



Tables is placed to the east of the Halys. Ptolemy, as well as Arrian, places it to the west of that river.

From Zagora to the river Halys 300 stadia. This river takes its name, as Strabo tells us, from the beds of fossil salt, through which it flows. Tournefort observes, in confirmation hereof, that "all the country is full of fossil salt, which is found even in the great roads, and arable grounds." Arrian's account of the rise of this river to the eastward, rather than to the south, is confirmed by Tournefort, who also bears testimony to the accuracy of Strabo, who says, that it rises in the greater Cappadocia, where it flows towards the west, and then winds towards the north, through Galatia and Paphlagonia. The maps of Ptolemy mark its course in much the same way. It must however be acknowledged, in favour of Herodotus, who gives the account, which is here corrected by Arrian, that its course is, for a considerable space, from the southward. D'Anville's map makes two rivers of this name, which, in their course, unite. One of these, according to him, rises near the borders of Cilicia, not far from the Cydnus, and nearly south of the mouth of the Halys. Xenophon says, that it was (not far from the mouth, I suppose) two stadia, or 1208½ feet, in breadth; but perhaps this may not be a correct account, as it is in a speech intended to magnify the difficulties of the passage. This river is mentioned by Apollonius, and by Valerius Flaccus.

From the river Halys to Naustathmos 30 stadia. From Naustathmos to Conoparum 50 stadia. This was a lake, probably so called from the multitude of insects which it produced.

γ Xenoph. Anabaf. lib. v.

• Val. Flacc. lib. iii. vers. 157.

• Arrian. lib. ii. vers. 955.

From Conopæum to Eufene 120 stadia. From Eufene to Amifus 160 stadia. Strabo and Stephanus Byzantinus say, that it is 900 stadia from Sinope to Amifus. Arrian makes it 1060. According to the Peutingerian Tables, it is 94 m. p. from Sinope to Amifus, equal to 752 stadia. Pliny says, that it is 130 miles, equal to 1040 stadia, not very different from Arrian's computation. D'Anville makes it to be only 740 stadia. Arrowsmith's chart makes it to be about 89.5 English miles, equal to about 781 stadia. Citizen Beauchamp's Geography of the Black sea makes it to be 75', equal to about 87 English miles, or 756 stadia. Strabo says, that the distance from Trapezus to Amifus is about 2200 stadia. According to Arrian, it is 2325 stadia. Arrowsmith's chart makes it nearly 3° of longitude, which in latitude 41° is about 157.5 English miles, or 1370 stadia nearly.

From Trapezus to the Phasis is, according to Strabo, near 1400 stadia. Arrian makes it 1450, which agrees well with Strabo, who meant to express a rude calculation only. It is not, by Arrowsmith's chart, more than 947 stadia, in a direct line; but that is not the distance understood by these writers.

Strabo, in the same place, counts it about 8000 stadia from the Fanum Jovis Urii to the Phasis. Arrian makes it, from the Fanum Jovis Urii to Trapezus, 6935 stadia, and from Trapezus to the Phasis 1450, in all 8385 stadia; a difference in the proportion nearly of 20 to 19, which is no great difference in a rude calculation.

From Amifus to Ancon 160 stadia. This is the mouth of the Iris, the largest river, according to Tournefort, on this coast. The  
river

river is now called Cafalmac. The distance is put down in the Peutingerian Tables at 22 Greek miles, not far from Arrian's calculation.

From Ancon to the promontory Heracleum 360 stadia. The Peutingerian Tables make it 40 miles, or 320 stadia.

From Heracleum to the river Thermodon 40 stadia. This river is mentioned by <sup>b</sup> Apollonius, who says, that it rises in the mountains of the Amazons, and that it divides into no less than 96 streams. This circumstance seems to indicate, that it runs through a flat country, which is said by Tournefort to be the case. This river is also mentioned by <sup>c</sup> Valerius Flaccus. It rises, according to Strabo, among hills, bordering on the plains of Themiscyra, from a variety of sources; whereas Apollonius says, that it rises from one only. Perhaps Strabo might take, what Apollonius describes as so many divisions or branches of the river, for so many streams, that contributed to form it. Xenophon says, that it was 300 feet wide. Arrowsmith's, and another chart, put it down under the name of Therme, or Termeh.

From the river Thermodon to the river Beris 90 stadia. From the river Beris to the river Thoaris 60 stadia. From the river Thoaris to Oenoe 30 stadia. From Oenoe to Phigamus 40 stadia. From Phigamus to Phadifana 150 stadia.

From the river Thermodon to Phadifana is nearly 31 English miles, by Arrowsmith's chart, which is little more than 270 stadia;

<sup>b</sup> Argon. lib. ii. vers. 972.

<sup>c</sup> Lib. iv. vers. 610.

whereas



whereas Arrian makes it to be 370 stadia. Arrian's measurement however followed the coast, which is rather irregular. A place called Fatfa, said to be of great trade, is in this situation, and the river, at the mouth of which it stands, is called Phadizza, or, according to Tournefort, Vatzia. He mentions the place at the mouth as a village only.

From Phadifana to Polemonium 10 stadia. Pliny says, that from Amifus to Polemonium is 120 miles, equal to 960 stadia. Arrian makes it 940 stadia, or  $117\frac{1}{2}$  miles<sup>d</sup>.

From Polemonium to Cape Jafonium 130 stadia. This cape retains its ancient name, and adds to the testimonies yet remaining of the Argonautic expedition.

From Jafonium to the Infula Cilicum 15 stadia. From the Infula Cilicum to Boona 75 stadia, (now Cape Vona, according to Arrowsmith.<sup>e</sup>) From Boona to Cotyora 90 stadia. This seems to have been in ruins in Strabo's time, having been demolished to build Cerasus and Ischopolis. It was probably a larger place at the time of Cyrus's expedition. Xenophon informs us, that it was a Greek city and a colony from Sinope.

<sup>d</sup> The Peutingerian Tables make it 127 miles, or 1016 stadia.

|                            | M. P. |
|----------------------------|-------|
| From Amifus to Ancon,      | 22    |
| From Ancon to Heracleum,   | 42    |
| From Heracleum to Cena,    | 30    |
| From Cena to Camila,       | 7     |
| From Camila to Pytane,     | 8     |
| From Pytane to Polemonium, | 20    |
| $127 \times 8 = 1016.$     | 127   |

<sup>e</sup> From Cape Jafonium to Cape Vona is, on Arrowsmith's chart, about nine English miles and a quarter, or about 82 stadia, in a right line.

From Cotyora to Melanthius 60 stadia. From Melanthius to Pharmatenus 150 stadia. From Pharmatenus to Pharnacea 120 stadia. This place, as well as some others in the same country, has recovered its ancient name, being now called Cerafonte, or Kiri-iontho'. It is well known to have been famous in early times for the cherry fruit; and Tournefort says, that at present cherry-trees<sup>a</sup> grow naturally, and in great abundance, in that neighbourhood.

From Pharnacea to the island Arrhentias 30 stadia. From Arrhentias to Zephyrium 120 stadia. Arrian makes it 420 stadia from Melanthius to Zephyrium<sup>b</sup>, the Peutingerian Tables make it to be 480 stadia, or 60 Greek miles.

From Zephyrium to Tripolis 90 stadia. Tournefort says, that Tripolis is 36 miles from Cerafonte. Arrian makes it 240 stadia, or 30 Greek miles.

From Tripolis to Argyria 20 stadia. From Argyria to Philocalca 90 stadia. From Philocalca to Coralla 100 stadia. From Coralla to Hieron Oros 150 stadia. This is called Cape Ioros, or Ioros

<sup>a</sup> Kercfoun, Arrowsmith—Ghirecin, or Kerefontas, Laurie's chart.

<sup>b</sup> Pliny, St. Jerome, and one of the Sophists in Athenæus, speak of the cherry-tree as being first brought into Italy from the town of Cerasus, in Pontus. But it was well known in Greece at the time of Theophrastus, who describes it accurately, and at length, and calls it by the name of κερασοῦς. The person likewise, who answers the Sophist in Athenæus, says, that Diphilus, who lived in the time of Lyfimachus, had described the fruit by name,

and given an account of its qualities. It appears from Servius, that the tree was known in Italy before the time of Lucullus, but that he introduced a better kind from Asia Minor. Casaubon thinks, that the place received its name from the fruit, and the observation of Tournefort, cited here, gives probability to this conjecture.

<sup>c</sup> This was a promontory, now called Kara Bouroun, or the Black Cape, perhaps for the same reasons as Acra Melæna was so called.

Burun, at present. From Hieron Oros to Cordyla 40 stadia. The Peutingerian Tables make it to be 30 miles from Cordyla to Philo-calea. Arrian reckons it to be 290 stadia, or 36½ miles.

From Cordyla to Hermonassa 45 stadia. From Hermonassa to Trapezus 60 stadia. The Peutingerian Tables make it 15 miles from Trapezus to Cordyla. Arrian makes it 105 stadia, equal to rather more than 13 Greek miles.

Arrian here sums up the account of the distances of the places from one another, in his own voyage from Trapezus to Dioscurias, and finds them to amount to 2260 stadia, which number corresponds exactly with the separate accounts of the distances, and is an undeniable proof of the correctness of the numbers specified in the text.

The voyage from Dioscurias to the Cimmerian Bosphorus was also, I am inclined to think, performed by Arrian himself in person, on his hearing of the death of King Cotys; and was meant to facilitate any interference which the Roman Government might choose to employ in the affairs of that country. This was professedly his intention; but whether he executed it personally, or not, is not clear.

The first place mentioned in the voyage, northward from Dioscurias, is Pityus, which lies rather to the north-west of Dioscurias, and is the first situation mentioned, where the coast bends in any considerable degree to the westward, which circumstance is remarked by Strabo, when speaking of the direction of the coast.

<sup>1</sup> Lib. xi. p. 497. Ed. Parif.

It is reckoned by Arrian to be 350 stadia, or 43.75 Greek miles, or about 40 English miles distant from Dioscurias. Strabo agrees nearly herewith, as he makes it 360 stadia, a trifling difference from the calculation of Arrian. There is a place of nearly the same name<sup>k</sup> still on this coast, but it appears much farther to the north than the situation described by Arrian. It probably derived its name from the pine-trees, which still grow in great plenty throughout all that country. It is called by Strabo "the great Pityus," and by Pliny, "oppidum opulentissimum," probably from its sharing with Dioscurias in the trade of the East.

Arrian speaks of Dioscurias as the boundary of the Roman Empire, whereas Theodoret, who lived in the fifth century, and at least 300 years later than Arrian, and when the Empire was in a declining state, mentions Pityus as the frontier<sup>l</sup> place. It was regarded in still later times as a fortress only, and both this place and Sebastopolis are considered in that light by Procopius, and in the Preface to the 28th Constitution of the Novels of Justinian.

From Pityus<sup>m</sup> to Nitica 150 stadia. Beyond Pityus, Theodoret represents the people, as ferociously savage<sup>n</sup>, and this is probable from Arrian's account of them, as Nitica was the resort or the residence of the Scythian Phthrophagi, or Lice-eaters. Arrian seems to cast an oblique censure on Herodotus, for his account of these people; but they are mentioned both by Strabo and by Pliny.

<sup>k</sup> Bitiyunta—Map of the country between the Black sea and the Caspian. Byzjunta — Arrowsmith's chart

<sup>l</sup> Theodor. Hist. Ecclesiast. lib. v. c. 34.

<sup>m</sup> Procopius s. y., it is two days journey

from Sebastopolis to Pityus. If this be meant of a day's journey for a foot traveller, which was usually reckoned at 20 miles a day, it agrees nearly with Strabo and Arrian.

<sup>n</sup> ἀποστάτοις βαρβαρίσις.

without any marks of disbelief of their existence; and it is said<sup>a</sup>, that some modern savages resemble the ancient, and their counterpart monkies, in being fond of this beastly viand. Arrian might certainly have spared his censure of Herodotus, as he owns, that what that Historian relates was the common opinion in his own time.

From Nitica to the river Abascus 90 stadia. This river probably belonged to the Abasgi before mentioned.

From the Abascus to the river Borgys 120 stadia. From the Borgys to the Nefis 60 stadia. Arrian says, that here was the promontory Herculeum. If there be no mistake here, there was another place of the same name about 300 stadia to the northward.

From Nefis to Masatica 90 stadia. From Masatica to the Achæus 60 stadia. Arrian observes, that this river separates the nation of the Zicchi from that of the Sanigæ, and that Satchempax was king of the Zicchi, and nominated by Hadrian, which shews that the Romans interfered in the nomination of kings beyond the limits of their own acknowledged territories.

From the Achæus to Promontorium Herculis 150 stadia. From Promontorium Herculis to another promontory 180 stadia. From the other promontory to ancient Lazica 120 stadia. The Lazi were the old inhabitants of this country, according to Procopius<sup>b</sup>, and changed their name into that of Colchi. These people were in some measure subject to Rome, as Julius Capitolinus tells us, that

<sup>a</sup> See Hearne's Journey from Prince of Wales's fort to the Copper-mine river, passim. *Editor.*  
<sup>b</sup> Bell. Goth. lib. iv. c. 13.

Antoninus Pius nominated Pacorus to be their king; and it appears from Procopius<sup>9</sup>, that something of the same kind, although probably more in show than in reality, was continued for many ages afterwards.

From ancient Lazica to ancient Achaia 150 stadia. Strabo intimates, that this name of Achaia was derived from some of the Thessalians of Phthiotis, who settled here at the time of the Argonautic expedition, and that the Lacedæmonians also formed a settlement in Heniochia under their leaders, Rhecas and Amphistratus, who were charioteers to the Dioscuri, or Castor and Pollux; and this circumstance is said to have given occasion to the name *Ἡίοχος*; another memorial of the Argonautic expedition.

From ancient Achaia to Pagræ 350 stadia. From Pagræ to the Sacred port 180 stadia. There is a place on this coast, which still retains the name in a kind of mixture of Turkish and Greek, being called Koddos-liman<sup>1</sup>, which has the same meaning. This is about 160 English miles, or 1400 stadia, in a straight line from Iskouriah, or Dioscurias; but Arrian makes it amount to 1990 stadia. The computation however of these distances may be expected to be less correct, as they refer to places beyond the bounds of the Empire.

From the Sacred port to Sindica 300 stadia. Strabo calls this a port, and one called Sundgik Liman still remains at the distance of about 51 English miles from the Sacred port, which is sufficiently

<sup>9</sup> Bell. Persicum, lib. ii. c. 15.

<sup>1</sup> Laurie and Whittle's chart of the Black

sea, Arrowsmith's chart calls it Kaldof-liman.

near to make it probable that this is the place meant by Arrian. Scylax, as well as Strabo, calls it the *Sindic port*.

From *Sindica* to *Panticapæum* 540 *stadia*. The distance on the modern maps is about 74 miles, or rather more than 640 *stadia*. *Panticapæum* was the principal city of the *Cimmerian Bosphorus*, on the European side, as *Phanagoria* was on the Asiatic. It was a colony of the *Milesians*<sup>1</sup>, situated on an eminence, 20 *stadia* in compass, with a port and a citadel to the eastward. It was in early times a free city, but fell afterwards under the power of *Mithridates*. It seems however to have been a free city in the time of Arrian. The mouth of the *Tanais*, where it empties itself into the Black sea, through the *Palus Mæotis*, forms the *Cimmerian Bosphorus*, and in early times was counted to mark the boundary between Europe and Asia, as Arrian shews by his quotation from *Æschylus*.

The whole distance from *Dioscurias* to *Panticapæum* is, according to Arrian, 2890 *stadia*, equal to 331 English miles nearly. According to *Arrowsmith's* chart, the rectilinear distance is 251 English miles nearly, or about 2200 *stadia*. The map of the country between the Black sea and the *Caspian* makes it 236 miles, and *Faden's* map 243 English miles.

We now enter upon the European part of this voyage.

From *Panticapæum* to *Cazeca* 420 *stadia*. This is probably the

<sup>1</sup> By *Faden's* map; but *Arrowsmith* makes it much less, not more than 56½ English miles: the Russian map however makes it 70 English miles.

<sup>2</sup> *Harum* (sc. *Milesiarum civitatum*) velut mater omnium, *Panticapæum*. *Annian.* lib. xxii. c. 8.

place set down in the Russian map under the name of Konezek, as it lies on the sea-coast, about  $\frac{1}{3}$  of the way from Panticapæum to Theodosia.

From Cazeca to Theodosia 280 stadia. Strabo computes the distance between Panticapæum and Theodosia to be 530 stadia. This is nearly true, if it be reckoned in a straight line; but if it be measured round the capes and head-lands, it will agree nearly with that given by Arrian. The account of the distance in Pliny is too corrupt to be depended upon. The author of the fragment of the Periplus of the Euxine sea says, that Theodosia was then called by the Alani, Ardauda, from the seven deities worshipped there, as that word signifies in the Alanic language.

Theodosia was an ancient Greek city, a colony of the Milesians, and, with many cities" on this coast, was remarkable for monuments of literature. Arrian remarks, that it was deserted, and probably in ruins, in his time. It still subsists under the name of Kassa; but whether the modern town stands exactly on the same site with the ancient, is doubtful. It had a good port, and was situated in a fertile country. It recovered itself during the middle ages under the Genoese government, who took it A. D. 1266, and made it an emporium for eastern commodities. It was taken from them by the Turks, A. D. 1474, and is again in decay, although it still subsists as a considerable town.

From Theodosia to a port of the Tauro-Scythæ 200 stadia. We are told by Pliny, that there were several of these on this

<sup>u</sup> Ammianus says of the Cherronesus, that it was "coloniaram plena Græcarum." Lib. xxii. cap. 8.



coast. They seem to have been the resort of pirates, which was the character of the people. It appears from the fragment of the *Periplus* above cited, that this place was called Athenæon. In Arrian's time it was deserted.

From the port of the Tauro-Scythæ to Halmitis Taurica 600 stadia. It is somewhat extraordinary that Arrian should pass by the celebrated promontory of Criu-Metopon\* unnoticed, which lies between the port last mentioned and Halmitis Taurica, and is opposite nearly to the promontory of Carambis on the south side, and, as it were, divides the Euxine sea into two parts.

From Halmitis to Symboli Portus 520 stadia. This was, according to Strabo, a piratical sea-port, belonging to the ancient Scythians.

From Symboli Portus to Cherronesus Taurica 180 stadia. This was a colony from Heraclea, situated on the south-west part of the peninsula. It was called Cherfon by the late writers, as Zonaras, Procopius, and others. It is not, however, the same place with the one which has at present that name, that being situated on the western side of the Borysthenes.

From Cherronesus Taurica to Cercinetis 600 stadia. From Cercinetis to Calus 700 stadia. From Calus to Tamyraca 300 stadia. There is here a road or station for ships, according to Strabo. This place was, at an early period, the capital city of Sarmatia Europæa.

\* Now called Cape Avia, Arrowsmith; or Ava-Burun, or Cape Karadge, Faden.

From Tamyraca to the Ostium Paludis 300 stadia. The marsh here alluded to is formed by the peninsula of Dromos Achillis running parallel with the shore to the westward.

From the Ostium Paludis to Æona 380 stadia. From Æona to the Borysthenes 150 stadia. Arrian mentions Olbia, which lies on the western side of the Borysthenes, near its mouth, which was a Greek city, and in the time of Strabo a place of great trade, and an emporium for manufactures. It was also called Borysthenes, and seems to have been situated nearly where Ockzakow now stands.

From the Borysthenes to a desert island 60 stadia. From the desert island to Odeffus 80 stadia. This is called Odeffus, or Ordeffus, by Ptolemy, and is described by him as lying on the river Axiaacus, which does not disagree with the situation assigned by Arrian.

From Odeffus to the Portus Istriarum 250 stadia. From the Portus Istriarum to the Portus Iliacorum 50 stadia. From the Portus Iliacorum to the Pylon Os Istri 1200 stadia. The intermediate country was desert, and without a name. This mouth, as the name implied, was the smallest of the mouths of the Danube, and seems now to be nearly choaked up. It is called Kilia-Bogasi in Arrowsmith's chart, and lies in Lat.  $45^{\circ} 28'$ , and in Long. east from Greenwich,  $29^{\circ} 15'$ , and from Ferro  $47^{\circ} 0' 50''$ .

From the Os Pylon to the second mouth of the Danube 60 stadia. Some of the modern maps mark out five mouths of the Danube; but Arrowsmith's chart notices four only. The second mouth is  
called

called *Rufki Bogafi*, and is said to be the deepest. To the north of the first mouth lay the island of Achilles, which Arrian seems to have mistaken for the *Dromos*, or Course of Achilles, which was a peninsula to the north of the island. The island was called *Leuce*, or white, from its colour, and is noticed under that name by Ptolemy. It seems the same that is at present called *Ilan-Adaffi*, or Serpents Island. Arrian spends more words in the description of this insignificant place than it seems to merit; but as he has thought proper to do so, I shall notice what he says. It appears to have been inhabited in his time by a few goats only, but there was a temple in it, which contained many votive offerings, as cups, rings, and precious stones. There were likewise inscriptions, both in the Greek and Latin languages, hung up in the temple, in honour both of Achilles and of Patroclus; and sacrifices were performed there, which shews that the superstition continued until the time of Arrian, and is another instance of the preservation of the ancient Greek traditions in this country. He remarks, that the fiery vapours, which are probably electrical, and which are frequently seen in the Mediterranean sea, playing about the masts, yards, and rigging of the ship, which went formerly under the name of *Castor* and *Pollux*, and are now called the fires of *St. Helmo*, were seen about this island, and were then called the fires of Achilles, and were at that time thought, as they have been in later times, to foretell a prosperous voyage.

From the second mouth of the Danube to the one called *Κάλον* 40 *stadia*. From the mouth called *Κάλον* to the one called *Νάρεκον*

† Philostratus says, it was 30 *stadia* in length, and four in breadth. Heroic. c. xix. sect. 16.

\* The superstition of the times forbade its

being inhabited. Philostrat. Heroic.

\* Donarius *epidem heroi consecratis*. Ammian. lib. xxii. c. 8.

60 stadia. From the mouth last mentioned to the fifth mouth 120 stadia. Arrian makes only five mouths to the Danube, but Pliny and Ptolemy reckon six. The names assigned by Pliny are, 1. Spireostoma; 2. Boreostoma; 3. Pseudostoma; 4. Calostoma; 5. Naracostoma; 6. Peuce. Pliny says, that the fifth mouth was so called, “a congelatis et stupidis piscibus, quarum ibi magna copia reperitur.” The sixth mouth is probably so called from the pine-trees, which grow plentifully on all the sides of the Euxine sea. The names given by Ptolemy agree nearly with those of Pliny.

|      | Names of the mouths. | Longitude.         | Latitude       |                            | Distances.                                 |
|------|----------------------|--------------------|----------------|----------------------------|--|
| From | Πε'χη                | 55° 20'            | 46° 30'        | Latin copy and Greek agree | 36.5 Eng. miles.                           |
| To   | Ἰεζόν                | 56°                | 46° 45'        | Latin copy and Greek agree | 54 Eng. miles.                             |
| From | Θιαγόλα              | 55° 40'<br>56° 15' | 47° 15'        | Latin copy<br>Greek copy   | 26 Eng. miles, Latin copy.                 |
| To   | Θιαγόλα<br>ψιδός     | 56° 15'            | 47°            | Latin copy and Greek agree | 21 Eng. miles.                             |
| From | Βορείον              | 56° 30'<br>56° 15' | 46° 45'<br>47° | Latin copy<br>Greek copy   | 47.5 Eng. miles, Gr. copy.                 |
| To   | Ἰναρσιον             | 56° 20'            | 46° 20'        | Latin copy and Greek agree | 26 Eng. miles.                             |
| From | Ψεῦδοσθόμιον         | 56° 15'            | 46° 40'        | Latin copy and Greek agree | 11.5 Eng. miles.                           |
| To   | Καλόν                | 56° 15'            | 46° 30'        | Latin copy and Greek agree | Total 222.5 English miles, very incorrect. |

Arrian makes this distance to be only 280 stadia, a wide difference from the computation of Ptolemy.

Arrowsmith's chart, and that of Laurie and Whittle, make only four mouths of the Danube; but Faden's map makes them to be five, one of them a branch of one of the other mouths, and which

which I suppose to be the one called (probably from that circumstance) *Pseudostoma*, by Pliny and Ptolemy.

Distance according to Arrowsmith's chart,

|  |         |
|--|---------|
| From the first mouth (Kilia Bogasi) to the second, called Sulina Bogasi, | } 16'   |
| From the second to the third, Ghiurcheri, . . . .                        | 17'     |
| From the third to the fourth, Vizi Bogasi, . . . .                       | 7' 30"  |
|  | <hr/>   |
|  | 40' 30" |

Equal to 47 English miles, or about 409 stadia.

Laurie and Whittle's chart varies but little, and these calculations are a kind of mean between those of Arrian and of Ptolemy. It is possible that the river may have changed its course, and some of the mouths be blocked up, or choaked with soil and sand, brought down by the current.

The fifth mouth of Arrian is the same with the sixth of Pliny and of Ptolemy. Strabo makes seven mouths, and about 300 stadia, or about  $37\frac{1}{2}$  Greek miles, or  $34\frac{1}{2}$  English miles from the first to the seventh. He reckons the order of them in an opposite direction to Arrian, as he counts the most southerly to be the first.

From the fifth mouth to the city of Istria 500 stadia. Strabo says, that from Peuce to Istria is 500 stadia. D'Anville makes it to be 400 stadia only, which is nearly the distance which a place called Vistar, or Vistwar, measures on modern maps. Perhaps this may be the site of the ancient city of Istria, or Iliropolis, although the distances do not exactly agree.

From

From Iliria to Tomi 300 stadia. This is set down in the Peutingerian Tables at 40 Greek miles, equal to 320 stadia, agreeing nearly with Arrian. Antoninus's Itinerary makes it to be 36 miles, or 288 stadia, which approaches still nearer to Arrian. Strabo makes it to be only 250 stadia, or 31½ Greek miles. From the mouth of the river, on which Vistwar is situated, to Baba, or Tomiswar, is, by Laurie and Whittle's chart, 34 English miles, equal to 37 Greek miles nearly, and very near 300 stadia. Tomi seems to have been a more considerable place at the time the Peutingerian Tables were constructed, than it was in that of Ovid<sup>b</sup>. Hoffman says, in his *Lexicon*, that there is a lake there, which in its name (Ouido Jezeoro) carries some memorial of that poet. The name of Tomi bears, according to Ovid, a testimony respecting the Argonautic expedition. Perhaps Tomi might have become more considerable<sup>d</sup> after the removal of the imperial seat to Constantinople, from its neighbourhood to that city.

From Tomi to Callantra 300 stadia. This appears to be the Callatis of other authors. Strabo makes this distance to be 280 stadia, or 35 Greek miles. The Peutingerian Tables make it to be 34 Greek miles, equal to 272 stadia. The Itinerary makes it 30 Greek miles, or 240 stadia. The distance from Tomi to Callatis is, in D'Anville's map, about 280 stadia. In Arrowsmith's chart,

<sup>b</sup> There is in Goltzius a coin of Tomi, of the head of a young man with a laurel crown, with a lyre by him, which probably was meant for Ovid.

<sup>c</sup> Inde Tomos dictus locus hic, quia fertur in illo

Membra soror fratris consecuisse fui.

Trist. lib. iii. eleg. 9.

I should rather suppose, that it had its name

from the cutting the tunnies into pieces for curing. The Tomus Thyrianus is well known, and why should not a place on a coast so celebrated for the preparation of the tunny, have the name of Tomi? *Editor.*

<sup>d</sup> Istropolis, Tomi, and Callatis appear to have been flourishing places in Pliny's time, as he calls them "pulcherrimas urbes."

the distance from Tomiswar to Mankala is  $31\frac{1}{2}$  English miles, equal nearly to 273 stadia, which makes it likely to be the same place.

From Callantra to Carus Portus 180 stadia. From Carus to Tetrifias Acra 120 stadia. This is probably the place called Trifla in the Peutingerian Tables, and is placed 24 miles from Callantra, or Callatis. It is called Tiristria Promontorium by Ptolemy, and Tiristis by Mela.

From Tetrifias to Bizus 60 stadia. This is called Bizon in Pliny, and is said by him to have been swallowed up by an earthquake\*. It is called Bihone in the Peutingerian Tables, and is put down as 12 miles distant from Trifla.

From Bizus to Dionysopolis 80 stadia. This distance is marked 12 miles, or 96 stadia, in the Peutingerian Tables. The Itinerary makes it 42 miles from Callatis to Dionysopolis, equal to 336 stadia. Arrian makes it 110 stadia. From Tomi to Varna, or Dionysopolis, measures on the map 97 English miles, allowing for the doubling of the Cape. In Arrowsmith's chart, it measures 91 miles, or nearly 800 stadia. Arrian makes it to be 740 stadia, or nearly 85 English miles. It was formerly called *Kpuvos*, from the springs of water in its neighbourhood; and afterwards Dionysopolis, from a statue of Bacchus being there cast up by the sea†.

From Dionysopolis to Odessus 200 stadia. This distance is marked in the Itinerary, 24 M. P. which agrees nearly with Arrian.

\* Lib. iv. c. 11. Mel. lib. ii. c. 2.

† Anonymi Periplus Pont. Eux. Steph. Byzant.

In the Peutingerian Tables it seems to be 32 M. P. equal to 256 stadia. Cedrenus the historian says, that in the eighteenth year of the Emperor Justinian, A. D. 544, the sea inundated the cities of Dionysopolis and Odesus.

From Odesus to the foot of Mount Hæmus<sup>b</sup>, 360 stadia. This place is called Mesembria by Strabo, and in the Peutingerian Tables. In the latter the distance is set down as 43 miles, equal to 344 stadia, not very different from Arrian's calculation. Arrian, however, places Mesembria farther on towards Apollonia.

From the foot of Mount Hæmus to Mesembria 90 stadia. This place retains, in some degree, its ancient name, being called Mifœure, Mifœuria, or Mifœurin.

From Mesembria to Anchialus<sup>c</sup> 70 stadia. This distance is set down in the Peutingerian Tables at 12 miles, or 96 stadia.

From Anchialus to Apollonia 180 stadia. The Peutingerian Tables count this distance to be 18 miles, or 144 stadia. Laurie and Whittle's chart makes it to be about 14 English miles, or 112 stadia. Arrowsmith's chart does not make it to be so much. Strabo accounts the distance from Callatis to Apollonia to be 1300 stadia. Arrian makes it to be 1340, a remarkable coincidence, which argues strongly, that the stadia used by Arrian and Strabo were the same. The Peutingerian Tables reckon it at 153 miles,

<sup>b</sup> Now called Emireh Burun.

<sup>c</sup> Anchialus is still called Akkiali. In Ar-

rowsmith's chart it seems to be called Ak-  
liman.



or 1224 stadia<sup>k</sup>. Arrowsmith's chart makes it to be in a straight line 113 English miles, equal nearly to 123 Greek miles, or 984 stadia only. Pliny<sup>l</sup> reckons it at 188 miles, or about 1504 stadia. It is now called Sizboli. Apollonia was a colony of the Milesians, and formerly remarkable for a colossal statue of Apollo, which Lucullus carried away, and placed in the Capitol. It was 30 cubits high, (equal, if Roman measure, to 43.5 English feet.) and cost 550 talents, equal to 106,562 pounds sterling.

From Apollonia<sup>m</sup> to Cherronefus 60 stadia. From Cherronefus to Aulai-tichos 250 stadia. From Aulai-tichos to Thynias 120 stadia. This seems to have been a colony from Apollonia. The island of Thynias on the south side of the Euxine sea was sacred to Apollo, and called Apollonia. There is still a cape Thyniada in this situation. It is called a promontory by Ptolemy.

From Thynias to Salmydessus 200 stadia. Strabo says, that it is 700 stadia from hence to the Cyaneæ Insulæ. According to Arrian, it is 650 stadia. Strabo says, the coast is desert, stony, without harbours, and exposed to the north wind, which may account for

<sup>k</sup> From Callatis to Triffa

24 M. P.

<sup>l</sup> Lib. iv. c. 12.

Triffa to Bihone

12

<sup>m</sup> From Apollonia to the Os Ponti is, according to Pliny, 188 M. P. or 1504 stadia. Arrian makes it to be 1320 stadia only.

Bihone to Dionysopolis

12

Dionysopolis to Odeffus

32

Odeffus to Erite

11

Erite to Templ. Jovis

16

Templ. Jovis to Mesembria

16

Mesembria to Anchialus

12

Anchialus to Apollonia

18

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153 = 1224 stadia.

the great degree of cold mentioned by Ovid and by Xenophon in this country, which might otherwise appear rather extraordinary in a latitude not exceeding 43 degrees. Salmydeffus has somewhat of the old name preserved in Midiah, (Midjeh, Arrowsmith,) a place built on the same spot. Xenophon, in the passage alluded to in the text of Arrian, says, that many ships, upon their arrival in the Euxine sea, strike, and are driven ashore, the coast being full of shoals, that run a considerable way into the sea". The Thracians, who inhabit this coast, raise pillars, and every man plunders the wreck that is cast upon his own coast. Salmydeffus is mentioned by Æschylus in the Prometheus, with much the same character as is here ascribed to it; but the place there meant is said to be on the eastern side of the Propontis, and near to the river Thermodon.

From Salmydeffus to Phrygia 330 stadia. This place is called Philea in Anonymi Periplus Maris Euxini, and Philias in the Peutingerian Tables. A place called Philin now stands on the same spot, which is in the modern maps nearly 40 English miles, or 340 stadia, from Salmydeffus.

From Phrygia to the Cyanean rocks 320 stadia. These are now called Urek Tachi.

From the Cyanean rocks to the Fanum Jovis Urii 40 stadia.

" In Arrowsmith's chart it is remarked, that this is the most dangerous place, where shipwreck is to be feared, being at the entrance of the Bosporus.

" Quid ? ex æde Jovis, religiosissimum ~~fanum~~ lacrum Jovis Imperatoris, quem Græci Urion.

nominant, pulcherrime factum, nonne abstulisti ? — Jovem autem Imperatorem quanto honore in suo templo fuisse arbitramini ? hinc colligere potestis, si recordari volueritis, quanta religione fuerit eadem specie atque forma ~~factum~~ illud, quod ex Macedonia captum in Capitolio

From the Fanum Jovis Urii to Daphne 40 stadia. From Daphne to Byzantium 80 stadia.

Capitolio posuerat Flamininus. Etenim tria ferebantur in orbe terrarum signa Jovis Imperatoris uno in genere pulcherrima facta, unum illud Macedonicum, alterum in Ponti ore et angustis.—Quod autem est ad introitum Ponti; id, cum tam multa ex illo mari bella

emerferint, tam multa porro in Pontum invecta sint, usque ad hanc diem integrum, inviolatumque servatum est. Verres took away the statue from the temple at Syracuse. Cic. in Verr. Act. ii. lib. iv. sect. 57, 58. *Editor*

*Table of the Distances of the Places, mentioned in the Periplus of Arrian, one from another, together with their Latitudes and Longitudes, according to Ptolemy, and to modern observation.*

From TRAPEZUS to DIOSCURIAS.

| From     | To       | Distance in stadia. | Longitude according to Ptolemy. | Latitude according to Ptolemy. | Modern Longitude.                                     | Modern Latitude.                                      |
|----------|----------|---------------------|---------------------------------|--------------------------------|---|---|
| Trapezus | Hyflus   | 180                 | 70 50 0<br>70 45 0 L. c.        | 43 5 0<br>43 6 0 L. c.         | 57 28 0 Arrowf.                                       | 41 2 0 Arrowf.  |
| Hyflus   | Ophis    | 90                  | 71 0 0<br>70 30 0 L. c.         | 43 0 0<br>43 20 0 L. c.        | 58 0 0 D'Anv.   | 41 7 0 D'Anv.   |
| Ophis    | Pfychrus | 30                  | 71 0 0 L. c.                    | 43 25 0<br>41 26 0 L. c.       | 57 55 50 Arrowf.                                      | 41 3 0 Arrowf.  |
| Pfychrus | Calus    | 30                  | 67 20 0                         | 47 20 0                        | 58 10 0 D'Anv.  | 41 0 0 D'Anv.   |
| Calus    | Rhizius  | 120                 |                                 |                                | 58 12 0 D'Anv.  | 41 2 0 D'Anv.   |
| Rhizius  | Afcurus  | 30                  | 71 0 0<br>71 10 0 L. c.         | 43 10 0<br>43 36 0 L. c.       | 58 3 50 Arrowf.<br>58 6 0 Ruf. map<br>58 28 24 D'Anv. | 41 10 0 Arrowf.<br>41 12 0 Ruf. map<br>41 10 0 D'Anv. |
| Afcurus  | Adienus  | 60                  |                                 |                                | 58 34 0 D'Anv.  | 41 11 0 D'Anv.  |
| Adienus  | Athenæ   | 180                 |                                 |                                | 58 45 0 D'Anv.  | 41 16 0 D'Anv.  |
| Athenæ   | Prytanis | 40                  | 71 0 0                          | 43 15 0<br>43 45 0 L. c.       | 58 25 50 Arrowf.<br>59 3 0 D'Anv.                     | 41 15 0 Arrowf.<br>41 19 0 D'Anv.                     |
| Prytanis | Pyxites  | 90                  |                                 |                                | 59 10 0 D'Anv.  | 41 20 0 D'Anv.  |
| Pyxites  | Archabis | 90                  |                                 |                                | 59 23 0 D'Anv.  | 41 20 0 D'Anv.  |
| Archabis | Apfarus  | 60                  | 61 59 0<br>52 0 0               | 44 0 0                         | 59 35 0 D'Anv.  | 41 25 0 D'Anv.  |
| Apfarus  | Acampûs  | 15                  | 72 20 0                         | 44 20 0<br>44 40 0             | 59 7 0 Ruf. map                                       | 41 37 0 Ruf. map                                      |

## TABLE OF DISTANCES.

| From                  | To         | Distance<br>in<br>stadia. | Longitude<br>according to<br>Ptolemy. | Latitude<br>according to<br>Ptolemy.  | Modern<br>Longitude.                | Modern<br>Latitude.                 |
|-----------------------|------------|---------------------------|---------------------------------------|---------------------------------------|-------------------------------------|-------------------------------------|
| Acampsis              | Bathys     | 75                        | 0 0 0                                 | 0 0 0                                 | 0 0 0                               | 0 0 0                               |
| Bathys                | Acinacis   | 90                        |                                       |                                       | 59 9 0 Ruf. map<br>60 0 0 D'Anv.    | 41 43 0 Ruf. map<br>41 40 0 D'Anv.  |
| Acinacis              | Ifis       | 90                        |                                       |                                       | 60 0 0 D'Anv.                       | 41 40 0 D'Anv.                      |
| Ifis                  | Mogrus     | 90                        |                                       |                                       | 60 6 0 D'Anv.                       | 41 47 0 D'Anv.                      |
| Mogrus                | Phasis     | 90                        |                                       |                                       | 60 7 0 D'Anv.                       | 41 55 0 D'Anv.                      |
| Phasis                | Chariens   | 90                        | 72 30 0                               | 44 45 0                               | 59 5 50 Arrowf.<br>59 5 0 Ruf. map  | 42 2 0 Arrowf.<br>42 25 0 Ruf. map  |
| Chariens              | Chobus     | 90                        | 72 0 0                                | 45 15 0                               | 60 20 0 D'Anv.                      | 42 37 0 D'Anv.                      |
| Chobus <sup>a</sup>   | Singames   | 210                       |                                       |                                       | 60 18 0 D'Anv.                      | 42 22 0 D'Anv.                      |
| Singames <sup>b</sup> | Tarfura    | 120                       |                                       |                                       | 60 16 0 D'Anv.                      | 42 47 0 D'Anv.                      |
| Tarfura <sup>c</sup>  | Hippus     | 150                       |                                       |                                       | 60 6 0 D'Anv.                       | 42 57 0 D'Anv.                      |
| Hippus <sup>d</sup>   | Attelephus | 30                        | 58 20 0<br>58 40 0 L. c.              | 42 15 0<br>42 45 0 L. c.              | 60 4 0 D'Anv.                       | 43 2 0 D'Anv.                       |
| Attelephus            | Diofcurias | 120                       |                                       |                                       | 60 2 0 D'Anv.                       | 43 8 0 D'Anv.                       |
| Diofcurias            |            |                           | 72 20 0                               | 41 45 0<br>44 45 0 L. c. <sup>e</sup> | 58 31 50 Arrowf.<br>58 0 0 Ruf. map | 43 18 0 Arrowf.<br>43 23 0 Ruf. map |
| Trapzuz               | Diofcurias | 2260                      |                                       |                                       |                                     |                                     |

<sup>a</sup> Cobi, Chardin. t. i. p. 56.<sup>b</sup> Tachar, Chardin.<sup>c</sup> Sucum, Chardin.<sup>d</sup> Schiniscari, i. e. le fleuve Cheval, Chardin.<sup>e</sup> It is in Ptolemy (Greek copy)  $\mu\alpha$ , which is

41°, but probably should be  $\mu\delta$ , or 44°, as it is in the Latin copy. In chap. 10, Diofcurias is put down 71° 10', Long. 46° 5', both in the Greek and Latin copies.

# TABLE OF DISTANCES.

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## From BYZANTIUM to TRAPEZUS.

| From                   | To                  | Distance<br>in<br>Stadia | Longitude<br>according to<br>Ptolemy. | Latitude<br>according to<br>Ptolemy | Modern<br>Longitude.               | Modern<br>Latitude                                    |
|------------------------|---------------------|--------------------------|---------------------------------------|-------------------------------------|------------------------------------|---|
| Byzantium <sup>1</sup> | Fanum<br>Jovis Urii | 120                      | 56 0 0                                | 43 5 0                              | 46 39 39                           | 41 1 0 Blair's<br>Geog.<br>41 1 24 Requif.<br>Tables. |
| Fanum<br>Jovis Urii    | Rhebas              | 90                       |                                       |                                     |                                    |   |
| Rhebas                 | Acra<br>Melena      | 150                      |                                       |                                     |                                    |   |
| Acra<br>Melena         | Artanes             | 150                      | 56 20 0                               | 43 35 0<br>43 45 0 L. c.            | 47 15 50 Arrowf.<br>47 16 0 D'Anv. | 41 6 0 Arrowf.<br>41 0 0 D'Anv.                       |
| Artanes                | Pfllis              | 150                      | 57 0 0                                | 43 5 0                              |                                    |   |
| Pfllis                 | Port.<br>Calpes     | 210                      | 57 15 0                               | 43 5 0<br>43 15 0 L. c.             |                                    |   |
| Port.<br>Calpes        | Rhoe                | 20                       | 57 20 0<br>57 40 0 L. c.              | 43 0 0<br>43 6 0                    |                                    |   |
| Rhoe                   | Apollonia           | 20                       |                                       |                                     |                                    |   |
| Apollonia              | Chelæ               | 20                       | 54 50 0                               | 44 20 0                             |                                    |   |
| Chelæ                  | Off.<br>Sangarii    | 180                      |                                       |                                     |                                    |   |
| Off. San-<br>garii     | Off.<br>Hippi       | 180                      | 58 0 0                                | 42 15 0                             | 48 47 0 D'Anv.                     | 40 53 0 D'Anv.  |

<sup>1</sup> The difference of longitude between Byzantium and Trapezus amounts, according to Beauchamp's calculation and Arrowfinaith's chart, to

42' 45" of time, equal to 10° 41' 25", which in that latitude are equal to 558½ English miles.

## TABLE OF DISTANCES.

| From                    | To                      | Distance<br>in<br>stadia. | Longitude<br>according to<br>Ptolemy.                                 | Latitude<br>according to<br>Ptolemy. | Modern<br>Longitude.             | Modern<br>Latitude.              |
|-------------------------|-------------------------|---------------------------|---|--------------------------------------|----------------------------------|----------------------------------|
| Off.<br>Hippi           | Lilium<br>Empori-<br>um | 100                       | 71 0 0 l. v.<br>cap. 10.<br>58 20 0<br>58 40 0 L. c.<br>l. v. cap. 1. | 46 30 0<br>42 45 0<br>42 15 0 L. c.  |                                  |                                  |
| Lilium<br>Empori-<br>um | Elæum                   | 60                        |   |                                      |                                  |                                  |
| Elæum                   | Cales Em-<br>porium     | 120                       |   |                                      |                                  |                                  |
| Cales Em-<br>porium     | Lycus<br>fluv.          | 80                        |   |                                      |                                  |                                  |
| Lycus<br>fluv.          | Heraclea                | 20                        |   |                                      |                                  |                                  |
| Heraclea                | Metroum                 | 80                        | 59 0 0  | 43 10 0                              | 50 0 0 D'Anv.<br>49 10 0 Arrowf. | 41 0 0 D'Anv.<br>41 10 0 Arrowf. |
| Metroum                 | Pofidæum                | 40                        |   |                                      |                                  |                                  |
| Pofidæum                | Tyndaridæ               | 45                        |   |                                      |                                  |                                  |
| Tynda-<br>ridæ          | Nymphæ-<br>um           | 15                        |   |                                      |                                  |                                  |
| Nymphæ-<br>um           | Oxinas                  | 30                        | 63 45 0   | 47 30 0                              |                                  |                                  |
| Oxinas                  | Sandaraca               | 90                        |   |                                      |                                  |                                  |
| Sandaraca               | Crenides                | 60                        |   |                                      |                                  |                                  |
| Crenides                | Ptylla Em-<br>porium    | 30                        |   |                                      |                                  |                                  |
| Ptylla Em-<br>porium    | Tios                    | 90                        | 59 30 0<br>59 10 0  | 43 10 0<br>43 30 0 L. c.             |                                  |                                  |
| Tios                    | Billæus<br>fluv.        | 20                        | 60 0 0<br>59 56 0 L. c.   | 43 10 0<br>43 30 0 L. c.             | 50 30 0 D'Anv.                   | 41 12 0 D'Anv.                   |

# TABLE OF DISTANCES.

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| From              | To                | Distance in fadia. | Longitude according to Ptolemy. | Latitude according to Ptolemy. | Modern Longitude.                  | Modern Latitude.                  |
|-------------------|-------------------|--------------------|---------------------------------|--------------------------------|------------------------------------|-----------------------------------|
| Billæus fluv.     | Partheni-us fluv. | 100                | 0 0 0                           | 0 0 0                          | 49 52 50                           | 41 36 0 Arrowf.                   |
| Partheni-us fluv. | Amastris          | 90                 | 60 15 0                         | 43 10 0                        | 50 3 50                            | 41 39 0 Arrowf.                   |
| Amastris          | Erythinus         | 60                 | 62 10 0                         | 43 10 0                        | 50 12 50 Arrowf.<br>51 0 0 D'Anv.  | 41 45 0 Arrowf.                   |
| Erythinus         | Cromna            | 60                 |                                 |                                |                                    |                                   |
| Cromna            | Cyturus           | 90                 | 61 0 0                          | 43 15 0                        |                                    |                                   |
| Cyturus           | Ægialos           | 60                 | 61 0 0                          | 41 20 0                        | 53 39 50 Arrowf.                   | 41 54 0 Arrowf.                   |
| Ægialos           | Thymena           | 90                 |                                 |                                |                                    |                                   |
| Thymena           | Carambis          | 120                |                                 |                                | 50 59 50                           | 42 11 24                          |
| Carambis          | Zephy-rium        | 60                 | 61 20 0                         | 41 25 0<br>44 26 0 L. c.       | 52 0 0 D'Anv.<br>51 6 20 Arrowf.   | 41 36 0 D'Anv.<br>42 23 0 Arrowf. |
| Zephy-rium        | Aboniti-chos      | 150                | 61 10 0<br>61 30 0              | 41 15 0<br>44 20 0 L. c.       |                                    |                                   |
| Aboniti-chos      | Æginetis          | 150                | 62 2 0                          | 41 25 0<br>44 0 0              | 52 8 0                             | 41 20 0 D'Anv.                    |
| Æginetis          | Cinolis           | 60                 |                                 |                                |                                    |                                   |
| Cinolis           | Stephanes         | 180                | 61 20 0                         | 40 15 0                        | 51 57 50                           | 42 3 0                            |
| Stephanes         | Potamos           | 150                | 63 20 0                         | 43 56 0<br>43 25 0             | 52 33 50                           | 42 16 0                           |
| Potamos           | Leptis Acra       | 120                |                                 |                                |                                    |                                   |
| Leptis Acra       | Harmene           | 60                 |                                 |                                |                                    |                                   |
| Harmene           | Sinope            | 40                 | 62 25 0                         | 40 25 0                        |                                    |                                   |
| Sinope            | Carufa            | 150                | 63 10 0                         | 44 0 0                         | 52 56 0 D'Anv.<br>52 53 20 Arrowf. | 41 8 0 D'Anv.<br>42 1 48 Arrowf.  |



## TABLE OF DISTANCES.

| From             | To                | Distance<br>in<br>stadia. | Longitude<br>according to<br>Ptolemy. | Latitude<br>according to<br>Ptolemy. | Modern<br>Longitude.             | Modern<br>Latitude.              |
|------------------|-------------------|---------------------------|---------------------------------------|--------------------------------------|----------------------------------|----------------------------------|
| Caruta           | Zagora            | 150                       | 0 0 0                                 | 0 0 0                                | 53 2 50                          | 41 45 5                          |
| Zagora           | Halys<br>fluv.    | 300                       |                                       |                                      |                                  |                                  |
| Halys<br>fluv.   | Naustath-<br>mus  | 90                        | 64 10 0                               | 43 10 0                              | 53 20 0                          | 40 28 0                          |
| Naustath-<br>mus | Conopæ-<br>um     | 50                        |                                       |                                      |                                  |                                  |
| Conopæ-<br>um    | Eufene            | 120                       |                                       |                                      |                                  |                                  |
| Eufene           | Amifus            | 160                       |                                       |                                      |                                  |                                  |
| Amifus           | Ancon             | 160                       | 65 0 0                                | 45 0 0                               | 54 0 0 D'Anv.<br>54 8 50 Arrowf. | 40 10 0 D'Anv.<br>41 7 0 Arrowf. |
| Ancon            | Heracle-<br>um    | 360                       | 66 0 0                                | 43 0 0                               |                                  |                                  |
| Heracle-<br>um   | Thermo-<br>don    | 40                        |                                       |                                      |                                  |                                  |
| Thermo-<br>don   | Beris             | 90                        | 67 0 0                                | 43 15 0                              | 54 45 50                         | 40 58 0                          |
| Beris            | Thoaris           | 60                        |                                       |                                      |                                  |                                  |
| Thoaris          | Œnoe              | 30                        |                                       |                                      |                                  |                                  |
| Œnoe             | Phigamus          | 40                        |                                       |                                      |                                  |                                  |
| Phigamus         | Phadifana         | 150                       |                                       |                                      |                                  |                                  |
| Phadifana        | Polemoni-<br>um   | 10                        |                                       |                                      |                                  |                                  |
| Polemoni-<br>um  | Jafonium          | 130                       | 67 15 0                               | 43 5 0                               | 55 19 50                         | 40 57 0                          |
| Jafonium         | Intula<br>Cilicum | 150                       | 68 20 0                               | 43 15 0                              | 55 26 50 Arrowf.                 | 41 1 0 Arrowf.                   |

# TABLE OF DISTANCES.

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| From              | To               | Distance<br>in<br>stadia. | Longitude<br>according to<br>Ptolemy. | Latitude<br>according to<br>Ptolemy. | Modern<br>Longitude. | Modern<br>Latitude. |
|-------------------|------------------|---------------------------|---------------------------------------|--------------------------------------|----------------------|---------------------|
| Insula<br>Cilicum | Boona            | 75                        | 0 1 0                                 | 43 5 0                               | 0 1 0                | 43 5 0              |
| Boona             | Cotyora          | 90                        |                                       |                                      | 55 33 50 Arrowf.     | 41 5 36 Arrowf.     |
| Cotyora           | Melanthi-<br>us  | 60                        | 67 5 0                                | 43 5 0                               |                      |                     |
| Melanthi-<br>us   | Pharma-<br>tenus | 150                       |                                       |                                      |                      |                     |
| Pharma-<br>tenus  | Pharnacea        | 120                       |                                       |                                      |                      |                     |
| Pharnacea         | Arrhen-<br>tias  | 30                        | 68 10 0 G. r<br>59 20 0               | 43 20 0                              | 56 5 50 Arrowf.      | 40 51 0 Arrowf.     |
| Arrhen-<br>tias   | Zephy-<br>rium   | 120                       | .                                     |                                      |                      |                     |
| Zephy-<br>rium    | Tripolis         | 90                        | 68 20 0                               | 43 0 0                               | 56 20 50 Arrowf.     | 40 58 0 Arrowf.     |
| Tripolis          | Argyria          | 20                        |                                       |                                      | 56 37 50 Arrowf.     | 40 46 0 Arrowf.     |
| Argyria           | Philocalca       | 90                        |                                       |                                      |                      |                     |
| Philocalca        | Coralla          | 100                       |                                       |                                      |                      |                     |
| Coralla           | Ἰερὸν ὄρος       | 150                       |                                       |                                      |                      |                     |
| Ἰερὸν ὄρος        | Cordyla          | 40                        |                                       |                                      |                      |                     |
| Cordyla           | Hermo-<br>nassa  | 45                        | 71 20 0                               | 43 15 0                              |                      |                     |
| Hermo-<br>nassa   | Trapezus         | 60                        | 68 0 0                                | 43 0 0                               |                      |                     |
| Byzanti-<br>um    | Trapezus         | 7055                      |                                       |                                      |                      |                     |

## TABLE OF DISTANCES.

From DIOSCURIAS to the CIMMERIAN BOSPORUS.

| From              | To                | Distance<br>in<br>stadia. | Longitude<br>according to<br>Ptolemy. | Latitude<br>according to<br>Ptolemy. | Modern<br>Longitude.              | Modern<br>Latitude.               |
|-------------------|-------------------|---------------------------|---------------------------------------|--------------------------------------|-----------------------------------|-----------------------------------|
|                   |                   |                           | ° ' "                                 | ° ' "                                | ° ' "                             | ° ' "                             |
| Dioscurias        | Pityus            | 350                       | 72 20 0                               | 41 45 0                              | 60 0 0 D'Anv.<br>58 15 0 Arrowf.  | 43 16 0 D'Anv.<br>43 18 0 Arrowf. |
| Pityus            | Nitica            | 150                       |                                       |                                      | 59 2 0 D'Anv.<br>57 23 50 Arrowf. | 43 20 0 D'Anv.<br>43 20 0 Arrowf. |
| Nitica            | Abafcus           | 90                        |                                       |                                      |                                   |                                   |
| Abafcus           | Borgys            | 120                       |                                       |                                      |                                   |                                   |
| Borgys            | Nefis             | 60                        |                                       |                                      |                                   |                                   |
| Nefis             | Mafætica          | 90                        |                                       |                                      |                                   |                                   |
| Mafætica          | Achæus            | 60                        |                                       |                                      |                                   |                                   |
| Achæus            | Prom.<br>Hercul.  | 150                       |                                       |                                      |                                   |                                   |
| Prom.<br>Hercul.  | Aliud<br>Prom.    | 180                       |                                       |                                      |                                   |                                   |
| Aliud<br>Prom.    | Vetus<br>Lazica   | 120                       |                                       |                                      |                                   |                                   |
| Vetus<br>Lazica   | Achaia<br>Antiqua | 150                       |                                       |                                      | 57 20 0 D'Anv.                    | 43 30 0 D'Anv.                    |
| Achaia<br>Antiqua | Pagræ             | 350                       |                                       |                                      |                                   |                                   |
| Pagræ             | Sacer<br>Portus   | 180                       |                                       |                                      |                                   |                                   |
| Sacer<br>Portus   | Sindica           | 300                       |                                       |                                      | 55 15 20 Arrowf.                  | 44 5 0 Arrowf.                    |

# TABLE OF DISTANCES.

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| From               | To                 | Distance in stadia. | Longitude according to Ptolemy. | Latitude according to Ptolemy. | Modern Longitude. | Modern Latitude. |
|--------------------|--------------------|---------------------|---------------------------------|--------------------------------|-------------------|------------------|
| Sindica            | Bosporus Cimmerius | 540                 | 0 1 0                           | 0 1 0                          | 54 30 50 Arrowf.  | 44 42 0 Arrowf.  |
| Bosporus Cimmerius | Tanais Osium       | 60                  |                                 |                                |                   |                  |
| Diofcurias         | Bosporus Cimmerius | 2890                |                                 |                                |                   |                  |

## From PANTICAPÆUM to FANUM JOVIS URII.

| From                   | To                     | Distance in stadia. | Longitude according to Ptolemy. | Latitude according to Ptolemy. | Modern Longitude.                   | Modern Latitude.                   |
|------------------------|------------------------|---------------------|---------------------------------|--------------------------------|-------------------------------------|------------------------------------|
| Panticapæum            | Cazeca                 | 420                 | 64 0 0                          | 47 55 0                        | 44 11 50                            | 45 21 0                            |
| Cazeca                 | Theodofia              | 280                 |                                 |                                |                                     |                                    |
| Theodofia              | Port. Taurro-Scytharum | 200                 | 63 20 0                         | 47 20 0                        | 52 56 50 Arrowf.<br>53 6 0 Ruf. map | 45 5 0 Arrowf.<br>45 20 0 Ruf. map |
| Port. Taurro-Scytharum | Halmitis Taurica       | 600                 |                                 |                                |                                     |                                    |
| Halmitis Taurica       | Symboli Portus         | 520                 |                                 |                                |                                     |                                    |
| Symboli Portus         | Cherrone-fus Taurica   | 180                 | 61 0 0                          | 47 15 0                        |                                     |                                    |
| Cherrone-fus Taurica   | Cercinetis             | 600                 | 61 0 0                          | 47 0 0                         |                                     |                                    |

<sup>i</sup> It is observed in the Travels of Pallas, that the distances of those places, which could be ascertained in the Taurica Cherfoneus, pretty accu-

rately correspond with those specified in the Periplus. Pallas, Travels, vol. ii. p. 341.

Cercinetis

## TABLE OF DISTANCES.

| From                    | To                      | Distance<br>in<br>stadia. | Longitude<br>according to<br>Ptolemy. | Latitude<br>according to<br>Ptolemy. | Modern<br>Longitude. | Modern<br>Latitude. |
|-------------------------|-------------------------|---------------------------|---------------------------------------|--------------------------------------|----------------------|---------------------|
| Cercinetis              | Calus                   | 700                       | 59 40 0                               | 48 30 0                              |                      |                     |
| Calus                   | Tamyraca                | 300                       | 59 30 0                               | 48 0 0                               |                      |                     |
| Tamyraca                | Of.<br>Paludis          | 300                       | 59 20 0                               | 48 30 0                              |                      |                     |
| Of.<br>Paludis          | Eona                    | 380                       | 63 0 0                                | 48 20 0                              |                      |                     |
| Eona                    | Borysthe-<br>nes        | 150                       |                                       |                                      |                      |                     |
| Borysthe-<br>nes        | Insula<br>Deserta       | 60                        | 57 0 0                                | 49 0 0                               |                      |                     |
| Insula<br>Deserta       | Odessus                 | 80                        |                                       |                                      |                      |                     |
| Odessus                 | Port. Istria-<br>anorum | 250                       | 54 50 0                               | 45 15 0                              |                      |                     |
| Port. Istria-<br>anorum | Portus<br>Istiacorum    | 50                        |                                       |                                      |                      |                     |
| Portus<br>Istiacorum    | Pfison Os<br>Istri      | 1200                      |                                       |                                      |                      |                     |
| Pfison Os<br>Istri      | Secundum<br>Os Istri    | 60                        |                                       |                                      |                      |                     |
| Secundum<br>Os Istri    | Calon Os<br>Istri       | 40                        |                                       |                                      |                      |                     |
| Calon Os<br>Istri       | Naracum                 | 60                        |                                       |                                      |                      |                     |
| Naracum                 | Quintum<br>Os Istri     | 120                       |                                       |                                      |                      |                     |
| Quintum<br>Os Istri     | Istria                  | 500                       |                                       |                                      |                      |                     |
| Istria                  | Tomea                   | 300                       |                                       |                                      |                      |                     |

# TABLE OF DISTANCES.

103

| From                       | To                         | Distance<br>in<br>stadia. | Longitude<br>according to<br>Ptolemy. | Latitude<br>according to<br>Ptolemy. | Modern<br>Longitude. | Modern<br>Latitude. |
|----------------------------|----------------------------|---------------------------|---------------------------------------|--------------------------------------|----------------------|---------------------|
| Tornea                     | Callantra                  | 300                       | 55 0 0                                | 45 50 0                              | 46 0 0 D'Anv.        | 44 29 0 D'Anv.      |
| Callantra                  | Carus<br>Portus            | 180                       | 54 40 0                               | 45 30 0                              |                      |                     |
| Carus<br>Portus            | Tetrifias                  | 120                       | 54 40 0                               | 45 30 0                              |                      |                     |
| Tetrifias                  | Bizus                      | 60                        |                                       |                                      |                      |                     |
| Bizus                      | Dionyfo-<br>polis          | 80                        |                                       |                                      |                      |                     |
| Dionyfo-<br>polis          | Odeffus                    | 200                       |                                       |                                      |                      |                     |
| Odeffus                    | Prom. of<br>Mount<br>Hæmus | 360                       |                                       |                                      |                      |                     |
| Prom. of<br>Mount<br>Hæmus | Mesemb-<br>ria             | 90                        |                                       |                                      | 46 50 0 Arrowf.      | 42 28 0 Arrowf.     |
| Mesemb-<br>ria             | Anchialus                  | 70                        | 55 0 0                                | 44 40 0                              | 46 27 0              | 42 25 0 Arrowf.     |
| Anchialus                  | Apollonia                  | 180                       | 54 45 0                               | 44 30 0                              |                      | 42 34 0             |
| Apollonia                  | Cherrone-<br>fus           | 60                        | 54 50 0                               | 44 20 0                              | 45 40 0              | 42 20 0             |
| Cherrone-<br>fus           | Aulai-<br>tichos           | 250                       | 55 0 0                                | 44 40 0                              | 46 32 0              | 42 19 0             |
| Aulai-<br>tichos           | Thynias                    | 120                       |                                       |                                      | 45 24 0              | 42 2 0              |
| Thynias                    | Salmydef-<br>fus           | 200                       | 57 40 0                               | 43 26 0<br>43 20 0                   | 45 33 0              | 41 54 0             |
| Salmydef-<br>fus           | Phrygia                    | 330                       | 55 20 0                               | 43 40 0                              | 45 40 0              | 41 45 0 Arrowf.     |
| Phrygia                    | Cyanæ                      | 320                       |                                       |                                      |                      |                     |

Cyanæ

## TABLE OF DISTANCES.

| From                | To                  | Distance<br>in<br>stadia. | Longitude<br>according to<br>Ptolemy. | Latitude<br>according to<br>Ptolemy. | Modern<br>Longitude.    | Modern<br>Latitude.     |
|---------------------|---------------------|---------------------------|---------------------------------------|--------------------------------------|-------------------------|-------------------------|
| Cyanæ               | Fanum<br>Jovis Urii | 40                        | ° ' "<br>56 30 0<br>56 10 0           | ° ' "<br>43 26 0<br>43 25 0          | ° ' "<br>47 10 0 D'Anv. | ° ' "<br>41 10 0 D'Anv. |
| Fanum<br>Jovis Urii | Daphne              | 40                        |                                       |                                      |                         |                         |
| Daphne              | Byzanti-<br>um      | 80                        |                                       |                                      |                         |                         |
| Pantica-<br>pæum    | Fanum<br>Jovis Urii | 10,310                    |                                       |                                      |                         |                         |

|  |         |
|--|---------|
|  | Stadia. |
| From Trapezus to Dioscurias            | 2260    |
| From Fanum Jovis Urii to Trapezus      | 6935    |
| From Dioscurias to Bosporus Cimmericus | 2890    |
| From Panticapæum to Fanum Jovis Urii   | 10,310  |

Circuit of the Euxine sea  $22,395 = 2564$  English miles nearly.

ON  
THE COMMERCE  
OF  
THE EUXINE SEA.



ON  
THE COMMERCE  
OF  
THE EUXINE SEA.

THE first sea-voyage of which we read in profane history was performed on the Euxine sea. The Argonauts, setting out from the port of Iolchos, or Pagasæ, in Thessaly, sailed to Colchis, at the eastern extremity of this sea, and, as it appears, visited many other places in that now unfrequented neighbourhood. This voyage is remarkable for its length, as well as for its antiquity, comprehending in extent the length of  $14\frac{1}{2}$  degrees upon the equator, or more than 1000 English miles.

The professed object of this expedition was the pursuit of gold; and perhaps the accounts given by Strabo and Appian may be the most probable of any, which state it to be a practice of the Colchians to extend fleeces of wool across the beds of the torrents that fall from mount Caucasus, and by means of these to entangle the particles of gold, which were washed down by the stream.

This mode of collecting this metal, which is much the same with the one practised now on the coast of Guinea, and other  
rivers

rivers of Africa, made Colchis be regarded as the Gold Coast<sup>a</sup> of that early period.

The manners however of those remote ages oblige us to consider this expedition as rather prædatory than commercial.

The trade carried on upon the Euxine sea may be regarded in two points of view, one respecting its own produce, and that of the countries bordering on it; the other respecting it as a means of conveying the produce of other countries, and particularly that of the East Indies, to Europe.

If we look at this sea in a map of the world, it appears happily situated for commerce of every kind, forming an easy communication between Europe and the north-east parts of Asia, enjoying a moderate climate, free from the hurricanes, that infest the Southern seas, and the almost perpetual storms that distress navigation in the Northern ocean. It possesses numerous ports; many navigable rivers flow into it; it abounds with large fish, to a degree unknown in other places; and the countries bordering on it, at least the whole extent of the Southern coast, are exuberant in the produce of every material for ship-building, as timber, pitch, hemp<sup>b</sup>, iron, together with great plenty of provisions. These advantages caused it, in early times, to be a sea of great naval resort. Both the European and the Asiatic Greeks founded colonies on its shores, both to the north-west and to the east of the Thracian Bosphorus.

<sup>a</sup> Strabo, lib. i. et xii.

<sup>b</sup> Strabo, p. 498.

Miletus, the capital of Ionia, the great school for astronomical and nautical instruction, and the prime source from whence most of the colonies<sup>c</sup> of antiquity were derived, founded several cities on the Euxine sea, and some even on its most remote shores. Among these, were on the southern coast, Sinope, Tios, Amisus, and Trapezus, and, according to Paterculus, even Byzantium and Cyzicus. On the east, Dioscurias, the principal city in that neighbourhood. On the north, Panticapæum, Theodosia, and Olbia, and on the west, Istria and Apollonia.

The European Greeks, as well as the Asiatic, founded cities on the same sea. Heraclea Pontica was a colony from Megara, and Athens contributed to that sent to Amisus. Apollonia in Ponto was built by emigrants from Corinth, or Corcyra. Amastris was of Greek original, and, according to Arrian, the whole of the cities on the western coast were Greek colonies.

The commodities furnished as articles of trade by the countries bordering on the Euxine sea were neither very numerous, nor of great value. Honey, wax, hides, provisions of all kinds, and materials for building or rigging ships, were the principal. It must not be omitted, that linen-cloth<sup>d</sup>, both white and dyed, or painted, was an article of trade from this country to Greece in very early times.

But the Euxine sea itself was the great source of supply for

<sup>c</sup> Super octoginta urbium per cuncta maria genitrix, Plin. Nat. Hist. lib. v. c. 29. Primæ in Ionia fundatæ et matris multarum et magnarum urbium in Ponto atque Ægypto, atque pluribus locis mundi Milesiorum civi-

tatis Senatus et Populus &c. &c. Translat. of a Greek Inscription in Chandler, pag. 17. No. xliii.

<sup>d</sup> Strabo, lib. xi. Herodot. lib. ii. c. 5.

their domestic or æconomical commerce. Both this sea and the Palus Mæotis abound in fish of a large size\*, and excellent quality. This is ascribed by Pliny† to its waters being less salt than those of the Mediterranean, which made them more proper for hatching the spawn, in the same manner as we observe some sea-fish, salmon particularly, come up the fresh-water rivers to deposit their ova. The Mæotis being, by the influx of the Tanais‡, less salt than the Euxine sea, attracts them thither, as a breeding-place, and perhaps on account of its cold climate, the tunny fish being, according to Ælian, very impatient of heat.

The fish, when they have attained a convenient size, pour out through the Cimmerian Bosphorus into the Black sea, and swim along the southern coast to the Thracian Bosphorus, in their way to the Mediterranean. Their growth is very rapid during their passage. The fishery, according to Strabo§, begins about Trapezus, or Pharnacea (Cerasus); but they are seldom caught at either of these places of a size sufficient to salt as an article of trade.

By the time the shoals had proceeded westward as far as Sinope',

\* Piscium genus omne, præcipua celeritate adolescit maxime in Ponto. Plin. lib. ix. c. 15. xxxii c. 11. Strabon. lib. vii. p. 320. Ed. Paris.

† Plin. lib. 9. c. 15.

‡ Polyb. lib. iv. c. 5. The shallowness of the Palus Mæotis may perhaps be an inducement to go thither to breed. Polybius says, in most places it is not more than five or seven fathoms deep.

§ Strabon. lib. vii. p. 320.

' A medal struck at Sinope has a tunny on

its reverse. Patin. 317 Piscis in nummo caelatus pelamis est, ad denotandam thunnorum seu pelamidum versus ejus littus abundantiam et piscationem, de qua tradit Strabo, lib. vii. p. 320. Nascitur autem in paludibus Mæotidis, cumque aliquid virium cepit, ac ad littus Asianum deferuntur usque ad Trapezuntem et Pharnaciam, atque ibi primum capiuntur: sed ea piscatio copiosa non est, quia justam magnitudinem pelamides non sunt assecutæ, Σινώπην ἀπολέσας ἀραιτέρα πρὸς τὴν Θύραν, καὶ τὴν ταρχύαν ἔστιν. Postquam ad Cyaneas appulere

the fish were increased in size, and were salted in great abundance. Heraclea, Tium, and Amastris, all of which lie to the west of Sinope, enjoyed the advantages of the fishery in still greater perfection, and were deeply engaged in it, as appears from *Ælian*<sup>1</sup>. In short, the advantages of the fishery to those who inhabited the coasts were such, that they abandoned all other means of getting a livelihood, and applied themselves entirely to fishing, though the ground in the neighbourhood was fertile, and the adjacent mountains rich in minerals.

As the fish proceeded further westward, they appear to have been more valued. A poetical glutton, of the name of Architratus, cited by Athenæus, extols as a delicacy that part of the fish which lies next the tail, pickled and broiled, as we do a red herring; and adds, that Byzantium is the metropolis<sup>2</sup> of this article of luxury; in which sentiment another proficient in luxurious eating concurs. The Pontic<sup>3</sup> salted meats (*ταριχία Ποντικά*) were highly esteemed in Greece, as early as the time of Herodotus, Plato, Aristophanes, and Polybius<sup>4</sup>, and probably long before. Even Hesiod is cited, as speaking of the Bosphorus as a market for these kinds of salted delicacies. They went under different names, but were mostly made of the tunny-fish, and were denominated, either from the size of the animal, the parts of it used, or the shape of the pieces into which it was cut. Thus the parts of the large

appulere, easque præteriere ad Byzantium et ad cornu ejus convertuntur, ibi fit tertia piscatio. Vaillant. Numm. *Ær.* p. 84. part. 2.

<sup>1</sup> *Ælian.* de Animal. lib. xv. c. 5.

<sup>2</sup> Athen. lib. vii. p. 303. Tunnies are still caught in vast quantities at Constantinople. See Petrus Gyllius, and Tournefort's Travels.

A medal of Plotina, struck at Byzantium, has on its reverse a dolphin between two tunnies, and two on a medal of Sabina. Vaillant. *Patin.* p. 188.

<sup>3</sup> Athen. lib. iii. p. 118, 119.

<sup>4</sup> Polyb. lib. iv. c. 5.

fish salted were called Melyandria; the parts next the tail, Ορεα, quasi *εραια*; the belly-parts, Hypogastria; and when cut into cubical shaped pieces, Cybia<sup>n</sup>.

Those who desire more information on this subject may consult Athenæus, who is very diffuse in his account, and adds, that a jar of this pickled fish was sold for 300 drachmæ, or about 10l. English.

It was not however the plenty of fish only, which gave the nations on this coast so much advantage in this trade. Nature had very plentifully supplied them with salt also.

The river Halys, which falls into the sea between Amifus and Sinope, takes its name from the salt grounds<sup>o</sup>, through which it flows; and Tournefort remarks, that all these parts are full of fossile salt, which is found even in the great roads<sup>p</sup> and arable lands.

Several of the places on this coast have, I think, received their names from the trade above mentioned. Thus Halmitis Taurica, which lies near the mouth of the Cimmerian Bosphorus, the great exit of the tunny-fish from the Palus Mæotis, probably took its name from the trade carried on there, the word *Ἀλμειτής* signifying a person who deals in salted<sup>q</sup> meats, or fish.

<sup>n</sup> Athen. lib vii p 303.

<sup>o</sup> Strab. lib xii p. 546.

<sup>p</sup> Tournefort's Travels, vol. iii. p. 49.

<sup>q</sup> Τῆς ἁλμῆς ταριχία, Strabo. The trade of

Cassa, or Theodosia, at present is, in a great measure, in salted fish and caviar, as formerly. Arrowsmith's chart.

**S**almydeffus, or Salmydeffus, had, I suspect, a similar derivation. Cordyla, a place so called, which lies near Trapezus, expresses<sup>a</sup> by its name a small or young tunny; and Strabo tells us, as I have before noticed, that these fish caught so far to the eastward as Trapezus are all small. Farther to the westward lies Thynias, an island that, I suppose, took its name from these fish, it lying to the west of Heraclea; at which place, Ælian tells us, the fish are in great perfection, as they improve when they approach the Thracian Bosphorus, and do not acquire the name of Thynri, or Θύνναι, until they are grown to be large, the small and middle-sized being called Pelamides.

The city of Thynias, in the neighbourhood of Salmydeffus, had its name also, I presume, from these fish, it being within a moderate distance of the Bosphorus, their great resort, both when they leave and when they enter the Euxine sea.

But the great advantage, which the Euxine sea possessed in point of trade, was its serving as a means of conveyance of the commodities of the East to Europe. This appears to me to have been the most ancient method, and much prior to the communication across the Arabian gulph, to the Red sea and Alexandria. It was indeed tedious and circuitous, but the desire of possessing Indian commodities overcame all obstacles. Pliny relates, from Varro, that Pompey, when prosecuting the war against Mithridates, discovered the course of this trade.

<sup>a</sup> *Cor. et hæc pelamis pusilla, cum in Pontum e Mæotide exit, hoc nomen ha-* bet. Plin. lib. xxxii. c. 11.

The goods, he says, were brought out of India in seven days<sup>†</sup> to the Icarus, a river of Bactriana, which falls into the Oxus, and conveyed down the river last mentioned into the Caspian sea, across which they were carried to the mouth of the Cyrus, and up that river to a place, that was five days' journey by land to the Phasis, down which they were carried to its entrance into the Euxine sea. from whence they were sent to Byzantium, and other places.

Strabo gives much the same account. He says, that Aristobulus and Eratosthenes had written, from the information of Patrocles, whose authority he highly commends in another part<sup>†</sup> of his work, that Indian commodities were carried down both the Ochus and the Oxus, into the Caspian sea, and transported from thence to the opposite coast of Albania, and from thence, by means of the Cyrus<sup>‡</sup>, and the avenues afforded by that river, carried into the Euxine sea.

It appears, that the Phasis served as the means of conveyance, being navigable as high up its stream as Sarapana, to which place the goods were carried in four days, by land-carriage, in waggons from the Cyrus<sup>†</sup>. These accounts of Pliny and Strabo do not materially vary from one another.

The river Icarus, mentioned by Pliny, is to be found in Solinus; but I think it is only copied from Pliny. Ptolemy specifies a country called Guriana, on the banks of a river, that falls into the

<sup>†</sup> *Μάλιστα πεινύσθαι δικάσας*, Strab. lib. ii.

<sup>‡</sup> Strab. lib. xi. p. 498.

<sup>§</sup> Strab. lib. xi. p. 509.



**Oxus**; and Mr. Rennell's map specifies both a district and a city, named Gaur, or Zout, in nearly the same situation, on the banks of a river, that runs into the Oxus, near the city of Balk, or, as it was anciently called, Bactra, or Zariaspe, in  $31^{\circ} 30'$  N. L. nearly, and  $64^{\circ}$  Long.

The district of Gaur joins to that of Cabul<sup>a</sup>, a celebrated place of trade in the East Indies, as low as the last century. The passage of the goods from thence to Europe and Asia Minor is easily conceived. They passed down the Oxus, or Jihon; northward to the Caspian sea. The Oxus is described by Arrian<sup>\*</sup> to be the largest of the Asiatic rivers, those of India excepted; and Strabo speaks of it, as convenient for navigation<sup>†</sup>, inasmuch that the goods carried down it are easily conveyed into Hyrcania, and from thence, by means of rivers, to the countries lying on the Pontic sea. How different must the condition of those countries at that time have been from their present state!

The breadth of the Caspian sea, from the mouth of the Oxus to the mouth of the Kur, or Cyrus, on the opposite coast of Albania, is, according to D'Anville, about 1800 stadia, or rather more than 210 English miles. The Cyrus is described by Strabo, as the

<sup>a</sup> The province of Cabul is, according to Mr. Rennell, highly diversified, being made up of mountains, covered with eternal snow, hills of moderate height, and easy ascent, rich plains, and stately forests, and these enlivened by innumerable streams of water. The situation of the city of Cabul is spoken of in terms of rapture by the Indian historians, it being no less romantic than pleasant, enjoying a wholesome air, and having within its

reach the fruits and other products both of the temperate and torrid zone. In a political light, it is considered as the gate of India towards Tartary, as Candahar holds the same place with regard to Persia. Rennell's Memoir of a Map of Hindostan, p. 152, 153.

<sup>\*</sup> Exped. Alex. lib. iii. p. 146. lib. viii. p. 295.

<sup>†</sup> Strab. lib. ii. p. 73.

largest river in that neighbourhood. It rises, ~~he~~ says<sup>2</sup>, in Armenia, and receiving several other streams from mount Caucasus, pours itself through a narrow channel into Albania, and becomes then a large stream, by the accession of four other navigable rivers; and, being thus increased, empties itself into the Caspian sea.

From modern maps<sup>3</sup>, and the consideration of the large rivers, which appear to flow into it, I make no doubt, that it was navigable (for such vessels as usually trade on rivers) as high as the meridian of Sarapana, which place still retains its ancient name, and is in one place distant only about 25 miles from a branch of the Cyrus. Sarapana was a fortified place, lying, as Sarapan now does, on one of the rivers that compose the Phasis, which last river, Strabo tells us, was also navigable so far. To this place the goods brought up the Cyrus were carried in waggons, and there re-embarked upon the Phasis, (which both Arrian and Pliny describe, as a very large river,) and carried down to its opening into the Euxine sea.

Strabo says, that the breadth of this isthmus, from the mouth of the Cyrus to Colchis, is about 3000 stadia, or 343 English miles. This seems to be nearly correct; the narrowest<sup>a</sup> part is about 318 English miles wide; but as the mouth of the Cyrus lies obliquely to the southward, this deviation would increase the distance rather more, I think, than Strabo's computation, who does not indeed profess to state the distance with exactness.

Dioscurias, which lies considerably to the north of the mouth

<sup>2</sup> Strab. lib. xi p. 500.

<sup>3</sup> Map of the country between the Black and Caspian seas, 1788. Edwards.

of the Phasis, was the usual centre and resort of the domestic trade of the country. But the emporium of the Indian trade was, according to Strabo, a city, called Phasis, situated on the river of the same name.

From the Phasis, Strabo tells us, that it was but two or three<sup>b</sup> days sail to Amisus, or to Sinope, from both of which cities the East Indian goods were dispersed<sup>c</sup> over Europe and Asia Minor; and this trade contributed, no doubt, to the aggrandizement<sup>d</sup> of both those cities.

Hippocrates<sup>e</sup> observes, that the country adjacent to the Phasis was, in his time, intersected with canals, which the inhabitants used for the purposes of inland navigation. He also speaks of emporia in that country, but whether for the domestic produce, or for foreign commodities, does not appear: the commodities imported were, I presume, much the same as what the European nations now receive from the East Indies. Cotton manufactures<sup>f</sup>, pearls<sup>g</sup>,

<sup>b</sup> Strab. lib. xi. p. 498.

<sup>c</sup> Strabo speaks of the communication of Amisus and Sinope with Colchis, Hyrcania, Bactria, and the parts lying towards the East. Lib. xi. p. 68.

<sup>d</sup> Sinope is called magna et opima by Valerius Flaccus. Argon. lib. v. vers. 108, 109.

<sup>e</sup> De aere, aquis, et locis.

<sup>f</sup> Cotton is mentioned by Herodotus, as an Indian production, and used in the manufacture of cloth. Strabo relates, on the authority of Nearchus, that it was woven into the finest

and best constructed cloths, which, Pliny says, were of very high price. They are repeatedly mentioned in Arrian's Voyage of Nearchus. Herodot. lib. iii. Strab. lib. xv. p. 694. Plin. lib. xii. c. 10. Arrian, Rec. Ind. p. 179. et alibi.

<sup>g</sup> Pliny and Strabo both speak of the Indian pearls, as the finest. Fertilissima est Taprobane, et Toidis, item Perimula promontorium Indiæ. Plin. lib. ix. c. 35. lib. vi. c. 22. Strab. p. 717. Ælian. Hist. Anim. lib. xv. c. 8. Hill's Theophrastus, p. 92.

and gems<sup>b</sup>, dyeing materials<sup>c</sup>, drugs<sup>d</sup>, perfumes<sup>e</sup>, spices<sup>f</sup>, and ivory<sup>g</sup>, were, I believe, the principal, although other articles of less consideration might perhaps be added.

The Indian trade in early ages must have been carried on to extreme disadvantage, even in Pliny's time, when the knowledge of the navigation of the Arabian gulph had facilitated the intercourse with India. Pliny says<sup>o</sup>, that it never drained the Roman empire of less than 463,645 l. annually paid for Indian commodities,

<sup>b</sup> The Indian diamonds are mentioned by Pliny, as first in excellence. The emeralds of the same country were much esteemed. Plin. lib. xxxvii. c. 45.

<sup>c</sup> India is mentioned by Strabo, as abounding in materials for dyeing. p. 694, 699. Pliny tells us, that Indico (Indigo) was brought from thence, and Dioscorides speaks of it as an Indian production. lib. xxxv. c. 6. The red resin, commonly called Dragon's blood, was, and still is, brought from India. Plin. lib. xxxiii. c. 7. lib. xxxv. c. 7. Draconum sanies. Another dyeing material, of the cochineal kind, was imported from the same country. It is described by Ctesias, and after him by Ælian; and as scarlet and purple colours were in such esteem at Rome, it is probable that this dye was made use of there.

<sup>d</sup> Strabo says, that many drugs were produced in India; and Dioscorides specifies a considerable number, which were in use in his time. Many of the ingredients in those exuberant and voluminous compositions, the *confectio Damocratis*, usually called *Mithridate*, and the *Theriaca Andromachi*, better known by the name of Venice treacle, are of Indian production. The admission of such into the

former of these compositions, forms a presumption, that the countries bordering on the Euxine sea had a connection with the East Indies.

<sup>e</sup> Perfumes appear to have been an article of trade with the East Indies, although more with Arabia. *Malabathrum*, *amomum*, *nardus*, *agallochum*, and many others, were all the produce of India. *Heliogabalus*, as we are told by *Lampridius*, burnt Indian perfumes by themselves, to impregnate the air of the vapour-rooms at the baths. As this is mentioned as an instance of extreme extravagance, it may serve to prove the value set on Indian perfumes at Rome.

<sup>f</sup> Cinnamon, mace, long pepper, ginger, and oil of nutmegs, are all ingredients in the *confectio Damocratis*, and of course well known in the countries adjacent to the Euxine sea.

<sup>g</sup> Ivory was, I believe, principally brought from Africa, but some from India, and the largest teeth were brought from thence. Plin. lib. viii. c. 11.

India mittit ebur— VIRGIL.

o Plin. lib. vi. c. 23.

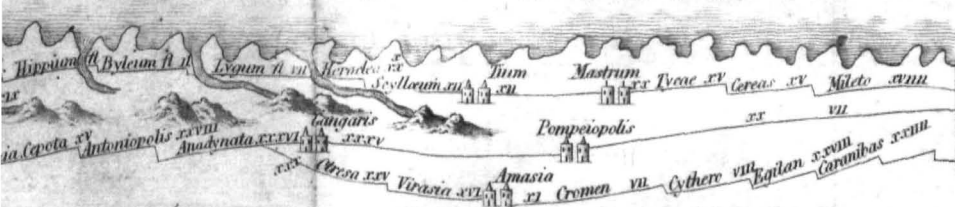
which

which were again fold for an hundred times the original cost; and in another place<sup>r</sup> he tells us, that India, Seres, and the peninsula of India, took from the Roman empire no less annually than double that sum.

As a large proportion of the vast increase of price of these goods, when sold again in Europe, must have arisen from the necessary expences attending their importation, this circumstance must have brought back to the frontier countries a considerable proportion of the wealth, which Rome attracted, as sovereign of the world.

But when the revolution, caused by the religion and by the conquests of Mahomet, put a stop to the East Indian trade down the Red sea, and across the Arabian gulph, his followers, being rather of a military than a commercial disposition, and not inclined to share with Christians what they retained of this commerce, the East Indian trade reverted, in a good measure, into its ancient channel, and contributed to the support and prosperity of Constantinople, which by this communication supplied Europe with East Indian commodities.

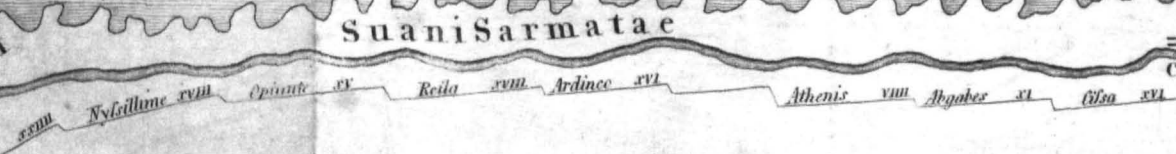
<sup>r</sup> Plin. lib. xii. c. 18.



Segmentum VI.



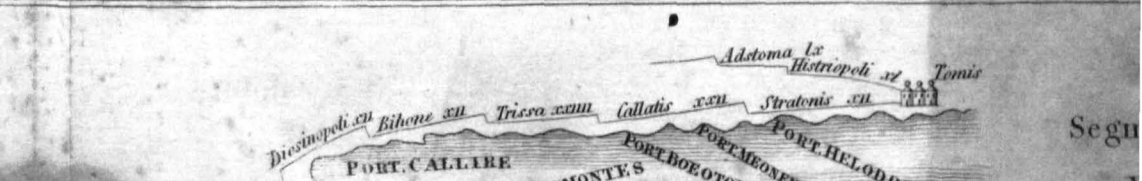
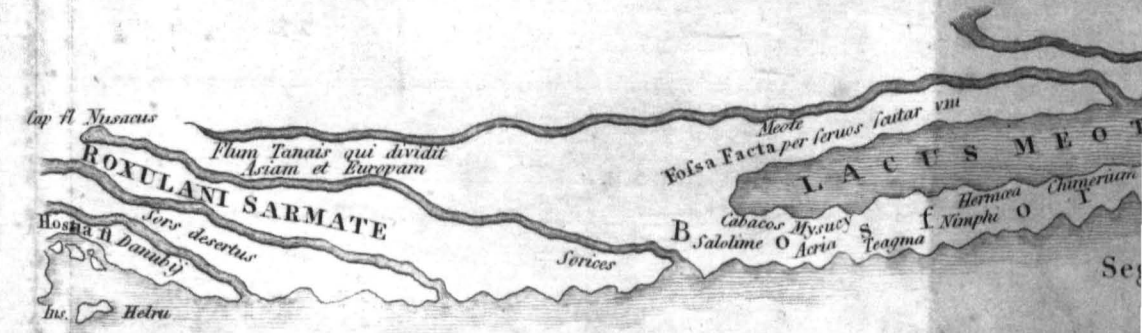
Segmentum VI.



Segmentum VII.



Segmentum VI.



ON  
THE DISTANCE  
WHICH THE  
ANCIENT SHIPS  
SAILED IN TWENTY-FOUR HOURS.

ON  
THE DISTANCE

WHICH THE  
ANCIENT SHIPS

SAILED IN TWENTY-FOUR HOURS.

IT is not my intention to discuss here the subject of ancient navigation; but a few observations on the distances which the vessels of antiquity could sail in twenty-four hours, may not be foreign to the subject, and tend to illustrate the Voyage now under consideration.

Scylax says, that a ship will sail 500 stadia, or 57 English miles, in the course of a day; by which it is clear that he means a day only, and not a day and a night, as, when he means both, they are always so specified. Ptolemy mentions 1000 stadia as the distance that a ship will sail in a day and a night; from which it appears, that as great a distance was allowed for the navigation of the night as for that of the day.


The distances specified by Scylax (though many of them are estimated by the space which a ship will sail in a day, or a



day and a night) cannot be supposed all of them to correspond with measurement, as the time consumed in some coasting voyages must be longer than in others, on account of the shores and currents, and often of the irregularity of the winds that blow off the land.

Let us however, subject to such allowance as may be made for these interruptions, examine some of the distances which he specifies.

The first distance he mentions is that which extends across the Straits of Gibraltar, which he accounts one day's sail. This distance is much less than 500 stadia; but on account of the current, which always sets strongly through the Straits into the Mediterranean, it might have taken up so much time with ships of such imperfect construction and management.

 The next distance he mentions is from Gades to the Pillars of Hercules, which he reckons as one day's sail. This corresponds well with the space, it being very nearly 500 stadia.

From the mouth of the Rhone to Antium, or, as Cluverius reads, to the Arnus, is counted four days and four nights sail. If the Arnus be the genuine reading, the coasting distance is about 2400 stadia, or 600 in twenty-four hours, or a day and night. If Antium be the right reading, the distance approaches nearer to the allotment of Ptolemy, it being nearly 4000 stadia, which accords with the calculation.

Another distance, which he specifies, is from Sardinia to the coast.  
of

of Libya, or Africa. This he estimates as one day and one night's sail. The distance is about 850 stadia, which is sufficiently near the former computation, as fractions of a day or night are seldom expressed in the ancient writers on these subjects.

Another distance which he specifies is from the mouth of the river Strymon to Sestos, which is reckoned as two days and two nights sail. It measures about 1400 stadia; but it might take up more time than usual, on account of the currents, which set very strongly from the Euxine through the Straits into the Ægean sea.

Let us now examine some of the distances on the Euxine sea itself, which are most applicable to the present purpose.

From the mouth of the Ister to Criu-metopon, or the Ram's-head promontory, is reckoned three days and three nights sail. The distance is about 213 English miles, equal to about 2130 stadia, or about 710 stadia for a day and a night's sail.

Another distance is from Criu-metopon to Panticapæum, which is reckoned a day and a night's sail. This is somewhat, but not greatly, more than 1000 stadia.

Another distance set down (not indeed in the Euxine sea) is from the mouth of the river Meander to the promontory of Cragus. This is called a voyage of two days, and appears to be about 1500 stadia, and the passage so entangled among the islands that in all probability it was not reckoned safe to sail in the night time.

The.

The last distance I shall cite from this author is from Lacedæmon to Crete, which is counted one day's sail, and is nearly 500 stadia. The average of the above distances is about 470 stadia in the course of twelve hours, or nearly 40 stadia, or 5 Greek miles, every hour.

Xenophon in his *Anabasis* says, that he sailed from Cotyora to Harmene in two days and one night. This distance by sea, if measured round Cape Boona, amounts to 1422 stadia, or 162.765 English miles, by D'Anville's map, which is equal to nearly 500 stadia daily. By Arrowsmith's chart it is 167 English miles, equal to 1460 stadia nearly, or about 487 stadia daily.

Xenophon says again, that the Greeks sailed from Harmene, or Sinope, to Heraclea in two days, which is about 1800 stadia; but the ships they employed were probably not the best sailers, as he says, that a trireme galley would, in a very long day, sail from Byzantium to Heraclea. This, according to Arrowsmith's chart, is 1150 stadia, or 131 English miles nearly, which, if we reckon sixteen hours to the day, would be nearly  $8\frac{1}{4}$  miles per hour. Xenophon however esteems this an extraordinary exertion, and such as required, no doubt, a favourable wind; and then, by the joint power of sails and oars, such a distance is not unlikely to be accomplished.

Tournefort, though embarrassed with the company of many vessels, and bad sailors, went 80 miles in a day on this coast, with the greatest ease, and even by four in the afternoon; and sailed seventy miles more that night. He accounts 50 miles a small distance for a day's sail, and 60 miles as a very moderate one.

Had

Had he continued his voyage after failing 80 miles, he might perhaps have gone as far in 16 hours as is mentioned by Xenophon, with no better sailors than those of the Greeks.

I am aware that in this statement I vary considerably from that of a gentleman, whose knowledge and abilities I respect; and it is on that account incumbent on me to state my reasons for thus differing with him in opinion \*.

Mr. Rennel thinks that 37 Greek miles is the mean distance, which the ships of antiquity sailed in the space of one day. As this is much less than I have assigned, I shall take the liberty to examine the authorities he cites for what he alledges.

The first instance he adduces is that of Miltiades, who, as he says, “under favour of an *easterly* wind, passed in a single day “from Elæus, in the Chersonese of Thrace, to Lemnos. The “distance is 38 Greek miles only.”

I am sorry to remark several inaccuracies in this short account. The story in Herodotus is as follows: “The Pelasgians, who were “in possession of Lemnos, being admonished by the Pythian oracle “to give satisfaction to the Athenians, for some injuries and cruel- “ties which they had committed, and being required by the Athe- “nians to surrender their island, replied, that they would do so when “the *north wind* <sup>b</sup> should carry a ship in one day from the Athe-

\* Mr. Rennel and I differ in our estimation of the length of the stadium. But I have given my reasons for this in another place.

<sup>b</sup> Βορέη άνέμος.

" nian territory to Lemnos, well knowing the thing to be impracticable, as Attica lies much to the south of Lemnos."

" Miltiades however, having gained possession of Elæus, which lies to the north-east of Lemnos, sailed from thence as from a part of the Athenian territory, during the prevalence of the Etesian winds, and claimed their promise of a surrender."

It is clear from this account, that none but a northerly wind would have enabled him to claim this promise; and it is equally clear, that the Etesian winds in Greece were northerly<sup>d</sup>, or north-westerly, not easterly, as Mr. Rennel (misled probably by the sound of the word) supposes.

Next Herodotus only says, that Miltiades sailed from Elæus to Lemnos in one day, not that the distance between these places was the utmost extent of a day's sail. Miltiades had no reason to go

<sup>c</sup> Herodot. lib. vi. ad finem.

<sup>d</sup> It must be owned that the Etesian winds are differently represented, some writers describing them as inclining to the east, others to the west, but all agreeing that their principal direction was northerly. But it is clear from Aristotle, who may properly be our guide on this occasion, and whose account reconciles these apparently contradictory opinions, that the Etesian winds in Greece always blow from the west of the north point, though within these limits their direction varied. In the eastern countries, he says, they were easterly winds.

Mare quoque Etesiae flabant: harum flatu in orientem navigantibus secundum, inde adversum erat. Tacitus, Histor. lib. ii.

Τῶν δὲ ἀνέμων, οἱ μὲν χειμῶνος, ὡς περ οἱ ἄλλοι, δυναστεύουσιν, οἱ δὲ θέρος, ὡς οἱ Ἑτησῖαι λεγόμενοι, μῆτιν ἔχοντες τῶν τε ἀπὸ τῆς ἀρκτὸς φερομένων καὶ ξιφύρων. Aristot. de Mundo, cap. iv. p. 853. Ed. Du Val.

Οἱ δ' Ἑτησῖαι περιέρχονται τοῖς μὲν περὶ δισμᾶς οἰκῶσιν, ἐκ τῶν Ἀπαρκτίων εἰς Θρασκίας, Ἀργίας, καὶ Ξιφύρας· ὁ γὰρ Ἀπαρκτίας Ξιφύρας ἐστὶν ἀρχόμενοι μὲν ἀπὸ τῆς Ἀρκτὸς, τελευτῶντες δὲ εἰς τῆς πόρῳ τοῖς δὲ πρὸς Ἑω περιέρχονται μέχρι τῆς Ἀπηνλώτης. Aristot. Meteorol. lib. ii. cap. vi. pag. 796.

In the table of the winds in Vitruvius, the Etesian winds are placed only fifteen degrees to the north of the west point. See the Plate at the end of this Work.

further ;

further; but this does not abridge his power of proceeding to a greater distance in that space of time. It should also be observed, that, although the distance between Attica and Lemnos is considerable, the Lemnians guarded their promise by restricting the voyage to be performed by a northerly wind.

Again, the distance between Elæum and the nearest point of Lemnos is, by Mr. D'Anville's map, 420 Olympic stadia, or more than 52 Greek miles; and according to Mr. Rochette's map, at least 49 miles. These distances approach much nearer to the calculation of Ptolemy than to that of Mr. Rennel; and indeed this instance proves nothing, as it does not appear that Miltiades might not have gone further, had he been so inclined.

Mr. Rennel next instances the fleet of Xerxes, which, he says, sailed from the Euripus to Phalerus, a port in Attica, in three days, which he says is 96 Greek miles, or 32 Greek miles each day. The words of Herodotus are, "that Xerxes, after having viewed the dead bodies of the Lacedæmonians slain at Thermopylæ, passed over from Trachis to Histiaæ, and after three days stay sailed through the Euripus, and in three days arrived at Phalerus." The distance from Histiaæ to Phalerus through the Euripus is, according to Mr. D'Anville, 179 Greek miles, and according to Mr. Rochette's map, 174 Greek miles; which gives, according to the lowest of these calculations, 58 Greek miles for each day's sail, instead of 32, according to Mr. Rennel. If we consider the vast fleet which performed this voyage, and the narrow straits through which they sailed, we may be justly surprised they were so expeditious. But a fleet of 1000 ships is no proper instance to prove how far ships in general may sail in a given time.

The third instance brought by Mr. Rennel is from the voyage of Nearchus. "That commander," he says, "reckoned the promontory of Maceta to be a day's sail from him, when he first discovered it; and it is shewn by circumstances, that this distance was about 38 Greek miles." The words of Nearchus are, that sailing 800 stadia from Bades, they came to a desert shore, from whence they viewed a long promontory extended a great way into the sea, and which *appeared* to them to be *about* a day's sail distance."

In this short account there is much uncertainty. We know not the spot from whence this promontory was viewed. The desert shore was not a point, and might allow a latitude of several miles. The judgment of a day's sail by the view of a distant object is very imperfect, and was probably still more so in the time of Nearchus than at present. The sentence referred to in Arrian has two expressions of doubt or uncertainty in eight words. Nothing therefore can be concluded from such a random computation.

The fourth instance which Mr. Rennel brings is from Scylax, who, he says, allows 75 $\frac{1}{2}$  days for the navigation from Canopus to the Pillars of Hercules, which is equal to about 32 Greek miles a day. Canopus lies so near to Alexandria, that it may in so large a distance be taken for the same place. The longitude of Alexandria from London is, by the Nautical Almanack, 30° 16' 30" E. L. that of Gibraltar 5° 22' W. The sum of these, 35° 38' 30", is equal, in the latitude of Gibraltar, (36° 5' 30") to 2009 English

\* Ἀπίχου δὲ ΕΦΑΙΝΕΤΟ ἡ ἄκρη πρὸς ὅσον ὧς ἡμέρης.

miles. The difference of latitude between Gibraltar and Alexandria is  $4^{\circ} 54' 10''$ . These, reckoned in the usual way of latitude and departure, amount to 2035 English miles, equal to 2229 Greek miles, which, divided by 75, give about 29½ Greek miles for each day's sail. But I must say, that this instance is not fairly adduced. Scylax expressly assigns this time to a ship that sailed round the bays<sup>f</sup> and gulphs that lay in the line of passage, not to one that sailed directly to the point aimed at. This circumstance makes a material difference. Had Mr. Rennel drawn his conclusion from an instance he might have found a few lines above, in the same author, it might perhaps have been different: Scylax there says, that a ship under favourable circumstances might sail from Carthage to Hercules's Pillars in seven days and seven nights.

Carthage lies nearly in the same latitude with Gibraltar, and at least  $15^{\circ}$  East, which in latitude 36.5 amounts to 56 English miles and a small fraction over to a degree. This multiplied by 15 is equal to 840 English miles, or 917 Greek miles; or 131 Greek miles, or 1048 stadia, in twenty-four hours.

The fifth instance he brings is from the Red sea, which, he says, from Herodotus, is forty days of navigation. Its length, according to the track a ship must make through it, is about 1300 miles, which makes a rate of sailing about 32 miles a day. But I cannot think the navigation of the Red sea proper to be brought as an instance to estimate the distance which might be sailed by the ships of antiquity, or indeed by any ships whatever. Mr. Irwin observes, that from its narrowness it is soon agitated; that it abounds

<sup>f</sup> Κατὰ τὰς κόλπους κύκλῳ περιπλέοντι ἡμερῶν σέ, δ'. Scylac. Perip.



with rocks, shoals, and breakers, and hazy weather. He mentions, that they could not run more than 30 miles on one tack, and that it was their custom to make one shore about sun-set<sup>a</sup>, then to tack, and to stand for the opposite shore until day-break. This is nearly the same progress described by Herodotus. Mr. Irwin adds, that an English ship had been wrecked<sup>b</sup> there, from the difficulty of the navigation, not six months before; and at one time he regarded his own situation as desperate.

They were besides twenty days (from April 16th to May 6th) in sailing from Mocha to Zambo, which is a difference of not more than  $11^{\circ}$  of latitude and  $6^{\circ}$  of longitude, which is little more than 42 English miles, or about 46 Greek miles, each day of twenty-four hours. Perhaps it was from the difficulty of this navigation that Herodotus intimates, that it was performed with oars only; and indeed Mr. Irwin's account proves that the management of sails in this sea is difficult, even in the present age, and to English sailors.

The sixth and last instance I shall examine is the one Mr. Rennel brings from Herodotus, who says, that the navigation from the Thracian Bosphorus on the Euxine sea to the mouth of the Phasis is a voyage of eight days and nine nights, or, as Mr. Rennel counts it, of sixteen days. This distance he reckons at 38 miles each day. Herodotus estimates this distance at 11,100 stadia, which gives for  $8\frac{1}{2}$  days sail more than 1300 stadia for every twenty-four hours, equal to 162 Greek miles, or 148 English miles.

<sup>a</sup> Irwin's Voyage, page 20.

<sup>b</sup> Page 22.

Arrian reckons the same distance to be 8505 stadia, or 1063 Greek miles, which divided by 8.5 gives 125 Greek miles, or 1000 stadia, for each day's sail of twenty-four hours, which agrees exactly with Ptolemy. The real distance however appears to be about  $13^{\circ}$  of longitude, which in latitude  $41^{\circ}$  amounts to 682 English miles, which divided by 8.5 gives 80 English miles, or 87 Greek miles, equal to 696 stadia, for a day and night's sail.

Herodotus again says, that the distance from Sindica to Themiscyra is 3300 stadia, and that this was three days and three nights sail. This allows 1100 stadia for every twenty-four hours sail, which is above the computation of Ptolemy. According to Mr. D'Anville, the distance is about 2640 stadia, or more than 118 Greek miles, in twenty-four hours.

I have thus examined the instances which Mr. Rennel thinks the fairest and most to the purpose; and I submit to the reader, whether I have not shewn, that the distance, which he has ascribed to the ships of antiquity as a day's sail, has not been by him underrated; and that 1000 stadia, which is the space assigned by Ptolemy, is not very near the truth, on a medium computation.

ON  
THE MEASURE  
OF THE  
GREEK STADIUM.

ON  
THE MEASURE  
OF THE  
GREEK STADIUM.

THE Stadium is allowed to be a measure of Grecian original, though well known, and in use, among the Romans.

It had its name, as some say, from the stop at the end of the course for foot-races, at Pisa in Elis <sup>a</sup>, which course was of this length. Others derive it from a word which implies the space a man was able to run without taking breath <sup>b</sup>.

This measure was not uniform, it being acknowledged that there were stadia of different lengths.

The Olympic stadium however, of which I mean principally to treat, appears to have been in the most general use as an itinerary

<sup>a</sup> Aul. Gell. i. cap. 1. διὰ τὴν στάσιν. Phavorini Lexicon.

<sup>b</sup> Παρὰ τὴν ἐν τῷ δρόμῳ στάσιν. Phavor. The word στάσις, in the sense here used, is explained by a passage cited from Hermogenes, in Stephens's Greek Thesaurus. Τάσις δὲ ἐστὶ τὸ λόγῳ,

ὅταν ὑπεράσῃ τῷ μέτρῳ τὸ λόγῳ τὸ σπυῖμα μακρότερον γινόμενον τῷ δυῖσθαι ἐν ἰδίῳ ἀηφθῆναι τοῦ λόγοντος σπυῖματι· τὸτο γὰρ ἐστὶν ἡ στάσις, τὸ ἀποτιτάσθαι ἐπὶ μακρότερον ἢ χρὴ τὸ σπυῖμα. Hermogen. de Invent. lib. iv.

measure, the others being mostly confined to local, or provincial districts.

Length  
of the  
Olympic  
stadium

The Olympic stadium consisted of 600 Greek feet, as appears from several authorities.

From  
Herodotus.

Herodotus says<sup>c</sup>, “ that the pyramids of Egypt were 100 ὀργυιαί, “ or fathoms, in height, and that 100 *legal* fathoms were equal to “ a stadium of six plethra. The fathom measures six feet, or four “ cubits, and each foot measures four palms, (τετραπαλαίσεων) and “ each cubit six palms.” The word δίκαιαι here used implies, I think, that the measures above specified were of the standard or established kind.

From Hero

Hero says, the stadium contained 600 <sup>d</sup> Philetærian feet.

From  
Suidas.

Suidas says, the stadium <sup>e</sup> contained 600 feet, and the plethron 100 feet.

From  
Strabo

Strabo says, that most people counted <sup>f</sup> 8 stadia to be equal to a mile.

A measure  
apparently  
different  
given by  
Columella

Several of the Roman writers indeed assign an apparently different measure to the stadium. Columella says<sup>g</sup>, that a stadium contains 125 paces, which, he says, make 625 feet; (each passus,

<sup>c</sup> Οὕτω αἱ μὲν πυραμίδες εἰσὶ ἑκατὸν ὀργυίων, αἱ δ' ἑκατὸν ὀργυιαί δίκαιαι εἰσι σταδίων ἑξαπλῆθρον ἑξαπλὴ μὲν τῆς ὀργυιᾶς μετρομένης καὶ τιτραπήχιοις, τῶν ποδῶν μὲν τετραπαλαίων ἰόντων, τοῦ δὲ πήχιοις, ἑξαπαλαίων. Herod. lib. ii. c. 149. Ed. Weffel.

<sup>d</sup> Hero in Megage.

<sup>e</sup> Vox Σταδίων.

<sup>f</sup> Strabon. lib. vii.

<sup>g</sup> Stadium deinde habet passus 125, id est pedes 625, quæ octies multiplicata efficit mille passus, sic veniunt quinque millia pedum. Columell. lib. v. c. 1.

or pace, containing five feet,) and the number of paces contained in each stadium being multiplied by eight make up 1000 paces, or 5000 feet.

Pliny says, that a stadium<sup>b</sup> contains 125 Roman paces, that is <sup>and by Pliny</sup> 625 feet.

Cenforinus says, that the Italic stadium<sup>i</sup> contains 625 feet, the <sup>and Cenforinus</sup> Olympic 600 feet, and the Pythic 1000 feet.

Frontinus says, the stadium<sup>k</sup> contains 625 feet, and the mile <sup>and Frontinus</sup> 1000 paces, or 5000 feet, equal to eight stadia.

The author of the treatise de Limitibus<sup>l</sup>, and the one de Menfuris<sup>m</sup>, say, "that the stadium is the least computation of distance <sup>and an anonymous writer</sup> used by travellers; that it contains 125 paces, which are equal to 625 feet, and this last sum multiplied eight times makes a mile, which consists of 5000 feet."

These accounts however are perhaps not more than seemingly discordant. The Olympic stadium, which is understood to be meant when nothing is expressed to the contrary, was composed of 600 Herculean feet, each of which exceeded the common foot, in the same proportion as the length of the foot<sup>n</sup> of Hercules did the

<sup>b</sup> Plin. Nat. Hist. lib. ii. cap. 32.

<sup>i</sup> Cenforin. cap. xiii.

<sup>k</sup> Exposit. Formarum.—Goefii Rei Agrariæ Auctores.

<sup>l</sup> Rei Agrariæ Auctores, p. 292.

<sup>m</sup> Ibid. p. 321.

<sup>n</sup> Nam quum fere constaret, curriculum

stadii, quod ~~est~~ Pifæ ad Jovis Olympii, Herculem pedibus suis metatum, idque fecisse longum pedes sexcentos: cætera quoque stadia in terra Græcia, ab aliis postea instituta, pedum quidem esse numero sexcentum, sed tamen aliquantulum breviora: facile intellexerit, modum spatiumque plantæ Herculis, ra-

Explana-  
tion of the  
difference  
of these  
accounts.

length of that of an ordinary man. This difference of length appears to have been in the proportion of 25 to 24. The real length of the stadium was the same among the Romans as it was among the Greeks; but the Greek foot being longer than the Roman, caused the Greeks to reckon fewer feet to the stadium than was done by the Romans.

Even when the length of the mile was reduced, that of the stadium seems to have continued the same as formerly. Thus Suidas reckons the mile *in his time* only at seven stadia and an half, or 4500 feet; by which it is clear, that he means the proportion of 600 feet to a stadium, and those Herculean feet, which he had before reckoned at 4800 to a mile.

Causes of  
the errors of  
ancient  
writers.

I have no doubt therefore that 600 feet was the standard, or legal measure of the stadium; and in this opinion almost all the early writers agree, except when they speak of measurements governed by local customs. Errors and inconsistencies are however frequent, from the ancient writers quoting so often as they appear to have done from memory only; from the want of a free communication of information, and from the natives of one country not understanding the language, customs, or usages of another. Thus Strabo<sup>e</sup> tells us, that Polybius, who had probably been used to count 600 Greek feet to the stadium, observes, that, according to this computation, one third of a stadium was necessary to be added to each  $\frac{1}{4}$  mile of eight stadia, in order to bring it to its proper length.

tione proportionis habita, tanto fuisse quam aliorum procerius, quanto Olympicum stadium

longius esset quam cætera. *Aul. Gell. lib. i. c. 1.*

<sup>e</sup> Strabon. lib. vii.

This

This must have arisen from a want of considering the difference between the Greek and the Roman foot, the former being to the latter in the proportion of 25 to 24, which corresponds with the additional quantity required by Polybius, in order to supply the deficiency in the mile. It is not however clear whether the error was in Polybius or in Strabo, since in another passage of the former author, now extant in his original works, he says, that the distances from one city or river to another "were distinctly" and "accurately marked by the Romans, and divided into portions of "eight stadia each." This indicates that the Romans in his time allowed eight stadia to a mile, and no more; which indeed Strabo admits to be the general custom, and is confirmed by this passage of Polybius, who in this place gives no account of any additional quantity necessary to make up the mile.

If then Polybius reckoned 600 feet to the stadium, as he appears to have done by Strabo's account, he must, in the passage last cited, have meant Greek feet; otherwise the mile would have been one-third of a stadium, or about 208 Roman feet, short of its proper length.

Plutarch, or those from whom he derived his information, seems to have been misled in the same way. He tells us, "that Caius Gracchus caused all the roads<sup>a</sup> to be divided into miles, each "mile containing a little less than eight stadia, and erected pillars "of stone to mark these divisions."

<sup>a</sup> Ταῦτα γὰρ οὕτως βεβαιώσεται καὶ συνημνῶνται  
κατὰ σταδίου ὅκτω διὰ Ῥωμαίων ὑπομετρῶς. Polyb.

lib. iii. sect. 39.

<sup>a</sup> Vita Caii Gracchi.



By this passage I suppose is meant only, that a mile of eight stadia of 600 feet each, measured by the Roman foot, was inferior in length to one of the same nominal dimensions, but measured by the Greek foot; which last we may reasonably conclude to have been in general use, in estimating the length of the stadium, which was a measure confessedly of Greek original.

It should be considered, that this quantity was assigned to each mile, at the first erection of mile-stones, when their computations might be less correct, and when, as Aulus Gellius tells us was done in later ages in some places, they preserved the number<sup>r</sup> of feet in a stadium, though they reckoned by a shorter foot.

Mr. D'Anville has, I think, incautiously blamed Cenforinus, for saying, that the Italic and the Olympic stadia were of different lengths, when he *might* mean only, that the Olympic<sup>r</sup> and the Pythic were different, since we can scarcely suppose a man of the learning of Cenforinus to be ignorant of the difference of length between the Greek and the Roman foot.

Length of  
the Greek  
foot.

Let us now endeavour to ascertain the length of the Greek foot, as on this the other calculation must in a great measure depend. For this purpose it will be necessary first to consider the length of the Roman foot.

<sup>r</sup> Cætera quoque stadia in terra Græcia, ab aliis postea instituta, pedum quidem esse numero sexcentum, sed tamen aliquantulum breviora. Aul. Gell. lib. i. cap. 1.

<sup>s</sup> Stadium autem in hac mundi mensura,

id potissimum intelligendum est, quod Italicum vocant, pedum 625, nam sunt præterea et alia longitudine discrepantia, ut Olympicum, quod est pedum 600, et Pythicum, pedum 1000. Cenforin. cap. xiii.

Dr. Murdoch<sup>†</sup> is of opinion, that the itinerary foot among the Romans differed from the one in domestic use. But I see no grounds for this supposition. Columella assumes the foot as the origin and foundation of measurements of every kind, either by its multiplications<sup>‡</sup>, or by its divisions, and specifics of the former kind, passus, actus, climata, jugera, stadia, centuriæ, and other spaces of greater extent. The foot which he describes must therefore have been the itinerary foot.

Vitruvius<sup>\*</sup> gives the same account of the foot with Columella; as that it contains four palms, or sixteen digits, and that it is to the cubit in the proportion of four to six.

We cannot doubt that the foot described by Vitruvius was the architectural foot,<sup>§</sup> and, as such, the same with the one on the monument of Cossutius at Rome. This may be inferred from Greaves's account, as he found the larger stones in the pavement of the Pantheon to correspond exactly with three Cossutian feet, and the smaller, with one Cossutian foot and a half. The person, to whose memory this is thought to have been erected, was by trade a sculptor, or perhaps more probably a builder, as we may infer from the compasses, square, and level, inscribed on his tomb,

<sup>†</sup> Preface to Busching's Geography.

<sup>‡</sup> Modus omnis arearum pedali mensura comprehenditur, qui digitorum est sedecim. Pes multiplicatus, in passus, et actus, et climata, et jugera, et stadia, centuriasque; mox etiam in majora spatia procedit. Passus pedes habet quinque, actus minimus, ut ait Marcus Varro, latitudinis pedes quatuor, longitudinis habet pedes centum et viginti. Clima quo-

quoque, pedum est sexaginta; actus quadratus, undique finitus, pedibus centum et viginti. Columell. lib. v. cap. 1.

<sup>\*</sup> E cubito enim, cum dempti sunt palmi duo, relinquitur pes quatuor palmorum. Palmus autem habet quatuor digitos, ita efficitur, ut pes habeat sedecim digitos. Vitruv. lib. iii. cap. 1.