

GREEK AND ROMAN MAPS

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with 62 illustrations

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CHAPTER IX

PERIPLOI

The word *periplus* ('a sailing round') can mean a circumnavigation or other coastal voyage.¹ From the point of view of contribution towards map-making, however, only such circumnavigations or other coastal voyages as were recorded are of major interest; these records too were called *periploi*. In the Mediterranean world of antiquity the Phoenicians, with their colonists the Carthaginians, and the Greeks were the most famous navigators. The voyage sponsored about 600 BC by Pharaoh Neco (p. 133) was manned by Phoenicians, who reported that on their clockwise circumnavigation of Africa the sun was on their right. This may have helped to convince some of the ancients that Africa extended into the southern hemisphere. Only one Carthaginian *periplus*, that of Hanno, has survived, and that in Greek translation, though we are able from Greek geographers to gain some impression of other voyages. This paucity is perhaps due either to the comparative lack of Phoenician and Carthaginian material, a lack paralleled in the literary field, or to an unwillingness to translate into Greek or Latin any writings unless they offered special information or could be regarded as major works of literature.²

Coastal voyaging and island-hopping were the normal method in the areas navigated by the Greeks and Romans, especially in the winter, which was regarded as a season when only profit-conscious ships' masters were willing to venture out of sight of land. The Romans preferred to travel long distances by land rather than sea even when a much longer journey was involved. Whereas land journeys could be measured fairly accurately, early measurement of sea journeys tended to be merely days of sailing. In some cases we are told that this was following coastal indentations, in some from point to point; in some neither is specified. Although winds and currents caused considerable variation in mileage covered, it

was generally reckoned that a day's sail averaged about 56 Roman miles.

THE EARLY PERIOD

Although Homer's *Odyssey* could be thought of as based on a *periplus*, it does not set out to be a geographical poem, as, in the sphere of much later epic, Apollonius Rhodius' *Argonautica* (third century BC) may be said to be. The places which feature in Odysseus' wanderings outside the Greek world cannot be conclusively identified,³ though some were in Classical antiquity (from a comparatively early period, but with increasing impact in Alexandrian times) given plausible equivalents, such as the Island of Djerba, Tunisia, for the Land of the Lotus-eaters. When Homer speaks of a sea voyage lasting nine days,⁴ he is using a poetically significant numeral (there were for example nine Muses), not one associated with exact calculation. It has been conjectured that Homer's Cimmerians, living at the edge of the Ocean in a dark fog, and his Laestrygonians, giants living where the paths of day and night are close to each other, represent races bordering the north Atlantic.⁵

Among early Classical *periploi* of which we hear at second hand are those written about 550–525 BC by two ships' captains from Massalia (Marseilles), colonized by Greeks from Phocaea in Asia Minor. The first, Euthymenes, explored the west African coast perhaps to Senegal or The Gambia,⁶ and claimed that a branch of the Nile rose near that coast. With regard to the second it is said, according to verses of the late Roman writer Avienius, that ships from Tartessus regularly went to Oestrymnis, equated by modern scholars either with western Spain or with Brittany.⁷ Tartessus was the Tarshish of the Old Testament, and may represent not a town but a coastal zone between Gibraltar and Cape St Vincent. The timing of two days' sail from Spain or Brittany to the sacred island inhabited by Hibernians (inhabitants of Ireland) seems insufficient, and Britain, as recorded in Avienius, is barely mentioned. It seems likely that the original was a versified Greek account, perhaps likewise imprecise and thus creating a double error. Nevertheless, such information was of use to later map-makers; it was their source, since for a long period from about 500 BC the Phoenicians and Carthaginians took care to exclude other maritime nations of the Mediterranean from penetrating, for either mercantile reasons

or scientific exploration, beyond the Straits of Gibraltar.

Some Carthaginian explorations, however, were translated from Punic into Greek. One such expedition was that of Himilco of Carthage from the Straits of Gibraltar to Brittany, but little is known of this. The account of which most has come down to us is the *periplus* of Hanno the Carthaginian.⁸ It is thought to have taken place before 480 BC, but the Greek translation is later. The text begins: 'The Carthaginians resolved that Hanno should sail beyond the Columns of Hercules [Straits of Gibraltar] and found cities for settlement of Libyphoenicians [inhabitants of the Carthaginian hinterland]. He therefore sailed with sixty penteconters (fifty-oared ships) and a total of up to thirty thousand men and women, with corn and other provisions. Two days' sail beyond the Pillars we founded the first city, which we called Thymiaterion; it had a large territory.' The reason for the move was no doubt overpopulation. Thymiaterion can be identified with Mehedia in Morocco, and the translator has given the Punic Dumathir a similar-sounding Greek name, ?'censer'. Some others of the colonies founded can likewise be identified, such as Akra (Agadir). But as the account progresses, perhaps because of intentional omissions in the Punic original,⁹ together with the unfamiliarity of the terrain in antiquity, the localization of places mentioned, despite indications of distance, becomes very difficult; though the high wooded mountains described as being twelve days' sail south of Cerne island seem to be Cape Verde. The most conspicuous natural feature is a mountain which they called, in the Greek translation, Theōn Ochēma, 'Chariot of the Gods'. This is said to have been a very high active volcano in a volcanic area, and is generally identified with Mt Kakulima in Guinea. The account continues: 'Sailing for three days from here past rivers of lava we reached a bay called Notu Keras ["Horn of the South", identified with Sherbro Sound]. In a recess of this bay is an island like the first one, with a harbour. And in the harbour was a second island, full of wild human beings. Most of these were women with hairs on their bodies, whom the interpreters called Gorillas [perhaps orang-utans]. We chased the men but could not catch them, as they were agile on the rocks and defended themselves with stones. But we captured three women, who bit and scratched their captors and were unwilling to come. We killed and flayed them and took their skins to Carthage. For we did not sail any further, as our food was

running short.'¹⁰

It seems unlikely that Hanno had read the account of the expedition sent round Africa by Pharaoh Neco, though in any case he may not have wished, like its sailors, to wait for the sowing and reaping of crops. Hanno's account was known in Roman times, though the elder Pliny in one passage (p. 69) implies that the work was considered lost. Later he gives a second-hand account,¹¹ differing in that (a) the island is said to be near Cape Hesperu Keras ('Horn of the West'), whereas Hanno says it was on the bay called Notu Keras; (b) the islands are said to be inhabited by Gorgons; (c) they are said, according to Xenophon of Lampsacus, to be two days' sail from the mainland; (d) Hanno is said by Pliny to have placed skins of two, not three, dead Gorgon women in the temple of Juno (= Tanit) at Carthage, where they remained until its capture by Rome. Sallmann thinks this account of Pliny's may come from Cornelius Nepos, whom Pliny elsewhere considers unreliable.¹²

Whereas Hanno's voyage was primarily for the purpose of colonization, we do hear through Herodotus not only of the earlier voyage sponsored by the Pharaoh, but of one Sataspes, a member of the Persian royal family, who was sent to sail round Africa from the Straits of Gibraltar to the Red Sea or Persian Gulf, but twice turned back.¹³ He seems to have taken only one ship, and to have reached further south than Hanno, reporting on the local tribes; but he was unfortunate enough to be executed by Xerxes on his second return.

The question how these early sea voyagers found their way is difficult to answer. There is no evidence that they followed drawn charts, yet already the concept of a continent which could be rounded had been formed. The ancients had different views about areas of greatest heat, and many disbelieved in an inhabitable southern hemisphere, but in the early period all thought of some sort of encircling ocean, a concept which encouraged attempts at circumnavigation.

PS.-SCYLAX AND THE HELLENISTIC AGE

It has been shown from an examination of the status of Greek cities that the *periplus* of ps.-Scylax is not earlier than the fourth century BC and is probably to be dated between 361 and 357 BC. It was

therefore not written in the extant form by the well-known Scylax, a Carian who between 519 and 512 became admiral of the Persian fleet under Darius I. This admiral sailed down the Indus, starting from Caspapyrus or Caspatyrus, on the Kabul river or at its confluence with the Indus, to the mouth of the Indus and eventually after two-and-a-half years to Arsinoe near Suez. Seven fragments are thought to come from his account of this navigation. The *periplus* of ps.-Scylax¹⁴ is a compilation from earlier *periploi*¹⁵ and from accounts of the fourth century BC. An extract from it, referring to part of the Tunisian coast from the Libyan frontier westwards and northwards, reads in translation: 'After Abrotonum the city and harbour of Tarichiae; the sail takes one day. Seaward from Tarichiae is an island called Brachion¹⁶ [later Meninx, now Djerba] or island of the Lotus-eaters. This is 300 stades [= 36 Roman miles¹⁷] long, somewhat less in width. It is about 3 stades from the mainland. On this island grow the edible lotus and another from which they make wine. The fruit of the lotus is as big as that of the arbutus [strawberry-tree]. They also make much oil from wild olives. The island has a good soil and grows good wheat and barley. It is one day's sail from Tarichiae to the island. After it is the city of Epichos [probably corrupted for Gichtis or Gigthis; ruins on the shore at Djorf bu-Ghara]. From the island to Epichos a half day's sail.'

It must be admitted that this quotation is not quite typical of the entries, since the section relating to Djerba is given in far greater detail than many other entries. With its probable Homeric association and its contemporary (fifth/fourth-century BC) prosperity, it clearly appealed to the writer, who may well have stayed some time on the island, at that time more fertile and productive than the new Arab landscape which meets today's tourists. One may call the work a combination of what is now known as a 'verbal map' with a selective guidebook. Such a verbal map, with or without this addition, would provide much of the material for the compilation of a coastal map.

Just as Alexander the Great chose experienced surveyors to measure and prepare descriptions in advance of land to be traversed, so he chose Nearchus the Cretan, an experienced ship's captain, to command his naval expedition in the East and write up an account of this.¹⁸ A fair amount of this report is known to us through Arrian's *Indica*. When Alexander's soldiers refused to

march further east, the King planned a combined land and sea expedition down the rivers Hydaspes, Acesines and Indus and along the coast to the Persian Gulf. This section of the Indian Ocean had been explored by Scylax, but he was relatively little known by Greeks of Alexander's time. 'Alexander had a desire', says Arrian, 'to sail right round [he presumably means only round the coast of] the Indian Ocean from India to Persia, but he was worried at the length of this voyage and afraid that they might encounter a place with no harbours or an appalling climate, and that the fleet would be lost.'¹⁹ However, Nearchus obviously persuaded him that the expedition was feasible, and was told to record coastal features, tribes etc. He wrote in discursive, Herodotean style, and started recording animals in India, but had to admit he had only seen a tiger skin, not a live tiger. Unfortunately Nearchus' fleet was held back at the Indus delta by adverse winds. Meanwhile Alexander, though 'not ignorant of the difficulties',²⁰ kept close to the shore of the Makran, with its terrible heat, sandhills and snakes. It was not till two months after the army set out that the fleet was able to make good progress, so that it could not bring provisions to the army. Nearchus made notes of the voyage, including ports where spices like cinnamon arrived from Malaysia, and particulars of great whales encountered in the Indian Ocean. The places mentioned are not identifiable, and there is a conflict between Arrian, who quotes measurements in stades, and Pliny, who says that the report has no measurements or staging-posts.²¹ One claim can certainly be discounted: according to Nearchus, he had been so far south that the sun was north of him, i.e. that he had crossed the equator, whereas what is known of the expedition shows that it followed Alexander's advice to keep near the Baluchistan shore, finally meeting him at the Straits of Hormuz.²²

The *periplus* of the Persian Gulf was written up in the lost work of Androstenes of Thasos.²³ Much of the information preserved on this is in Theophrastus and concerns the flora and fauna. But we are told by Strabo that Androstenes reckoned the Arabian coast as 10,000 stades long, that he made the sea voyage by himself as well as with Nearchus, and that he was interested in signs of Phoenician-type temples and an island called Tyros (Tyre).

This happened in the late summer and autumn of 325 BC. At much the same time at the opposite extremity of the known world

another Greek-speaking navigator was recording two *periploi*. The expeditions of Pytheas of Marseilles are thought to have taken place about 320 BC.²⁴ His accounts, whose Greek titles may be translated *On the Ocean* and *Periplus* or *Journey round the world* (*Gēs Periodos*), have not survived, but we can reconstruct a fair amount from later writers. Of these, Eratosthenes and Hipparchus reported favourably, but Polybius and Strabo criticized what they had read of his voyages and considered him an arrant liar. It seems likely that he made two voyages rather than one: (a) both coasts of Britain, together with Thule; (b) 'the whole coastline of [western and northern] Europe from Gades [Cadiz] to the R. Tanais [Don]'.²⁵ Since Strabo summarizes the two as 'the whole of northern Europe', the wording for the second voyage cannot refer to the Mediterranean; presumably he thought the Don flowed into a northern sea such as the Baltic. Pytheas' estimate for the circumnavigation of Britain, 40,000 stades (with the commonest contemporary equivalence, 4800 Roman miles), is wildly exaggerated. If, however, he followed all the principal coastal indentations from Land's End to the north of Scotland, and reckoned his journey in terms of days' sail, it becomes somewhat more comprehensible. The northernmost point reached was the island of Thule,²⁶ which according to Pytheas, paraphrased by Pliny,²⁷ was six days' sail northwards from Britain and had continuous daylight in summer, continuous night in winter. The Thule seen by Agricola's fleet²⁸ when it was cruising near the Orcades (Orkney) was clearly Shetland, but this does not prove that Pytheas' Thule was likewise. Scholars have tended to favour part of the Norwegian coast mistaken as an island, though Hawkes argues for Iceland.²⁹ Both of these would conform to the length of daylight. But if one sails north from Cape Wrath for about 300–350 Roman miles, one reaches the Faeroes, through which the 62° N. parallel runs. Admittedly this is not inside the Arctic Circle, but neither is most of Iceland; and Norway, like Iceland, is much further than Pliny intimates. In Ptolemy's *Almagest* the island of Thule is given as 63° N., with a longest day of twenty equatorial hours.³⁰ Since we know that at several places Pytheas made observations of the sun's angle at midsummer, his account of Thule may have included one such, which will have misled such later writers as took Thule to be Shetland, whereas it may have referred to the Faeroes.

If on the second voyage Pytheas set out to travel as far as the Tanais (Don), probably his idea was that the Don could in some way be reached from the Baltic. It has long been suggested that the city of Massilia was interested in the lands from which amber came. The latitude corresponding to 54° 14' which he gave to an island called by him Abalos, perhaps 'apple island', and by Timaeus Basilia, Kingly, has been thought to refer to the northern part of Jutland.³¹ His estimate of the length of the sea penetrated by him, 6000 stades, suggests that when he reached the point where the Baltic broadens out, he thought he had reached the Northern Ocean and turned back. The main amber routes led from the Baltic to the Black Sea, and he may have wanted to trace one as far as the R. Don.

Although Pytheas was dismissed as a teller of sea yarns by some later writers, he seems to have been more methodical than many ancient navigators; the cartography of Eratosthenes (p. 33) was obviously indebted to him and his findings. The northern waters were relatively uncharted, and Greek cartographers of the Hellenistic Age turned to Pytheas as one who at least observed, measured and recorded latitudes and distances.

Coastal exploration under the Ptolemies of Egypt was designed to promote trade in southern latitudes. Piracy in the Red Sea was suppressed, agreements were made with the Arabs of Yemen, and trading stations were set up along the east coast of Africa. We do not know whether the area was mapped; though if not, advances were certainly made in the plotting of coastal distances and features. But one of the areas developed was the Cinnamon country, the Somali coast west of Cape Guardafui, at a latitude of 11°–12° N. Whereas in later cartography more northerly areas of Africa were given parallels of latitude based on places on the Nile, not necessarily all on the same longitude, the Cinnamon country served as the parallel for this southerly zone.

ROMAN SEA VOYAGES IN THE NORTH-WEST

In spite of greatly increased trade and travel with Rome's expansion, there was no great increase in compilation of *periploi*. The Romans were not in general lovers of sea expeditions, but the more commercially minded among them did sponsor Greek ships' captains to develop trade. Strabo shows the extent of the rivalry

between Rome and Carthage when he recounts how the captain of a Carthaginian ship, making for the ten Cassiterides (Tin Islands) from the Spanish coast to load tin, was publicly rewarded when he grounded his vessel on a sandbank rather than continue and so indicate his route to the following Roman ship's crew.³² He goes on to mention a Roman, P. Crassus,³³ who opened up the approach to the Cassiterides, which he calls a voyage 'further than to Britain'. No conclusive proofs have been adduced to identify these islands with Cornwall³⁴ or other areas of the British Isles. Presumably P. Crassus and his successors who made this voyage were equipped with either a *periplus* or a rudimentary map.

THE ERYTHRAEAN SEA

The *Periplus of the Erythraean Sea*³⁵ is a Greek prose work of the early Roman Empire. Two kings in different areas mentioned in the text are Malichus (the name means 'king') the Nabataean and Mambanos of the Bombay region. Recent scholarship is inclined on balance to give a first-century AD date for these two kings.³⁶ Between AD 40 and 70 Malichus II was ruler of the Nabataeans, whose capital was Petra. Mambanos may or may not be identical with Nahapāna, a king of western India whose date is controversial: earlier he was thought to have died about AD 125 or 130, but now *c.* AD 100 is thought perhaps a more likely date; if so, he could, if he had a very long reign, have started it as early as the end of Malichus II's reign. The unknown author was a trader, who describes two sea voyages which started down the Red Sea,³⁷ the first to the Far East and the second to east Africa. It was not the same style of work as the treatise *On the Erythraean Sea*,³⁸ written about 132 BC by Agatharchides, an untrustworthy geographer. Although the writer of the *periplus* is familiar with the Indian coast as far as the Ganges, he does not know Sri Lanka. An extract may be rendered: 'This river [the Sinthos, i.e. Indus] has seven mouths, but they are shallow and marshy, so that they are not navigable except for the central channel, on which there is also a sea trading post, Barbarikon [Bahardipur]. Opposite it is a small island, and in its hinterland the capital of Scythia, Minnagar. It is ruled over by factions of Parthians, who are constantly ousting each other.'³⁹ The part played by Mediterranean traders in this area is attested by coins and Indian sources. Beyond India the account becomes

sketchy and ends at Thinae, an inland city from which silk and Chinese cloth was taken.

The chief difference between this *periplus* and others lies in its concentration on trade. The number of items traded in is very large; thus those listed for Barugaza (Broach, India), as recorded in § 49, are:

IMPORTS

- (a) *For the market*
 Wine, chiefly Italian, some from Laodicea and Arabia
 Copper, tin, lead
 Coral, topaz
 Clothing, unlined and inferior, of all kinds; damask girdles 1 ft long
 Storax gum (*Styrax officinalis*)
 Sweet clover
 Unworked glass
 Red sulphate of arsenic (realgar); powdered antimony (kohl)
 Gold and silver coinage, which can be exchanged at a good rate for local coinage
 Perfume, but not expensive nor in large quantities
- (b) *For the king*
 Expensive silver plate
 Music
 Attractive girls as concubines
 Quality wine
 Expensive unlined clothing
 Choice perfume

EXPORTS

- Spikenard, Saussurea Lappa (root used as a spice), balsam gum
 Ivory
 Onyx stones, myrtle- (or mulberry-) coloured stones
 Lykion (an Indian plant)
 Linen cloth of all sorts, silk, mallow-cloth, yarn
 Long pepper
 Goods from other markets

The section ends: 'Sailings from Egypt to Barugaza about July'.

The *periplus* is less detailed about the east African coast. Menuthias is described⁴⁰ as 'an island about 300 stades from the mainland, low and wooded, in which there are also rivers and many types of birds and a mountain tortoise. It has no wild animals at all except crocodiles, which do not harm anyone. It also has boats that are sewn together (*rhapta*) and made of a single trunk;⁴¹ these they use for fishing and catching turtles. . .'.⁴² Although the distance from the mainland, equivalent to 37½ Roman miles,

would suit Pemba better, mention of rivers seems to point to Zanzibar. Two days' sail beyond Menuthias was 'the Rhapta', named after the same type of boat as was mentioned before. This settlement is described as selling ivory and tortoiseshell, and as having a chief dependent on Arabs from Mouza (Maushij). In Ptolemy the latitude of Rhapta is given as 7° S.; this suits Dar es Salaam, to which two days' sail sounds too little from Zanzibar and too much from Pemba, or the Refiqi delta, rather more than two days' sail from Zanzibar. The name of the river Refiqi, contrary to the usual tendency, might have been derived from the town Rhapta.

ARRIAN

The work of Arrian⁴³ (Flavius Arrianus) shows how a *periplus* could be of military use to the Roman Empire. Hadrian made it clear that he welcomed all military information of interest from provincial governors; and Arrian's *Periplus of the Euxine* (Black Sea) is addressed to that emperor in the form of a letter. A Greek from Bithynia, he had become governor of Cappadocia under Hadrian and had defeated an invasion by the Alani in AD 134. An extract from the *periplus* may be rendered: 'Before midday, having sailed over 500 stades [from a village on the Black Sea called Athenai], we reached Apsarus, where the five cohorts are stationed. I gave the soldiers their pay and inspected their arms, the wall, the ditch, the sick man and the existing state of provisions. My opinion about this has already been expressed in my Latin letter. It is said that Apsarus is the same place as was of old called Apsyrtus, named after Medea's brother Apsyrtus who was killed there . . .'.⁴⁴ It appears from the previous context that Arrian's ship had to tack on leaving the village, so that the recorded distance, which depended on hours of sailing time, is more than would have been expected.

OTHER PERIPLI OF THE LATE EMPIRE

Substantial fragments of the *Stadiasmus Maris Magni*,⁴⁵ a Greek *periplus* of the Mediterranean of c. AD 250–300, survive: (a) from Alexandria along the north African coast to Utica, (b) from Phoenicia to Crete. The entries are mostly only of distances, which

in the case of well-known Greek islands radiate out; but occasionally there are descriptions such as the following: 'As you sail in, you will see low-lying land with islands. When you get near them, you will see the city near the sea and a white sandy beach; and the whole city is white. It has no harbour; but you can moor safely near the temple of Hermes. This city is called Leptis [Lepcis Magna].'⁴⁶

In addition to translating Dionysius Periegetes (p. 143), the Roman senator Rufus Festus Avenius (fourth century AD) wrote in Latin verse a work called *Ora Maritima*,⁴⁷ 'sea-shore'. In its extant form it is brief and thought to be incomplete. From Massilia (Marseilles) it gives a description of the coasts as far as Gades (Cadiz), together with an account of maritime exploration from Cadiz, including that of Himilco (p. 132). As the coastline west of Marseilles has in places changed appreciably since ancient times, it is of interest to have Avenius' account of it, and during the present century a cartographic reconstruction of it has been made.⁴⁸

By this time Roman forces and Greek and Roman traders had penetrated many areas previously not well known. Marcian of Heraclea Pontica (c. AD 400) is the author of a Greek *Periplus of the Outer Sea* in two books;⁴⁹ the description of some areas is fragmentary or missing. The 'outer sea' is what in earlier times was called the Ocean; and Marcian's work gives us something more than mere description. He refers among his sources to the *Geography* of 'the most divine and wise Ptolemy'.⁵⁰ Book I deals with the East and Book II with the West. The author shows a more scientific attitude to measurement than those of other *peripli*. Distances are given in stades: for Europe two figures are recorded, indicating maximum and minimum mileages; for other areas only one figure is given. Previous writers, he says, have tended to give only one figure throughout, as if distances traversed by sea could be measured with a rope. He also tells us in his preface that he will include the major islands, 'the one called Taprobane, formerly called the island of Palaesimundu⁵¹ [Sri Lanka] and the two Britains' (Britain and Ireland). The entry on Britain shows an interest in statistical analysis. Marcian's paragraph (ii.45) may be rendered: 'The length of the British island of Albion⁵² begins at the western horizon at the Damnonian promontory, also called Okrion; it ends at Tarvedunum, also called the promontory of Orcas; so that its greatest length is 5225 stades (= $653\frac{1}{8}$ Roman

miles). Its width begins at the Damnonian promontory, also called Okrion, and ends at the peninsula of the Novantai and the promontory of the same name, so that its greatest width is 3083 stades (= $385\frac{3}{8}$ Roman miles). It embraces 33 tribes, 59 well-known cities, 40 well-known rivers, 14 well-known promontories, 1 well-known peninsula, 5 well-known bays and 3 well-known harbours. The *periplus* of the whole island of Albion is not more than 28,604 or less than 20,526 stades' (= $3575\frac{1}{2}$ – $2565\frac{3}{4}$ Roman miles). Similar statistics are available for a number of other regions. Can we deduce from this that not only with regard to Britain, but with regard to these others, it is apparent that Marcian had a map or maps to hand? Since he mentions Ptolemy but not Marinus, it may be that he had some sort of Ptolemy map, but perhaps only a world map, such as Agathodaimon composed. Ptolemy does not mention distances within Britain except in criticism of Marinus. But Marcian can have found his measurements in his other source, one Protagoras (p. 155). The odd shape of Britain ascertainable from Ptolemy's co-ordinates, no doubt influenced by Marinus, and visible in Ptolemaic maps, has strongly influenced Marcian. His length is SW–NE, from The Lizard to Dunnet Head. His width is south–north, from The Lizard to the Rhinns and Mull of Galloway, wrongly thought of by Ptolemy as the northernmost point of Britain. The measurements are very strange. On the one hand the length and width are far too short, since if a regional map is drawn based on Ptolemy's co-ordinates and with his recommended proportions of latitude to longitude (p. 80), we find the length and width as given by Marcian to be about 900 and 700 Roman miles respectively, his own figures being only 73% and 55% of those figures. On the other hand, although the distance for sailing round Britain cannot be checked from Ptolemy, it looks extremely long.

Marcian warns readers of the fallibility of sea measurements. He writes: 'I maintain that it is not easy to establish with accuracy the number of stades over every part of the sea. If the shore is straight and has no indentations or promontories, there is no problem in reckoning its measurement; but if it is full of bays and projections it is impossible to be accurate. One does not sail on a fixed route in the same way as one travels on a military road. Let us take as an example a bay which round the shore measures 100 stades. Anyone sailing close to the shore will find he covers fewer stades than the

man walking along the beach, though there will not be very much difference; but the difference will increase as he traces the arc of a shorter circle.'⁵³

BYZANTIUM AND LATER SEA CHARTS

Although we have no original Byzantine maps, there are Byzantine *periploi*, which followed in the tradition of earlier Greek ones as applied to the shores of the Byzantine Empire. In modern writings these have often been called 'portolans', but this is a name better reserved for the late medieval and Renaissance sea-charts, whose Italian name points to the importance in those periods of Italian cartographers. Geographical writers like Marcian may have drawn straight lines on their copies of maps to help them calculate distances; and these might correspond to the loxodromes which all except the earliest portolans have. But despite careful investigations, no direct line of descent has been able to be established between ancient *periploi* and these portolans.

It is of interest to see what features of the *periploi* could have been incorporated into portolans, so as to turn description into map form: (a) measurement: the *periploi* sometimes reckon in days' sail, sometimes in stades; as has been seen, the one could arbitrarily be converted to the other; (b) compass directions: only occasionally given, as 'after sailing for 6 stades you will see a promontory stretching out towards the west';⁵⁴ (c) information on world cartography: Marcian summarizes views from Eratosthenes onwards;⁵⁵ (d) information on harbours, moorings and beaches: some of this could have been incorporated into maps, with or without symbols; (e) trade etc.: such information often found its way into texts accompanying maps.

PERIEGESES

In addition to these prose descriptions, there were Greek verse *periegeses*, i.e. world guides. Dionysius Periegetes ('the guide') wrote between AD 117 and 138, in Alexandria, a *periegesis* of the known world in hexameters, based chiefly on Eratosthenes' map with little regard to subsequent cartography.⁵⁶ It was illustrated with a map by the time of Cassiodorus (p. 155). Dionysius describes the oikumene as sling-shaped, i.e. oval, and deals first

with the Ocean, then with the continents, Asia being most fully described. He brings in mythology and refers to trade or migration; but on Britain, for example, he has next to nothing to say. The coasts are the predominant interests, but the Nile is described in outline as far as Syene (Aswan). The eulogy of the R. Rhebas in Bithynia has suggested that Dionysius must have come from there, since this was a river of no great importance.⁵⁷

Next live Bithynians in a fertile land,
Where Rhebas summons forth his lovely stream,
Rhebas, who travels by the Black Sea's mouth,
Rhebas, the fairest water in the world.

The work became very popular and was translated into Latin verse by Avienius (p. 141) and Priscian. Another Dionysius of the second century AD, son of Calliphon, wrote a verse description of Greece in iambics, which includes a few measurements.⁵⁸

Whereas Dionysius Periegetes is capable of sounding poetic, the same cannot be said of an iambic work of some 200–250 years earlier, the *Periegesis* of ps.-Scymnus.⁵⁹ The original Scymnus of Chios⁶⁰ wrote c. 185 BC a lost prose work of the same type. The verse *periegesis*, addressed to King Nicomedes III or IV of Bithynia, is fragmentary in its second half. Entries refer principally to coastal areas. The section on the Straits of Gibraltar may be rendered:

The opening to the Atlantic Sea
Is stated to be fifteen miles in width.
The lands nearby are the extremities
Of Libya (Africa) and Europe

It is possible that the preservation of such works is due to their having been used as school geographies.

Finally, an epigram has helped to date a *periplus* writer of whom we possess only a fragment. This is the *Periplus of the Euxine* by Menippus of Pergamon,⁶¹ of which the first part is preserved; Marcian tells us there were *periploi* of the Inner Sea by Artemidorus of Ephesus (*fl.* 104 BC) in eleven books and by Menippus in three books, and that after the Black Sea Menippus gave a *periplus* of the Mediterranean. The dating of this writer is from an epigram by Crinagoras of Mitylene,⁶² who visited Rome in 25 BC: 'I am preparing a sea voyage to Italy, to see friends I have not visited for a long time. I need a *periplus* to guide me to the Cyclades islands and ancient Scheria. Dear Menippus, you who know all geography, and have written a learned tour, please help me from your book.'

CHAPTER X

MAPS IN ART FORM

GREEK COSMOGRAPHY

The idea that maps or something approaching them were works of art and could best be portrayed in art form is very old and persisted throughout antiquity. In Homer (p. 55 above) it is the craftsman god Hephaestus who makes for Achilles a shield out of one gold plate, two tin and two bronze, one of the bronze plates being engraved with 'innumerable subjects, planned by a clever mind'. The heritage from Homer's artistry, related to a shield, is twofold. On the one hand the use of a shield map recurs under the Roman Empire with the Dura Europos shield (p. 120). This in itself contains not only roads and a coast in plan, but also an art element in the portrayal of ships, coloured and enlarged out of scale, to fill the empty spaces on the Black Sea. Just as in medieval and early Renaissance maps the *horror vacui* often led to artistic flights of fancy and irrelevant drawings, so in a land route map of this type the paintings on the sea had a similar function.

The other heritage lay in the realm of celestial cartography, which as it was well developed in Classical Greece (p. 21) may well have influenced the artistic representation of terrestrial mapping. The sky could be mapped on a flat surface or a globe. On a flat surface, it would appear that the artistic approach was quite as often used as more mathematical and scientific attempts at accuracy. The popularity of artistry is attested by the Latin translations, at various periods, of the extant verse rendering by the Alexandrian poet Aratus of Soli (c. 315–240 BC) of the *Phaenomena* of Eudoxus of Cnidos.¹ Although the description of constellations is poetic, one can clearly see that the animals or other figures which the constellations were thought to depict were themselves drawn in elaborate outline. It seems that Hipparchus of Nicaea (c. 190–120 BC) tried to combine the mathematical with the artistic approach, listing the exact latitude and longitude for eight hundred stars and