

Strabo

Book I Chapter 4

2 Next, in determining the breadth of the inhabited world, Eratosthenes says that, beginning at Meroë and measuring on the meridian that runs through Meroë, it is ten thousand stadia to Alexandria; and thence to the Hellespont about eight thousand one hundred; then to the Borysthenes five thousand; then to the parallel circle that runs through Thule (which Pytheas says is a six days' sail north of **Britain**, and is near the frozen sea) about eleven thousand five hundred more. Accordingly, if we add three thousand four hundred stadia more to the south of Meroë, in order to embrace the Island of the Egyptians, the Cinnamon-producing country, and Taprobane, we shall have thirty-eight thousand stadia.

3 However, with one exception, let all the distances of Eratosthenes be granted him — for they are sufficiently agreed upon; but what man of sense could grant his distance from the Borysthenes to the parallel of Thule? For not only has the man who tells about Thule, Pytheas, been found, upon scrutiny, to be an arch-falsifier, but the men who have seen **Britain** and **Ierne** do not mention **Thule**, though they speak of other islands, small ones, about **Britain**; and **Britain** itself stretches alongside of Celtica with a length about equal thereto, being not greater in length than five thousand stadia, and its limits are defined by the extremities of Celtica which lie opposite its own. For the eastern extremity of the one country lies opposite the eastern extremity of the other, and the western extremity of the one opposite the western of the other; and their eastern extremities, at all events, are near enough to each other for a person to see across from one to the other — I mean **Cantium** and the mouths of the Rhine. But Pytheas declares that the length of **Britain** is more than twenty thousand stadia, and that Cantium is several days' sail from Celtica; and in his account both of the Ostimians and of what is beyond the Rhine as far as Scythia he has in every case falsified the regions. However, any man who has told such great falsehoods about the known regions would hardly, I imagine, be able to tell the truth about places that are not known to anybody.

4 The parallel through the mouth of the Borysthenes is conjectured by Hipparchus and others to be the same as that through **Britain**, from the fact that the parallel through Byzantium is the same as that through Massilia; for as to the relation of the dial-index to the shadow, which Pytheas has given for Massilia, this same relation Hipparchus says he observed at Byzantium, at the same time of the year as that mentioned by Pytheas. But it is not more than five thousand stadia from Massilia to the centre of **Britain**. Furthermore, if you were to proceed not more than four thousand stadia north from the centre of **Britain** you would find a region that is inhabitable only after a fashion (which region would be in the neighbourhood of Ierne); and so, as for the regions farther on, far out where Eratosthenes places Thule, you would find places no longer habitable. But by what guesswork Eratosthenes could say that the distance from the parallel through Thule to that through the mouth of the Borysthenes is eleven thousand five hundred stadia, I do not see.

Book II Chapter 1

And yet the voyage from Celtica to the north is nowadays called the remotest voyage to the north; I mean the voyage to **Ierne**, which island not only lies beyond **Britain** but is such a wretched place to live in on account of the cold that the regions on beyond are regarded as uninhabitable. And **Ierne** is not farther from Celtica, he says, than five thousand stadia; so that about thirty thousand stadia all told, or perhaps a few more, would represent the breadth of the inhabited world.

Book II Chapter 1

18 Hipparchus says, at all events, that at the Borysthenes and Celtica, throughout the nights in summer-time, the light of the sun shines dimly, moving round from the west to the east, and at the winter solstice the sun ascends at most only nine cubits; but that among the people who are six thousand three hundred stadia distant from Massilia (people who live two thousand five hundred stadia north of Celtica, whom Hipparchus assumes still to be Celts, though I think they are **Britons**) this phenomenon is much more marked; and on the winter days there the sun ascends only six cubits, and only four cubits among the people who are distant from Massilia nine thousand one hundred stadia; and less than three cubits among the people who live on beyond (who, according to my argument, would be much farther north than **Ierne**). But Hipparchus, trusting Pytheas, puts this inhabited country in the regions that are farther south than **Britain**, and says that the longest day there has nineteen equinoctial hours, but that the longest day has eighteen hours where the sun ascends only four cubits; and these people, he says, are distant from Massilia nine thousand and one hundred stadia; and hence the most southerly of the **Britons** are more northerly than these people. Accordingly, they are either on the same parallel as the Bactrians that live near the Caucasus or on some parallel close to it; for, as I have stated, according to Deïmachus and his followers our result will be that the Bactrians that live near the Caucasus are more northerly than **Ierne** by three thousand eight hundred stadia; and if these stadia be added to those from Massilia to **Ierne**, we get twelve thousand five hundred stadia. Now who has ever reported in these regions (I mean the regions about Bactra) such a length of the longest days, or such a meridian height of the sun at the winter solstice?

However, let it be said at this moment that Timosthenes and Eratosthenes and the still earlier geographers were completely ignorant of Iberia and Celtica; and vastly more ignorant of Germany and **Britain**, and likewise of the countries of the Getans and the Bastarnians; and they were to a considerable extent ignorant of Italy, the Adriatic Sea, the Pontus, and the regions beyond them on the north; though perhaps such statements are censorious.

Book II Chapter 4

1 Polybius, in his account of the geography of Europe, says he passes over the ancient geographers but examines the men who criticise them, namely, Dicaearchus, and Eratosthenes, who has written the most recent treatise on Geography; and Pytheas, by whom many have been misled; for after asserting that he travelled over the whole of **Britain** that was accessible Pytheas reported that the coast-line of the island was more than forty thousand stadia, and added his story about Thule and about those regions in which there was no longer either land properly so-called, or sea, or air, but a kind of substance concentered from all these elements, resembling a sea-lungs — a thing in which, he says, the earth, the sea, and all the elements are held in suspension; and this is a sort of bond to hold all together, which you can neither walk nor sail upon. Now, as for this thing that resembles the sea-lungs, he says that he saw it himself, but that all the rest he tells from hearsay. That, then, is the narrative of Pytheas, and to it he adds that on his return from those regions he visited the whole coast-line of Europe from Gades to the Tanaïs.

2 Now Polybius says that, in the first place, it is incredible that a private individual — and a poor man too — could have travelled such distances by sea and by land; and that, though Eratosthenes was wholly at a loss whether he should believe these stories, nevertheless he has believed Pytheas' account of **Britain**, and the regions about Gades, and of Iberia; but he says it is far better to believe Euhemerus, the Messenian, than Pytheas. Euhemerus, at all events, asserts that he sailed only to one country, Panchaea, whereas Pytheas asserts that he explored in person the whole northern

region of Europe as far as the ends of the world — an assertion which no man would believe, not even if Hermes made it.

Book II Chapter 5

Now the Roxolians, the most remote of the known Scythians, live beyond the Borysthenes, though they are farther south than the most remote peoples of whom we have knowledge north of **Britain**; and the regions beyond the Roxolians become at once uninhabitable because of the cold; and farther south than the Roxolians are the Sarmatians who dwell beyond Lake Maeotis, and also the Scythians as far as the Eastern Scythians.

8 Now Pytheas of Massilia tells us that Thule, the most northerly of the **Britannic** Islands, is farthest north, and that there the circle of the summer tropic is the same as the arctic circle. But from the other writers I learn nothing on the subject — neither that there exists a certain island by the name of Thule, nor whether the northern regions are inhabitable up to the point where the summer tropic becomes the arctic circle. But in my opinion the northern limit of the inhabited world is much farther to the south than where the summer tropic becomes the arctic circle. For modern scientific writers are not able to speak of any country north of **Ierne**, which lies to the north of **Britain** and near thereto, and is the home of men who are complete savages and lead a miserable existence because of the cold; and therefore, in my opinion, the northern limit of our inhabited world is to be placed there. But if the parallel though Byzantium passes approximately through Massilia, as Hipparchus says on the testimony of Pytheas (Hipparchus says, namely, that in Byzantium the relation of the index to the shadow is the same as that which Pytheas gave for Massilia), and if the parallel through the mouth of the Borysthenes is about three thousand eight hundred stadia distant from that parallel, then, in view of the distance from Massilia to **Britain**, the circle drawn through the mouth of the Borysthenes would fall somewhere in **Britain**. But Pytheas, who misleads people everywhere else, is, I think, wholly in error here too; for it has been admitted by many writers that all the line drawn from the Pillars to the regions of Strait of Sicily and of Athens, and of Rhodes, lies on the same parallel; and it is admitted that the part of that line from the Pillars to the strait runs approximately through the middle of the sea. And further, sailors say that the longest passage from Celtica to Libya, namely, that from the Galatic Gulf, is five thousand stadia, and that this is also the greatest width of the Mediterranean sea, and therefore the distance from the line in question to the head of the gulf would be two thousand five hundred stadia and less than that to Massilia; for Massilia is farther south than the head of the gulf. But the distance from Rhodes to Byzantium is about four thousand nine hundred stadia, and therefore the parallel through Byzantium would be much farther north than that through Massilia. And the distance from Massilia to **Britain** may possibly correspond to that from Byzantium to the mouth of the Borysthenes; but the distance that should be set down for the stretch from **Britain** to **Ierne** is no longer a known quantity, nor is it known whether there are still inhabitable regions farther on, nor need we concern ourselves about the question if we give heed to what Hesiod said above. For, so far as science is concerned, it is sufficient to assume that, just as it was appropriate in the case of the southern regions to fix a limit of the habitable world by proceeding three thousand stadia south of Meroë (not indeed as though this were a very accurate limit, but as one that at least approximates accuracy), so in this case too we must reckon not more than three thousand stadia north of **Britain**, or only a little more, say, four thousand stadia. And for governmental purposes there would be no advantage in knowing such countries and their inhabitants, and particularly if the people live in islands which are of such a nature that they can neither injure nor benefit us in any way because of their isolation. For although they could have held even **Britain**, the Romans scorned to do so,

because they saw that there was nothing at all to fear from the **Britons** (for they are not strong enough to cross over and attack us), and that no corresponding advantage was to be gained by taking and holding their country. For it seems that at present more revenue is derived from the duty on their commerce than the tribute could bring in, if we deduct the expense involved in the maintenance of an army for the purpose of guarding the island and collecting the tribute; and the unprofitableness of an occupation would be still greater in the case of the other islands about **Britain**.

Book II Chapter 5 (beginning)

12 In particular the writers of the present time can give a better account of the **Britons**, the **Germans**, the peoples both north and south of the Ister, the Getans, the Tyregetans, the Bastarnians, and, furthermore, the peoples in the regions of the Caucasus, such as the Albanians and the Iberians.....

15 But if you sail.... from the Sacred Cape until you come to the people called Artabrians, your voyage is northward, and you have Lusitania on your right hand. Then all the rest of your voyage is eastward, thus making an obtuse angle to your former course, until you reach the headlands of the Pyrenees that abut on the ocean. The westerly parts of **Britain** lie opposite these headlands towards the north; and in like manner the islands called Cassiterides, situated in the open sea approximately in the latitude of **Britain**, lie opposite to, and north of, the Artabrians. Therefore it is clear how greatly the east and west ends of the inhabited world have been narrowed down by the surrounding sea.

28 Next to Iberia towards the east lies Celtica, which extends to the River Rhine. On its northern side it is washed by the whole **British** Channel (for the whole island of **Britain** lies over against and parallel to the whole of Celtica and stretches lengthwise about five thousand stadia); on its eastern side it is bounded by the River Rhine, whose stream runs parallel to the Pyrenees; and on its southern side it is bounded, on the stretch that begins at the Rhine, by the Alps, and by our sea itself in the region where the so called Galatic Gulf widens out — the region in which Massilia and Narbo are situated, very famous cities. Opposite this gulf, and facing in the opposite direction, lies another gulf that is also called Galatic Gulf; and it looks toward the north and **Britain**; and it is between these two gulfs that Celtica has its least breadth; for it is contracted into an isthmus of less than three thousand, but more than two thousand, stadia.....

The islands which I have already mentioned lie off Europe; outside the Pillars: Gades, the Cassiterides, and the **Britannic** islands; and inside the Pillars: the Gymnesiae and other little islands of the Phoenicians, and those off Massilia and Liguria, and the islands of Italy up to the Islands of Aeolus and to Sicily, and all the islands round about Epirus and Greece and as far as Macedonia and the Thracian Chersonese.

In this southern sea, off the coast of India, lies an island, Taprobane, which is not less than **Britain**.

Book III, Chapter 2

For the whole country of the Iberians is full of metals, although not all of it is so rich in fruit, or so fertile either, and in particular that part of it which is well supplied with metals. It is rare for a country to be fortunate in both respects, and it is also rare for the same country to have within a small area an abundance of all kinds of metals. But as for Turdetania and the territory adjoining it, there is no worthy word of praise left to him who wishes to praise their excellence in this respect. Up to the present moment, in fact, neither gold, nor silver, nor yet copper, nor iron, has been found anywhere in the world, in a natural state, either in such quantity or of such good quality. And the gold is not only mined, but is also washed down; that is, the gold-bearing sand is carried down by the rivers and the torrents, although it is often found

in p41 the waterless districts also; but in these districts it cannot be seen, whereas in the flooded districts the gold-dust glitters. Besides, they flood the waterless districts by conducting water thither, and thus they make the gold-dust glitter; and they also get the gold out by digging pits, and by inventing other means for washing the sand; and the so called "gold-washeries" are now more numerous than the gold mines. The Galatae hold that their own mines, both those in the Cemmenus Mountains and those situated at the foot of the Pyrenees themselves, are equal to those of Turdetania; the metals from the latter, however, are held in greater esteem. And in the gold-dust, they say, nuggets weighing as much as half a pound are some found, which are called "palae," and they need but little refining. They further say that when stones are split they find in them small nuggets resembling nipples, and when the gold is smelted and refined by means of a sort of styptic earth the residuum thereof is "electrum"; and, again, that when this electrum, which contains a mixture of silver and gold, is smelted, the silver is burned away, while the gold remains. For the alloy-type is easily fused and stone-like. For this reason, too, the gold is preferably melted with chaff-fire, because the flame, on account of its softness, is suitable to a substance that yields and fuses easily; but the charcoal-fire consumes much of it because, owing to its intensity, it over-melts the gold and carries it off as vapour. The soil is carried along in the streams, and is washed in by troughs; or else a pit is dug, and the soil that has been accumulated is there washed. They build the silver-smelting furnaces with high chimneys, so that the gas from the ore may be carried high into the air; for it is heavy and deadly. Some of the copper-mines are called gold-mines, and from this fact it is inferred that in former times gold was mined from them.

9 Poseidonius, in praising the quantity and the excellence of these ores, does not abstain from his usual rhetorical speech; indeed, he enthusiastically concurs with the extravagant stories told; for example, he does not discredit the story, he says, that, when on a time the forests had been burned, the soil, since it was composed of silver and gold ores, melted and boiled out over the surface, because, as he says, every mountain and every hill is bullion heaped up there by some prodigal fortune. And, in general, he says, anyone who had seen these regions would declare that they are everlasting storehouses of nature, or a never-failing treasury of an empire. For the country was, he adds, not only rich, but also rich down below; and with the Turdetanians it is verily Pluto, and not Hades, who inhabits the region down below. Such, then, are the flowery utterances of Poseidonius on this subject — himself drawing much of his language from a mine, as it were. Again, in speaking of the industry of the miners, he cites the statement of Demetrius of Phalerum. Demetrius, he says, states in reference to the Attic silver-mines, that the people dig as strenuously as if they expected to bring up Pluto himself. So Poseidonius implies that the energy and industry of the Turdetanian miners is similar, since they cut their shafts aslant and deep, and, as regards the streams that meet them in the shafts, oftentimes draw them off with the Egyptian screw. However, the whole affair, he says, is never the same for these miners as for the Attic miners; indeed, for the latter, mining is like a riddle: "What they took up," he says, "they did not take, yet what they had, they lost"; but, for the Turdetanians, mining is profitable beyond measure, since one-fourth of the ore brought out by their copper-workers is pure copper, while some of their private adventurers who search for silver pick up within three days a Euboean talent of silver. Tin, however, is not found there on the surface of the ground, he says, as the historians continually repeat, but is dug up; and it is produced both in the country of the barbarians who live beyond Lusitania, and in the **Cassiterides** Islands; and tin is brought to Massilia from the **British** Islands also. But among the Artabrians, who live farthest on the north-west of Lusitania, the soil "effloresces," he says, with silver, tin, and "white gold" (for it is mixed with silver). This soil, however, he adds, is brought

by the streams; and the women scrape it up with shovels and wash it in sieves woven basket-like. Such, then, is what Poseidonius has said about the mines.

10 Polybius, in mentioning the silver-mines of New Carthage, says that they are very large; that they are distant from the city about twenty stadia and embrace an area four hundred stadia in circuit; and that forty thousand workmen stay there, who (in his time) bring into the Roman exchequer a daily revenue of twenty-five thousand drachmae. But as for the processes of the work, I omit all he says about it (for it is a long story) except what he says of the silver-bearing ore that is carried along in the streams, namely, that it is crushed and by means of sieves disengaged in water; then the sediment is again crushed, and again strained through (the waters meantime being poured off), and crushed; then the fifth sediment is smelted, and, after the lead has been poured off, yields the pure silver. The silver-mines are still being worked at the present time; they are not state-property, however, either at New Carthage or anywhere else, but have passed over to private ownership. But the majority of the gold-mines are state-property. Both in Castalo and elsewhere there is a special metal of mined lead; this, too, has a slight quantity of silver mixed with it, though not enough to make the refining of it profitable.

Not very far from Castalo is also the mountain in which the Baetis is said to rise; it is called "Silver Mountain" on account of the silver-mines that are in it. According to Polybius, however, both this river and the Anas, though distant from each other as much as nine hundred stadia, rise in Celtiberia; for, as a result of their growth in power, the Celtiberians caused the whole neighbouring country to have the same name as their own. The ancients seem to have called the Baetis River "Tartessus"; and to have called Gades and the adjoining islands "Erytheia"; and this is supposed to be the reason why Stesichorus spoke as he did about the neat-herd of Geryon, namely, that he was born "about opposite famous Erytheia, beside the unlimited, silver-rooted springs of the river Tartessus, in a cavern of a cliff." Since the river had two mouths, a city was planted on the intervening territory in former times, it is said,— a city which was called "Tartessus," after the name of the river; and the country, which is now occupied by Turdulians, was called "Tartessus." Further, Eratosthenes says that the country adjoining Calpe is called "Tartessus," and that Erytheia is called "Blest Isle." Eratosthenes is contradicted by Artemidorus, who says that this is another false statement of Eratosthenes, like his statement that the distance from Gades to the Sacred Cape is a five days' sail (although it is not more than one thousand seven hundred stadia), and his statement that the tides come to an end at the Sacred Cape (although the tides take place round the whole circuit of the inhabited world), and his statement that the northerly parts of Iberia afford an easier passage to Celtica than if you sail thither by the ocean; and, in fact, every other statement which he had made in reliance upon Pytheas, on account of the latter's false pretensions.

Book III Chapter 5

11 The **Cassiterides** are ten in number, and they lie near each other in the high sea to the north of the port of the Artabrians. One of them is desert, but the rest are inhabited by people who wear black cloaks, go clad in tunics that reach to their feet, wear belts around their breasts, walk around with canes, and resemble the goddesses of vengeance in tragedies. They live off their herds, leading for the most part a nomadic life. As they have mines of tin and lead, they give these metals and the hides from their cattle to the sea-traders in exchange for pottery, salt and copper utensils. Now in former times it was the Phoenicians alone who carried on this commerce (that is, from Gades), for they kept the voyage hidden from every one else. And when once the Romans were closely following a certain ship-captain in order that they too might learn the markets in question, out of jealousy the ship-captain purposely drove his ship out of its course into shoal water; and after he had lured the followers into the

same ruin, he himself escaped by a piece of wreckage and received from the State the value of the cargo he had lost. Still, by trying many times, the Romans learned all about the voyage. After Publius Crassus crossed over to these people and saw that the metals were being dug from only a slight depth, and that the men there were peaceable, he forthwith laid abundant information before all who wished to traffic over this sea, albeit a wider sea than that which separates **Britain** from the continent. So much, then, for Iberia and the islands that lie off its coast.

Book IV Chapter 1

1 Next, in order, comes Transalpine Celtica. I have already indicated roughly both the shape and the size of this country; but now I must speak of it in detail. Some, as we know, have divided it into three parts, calling its inhabitants Aquitani, **Belgae**, and Celtae. The Aquitani, they said, are wholly different, not only in respect to their language but also in respect to their physique — more like the Iberians than the Galatae; while the rest of the inhabitants are Galatic in appearance, although not all speak the same language, but some make slight variations in their languages. Furthermore, their governments and their modes of life are slightly different. Now by "Aquitani" and "Celtae" they meant the two peoples (separated from each other by the Cemmenus Mountain) who live next to the Pyrenees; for, as has already been said, this Celtica is bounded on the west by the Pyrenees Mountains, which join the sea on either side, that is, both the inner and the outer sea; on the east, by the River Rhenus, which is parallel to the Pyrenees; as for the parts on the north and the south, those on the north are surrounded by the ocean (beginning at the northern headlands of the Pyrenees) as far as the mouths of the Rhenus, while those on the opposite side are surrounded by the sea that is about Massilia and Narbo, and by the Alps (beginning at Liguria) as far as the sources of the Rhenus. The Cemmenus Mountain has been drawn at right angles to the Pyrenees, through the midst of the plains; and it comes to an end about the centre of these plains, near Lugdunum, with an extent of about two thousand stadia. So, then, by "Aquitani" they meant the people who occupy the northern parts of the Pyrenees and, from the country of the Cemmenus on to the ocean, the parts this side the Garumna River; by "Celtae" they meant the people whose territory extends in the other direction; — down to the sea that is about Massilia and Narbo — and also joins some of the Alpine Mountains; and by "**Belgae**" they meant the rest of the people who live beside the Rhenus and the Alps. Thus the Deified Caesar, also, has put it in his "Commentaries." Augustus Caesar, however, divided Transalpine Celtica into four parts: the Celtae he designated as belonging to the province of Narbonitis; the Aquitani he designated as the former Caesar had already done, although he added to them fourteen tribes of the peoples who dwell between the Garumna and the Liger Rivers; the rest of the country he divided into two parts: one part he included within the boundaries of Lugdunum as far as the upper districts of the Rhenus, while the other he included within the boundaries of the **Belgae**. Now although the geographer should tell of all the physical and ethnic distinctions which have been made, whenever they are worth recording, yet, as for the diversified political divisions which are made by the rulers (for they suit their government to the particular times), it is sufficient if one state them merely in a summary way; and the scientific treatment of them should be left to others.

Book IV Chapter 1

In the first place, the voyage which the Rhodanus affords inland is a considerable one, even for vessels of great burden, and reaches numerous parts of the country, on account of the fact that the rivers which fall into it are navigable, and in their turns receive most of the traffic. Secondly, the Rhodanus is succeeded by the Arar, and by the Dubis (which empties into the Arar); then the traffic goes by land as far as the Sequana River; and thence it begins its voyage down to the ocean, and to the Lexobii

and Caleti; and from these peoples it is less than a day's run to **Britain**. But since the Rhodanus is swift and difficult to sail up, some of the traffic from here preferably goes by land on the wagons, that is, all the traffic that is conveyed to the Arvernians and the Liger River — albeit in a part of its course the Rhodanus draws close to these also; still, the fact that the road is level and not long (about eight hundred stadia) is an inducement not to use the voyage upstream, since it is easier to go by land; from here, however, the road is naturally succeeded by the Liger; and it flows from the Cemmenus Mountain to the ocean. Thirdly, from Narbo traffic goes inland for a short distance by the Atax River, and then a greater distance by land to the Garumna River; and this latter distance is about eight hundred or seven hundred stadia. And the Garumna, too, flows to the ocean. This, then, is what I have to say about the people who inhabit the dominion of Narbonitis, whom the men of former times named "Celtae"; and it was from the Celtae, I think, that the Galatae as a whole were by the Greeks called "Celti" — on account of the fame of the Celtae, or it may also be that the Massiliotes, as well as other Greek neighbours, contributed to this result, on account of their proximity.

Book IV Chapter 2

The Liger, however, discharges its waters between the Pictones and the Namnitae. Formerly there was an emporium on this river, called Corbilo, with respect to which Polybius, calling to mind the fabulous stories of Pytheas, has said: "Although no one of all the Massiliotes who conversed with Scipio was able, when questioned by Scipio about **Britain**, to tell anything worth recording, nor yet any one of the people from Narbo or of those from Corbilo, though these were the best of all the cities in that country, still Pytheas had the hardihood to tell all those falsehoods about **Britain**." The city of the Santoni, however, is Mediolanium. Now the most of the ocean-coast of the Aquitani is sandy and thin-soiled, thus growing millet, but it is rather unproductive in respect of the other products. Here too is the gulf which, along with that Galatic Gulf which is within the coastline of Narbonitis, forms the isthmus (itself too, like the latter gulf, having the name "Galatic"). The gulf is held by the Tarbelli, in whose land the gold mines are most important of all; for in pits dug only to a slight depth they find slabs of gold as big as the hand can hold, which at times require but little refining; but the rest is gold dust and nuggets, the nuggets too requiring no great amount of working.

Book IV Chapter 3

He (Asinius) further says it (The Rhenus) has only two mouths, after first finding fault with those who say it has more than that. So then, both this river and the Sequana encircle somewhat of territory within their windings, but not so much as that. Both rivers flow from the southern parts towards the north; and in front of them lies **Britain**, which is near enough to the Rhenus for **Cantium**, which is the eastern cape of the island, to be visible from it, though it is slightly farther off from the Sequana. Here, too, the Deified Caesar established his navy-yard when he sailed to **Britain**.

The passage across to **Britain** from the rivers of Celtica is three hundred and twenty stadia; for if you put to sea on the ebb-tide at nightfall, you land upon the island about the eighth hour on the following day. After the Mediomatrici and the Tribocchi, along the Rhenus, dwell the Treveri, near whom the bridge has been built by the Roman officers who are now conducting the Germanic war. The Ubii used to live opposite this region, across the Rhenus, though by their own consent they were transferred by Agrippa to the country this side the Rhenus. Next after the Treveri are the Nervii, who are also a Germanic tribe. Last come the Menapii, who dwell on both sides of the river near its mouths, in marshes and woods (not of tall timber, but dense and thorny). It is opposite to these that the Sugambri are situated, a Germanic people. But beyond this whole river-country are those Germans who are called the Suevi and

excel all the others in power and numbers (the people driven out by the Suevi in our time have been fleeing for refuge to this side of the Rhenus). And other peoples, also, lord it in different places, and in their turn take up the tinders of war, but the foremost are always put down.

5 West of the Treveri and the Nervii dwell the Senones and the Remi, and farther on, the **Atrebatii** and the Eburones; and after the Menapii, on the sea, are, in their order, the Morini, the Bellovaci, the Ambiani, the Suessiones, and the Caleti, as far as the outlet of the Sequana River. Both the country of the Morini and that of the Atrebatii and Eburones resemble that of the Menapii; for much of it, though not so much as the historians have said (four thousand stadia), is a forest, consisting of trees that are not tall; the forest is called Arduenna. At the time of hostile onsets they used to intertwine the withes of the brushwood, since the withes were thorny, and thus block the passage of the enemy. In some places they also used to fix stakes in the ground — themselves, with their whole families, slinking away into the depths of the forest, for they had small islands in their marshes. Now although the refuge they took was safe for them in the rainy seasons, they were easily captured in the dry seasons. But as it is, all the peoples this side the Rhenus are living in a state of tranquillity and are submissive to the Romans. The **Parisii** live round about the Sequana River, having an island in the river and a city called Lucotocia; and so do the Meldi and the Lexovii — these latter beside the ocean. But the most noteworthy of all the tribes in this region of Celtica is that of the Remi; their metropolis, Duricortora, is most thickly settled and is the city that entertains the Roman governors.

Book IV Chapter 4

1 After the aforesaid tribes, the rest are tribes of those Belgae who live on the ocean-coast. Of the Belgae, there are, first, the Veneti who fought the naval battle with Caesar; for they were already prepared to hinder his voyage to **Britain**, since they were using the emporium there. But he easily defeated them in the naval battle, making no use of ramming (for the beams were thick), but when the Veneti bore down upon him with the wind, the Romans hauled down their sails by means of pole-hooks; for, on account of the violence of the winds, the sails were made of leather, and they were hoisted by chains instead of ropes. Because of the ebb-tides, they make their ships with broad bottoms, high sterns, and high prows; they make them of oak (of which they have a plentiful supply), and this is why they do not bring the joints of the planks together but leave gaps; they stuff the gaps full of sea-weed, however, so that the wood may not, for lack of moisture, become dry when the ships are hauled up, because the sea-weed is naturally rather moist, whereas the oak is dry and without fat. It is these Veneti, I think, who settled the colony that is on the Adriatic (for about all the Celti that are in Italy migrated from the transalpine land, just as did the Boii and Senones), although, on account of the likeness of name, people call them Paphlagonians. I do not speak positively, however, for with reference to such matters probability suffices. Secondly, there are the Osismii (whom Pytheas calls the Ostimii), who live on a promontory that projects quite far out into the ocean, though not so far as he and those who have trusted him say. But of the tribes that are between the Sequana and the Liger, some border on the Sequani, others on the Arverni.

2 The whole race which is now called both "Gallic" and "Galatic" is war-mad, and both high-spirited and quick for battle, although otherwise simple and not ill-mannered. And therefore, if roused, they come together all at once for the struggle, both openly and without circumspection, so that for those who wish to defeat them by stratagem they become easy to deal with (in fact, irritate them when, where, or by what chance pretext you please, and you have them ready to risk their lives, with nothing to help them in the struggle but might and daring); whereas, if coaxed, they so easily yield to considerations of utility that they lay hold, not only of training in

general, but of language-studies as well. As for their might, it arises partly from their large physique and partly from their numbers. And on account of their trait of simplicity and straightforwardness they easily come together in great numbers, because they always share in the vexation of those of their neighbours whom they think wronged. At the present time they are all at peace, since they have been enslaved and are living in accordance with the commands of the Romans who captured them, but it is from the early times that I am taking this account of them, and also from the customs that hold fast to this day among the **Germans**. For these peoples are not only similar in respect to their nature and their governments, but they are also kinsmen to one another; and, further, they live in country that has a common boundary, since it is divided by the River Rhenus, and the most of its regions are similar (though **Germany** is more to the north), if the southern regions be judged with reference to the southern and also the northern with reference to the northern. But it is also on account of this trait that their migrations easily take place, for they move in droves, army and all, or rather they make off, households and all, whenever they are cast out by others stronger than themselves. Again, the Romans conquered these people much more easily than they did the Iberians; in fact, the Romans began earlier, and stopped later, carrying on war with the Iberians, but in the meantime defeated all these — I mean all the peoples who live between the Rhenus and the Pyrenees Mountains. For, since the former were wont to fall upon their opponents all at once and in great numbers, they were defeated all at once, but the latter would husband their resources and divide their struggles, carrying on war in the manner of brigands, different men at different times and in separate divisions. Now although they are all fighters by nature, they are better as cavalry than as infantry; and the best cavalry-force the Romans have comes from these people. However, it is always those who live more to the north and along the ocean-coast that are the more warlike.

3 Of these people, they say, the **Belgae** are bravest (who have been divided into fifteen tribes, the tribes that live along the ocean between the Rhenus and the Liger); consequently they alone could hold out against the onset of the **Germans** — the Cimbri and Teutones. But of the **Belgae** themselves, they say, the Bellovaci are bravest, and after them the Suessiones. As for the largeness of the population, this is an indication: it is found upon inquiry, they say, that there are as many as three hundred thousand of those **Belgae** (of former times) who are able to bear arms; and I have already told the number of the Elvetii, and of the Arverni, and of their allies,— from all of which the largeness of the population is manifest, as is also the thing of which I spoke above — the excellence of the women in regard to the bearing and nursing of children. The Gallic people wear the "sagus," let their hair grow long, and wear tight breeches; instead of tunics they wear slit tunics that have sleeves and reach as far as their private parts and the buttocks. The wool of their sheep, from which they weave the coarse "sagi" (which they call "laenae"), is not only rough, but also flocky at the surface; the Romans, however, even in the most northerly parts raise skin-clothed flocks with wool that is sufficiently fine. The Gallic armour is commensurate with the large size of their bodies: a long sabre, which hangs along the right side, and a long oblong shield, and spears in proportion, and a "madaris," a special kind of javelin. But some of them also use bows and slings. There is also a certain wooden instrument resembling the "grosphus" (it is hurled by hand, not by thong, and ranges even farther than an arrow), which they use particularly for the purposes of bird-hunting. Most of them, even to the present time, sleep on the ground, and eat their meals seated on beds of straw. Food they have in very great quantities, along with milk and flesh of all sorts, but particularly the flesh of hogs, both fresh and salted. Their hogs run wild, and they are of exceptional height, boldness, and swiftness; at any rate, it is dangerous for one unfamiliar with their ways to approach them, and

likewise, also, for a wolf. As for their houses, which are large and dome-shaped, they make them of planks and wicker, throwing up over them quantities of thatch. And their flocks of sheep and herds of swine are so very large that they supply an abundance of the "sagi" and the salt-meat, not only to Rome, but to most parts of Italy as well. The greater number of their governments used to be aristocratic — although in the olden time only one leader was chosen, annually; and so, likewise, for war, only one man was declared general by the common people. But now they give heed, for the most part, to the commands of the Romans. There is a procedure that takes place in their assemblies which is peculiar to them: if a man disturbs the speaker and heckles him, the sergeant-at-arms approaches him with drawn sword, and with a threat commands him to be silent; if he does not stop, the sergeant-at-arms does the same thing a second time, and also a third time, but at last cuts off enough of the man's "sagus" to make it useless for the future. But as for their custom relating to the men and the women (I mean the fact that their tasks have been exchanged, in a manner opposite to what obtains among us), it is one which they share in common with many other barbarian peoples.

4 Among all the Gallic peoples, generally speaking, there are three sets of men who are held in exceptional honour; the Bards, the Vates and the **Druids**. The Bards are singers and poets; the Vates, diviners and natural philosophers; while the **Druids**, in addition to natural philosophy, study also moral philosophy. The **Druids** are considered the most just of men, and on this account they are entrusted with the decision, not only of the private disputes, but of the public disputes as well; so that, in former times, they even arbitrated cases of war and made the opponents stop when they were about to line up for battle, and the murder cases, in particular, had been turned over to them for decision. Further, when there is a big yield from these cases, there is forthcoming a big yield from the land too, as they think. However, not only the **Druids**, but others as well, say that men's souls, and also the universe, are indestructible, although both fire and water will at some time or other prevail over them.

5 In addition to their trait of simplicity and high-spiritedness, that of witlessness and boastfulness is much in evidence, and also that of fondness for ornaments; for they not only wear golden ornaments — both chains round their necks and bracelets round their arms and wrists — but their dignitaries wear garments that are dyed in colours and sprinkled with gold. And by reason of this levity of character they not only look insufferable when victorious, but also scared out of their wits when worsted. Again, in addition to their witlessness, there is also that custom, barbarous and exotic, which attends most of the northern tribes — I mean the fact that when they depart from the battle they hang the heads of their enemies from the necks of their horses, and, when they have brought them home, nail the spectacle to the entrances of their homes. At any rate, Poseidonius says that he himself saw this spectacle in many places, and that, although at first he loathed it, afterwards, through his familiarity with it, he could bear it calmly. The heads of enemies of high repute, however, they used to embalm in cedar-oil and exhibit to strangers, and they would not deign to give them back even for a ransom of an equal weight of gold. But the Romans put a stop to these customs, as well as to all those connected with the sacrifices and divinations that are opposed to our usages. They used to strike a human being, whom they had devoted to death, in the back with a sabre, and then divine from his death-struggle. But they would not sacrifice without the **Druids**. We are told of still other kinds of human sacrifices; for example, they would shoot victims to death with arrows, or impale them in the temples, or, having devised a colossus of straw and wood, throw into the colossus cattle and wild animals of all sorts and human beings, and then make a burnt-offering of the whole thing.

6 In the ocean, he says, there is a small island, not very far out to sea, situated off the outlet of the Liger River; and the island is inhabited by women of the Samnitaë, and they are possessed by Dionysus and make this god propitious by appeasing him with mystic initiations as well as other sacred performances; and no man sets foot on the island, although the women themselves, sailing from it, have intercourse with the men and then return again. And, he says, it is a custom of theirs once a year to un-roof the temple and roof it again on the same day before sunset, each woman bringing her load to add to the roof; but the woman whose load falls out of her arms is rent to pieces by the rest, and they carry the pieces round the temple with the cry of "Ev-ah," and do not cease until their frenzy ceases; and it is always the case, he says, that some one jostles the woman who is to suffer this fate. But the following story which Artemidorus has told about the case of the crows is still more fabulous: there is a certain harbour on the ocean-coast, his story goes, which is surnamed "Two Crows," and in this harbour are to be seen two crows, with their right wings somewhat white; so the men who have disputes about certain things come here, put a plank on an elevated place, and then throw on barley cakes, each man separately; the birds fly up, eat some of the barley cakes, scatter the others; and the man whose barley cakes are scattered wins his dispute. Now although this story is more fabulous, his story about Demeter and Core is more credible. He says that there is an island near **Britain** on which sacrifices are performed like those sacrifices in Samothrace that have to do with Demeter and Core. And the following, too, is one of the things that are believed, namely, that in Celtica there grows a tree like a fig-tree, and that it brings forth a fruit similar to a Corinthian-wrought capital of a column; and that, if an incision be made, this fruit exudes a sap which, as used for the smearing of arrows, is deadly. And the following, too, is one of the things that are repeated over and over again, namely, that not only are all Celti fond of strife, but among them it is considered no disgrace for the young men to be prodigal of their youthful charms. Ephorus, in his account, makes Celtica so excessive in its size that he assigns to the regions of Celtic most of the regions, as far as Gades, of what we now call Iberia; further, he declares that the people are fond of the Greeks, and specifies many things about them that do not fit the facts of to-day. The following, also, is a thing peculiar to them, that they endeavour not to grow fat or pot-bellied, and any young man who exceeds the standard measure of the girdle is punished. So much for Transalpine Celtica.

Book IV Chapter 5

1 **Britain** is triangular in shape; and its longest side stretches parallel to Celtica, neither exceeding nor falling short of the length of Celtica; for each of the two lengths is about four thousand three hundred — or four hundred — stadia: the Celtic length that extends from the outlets of the Rhenus as far as those northern ends of the Pyrenees that are near Aquitania, as also the length that extends from Cantium (which is directly opposite the outlets of the Rhenus), the most easterly point of Britain, as far as that westerly end of the island which lies opposite the Aquitanian Pyrenees. This, of course, is the shortest distance from the Pyrenees to the Rhenus, since, as I have already said, the greatest distance is as much as five thousand stadia; yet it is reasonable to suppose that there is a convergence from the parallel position which the river and the mountains occupy with reference to each other, since at the ends where they approach the ocean there is a curve in both of them.

2 There are only four passages which are habitually used in crossing from the mainland to the island, those which begin at the mouths of the rivers — the Rhenus, the Sequana, the Liger, and the Garumna. However, the people who put to sea from the regions that are near the Rhenus make the voyage, not from the mouths themselves, but from the coast of those Morini who have a common boundary with

the Menapii. (On their coast, also, is Itium, which the Deified Caesar used as a naval station when he set sail for the island. He put to sea by night and landed on the following day about the fourth hour, thus having completed three hundred and twenty stadia in his voyage across; and he found the grain still in the fields.) Most of the island is flat and overgrown with forests, although many of its districts are hilly. It bears grain, cattle, gold, silver, and iron. These things, accordingly, are exported from the island, as also hides, and slaves, and dogs that are by nature suited to the purposes of the chase; the Celti, however, use both these and the native dogs for the purposes of war too. The men of **Britain** are taller than the Celti, and not so yellow-haired, although their bodies are of looser build. The following is an indication of their size: I myself, in Rome, saw mere lads towering as much as half a foot above the tallest people in the city, although they were bandy-legged and presented no fair lines anywhere else in their figure. Their habits are in part like those of the Celti, but in part more simple and barbaric so much so that, on account of their inexperience, some of them, although well supplied with milk, make no cheese; and they have no experience in gardening or other agricultural pursuits. And they have powerful chieftains in their country.

For the purposes of war they use chariots for the most part, just as some of the Celti do. The forests are their cities; for they fence in a spacious circular enclosure with trees which they have felled, and in that enclosure make huts for themselves and also pen up their cattle — not, however, with the purpose of staying a long time. Their weather is more rainy than snowy; and on the days of clear sky fog prevails so long a time that throughout a whole day the sun is to be seen for only three or four hours round about midday. And this is the case also among the Morini and the Menapii and all the neighbours of the latter.

3 The Deified Caesar crossed over to the island twice, although he came back in haste, without accomplishing anything great or proceeding far into the island, not only on account of the quarrels that took place in the land of the Celti, among the barbarians and his own soldiers as well, but also on account of the fact that many of his ships had been lost at the time of the full moon, since the ebb-tides and the flood-tides got their increase at that time. However, he won two or three victories over the **Britons**, albeit he carried along only two legions of his army; and he brought back hostages, slaves, and quantities of the rest of the booty. At present, however, some of the chieftains there, after procuring the friendship of Caesar Augustus by sending embassies and by paying court to him, have not only dedicated offerings in the Capitol, but have also managed to make the whole of the island virtually Roman property. Further, they submit so easily to heavy duties, both on the exports from there to Celtica and on the imports from Celtica (these latter are ivory chains and necklaces, and amber-gems and glass vessels and other petty wares of that sort), that there is no need of garrisoning the island; for one legion, at the least, and some cavalry would be required in order to carry off tribute from them, and the expense of the army would offset the tribute-money; in fact, the duties must necessarily be lessened if tribute is imposed, and, at the same time, dangers be encountered, if force is applied.

4 Besides some small islands round about **Britain**, there is also a large island, **Ierne**, which stretches parallel to Britain on the north, its breadth being greater than its length. Concerning this island I have nothing certain to tell, except that its inhabitants are more savage than the Britons, since they are man-eaters as well as heavy eaters, and since, further, they count it an honourable thing, when their fathers die, to devour them, and openly to have intercourse, not only with the other women, but also with their mothers and sisters; but I am saying this only with the understanding that I have no trustworthy witnesses for it; and yet, as for the matter of

man-eating, that is said to be a custom of the Scythians also, and, in cases of necessity forced by sieges, the Celti, the Iberians, and several other peoples are said to have practised it.

5 Concerning **Thule** our historical information is still more uncertain, on account of its outside position; for Thule, of all the countries that are named, is set farthest north. But that the things which Pytheas has told about Thule, as well as the other places in that part of the world, have indeed been fabricated by him, we have clear evidence from the districts that are known to us, for in most cases he has falsified them, as I have already said before, and hence he is obviously more false concerning the districts which have been placed outside the inhabited world. And yet, if judged by the science of the celestial phenomena and by mathematical theory, he might possibly seem to have made adequate use of the facts as regards the people who live close to the frozen zone, when he says that, of the animals and domesticated fruits, there is an utter dearth of some and a scarcity of the others, and that the people live on millet and other herbs, and on fruits and roots; and where there are grain and honey, the people get their beverage, also, from them.

As for the grain, he says,— since they have no pure sunshine — they pound it out in large storehouses, after first gathering in the ears thither; for the threshing floors become useless because of this lack of sunshine and because of the rains.

Book IV Chapter 6

8 Next, in order, come those parts of the mountains that are towards the east, and those that bend round towards the south: the Rhaeti and the Vindelici occupy them, and their territories join those of the Elvetii and the Boii; for their territories overlook the plains of those peoples. Now the Rhaeti reach down as far as that part of Italy which is above Verona and Comum (moreover, the "Rhaetic" wine, which has the repute of not being inferior to the approved wines of the Italic regions, is made in the foot-hills of the Rhaetic Alps), and also extend as far as the districts through which the Rhene runs; the Lepontii, also, and Camuni, belong to this stock. But the Vindelici and Norici occupy the greater part of the outer side of the mountain, along with the Breuni and the Genauni, the two peoples last named being Illyrians. All these peoples used to overrun, from time to time, the neighbouring parts, not only of Italy, but also of the country of the Elvetii, the Sequani, the Boii and the **Germans**. The Licattii, the Clautenatii, and the Vennonnes proved to be the boldest warriors of all the Vindelici, as did the Rucantii and the Cotuantii of all the Rhaeti. The Estiones, also, belong to the Vindelici, and so do the **Brigantii**, and their cities, **Brigantium** and **Cambodunum**, and also Damasia, the acropolis, as it were, of the Licatii. The stories of the severity of these brigands towards the Italiotes are to this effect: When they capture a village or city, they not only murder all males from youths up but they also go on and kill the male infants, and they do not stop there either, but also kill all the pregnant women who their seers say are pregnant with male children.

Book VII, Chapter 1

2 Now the parts beyond the Rhene, immediately after the country of the Celti, slope towards the east and are occupied by the **Germans**, who, though they vary slightly from the Celtic stock in that they are wilder, taller, and have yellower hair, are in all other respects similar, for in build, habits, and modes of life they are such as I have said the Celti are. And I also think that it was for this reason that the Romans assigned to them the name "**Germani**," as though they wished to indicate thereby that they were "genuine" Galatae, for in the language of the Romans "germani" means "genuine."

3 The first parts of this country are those that are next to the Rhene, beginning at its source and extending as far as its outlet; and this stretch of river-land taken as a whole is approximately the breadth of the country on its western side. Some of the

tribes of this river-land were transferred by the Romans to Celtica, whereas the others anticipated the Romans by migrating deep into the country, for instance, the Marsi; and only a few people, including a part of the Sugambri, are left. After the people who live along the river come the other tribes that live between the Rhenus and the River Albis, which latter flows approximately parallel to the former, towards the ocean, and traverses no less territory than the former. Between the two are other navigable rivers also (among them the Amasias, on which Drusus won a naval victory over the Bructeri), which likewise flow from the south towards the north and the ocean; for the country is elevated towards the south and forms a mountain chain that connects with the Alps and extends towards the east as though it were a part of the Alps; and in truth some declare that they actually are a part of the Alps, both because of their aforesaid position and of the fact that they produce the same timber; however, the country in this region does not rise to a sufficient height for that. Here, too, is the Hercynian Forest, and also the tribes of the Suevi, some of which dwell inside the forest, as, for instance, the tribes of the Coldui, in whose territory is Boihaemum, the domain of Marabodus, the place whither he caused to migrate, not only several other peoples, but in particular the Marcomanni, his fellow-tribesmen; for after his return from Rome this man, who before had been only a private citizen, was placed in charge of the affairs of state, for, as a youth he had been at Rome and had enjoyed the favour of Augustus, and on his return he took the rulership and acquired, in addition to the peoples aforementioned, the Lugii (a large tribe), the Zumi, the Butones, the Mugilonas, the Sibini, and also the Semnonas, a large tribe of the Suevi themselves. However, while some of the tribes of the Suevi dwell inside the forest, as I was saying, others dwell outside of it, and have a common boundary with the Getae.

Book VII, Chapter 2

1 As for the Cimbri, some things that are told about them are incorrect and others are extremely improbable. For instance, one could not accept such a reason for their having become a wandering and piratical folk as this — that while they were dwelling on a Peninsula they were driven out of their habitations by a great flood-tide; for in fact they still hold the country which they held in earlier times; and they sent as a present to Augustus the most **sacred kettle** in their country, with a plea for his friendship and for an amnesty of their earlier offences, and when their petition was granted they set sail for home; and it is ridiculous to suppose that they departed from their homes because they were incensed on account of a phenomenon that is natural and eternal, occurring twice every day. And the assertion that an excessive flood-tide once occurred looks like a fabrication, for when the ocean is affected in this way it is subject to increases and diminutions, but these are regulated and periodical. And the man who said that the Cimbri took up arms against the flood-tides was not right, either; nor yet the statement that the Celti, as a training in the virtue of fearlessness, meekly abide the destruction of their homes by the tides and then rebuild them, and that they suffer a greater loss of life as the result of water than of war, as Ephorus says. Indeed, the regularity of the flood-tides and the fact that the part of the country subject to inundations was known should have precluded such absurdities; for since this phenomenon occurs twice every day, it is of course improbable that the Cimbri did not so much as once perceive that the reflux was natural and harmless, and that it occurred, not in their country alone, but in every country that was on the ocean. Neither is Cleitarchus right; for he says that the horsemen, on seeing the onset of the sea, rode away, and though in full flight came very near being cut off by the water. Now we know, in the first place, that the invasion of the tide does not rush on with such speed as that, but that the sea advances imperceptibly; and, secondly, that what takes place daily and is audible to all who are about to draw near it, even before they

behold it, would not have been likely to prompt in them such terror that they would take to flight, as if it had occurred unexpectedly.

3 Writers report a custom of the Cimbri to this effect: Their wives, who would accompany them on their expeditions, were attended by priestesses who were seers; these were grey-haired, clad in white, with flaxen cloaks fastened on with clasps, girt with girdles of bronze, and bare-footed; now sword in hand these priestesses would meet with the prisoners of war throughout the camp, and having first crowned them with wreaths would lead them to a brazen vessel of about twenty amphorae; and they had a raised platform which the priestess would mount, and then, bending over the kettle, would cut the throat of each prisoner after he had been lifted up; and from the blood that poured forth into the vessel some of the priestesses would draw a prophecy, while still others would split open the body and from an inspection of the entrails would utter a prophecy of victory for their own people; and during the battles they would beat on the hides that were stretched over the wicker-bodies of the wagons and in this way produce an unearthly noise.