–50 (note 17); Harvey, *Topographical Maps*, 67 (note 1).

Holy Land one, known only through what is probably a draft, gives distances between places along the coast and was probably based on a written itinerary. But his much better known map of Great Britain, which also survives in four versions, should also be seen as an itinerary map (plate 39). Its axis is the route from Newcastle upon Tyne to Dover, with some fifteen intermediate places, among them Matthew Paris's own monastery at Saint Albans; this route is drawn along a straight line, ignoring the fact that on the ground it turns through ninety degrees at London to run east instead of south. On either side of this route, and beyond it in Scotland, are many further details: towns, rivers, and coastlines, as well as a few topographical notes. The result bears some resemblance to a modern geographic map of Great Britain, but to view it in this light is to miss the crucial point of its construction on the basis of a single route; essentially it is simply an itinerary map with additions.[133] Probably this is how we should also see the far more elaborate Gough map of the mid- or late fourteenth century. This too is a map of the whole of Britain, but instead of having a single route as its basis it takes five main roads radiating from London, with some branches and crossroads and, in Lincolnshire and Yorkshire, some local roads too. Like Matthew Paris's map it marks towns, rivers, and coastlines beyond its basic routes as well as along them, and it does this with a thoroughness and accuracy that far surpass the achievement of Matthew Paris. But that its starting point and main center of interest are these primary routes is clear; in Cornwall, Wales, and Scotland, where it shows few roads or none, its general shape is least like what we would expect from a geographic map today (plate 40).[134]

Clearly both Matthew Paris and the author of the Gough map had some notion of consistent scale. This appears explicitly in a note on one version of Matthew Paris's map: "The whole island should have been longer if only the page had permitted" (*Si pagina pateretur hec totalis insula longior esse deberet*).[135] And since the places named on his basic route are more or less equidistant on the ground—he very likely viewed them as staging points—as well as on the map, where they are simply entered one below the other without much space between, they provide a very rough basis of scale as well as of relative position. On the Gough map the relative positions of some groups of places are so close to what we would expect from an accurate scale map that it has been argued, by E. J. S. Parsons, that the compiler made use of existing local maps drawn to scale, reproducing them on his general map at a scale of about 1:1,000,000.[136] From what we know of medieval mapping in general this seems unlikely, but it is a tribute to the map that the possibility can even be considered. In fact it cannot be claimed that the Gough map—let alone

Matthew Paris's map—was constructed, or even envisaged, as a scale map throughout. Along the roads are figures giving the distances from one place to another; these distances are in local (and very variable) customary miles, but the lengths of the roads on the map itself bear no fixed relation either to these figures or to the distances expressed by a standard measure. But even if these cannot be seen as scale maps, they show clearly that where a map, with some idea of scale behind it, is constructed around a route or routes with distances entered, it is conceptually only a very small step to set out the itinerary with its distances all in due proportion; and once that has been done the idea of scale has been introduced at the very heart of the map.

The map of the Holy Land found in the early fourteenth-century works of Marino Sanudo and Paolino Veneto can be placed in the same context, though it is conceptually further advanced than even the Gough map. Sanudo's text sets out the principle behind the map, how Palestine was imagined as divided by a grid into squares of one league and how each town could then be placed in the appropriate square; and besides entering them on the map itself he lists all the towns, defining their positions on the grid.[137] The result is, of course, a complete scale map, even if inaccuracies, particularly at the edges, mean that its execution falls short of its intention. The sudden appearance in medieval Europe of a land map drawn to scale on the basis of a grid is of extraordinary interest, and Needham has suggested that it may derive from the grid-based scale maps that we know were a little earlier being drawn in China; Arab maps consisting of place-names entered on a grid provide a possible connection and an immediate source for the method.[138] At first sight this may seem to have little to

133. British Museum, *Four Maps of Great Britain Designed by Matthew Paris about A.D. 1250* (London: British Museum, 1928); J. B. Mitchell, "Early Maps of Great Britain: I. The Matthew Paris Maps," *Geographical Journal* 81 (1933): 27–34; Vaughan, *Matthew Paris*, 241–44 (note 17); Harvey, *Topographical Maps*, 140–42 (note 1).

134. *The Map of Great Britain, circa A.D. 1360, Known as the Gough Map* (Oxford: Oxford University Press, 1958), published for the Royal Geographical Society and Bodleian Library with an accompanying memoir by E. J. S. Parsons, *Introduction to the Facsimile* (Oxford: Oxford University Press, 1958).

135. London, British Library, Royal MS. 14.C.vii, fol. 5v.

136. Parsons, *Introduction*, 9 (note 134).

137. Marino Sanudo, *Liber secretorum fidelium crucis*, vol. 2 in *Gesta Dei per Francos*, 2 vols., ed. Jacque Bongars (Hanover: Heirs of J. Aubrius, 1611), 246, for Sanudo's text; Röhricht, "Marino Sanudo," 84–126 (note 32); Degenhart and Schmitt, "Sanudo und Veneto," 76–78, 116–19 (note 27); Harvey, *Topographical Maps*, 144–46 (note 1).

138. Joseph Needham, *Science and Civilisation in China* (Cambridge: Cambridge University Press, 1954–), vol. 3, *Mathematics and the Sciences of the Heavens and the Earth*, 564, pls. LXXXVII, LXXXVIII.

do with the itinerary map. But defining the positions of the towns in the Holy Land so that they could be correctly placed on the grid can only have been done by measuring the routes between them; ultimately the map must be based on a whole series of measured itineraries, even though it does not show the roads or distances between one place and another. There is, of course, an obvious similarity between this map of the Holy Land and the large and small maps of Italy that appear in one manuscript of Paolino Veneto's *Chronologia magna*; these too, as we have seen, are based on a grid (the same for both maps), set out with dots and figures along each margin.[139] On the other hand, these maps of Italy were essentially extensions (to cover some inland features) of maps of the peninsula's coastline drawn as portolan charts. They may thus be a link between the portolan charts and the map of the Holy Land, being the first application of the ideas and techniques of the portolan charts to a map of a land mass viewed as something more than just a coastline.

Whatever the origin of the ideas and techniques behind this early fourteenth-century map of the Holy Land, they were not taken up by other mapmakers: it had no immediate successors. And when, in the mid-fifteenth century, the itinerary-based scale map reappeared in Germany it owed no direct debt to the sea-itinerary tradition of the portolan charts. Instead it almost certainly owed something, probably a great deal, to the interest in theoretical geography and in working out geographical coordinates that we find among scholars in late medieval Germany and Austria; significantly, degrees of latitude and longitude are now marked, suggesting that astronomical measurement may have been used to fix the positions of places north or south. But the circumstances of the scale map's reappearance are mysterious. What we have are two maps of Germany, both explicitly attributed to Nicolas of Cusa, philosopher and theologian, who died in 1464. But both maps in their surviving form date from long after his death. One is in manuscript, an addition to the maps of Ptolemy in an atlas drawn up by Henricus Martellus Germanus in 1490. The other is printed, a copper engraving which is dated at Eichstätt (Bavaria) in 1491 but which may well not have been completed and brought into use until the 1530s.[140] The two are quite dissimilar but may just possibly derive from the same original map, now lost. Whatever these maps owe to the work of the geographers in fixing key points on the maps, they are essentially itinerary maps in their detailed construction, based on measurements along many routes. These measurements will have been of angles as well as of length, and behind these maps lies the introduction of the magnetic compass for measuring direction on land; its use seems to have spread in the fifteenth century, particularly as a component of pocket sundials.[141] But whatever the methods and authorship of these maps, they are of great importance: their accuracy argues a high degree of technical accomplishment, and they mark the beginning of a real tradition of topographical maps drawn to scale in Europe.

Although we know nothing of the origin of the maps attributed to Nicolas of Cusa, we know very much more about the maps that lie in direct succession to them in Germany. These were the work of Erhard Etzlaub of Nuremberg; significantly, he was a maker of pocket sundials. His most extensive map, already mentioned, covers Germany, central Europe and the Alps, and northern Italy. It exists in two versions, both woodcuts, and they are commonly distinguished by the opening words of the descriptive title above the map. One reads *Das ist der Rom-Weg* . . . ("This is the road to Rome"); it may have been intended to guide pilgrims to Rome in the holy year 1500, or it may have been produced rather earlier in the 1480s or 1490s. The other reads *Das sein dy lantstrassen durch das Römisch reych* . . . ("These are the roads through the Roman Empire") and bears the date 1501. The maps have two particular points of interest that reflect their origin as itinerary maps. One is that main land routes are shown prominently and are marked by series of dots, each representing one German mile, as is explained, with a scale, at the foot of each map. The other is that also at the foot of each map is a tiny compass rose with a note explaining how to orient the map with an actual compass. Etzlaub's maps, like Nicolas of Cusa's, were constructed from innumerable measurements of direction and distance. This applies equally to another map that Etzlaub must have compiled either as a by-product or as a preliminary sample of his larger maps; like them it has Nuremberg as its center, but it is simply a regional map, circular in shape, covering an area of sixteen German miles from the city. This too was published as a woodcut, dated 1492. But it was not only in producing these itinerary-based scale maps that Etzlaub is important in the history of cartography. In 1507 he was employed to survey an estate that had been bought by the city of Nuremberg; whether or not this included drawing a map, it is of great significance that we see here surveyor and mapmaker brought together in a single person, a union that foreshadowed important developments in large-scale cartography.[142]

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139. Above, p. 481.

140. A. Wolkenhauer, "Über die ältesten Reisekarten von Deutschland aus dem Ende des 15. und dem Anfange des 16. Jahrhunderts," *Deutsche Geographische Blätter* 26 (1903): 120–38, esp. 124–28.

141. Cf. P. D. A. Harvey's Introduction in Skelton and Harvey, *Local Maps and Plans*, 37 (note 3).

142. Wolkenhauer, "Über die ältesten Reisekarten," 130–36 (note 140); Herbert Krüger, "Erhard Etzlaub's *Romweg* Map and Its Dating

So too, though in a different way, did the work of Konrad Türst, physician to the emperor Maximilian I, presage new developments. In 1495–97 he wrote an account of Switzerland, *De situ confoederatorum descriptio*, but he did not publish it, and it is known only from four manuscript copies. Two of these include a map of Switzerland, which again is drawn to scale on the basis of itineraries, an achievement the more remarkable in view of the difficulty of much of the Swiss terrain. But though this links the map with those of Nicolas of Cusa and Etzlaub, its general appearance is far closer to the district maps from northern Italy, for instead of the austere dots or circles that mark towns on the German maps it has a multiplicity of tiny thumb-nail sketches that are pictures of the places' actual appearance, drawn from life.[143] In bringing together these two strands of cartographic tradition from the Middle Ages, the itinerary map and the picture map, Türst seems to have anticipated developments that were to find their full expression in the Renaissance.

in the Holy Year of 1500," *Imago Mundi* 8 (1951): 17–26; Schnelbögl, "Life and Work of Etzlaub," 11–26 (note 29); Tony Campbell, "The Woodcut Map Considered as a Physical Object: A New Look at Erhard Etzlaub's *Rom Weg* Map of c. 1500," *Imago Mundi* 30 (1978): 79–91; Harvey, *Topographical Maps*, 147–49 (note 1).

143. Eduard Imhof, *Die ältesten Schweizerkarten* (Zurich: Füssli, 1939), 6–14, pls. 1, 2; Theophil Ischer, *Die ältesten Karten der Eidgenossenschaft* (Bern: Schweizer Bibliophile Gesellschaft, 1945).

APPENDIX 20.1 CHRONOLOGICAL LIST OF LOCAL MAPS FROM NORTHERN ITALY BEFORE 1500

1. 1291: Asti area. Turin, Biblioteca Nazionale, Codex Alfieri. See Roberto Almagià, "Un'antica carta del territorio di Asti," *Rivista Geografica Italiana* 58 (1951): 43–44.

2. First half of fourteenth century: Asti area. Asti, Codex de Malabaya. See Almagià, "Antica carta."

3. 1383–1400: Lake Garda. Verona, Biblioteca Civica. See Roberto Almagià, *Monumenta Italiae cartographica* (Florence: Istituto Geografico Militare, 1929), 5, pl. VII.

4. 1406–16: Brescia area. Brescia, Archivio Storico Civico, n. 434/3. See Giovanni Treccani degli Alfieri, *Storia di Brescia*, 4 vols. plus index (Brescia: Morcelliana, 1961), 1:870.

5. 1437–41: Lombardy. Paris, Bibliothèque Nationale, Rés. Ge. C. 4990. See Almagià, *Monumenta*, 9, pl. VIII (where is is cited as Ge.C.4090).

6. After 1439: Verona area. Venice, Archivio di Stato. See Roberto Almagià, "Un'antica carta topografica del territorio veronese," *Rendiconti della Reale Accademia Nazionale dei Lincei: Classe di Scienze Morali, Storiche e Filologiche* 32 (1923): 63–83; idem, *Monumenta*, 11, pl. XI.

7. 1440: Lombardy, by "Ioanes Pesato." Treviso, Museo Comunale. See Almagià, *Monumenta*, 9, pl. VIII.

8. 1449: Padua area, by Annibale di Maggi. Milan, Biblioteca Ambrosiana. See Almagià, *Monumenta*, 12.

9. Second half of fifteenth century: Veneto region. Istanbul, Topkapi Sarayi Muzesi. See Rodolfo Gallo, "A Fifteenth Century Military Map of the Venetian Territory of *Terraferma*," *Imago Mundi* 12 (1955): 55–57.

10. After 1460: Parma area. Parma, Archivio di Stato. See Almagià, *Monumenta*, 9.

11. 1465: Padua area, by Francesco Squarcione. Padua, Museo Civico. See Almagià, *Monumenta*, 12.

12. 1469–70: Brescia area. Modena, Biblioteca Estense. See Mario Baratta, "Sopra un'antica carta del territorio bresciano," *Bollettino della Reale Società Geografica*, 5th ser., 2 (1913): 514–26, 1025–31, 1092; Almagià, *Monumenta*, 12, pl. XII.

13. Before 1472: Brescia area. Brescia, Biblioteca Queriniana. See Almagià, *Monumenta*, 9, pl. VII.

14. 1479–83: Verona area. Venice, Archivio di Stato, Scuola di Carità, busta 36, n. 2530. See A. Bertoldi, "Topografia del Veronese (secolo XV)," *Archivio Veneto*, n.s., 18 (1888): 455–73; Almagià, *Monumenta*, 12; Gallo, "Fifteenth Century Military Map," 55.

APPENDIX 20.2 CHRONOLOGICAL LIST OF LOCAL MAPS AND PLANS FROM ENGLAND BEFORE 1500

Most of the following items are reproduced, and each is fully discussed in its local historical context, in *Local Maps and Plans from Medieval England*, ed. R. A. Skelton and P. D. A. Harvey (Oxford: Clarendon Press, 1986); I am most grateful to the Oxford University Press for permission to list the material here. The only items not included there are nos. 5, 6, 7, 17, and 23, which have recently come to light and have been brought to my attention by the kindness of Catherine Delano Smith, H. S. A. Fox, J. H. Harvey, and M. M. Condon. The date assigned to each map is that of its original compilation; in some cases the surviving maps are later copies.

1. About 1153–61: Canterbury (Kent). Cambridge, Trinity College, MS. R.17.1, fols. 284v–285r, 286r.

2. 1220–30: Wormley (Hertfordshire). London, British Library, Harl. MS. 391, fol. 6r.

3. 1224–49: Wildmore Fen (Lincolnshire). Loughlinstown (county Dublin), library of Sir John Galvin, Kirkstead Psalter, fol. 4v.

4. Mid- or late fourteenth century: Peterborough (North-amptonshire). Peterborough, Archives of the Dean and Chapter of Peterborough, MS. 1, fol. 368r.

5. Mid- or late fourteenth century: Fineshade (North-amptonshire). Lambeth Palace Library, Court of Arches, Ff.291, fol. 58v.

6. Late fourteenth century: Chute Forest (Hampshire and Wiltshire). Winchester, Winchester College Muniments, 2206.

7. Late fourteenth century: Clare (Suffolk). London, British Library, Harl. MS. 4835, fols. 66v–67r.

8. Late fourteenth century: Isle of Ely (Cambridgeshire) and Holland (Lincolnshire). London, Public Record Office, MPC 45.

9. Late fourteenth century–1408: Cliffe (Kent). Canterbury, Archives of the Dean and Chapter of Canterbury, Charta Antiqua C.295.

10. Late fourteenth century–1414: Canterbury (Kent). Cambridge, Trinity Hall, MS. 1, fol. 77r.

11. Late fourteenth century–1414: Isle of Thanet (Kent). Cambridge, Trinity Hall, MS. 1, fol. 42v.

12. Late fourteenth or early fifteenth century: Clenchwarton (Norfolk). London, British Library, Egerton MS. 3137, fol. 1v.

13. Late fourteenth or early fifteenth century: Sherwood Forest (Nottinghamshire). Belvoir (Leicestershire), Archives of the Duke of Rutland, map 125.

14. About 1390: Winchester (Hampshire). Winchester, Winchester College Muniments, 22820, inside front and back covers.

15. About 1407: Inclesmoor (Yorkshire). London, Public Record Office, DL 42/12, fols. 29v–30r, and MPC 56.

16. About 1420: Exeter (Devonshire). Exeter, Devon Record Office (East Devon Area), Exeter City Archives, book 53A, fol. 34r.

17. About 1420 to about 1430: Exeter (Devonshire). Exeter, Devon Record Office (East Devon Area), Exeter City Archives, Miscellaneous Roll 64, m.1d.

18. About 1430 to about 1442: Tursdale Beck (county Durham). Durham, Muniments of the Dean and Chapter of Durham, Miscellaneous Charter 6417.

19. 1439 to about 1442: Durham. Durham, Muniments of the Dean and Chapter of Durham, Miscellaneous Charter 5828/12.

20. 1440–41: Shouldham (Norfolk). Norwich, Norfolk Record Office, Hare 2826, fols. 16v, 34v.

21. 1440 to about 1445: Durham. Durham, Muniments of the Dean and Chapter of Durham, Miscellaneous Charter 7100.

22. 1444–46: Boarstall (Buckinghamshire). Aylesbury, Buckinghamshire Record Office, Fletcher Archives, Boarstall Cartulary, Boarstall section fol. 1r.

23. Mid-fifteenth century: Burnham Overy (Norfolk). London, Public Record Office, E.163.

24. Mid-fifteenth century: Clerkenwell and Islington (Middlesex). London, Muniments of the Governors of Sutton's Hospital in Charterhouse, MP 1/13.

25. Mid-fifteenth century: Witton Gilbert (county Durham). Durham, Muniments of the Dean and Chapter of Durham, Cartulary IV, fol. 301v.

26. Mid- or late fifteenth century: Chertsey (Surrey) and Laleham (Middlesex). London, Public Record Office, E.164/25, fol. 222r.

27. 1469 to about 1477: Staines (Middlesex). London, Muniments of the Dean and Chapter of Westminster, 16805.

28. 1470–78: Deptford (Kent and Surrey), Lambeth (Surrey), and London. London, Corporation of London Records Office, Bridge House Deeds, Small Register, fols. 8r–11r.

29. Late fifteenth century: Barholm, Greatford, and Stowe (Lincolnshire). Lincoln, Lincolnshire Archives Office, Lindsey deposit 32/2/5/1, fol. 17v.

30. Late fifteenth century: Deeping Fen (Lincolnshire). London, British Library, Cotton MS Otho B.xiii, fol. 1r.

31. Late fifteenth or early sixteenth century: Dartmoor (Devonshire). Exeter, Royal Albert Memorial Museum.

32. About 1478: Denham (Buckinghamshire) and Harefield (Middlesex). London, Muniments of the Dean and Chapter of Westminster, 432.

33. About 1480: Bristol. Bristol, Bristol Record Office MS. 04720, fol. 5v.

34. 1497–1519: Northwestern Warwickshire and Tanworth in Arden (Warwickshire). Stratford upon Avon, Shakespeare Birthplace Trust Records Office, DR 37/box 74, B ii a–c.

35. 1499: Exeter (Devonshire). Exeter, Devon Record Office (East Devon Area), Exeter City Archives, ED/M/933.

APPENDIX 20.3 CHRONOLOGICAL LIST OF LOCAL MAPS AND PLANS FROM THE LOW COUNTRIES BEFORE 1500

I am most grateful to Cornelis Koeman for his helpful comments and corrections to the first draft of this list. The date assigned to each map is that of its original compilation; in some cases the surviving maps are later copies.

1. 1307: Aardenburg (Zeeland) and Boechoute (East Flanders). Lille, Archives Départementales du Nord, B 1388/1282 bis. See M. K. Elisabeth Gottschalk, *Historische geografie van Westelijk Zeeuws-Vlaanderen*, 2 vols. (Assen: Van Gorcum, 1955–58), vol. 1, *Tot de St-Elizabethvloed van 1404* 148–49.

2. 1357: River Meuse. Paris, Bibliothèque de la Sorbonne, Archives de l'Université de Paris, Reg. 2, vol. 2, fol. 35v. See

Gray C. Boyce, "The Controversy over the Boundary between the English and Picard Nations in the University of Paris (1356–1358)," in *Etudes d'histoire dédiées à la mémoire de Henri Pirenne* (Brussels: Nouvelle Société d'Editions, 1937), 55–66.

3. 1358: Oostburg and IJzendijke (Zeeland). Ghent, Rijksarchief. See M. K. Elisabeth Gottschalk, "De oudste kartografische weergave van een deel van Zeeuwsch-Vlaanderen," *Archief: Vroegere en Latere Mededelingen Voornamelijk in Betrekking tot Zeeland Uitgegeven door het Zeeuwsch Genootschap der Wetenschappen* (1948): 30–39.

4. Fifteenth century: Dordrecht(?). Dordrecht, Gemeentearchief. See Cornelis Koeman, *Collections of Maps and Atlases in the Netherlands: Their History and Present State* (Leiden: E. J. Brill, 1961), 207.

5. Fifteenth century: Rivers Lek and Waal. The Hague, Algemeen Rijksarchief. See Jan Henricus Hingman, *Inventaris der verzameling kaarten berustende in het Rijks-Archief* (The Hague: Nijhoff, 1867–71), 2:35 (no. 236); B. van 'tHoff, "The Oldest Maps of the Netherlands: Dutch Map Fragments of about 1524," *Imago Mundi* 16 (1962): 29–32, esp. 30, fig. 2.

6. 1457: Houtrijk (North Holland). See S. J. Fockema Andreae and B. van 'tHoff, *Geschiedenis der kartografie van Nederland van den Romeinschen tijd tot het midden der 19de eeuw* (The Hague: Nijhoff, 1947), 11–12, pl. 12; Johannes Keuning, "XVIth Century Cartography in the Netherlands (Mainly in the Northern Provinces)," *Imago Mundi* 9 (1952): 35–64, esp. 41.

7. 1468: River Scheldt. Brussels, Archives Générales du Royaume; Antwerp, Gemeentearchief; Middelburg, Rijksarchief in Zeeland. See C. de Waard, *Rijksarchief in Zeeland: Inventaris van kaarten en teekeningen* (Middelburg: D. G. Kröber, Jr., 1916), 10–11 (no. 99); M. K. Elisabeth Gottschalk and W. S. Unger, "De oudste kaarten der waterwegen tussen Brabant, Vlaanderen en Zeeland," *Tijdschrift van het Koninklijk Nederlandsch Aardrijkskundig Genootschap*, 2d ser., 67 (1950): 146–64; Keuning, "XVIth Century Cartography," 41.

8. 1472: Gooiland (North Holland). The Hague, Algemeen Rijksarchief, Grafelijkheid van Holland, Rekenkamer no. 755f. See D. T. Enklaar, "De oudste kaarten van Gooiland en zijn grensgebieden," *Nederlandsch Archievenblad* 39 (1931–32): 185–205, esp. 188–92, pl. I.

9. 1480: Braakman (Zeeland). Ghent, Rijksarchief. See M. P. de Bruin, "Kaart van de Braakman van ca. 1480," *Tijdschrift van het Koninklijk Nederlandsch Aardrijkskundig Genootschap*, 2d ser., 70 (1953): 506–7.

10. About 1480: Dordrecht area, depicting the Saint Elizabeth's Day Flood, 1421. Amsterdam, Rijksmuseum, A 3147a,b. See Rijksmuseum, *All the Paintings of the Rijksmuseum in Amsterdam: A Completely Illustrated Catalogue* (Amsterdam: Rijksmuseum, 1976), 633.

11. 1487: Overflakkee (South Holland). Brussels, Archives Générales du Royaume, Grand Conseil de Malines, Appels de Holland 188, sub G. See A. H. Huussen, *Jurisprudentie en kartografie in de XVe en XVIe eeuw* (Brussels: Algemeen Rijksarchief, 1974), 7–8, pl. 1.

12. 1498: Gouda area. Gouda, Gemeentearchief. See Fockema Andreae and van 'tHoff, *Geschiedenis der kartographie*, 13.

13. About 1500: Hoeksche Waard (South Holland). The Hague, Algemeen Rijksarchief. See Hingman, *Inventaris*, 2:231 (no. 2081); Fockema Andreae and van 'tHoff, *Geschiedenis der kartografie*, 13; Maritiem Museum Prins Hendrik, *Eilanden en waarden in kaart en beeld: Tentoonstelling, 22 december, 1953–15 maart, 1954* (Rotterdam: Maritiem Museum Prins Hendrik, [1954]), no. 54.

14. Fifteenth century(?): South Holland. The Hague, Algemeen Rijksarchief. See Hingman, *Inventaris*, 2:212 (no. 1889).

15. Fifteenth century(?): Voorne (South Holland). The Hague, Algemeen Rijksarchief. See Hingman, *Inventaris*, 2:226 (no. 2028).

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