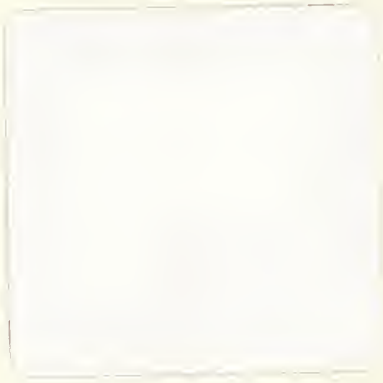


TABULA
PONTI EUXINI
ad Periplum Arriani
accommodata : e
D'Anvillii tabula
desumpta.
PONTUS EUXINUS
ISTER FLUV.
Istrianorum Fl.
Isiacorum Fl.
Odessus
Olbia
vel Borysthenes
Eona
Calos Limen
Tamyrace Pr.
Achillis
Carcinites Sinus
Chersonesus
TAURICA CHERSONESUS
Symbolorum Port
Panticapæum
Theodosia
BOSPORUS CIMMERIUS
Halmitis Taurica
Criu-metopon Pr.
Psilon Ostium
Boreum Ostium
Achillis I. vel Leuce
Calum Ostium
Naracum Ostium
Sacrum et Peuce Ostium
Istropolis
Tomi
Calatis
Carum Portus
Bizum
Cruni
Tetrisias Acra
Odessus
vel Dionysopolis
Mesembria
Hæmi Extrema
Anchialus
Chersonesus
Apollonia
Aulaidichos
Thynias
Salmydessus
Cyaneæ
Bosporus Thracius
Byzantium
Artane
Psilis
Calpe
Thynias Ins.
Sangarius Fl.
Hypius Fl.
Heraclea
Oxina Fl.
Tium
Amastris
Ægialos
Erythini
Cytorus
Cromna
Carambis Pr.
Timena
Zephyrium
Abonitichos
Stephane
Egimus
Cinolis
Harmene
Sinope
Carusa
Zagora
Halys Flu.
Eusene
Amisus
Lycus Fl.
Thermodon Fl.
Heracleum
Phadisana Pr.
Jasonium Pr.
Boona
Polemonium
Zephyrium
Tripolis
Argyria
Cerasus
vel Pharnacia
Pharmatenus Fl.
Trapezus
Hermonassa
Cordyla
Coralla
Philocalea
Hyssus
Ophis Fl.
Rhyzius Fl.
Athenæ
Anchiali Regia
Apsarus
Archabis
Bathys Fl.
Isis Fl.
Acinasis Fl.
Mogrus
Thasis Fl.
Cobus Fl.
Chariens Fl.
Singamis Fl.
Astelephus
Hippus Fl.
Tarsuras Fl.
Dioscurias
Pityus
Validus Murus
Nitica
Botrys
Mosætica
Nesis
Abascus Fl.
Heracleum Pr.
Vetus Achaia
Vetus Lazica
Pagræ Portus
Sacer Portus
Sindicus Portus
Scala Stadior: Olympicorum.
150 300 600 900 1200 1500 1800
T. Conder Sculp.t

B 15-

ARRIAN'S

VOYAGE

ROUND

THE EUXINE SEA

TRANSLATED;

AND ACCOMPANIED WITH

A GEOGRAPHICAL DISSERTATION,

AND MAPS.

TO WHICH ARE ADDED

THREE DISCOURSES,

I. *On the Trade to the Eaſt Indies by means of the Euxine Sea.*

II. *On the Diſtance which the Ships of Antiquity uſually ſailed in twenty-four Hours.*

III. *On the Meaſure of the Olympic Stadium.*

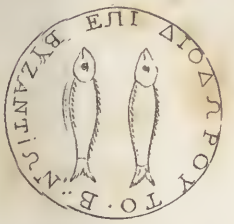
OXFORD:

SOLD BY J. COOKE; AND BY MESSRS. CADELL AND DAVIES, STRAND, LONDON.

1805.

S. Collingwood, Printer, Oxford.

Coins of Cities on the Coast of the Euxine Sea.



TO THE EMPEROR

CÆSAR ADRIAN AUGUSTUS,

ARRIAN WISHETH HEALTH AND PROSPERITY.

WE came in the courſe of our voyage to Trapezus, a Greek city in a maritime ſituation, a colony from Sinope, as we are informed by Xenophon, the celebrated Hiſtorian. We ſurveyed the Euxine ſea with the greater pleaſure, as we viewed it from the ſame ſpot, whence both Xenophon and Yourſelf had formerly obſerved it. Two altars of rough ſtone are ſtill ſtanding there; but, from the coarſeneſs of the materials, the letters inſcribed upon them are indiſtinctly engraven, and the Inſcription itſelf is incorrectly written, as is common among barbarous people. I determined therefore to erect altars of marble, and to engrave the Inſcription in well marked and diſtinct characters. Your Statue, which ſtands there, has merit in the idea of the figure, and of the deſign, as it repreſents You pointing towards the ſea; but it bears no reſemblance to the Original, and the execution is in other reſpects but indifferent. Send therefore a Statue worthy to be called Yours, and of a ſimilar deſign to the one which is there at preſent,

as the ſituation is well calculated for perpetuating, by theſe means, the memory of any illuſtrious perſon. A Fane or Temple is there conſtructed, built of ſquared ſtone, and is a reſpectable edifice; but the Image of Mercury, which it contains, is neither worthy the Temple, nor the ſituation in which it ſtands. Wherefore, if You ſhould think proper, ſend to me a Statue of Mercury of not more than five feet in height, as ſuch a ſize ſeems well proportioned, and ſuitable to that of the building. I requeſt alſo a Statue of Phileſius of four feet in height; for it ſeems to me reaſonable that the latter ſhould have a temple and an altar in common with his Anceſtor. Hence whilſt ſome perſons ſacrifice to Mercury, and ſome to Phileſius, and others to both, they will all do what is agreeable to both theſe Deities; to Mercury, as they honour his Deſcendant; to Phileſius, as they honour his Anceſtor. Wherefore I myſelf ſacrificed an Ox there; not as Xenophon did in the port of Calpe, when he took an Ox from a waggon on account of the ſcarcity of victims; whereas here the Trapezuntines themſelves furniſhed no contemptible ſacrifice. We examined the entrails of the animals ſacrificed, and performed our libations upon them. I need not mention to You in whoſe behalf we firſt offered our prayers, as You are well acquainted with our cuſtom on ſuch occaſions, and as You muſt be conſcious, that You deſerve the prayers of all, and eſpecially of thoſe who are under leſs obligations of gratitude than myſelf.

Having then ſailed from Trapezus, we arrived the firſt day at the port of Hyſſus, and exerciſed the foot-ſoldiers, whom we found there. This body of men, as You know, conſiſts of foot, although they have beſides belonging to them twenty horſemen, who are deſigned for private ſervices only. It has however been found neceſſary

ceſſary for theſe men ſometimes to act in the capacity of thoſe who throw javelins.

Thence we ſailed, at firſt only with the breezes which blow early in the morning from the mouths of the rivers, uſing however oars at the ſame time. Theſe breezes were indeed cool, as [a]Homer expreſſes himſelf, but not ſufficiently ſtrong for us, who wiſhed for a quick voyage. A calm ſoon followed, when we were reduced to depend upon our oars only. Soon after a cloud ſuddenly ariſing burſt nearly in an eaſterly direction from us, and brought on a violent ſtorm of wind, which was entirely contrary to the courſe that we held, and from the fatal effects of which we had a narrow eſcape. For it almoſt inſtantly produced ſuch a ſwell of the ſea, as to make it appear hollow to the view, and cauſed a deluge of water to break not only over that part of the ſhip where the benches of the rowers were placed, but alſo over the part which is between them and the poop. Our ſituation was then truly tragical, ſince as faſt as we pumped out the water, ſo faſt did it burſt in upon us. The ſwell of the ſea did not however bear upon the ſide of our veſſel; and from this circumſtance we were enabled, although with great trouble and difficulty, to make uſe of our oars, and, after much diſtreſsful ſuffering, to arrive at Athenæ. For there is upon the Euxine ſea a place ſo called, where there is a temple in the Grecian ſtyle, from which circumſtance the place ſeems to have derived its name. There is a ruined caſtle at this place, and a port, which in the ſummer ſeaſon cannot indeed contain many ſhips, but is ſufficient to afford them a ſhelter from the South wind, and even from the South-Eaſt. Ships that put in there

[a] Αὔρη δ' ἐκ ποταμοῖ ψυχρὴ πνέει ἠῶθι πρό. Odyſſ. ε'. ver. 469.

might

might indeed be ſafe from the North-Eaſt wind, but not from the North, nor from that wind, which is called in Pontus, Thraſcias, but in Greece, Sciron. During the night there came on a violent ſtorm of thunder and lightning; nor did the wind continue in the ſame quarter, but came about to the South, and ſoon after from the South to the South-Weſt, which rendered the bay, or road, in which we lay, no longer a ſafe ſtation. Therefore, before the ſea had begun to rage violently, we drew up into the harbour of Athenæ as many of our ſhips as it would contain, excepting one trireme, which having found a convenient ſhelter under cover of a rock, rode there in ſafety. We thought proper alſo to ſend ſeveral of our veſſels to the neighbouring ſhores to be drawn aground; which ſucceeded ſo well, that they all eſcaped ſafe, excepting one, which entering the bay expoſed its ſide improperly to the wind, and the ſwell of the ſea drove it aſhore, where it was wrecked. Every thing on board however was ſaved, not the ſails only, and the nautical inſtruments, but the bolts alſo, and the men. We alſo ſcraped off the wax, which is as neceſſary an article in ſhip-building as any, timber excepted; of which laſt material there is, as You know, a great quantity in the countries that border upon this ſea. The ſtorm continued two days, and neceſſarily detained us during that time. It would indeed have indicated a want of reſpect to have paſſed by Athenæ, even the one of that name on the Pontic ſea, as if it were ſome deſerted and nameleſs port.

Setting ſail thence early in the morning, we attempted to make our way with the waves, or ſwell of the ſea, bearing upon the ſide of our ſhip; but as the day advanced, the North-Eaſt wind blowing gently calmed the ſea, and rendered it altogether ſmooth and tranquil. Before noon we reached Apſarus, having ſailed more than

than five hundred ſtadia. At this place five cohorts are ſtationed, to whom we delivered their pay, and inſpected their arms, the walls, and the ditch, their ſick, and their preſent ſtock of proviſions. My report concerning theſe ſubjects has been already written in the Latin language. Apſarus, it is ſaid, formerly bore the name of Apſyrtus, from the perſon who was murdered by Medea, and whoſe ſepulchre is ſtill ſhewn there. Its preſent name was corrupted by the Barbarians from the ancient one, as has taken place in many other inſtances. Thus they ſay, that Tyana in Cappadocia was called, about the time alluded to, Thoana, from Thoas, King of the Tauri; who, it is reported, came thither in purſuit of Pylades and Oreſtes, and their companions, and died there of ſome diſeaſe.

The rivers, which we paſſed ſince our departure from Trapezus, are as follows.

The Hyſſus, from which the port of that name is called, is diſtant from Trapezus an hundred and eighty ſtadia.

The Ophis; which is diſtant from the port of Hyſſus, at moſt, ninety ſtadia, and ſeparates the country of Colchis from that of Thyana.

The Pſychrus; diſtant from the Ophis about thirty ſtadia.

The Calus; diſtant from the Pſychrus thirty ſtadia.

The Rhizius lies alſo in the neighbourhood of the Pſychrus, and is diſtant from the Calus an hundred and twenty ſtadia.

From the Rhizius to the Aſcurus the diſtance is thirty ſtadia.

From the Aſcurus to the Adienus ſixty ſtadia.

From the Adienus to Athenæ an hundred and eighty ſtadia.

The river Zagatis lies at moſt only ſeven ſtadia from Athenæ.

In

In ſailing from Athenæ we paſſed by Prytanis, a palace of Anchialus, which is diſtant from Athenæ forty ſtadia.

The river Pyxites is diſtant from Prytanis ninety ſtadia.

The diſtance from Pyxites to Archabis is alſo ninety ſtadia.

From Archabis to Apſarus ſixty ſtadia.

When we ſet ſail from Apſarus, we paſſed by the river Acampſis in the night, at the diſtance of fifteen ſtadia from Apſarus. The river Bathys is ſeventy-five ſtadia diſtant from the Acampſis.

From the Bathys to the Acinaſis ninety ſtadia.

From the Acinaſis to the Iſis ninety ſtadia. The Acampſis and the Iſis are both of them navigable rivers, from whoſe mouths iſſue ſtrong morning breezes.

Sailing from the mouth of the Iſis, we paſſed by the Mogrus, which alſo is a navigable river, and at the diſtance of ninety ſtadia from the Iſis. We then entered the Phaſis, which is diſtant from the Mogrus ninety ſtadia. The water of this river is lighter in the balance, and more changeable in its colour, than any with which I am acquainted. Any perſon may ſatisfy himſelf of the ſuperior lightneſs of this water by weighing it, or by obſerving that it floats on the ſurface of the ſea without mingling with it. In the ſame manner Homer ſays, that the water of the river Titareſius floats upon the ſurface of the Peneus :

> "Yet o'er the ſilver ſurface pure they flow,
> "The ſilver ſtream unmix'd with ſtreams below." Il. i. ver. 754.

The water of the Phaſis, if you take it from the ſurface, is freſh; but if any one lets down a jar deep into the ſtream, he finds the water brackiſh. It muſt however be obſerved, that the Pontic ſea is much leſs ſalt than the ſea without the Helleſpont, on account of the rivers which diſcharge themſelves into the former, the number

ber and ſize of which are beyond computation. We may bring as a proof of its freſhneſs, if any proof can be neceſſary reſpecting what is the object of our ſenſes, that all the people who live on its borders lead out their cattle to drink of the water of the ſea, which they willingly do; and experience has ſhewn that they thrive better with this than with freſh water. The colour of the water of the Phaſis reſembles that of water impregnated with lead or tin; but on ſtanding and depoſiting a ſediment, it becomes perfectly pure. It is even provided by the law, that thoſe who ſail into the Phaſis ſhould not import any foreign water into the country; but as ſoon as they enter the ſtream, it is ſignified to them, that they ſhould pour out what water is left in the ſhip; which if they neglect to do, the common opinion is that their future voyages will not be proſperous. The water of the Phaſis does not corrupt by keeping, but continues free from any taint of this kind for more than ten years. The only change that takes place is, that it becomes ſweeter than it was originally. The Statue of the Goddeſs Phaſiana is placed to the left of the entrance into the Phaſis; which Deity we may reaſonably conjecture, from her figure and appearance, to be the ſame with Rhea, as ſhe holds in her hands a cymbal, has lions under her throne, and is ſeated in the ſame manner as the Statue by Phidias in the temple of Cybele at Athens. An anchor, ſaid to be of the ſhip Argo, is ſhewn here; but as it is of iron, it does not ſeem to be ancient; it differs indeed both in ſize and ſhape from thoſe at preſent in uſe, but nevertheleſs appears to me to be of later date than the Argonautic period. They alſo ſhew there ſome fragments of an ancient ſtone anchor, which are more likely than the other to be the remains of the anchor of the Argo. No other monument is now to be found there of the fabulous hiſtory of Jaſon. The caſtle, in which four hundred ſe-

lect

lect men are ſtationed, ſeems to me very ſtrong by ſituation, and conveniently ſituated for the protection of thoſe that ſail upon the river. It was ſurrounded with a ditch and a double wall, each of them very broad. The walls were formerly of earth, and the towers of wood; but at preſent both the wall and the towers are built of baked brick, the foundations of which are ſecurely laid, and the whole furniſhed with warlike engines, and, in ſhort, ſo fortified in every reſpect, as to afford no acceſs to the Barbarians, nor to expoſe thoſe who defend it to the danger of a ſiege. But as it is adviſable that the port ſhould be rendered ſafe for ſea-faring people, and that other places ſhould be ſecured which lie without the walls of the caſtle, and are inhabited by people who are now exempted from military ſervice, or by perſons engaged in commerce, I thought proper to carry from the double ditch, that ſurrounds the wall, another ditch, as far as the river, which may include both the harbour, and the buildings, that lie beyond the walls of the fortifications.

Leaving the Phaſis we paſſed by the Chariens, a navigable river, at the diſtance of ninety ſtadia from the Phaſis. From the Chariens we ſailed to the Chobus, which is ninety ſtadia diſtant from the Chariens. We here went into the harbour; but for what cauſes, and what buſineſs we tranſacted there, the Latin letters will explain. Proceeding from the Chobus we ſailed by the Singamis, a navigable river, at the diſtance from the Chobus of two hundred and ten ſtadia at the utmoſt. Next to the Singamis, and at the diſtance of one hundred and ninety ſtadia, lies the river Tarſuras. From the Tarſuras to the Hippus is one hundred and fifty ſtadia. From Hippus to Aſtelephus is thirty ſtadia. In our courſe from the Chobus we paſſed by Aſtelephus,

and

and got to Sebaſtopolis before noon; which laſt place is one hundred and twenty ſtadia from Aſtelephus. We ſpent the remainder of the day in diſtributing the pay to the ſoldiers, in reviewing the horſes and the arms, and in obſerving the dextrous activity of the horſemen in leaping upon their horſes; in viewing the ſick, and in ſurveying the proviſion of corn, and the condition of the walls and of the ditch. The diſtance from the Chobus to Sebaſtopolis is ſix hundred and thirty ſtadia; but from Trapezus to Sebaſtopolis two thouſand two hundred and ſixty ſtadia. This place (Sebaſtopolis) was formerly called Dioſcurias, and was a colony from Miletus. The nations which we ſailed by on our voyage are as follows. The Colchians, who, as Xenophon obſerves, border on the Trapezuntines; as do the Drillæ, as he calls them, but who ſeem to me to be more properly called the Sanni; a people, whom he records to be of a warlike diſpoſition, and very hoſtile to the Trapezuntines; both which characters they preſerve to the preſent time. They dwell in ſtrongly fortified places, and do not live under a monarchical government. They were formerly tributary to the Romans; but of late, being addicted to plunder, they do not pay the tribute regularly: however, now, by the Gods' aſſiſtance, we will either oblige them to be more punctual, or exterminate them. The Machelones and the Heniochi border on theſe people, the latter of whom have a King called Anchialus. Next to theſe lie the Sydretæ, ſubject to Pharaſmanus; and adjoining to the Sydretæ are the Lazi, a people ſubject to King Malaſſas, who holds his kingdom from You. Bordering on the Lazi are the Apſilæ, governed by King Julianus, who received his kingdom from your Father. The Abaſci border on the Apſilæ, whoſe King, Rheſmagus, received his crown from You. The Sanigæ border on the Abaſci. Sebaſtopolis is a city of the Sanigæ, who are ſubject to

King Spadagas, who received his kingdom from You. As far as Apſarus our courſe lay Eaſtward, on the right ſide of the Euxine ſea. Apſarus appears to me to terminate the Pontus, when we eſtimate its greateſt length.

From thence our courſe was Northerly to the river Chobus, and from thence to Singames. From Singames we turned to the left ſide of the Pontus as far as the river Hippus; and from thence to Aſtelephus and Dioſcurias, where we had a view of Mount Caucaſus, the height of which is much the ſame with that of the Celtic Alps. The higheſt point of the mountain called Strobilus is viſible here, where Prometheus is fabled to have been ſuſpended by Vulcan, according to the commands of Jupiter.

The diſtances of the places from one another, that lie between the Thracian Boſporus and Trapezus, are as follows. The temple of Jupiter Urius is diſtant from Byzantium an hundred and twenty ſtadia. The Thracian Boſporus is, as You know, the narroweſt of the mouths of the Pontus, through which it diſcharges itſelf into the Propontis. The river Rhebas lies on the right hand of thoſe who ſail from the temple above mentioned, and is at the diſtance of ninety ſtadia from it. From the river Rhebas to Acra Melæna is one hundred and fifty ſtadia. From Acra Melæna to the river Artanes, where there is a harbour for ſmall veſſels near a temple of Venus, is one hundred and fifty ſtadia. From the river Artanes to Pſilis, where ſmall veſſels may lie ſafely under the ſhelter of a projecting rock, not far from the mouths of the river, an hundred and fifty ſtadia. Prom Pſilis to the port of Calpe two hundred and ten ſtadia.

Xenophon

Xenophon the elder has deſcribed at large the port and ſituation of Calpe, and informed us, that there is there a cool and pure ſpring, and woods of timber fit for building ſhips, and wild animals.

From the port of Calpe to Rhoe, a harbour for ſmall veſſels, twenty ſtadia. From Rhoe to Apollonia, a ſmall iſland at a little diſtance from the Continent, twenty ſtadia. In this ſmall iſland there is a port. From hence to Chelæ twenty ſtadia. From Chelæ to the place where the river Sangarius flows into the Pontus an hundred and eighty ſtadia. From thence to the mouths of the Hyppius an hundred and eighty ſtadia. From Hyppius to the mart of Lillium an hundred ſtadia. From Lillium to Elæum ſixty ſtadia. From Elæum to another mart called Cales an hundred and twenty ſtadia. From Cales to the river Lycus eighty ſtadia. From Lycus to Heraclea, a Dorian Greek city, a colony of the Megareans, twenty ſtadia. Here there is a harbour for ſhips. From Heraclea to a place called Metroum eighty ſtadia. From Metroum to Poſidæum forty ſtadia. From Poſidæum to the Tyndaridæ forty-five ſtadia. From the Tyndaridæ to Nymphæum fifteen ſtadia. From Nymphæum to the river Oxinas thirty ſtadia. From the river Oxinas to Sandaraca, a port for ſmall veſſels, ninety ſtadia. From Sandaraca to Crenides ſixty ſtadia. From Crenides to the mart of Pſylla thirty ſtadia. From Pſylla to Tios, an Ionian Greek city, ſituated on the ſea, and a colony of the Mileſians, ninety ſtadia. From Tios to the river Billæus twenty ſtadia. From Billæus to the river Parthenius an hundred ſtadia. The country ſo far is inhabited by the Thracian Bithynians, of whom Xenophon has made mention in his Memoirs, as the moſt warlike of the Aſiatics, and from whom the army of the Greeks ſuffered much, after the Arcadians had ſeparated themſelves from the other diviſion of the army, commanded by Chiriſophus

ſophus and Xenophon. Here commences the boundary of Paphlagonia. From the river Parthenius to Amaſtris, a Greek city, where there is a port for ſhips, ninety ſtadia. From thence to the Erythini ſixty ſtadia. From the Erythini to Cromna ſixty ſtadia. From Cromna to Cytorus, where there is a port, ninety ſtadia. From Cytorus to Ægialus ſixty ſtadia. From Ægialus to Thymena ninety ſtadia. From Thymena to Carambis an hundred and twenty ſtadia. From Carambis to Zephyrium an hundred and ſixty ſtadia. From Zephyrium to the fortreſs of Abonum, where there is a ſmall city, one hundred and fifty ſtadia. The port here is not altogether ſafe; nevertheleſs, ſhips may lie here free from harm, if the tempeſt be not very violent. From the fortreſs of Abonum to Æginetis an hundred and fifty ſtadia. From Æginetis to the mart of Cinolis ſixty ſtadia. In the ſummer ſeaſon ſhips may lie here. From Cinolis to Stephanes, a ſafe port for ſhips, an hundred and eighty ſtadia. From Stephanes to Potamos an hundred and fifty ſtadia. From Potamos to Lepte Acra one hundred and twenty ſtadia. From Lepte Acra to Harmene ſixty ſtadia. There is a port at Harmene. This place is mentioned by Xenophon. From Harmene to Sinope, a colony of the Mileſians, forty ſtadia. From Sinope to Caruſa, where there is an open road where ſhips lie, but no port, an hundred and fifty ſtadia. From Caruſa to Zagora an hundred and fifty ſtadia. From Zagora to the river Halys three hundred ſtadia. This river was formerly the boundary between the kingdom of Crœſus and that of the Perſians; but now it is in the Roman territory. Its courſe is not from the South, as Herodotus deſcribes it, but from the Eaſt; and where it diſcharges itſelf into the Pontus, it forms the boundary between the Sinopians and the Amiſenians. From the river Halys to Nauſtathmus, where there is a marſh, ninety ſtadia. From hence to Conopæum, where there is another marſh, fifty ſtadia. From Conopæum to Euſene

an

an hundred and twenty ſtadia. From Euſene to Amiſus an hundred and ſixty ſtadia. Amiſus lies upon the ſea, is a Greek city, and an Athenian colony. From Amiſus to the port of Ancon, where the river Iris empties itſelf into the ſea, an hundred and twenty ſtadia. From the mouths of the Iris to the port of Heracleum three hundred and ſixty ſtadia. From Heracleum to the river Thermodon forty ſtadia. This is the river Thermodon, on whoſe banks the Amazons are ſaid to have dwelt. From the Thermodon to the river Beris ninety ſtadia. From the Beris to the river Thoaris ſixty ſtadia. From Thoaris to Œnoe thirty ſtadia. From Œnoe to the river Phigamus forty ſtadia. From Phigamus to the fortreſs of Phadiſana one hundred and fifty ſtadia. From Phadiſana to the city of Polemonium ten ſtadia. From Polemonium to the promontory called the Jaſonian an hundred and thirty ſtadia. From the Jaſonian promontory to the iſland of the Cilices fifteen ſtadia. From this iſland to Boona, where there is a port for ſhips, ſeventy-five ſtadia. From Boona to Cotyora ninety ſtadia. Xenophon mentions Cotyora as a city, and ſays, that it was a colony of the Sinopians: at preſent it is no more than a village, and that not a large one. From Cotyora to the river Melanthius is, at the utmoſt, ſixty ſtadia. From the Melanthius to the Pharmatenus, another river, an hundred and fifty ſtadia. From the Pharmatenus to Pharnacea an hundred and twenty ſtadia. Pharnacea was formerly called Ceraſus, and was a colony from Sinope. From Pharnacea to the iſland Arrhentias thirty ſtadia. From Arrhentias to Zephyrium one hundred and twenty ſtadia. There is here a port for ſhips. From Zephyrium to Tripolis ninety ſtadia. From Tripolis to Argyria twenty ſtadia. From Argyria to Philocalea ninety ſtadia. From Philocalea to Coralla an hundred ſtadia. From Coralla to the ſacred mountain (ἱερὸν ὄρος) an hundred

dred and fifty ſtadia. From the ſacred mountain to Cordyla forty ſtadia. Here there is a port for ſhips. From Cordyla to Hermonaſſa forty-five ſtadia. Here alſo is a port for ſhips. From Hermonaſſa to Trapezus ſixty ſtadia. Here You are conſtructing a harbour, as there was formerly only a road or ſtation, where ſhips might ride in ſafety during the ſummer ſeaſon.

The diſtances between the places that lie between Trapezus and Dioſcurias have been before ſet down, according to the intervals between the rivers. If theſe ſeparate diſtances between Trapezus and Dioſcurias, now called Sebaſtopolis, be collected, they will amount to two thouſand two hundred and ſixty ſtadia. This is the diſtance, if you ſail on the right hand from Byzantium to Dioſcurias, which place is the laſt in the Roman territory to thoſe who keep to the right hand ſide in ſailing into the Pontic ſea. For as ſoon as I was informed of the death of Cotys, King of the Cimmerian Boſporus, I took care that You ſhould be made acquainted with the navigation of this ſea as far as the Boſporus, that if You ſhould be inclined to interfere in the affairs of that country, You might execute your intentions with greater eaſe, by being acquainted with the navigation.

The firſt port to be met with after quitting Dioſcurias is Pityus, at the diſtance of three hundred and fifty ſtadia. From Pityus to Nitica is one hundred and fifty ſtadia. This was formerly inhabited by a Scythian nation, of whom Herodotus, who is apt to relate improbable ſtories, has made mention, and ſpoken of them as eaters of lice; and indeed the ſame opinion of them prevails in the preſent age. From Nitica to the river Abaſcus is ninety ſtadia. From Abaſcus to Borgys an hundred and twenty ſtadia. From Borgys

Borgys to Neſis, which includes the Herculean promontory, ſixty ſtadia. From Neſis to Maſaïtica ninety ſtadia. From Maſaïtica to the river Achæus, which ſeparates the Zicchi from the Sanichæ, ſixty ſtadia. Satchempax is the King of the Zicchi, and received his kingdom from You. From Achæus to the Herculean promontory, where there is a ſtation ſheltered from the North-Weſterly wind, called Thraſcias, and from the North-Eaſterly wind called Boreas, an hundred and eighty ſtadia. From thence to a place called ancient Lazica an hundred and twenty ſtadia. From hence to ancient Achaia an hundred and fifty ſtadia. From thence to the port of Pagræ three hundred and fifty ſtadia. From the port of Pagræ to the port of Hierus (or the ſacred port) an hundred and eighty ſtadia. From thence to Sindica three hundred ſtadia. From Sindica to the Boſporus, called Cimmerian, and to Panticapæum, a city of the Boſporus, five hundred and forty ſtadia. From Panticapæum to the river Tanais, which is ſaid to divide Europe from Aſia, ſixty ſtadia. This river burſts forth from the Palus Mæotis, and empties itſelf into the Euxine ſea. Æſchylus however, in the tragedy of Prometheus Delivered, makes the Phaſis the boundary between Europe and Aſia. He there introduces the Titans ſpeaking thus to Prometheus: "Hither are we come to ſee thy labours, "O Prometheus! and the ſufferings which thou undergoeſt in "conſequence of thy bonds:" and in ſpecifying how large a ſpace of ground they had paſſed over in their journey, they ſpeak of the Phaſis "as the twin-born offspring of the earth, and the great "boundary of Europe and Aſia." The circuit of the Palus Mæotis is ſaid to be about nine thouſand ſtadia. From Panticapæum to a village called Cazeca, ſituated upon the ſea, four hundred and twenty ſtadia. From Cazeca to Theodoſia, a deſerted city, two hundred and eighty ſtadia. This was formerly an Ionian Greek

city,

city, a colony from Miletus, the memory of which is preſerved in the works of many writers. From Theodoſia to a port of the Tauro-Scythæ, now deſerted, two hundred ſtadia. From thence to Halmitis Taurica ſix hundred ſtadia. From Lampas to Symboli Portus, which is alſo a Tauric port, five hundred and twenty ſtadia. From Symbolus to Cherſoneſus Taurica a hundred and eighty ſtadia. From Cherſoneſus Taurica to Cercinetis ſix hundred ſtadia. From Cercinetis to Calos, a Scythian port, ſeven hundred ſtadia. From the port of Calos to Tamyraca three hundred ſtadia. Within the limits of Tamyraca there is a ſmall lake. From Tamyraca to the place where the lake diſcharges itſelf, three hundred ſtadia. From the mouth of the lake to Eona three hundred and eighty ſtadia. From Eona to the river Boryſthenes a hundred and fifty ſtadia. When you ſail up the river you meet with a Greek city of the name of Olbia. From the Boryſthenes to a ſmall, deſerted, nameleſs iſland, ſixty ſtadia. From the deſert iſland to Odeſſus, where there is a port for ſhips, eighty ſtadia. The port of the Iſtrians is the next place in order from Odeſſus, and lies at the diſtance of two hundred and fifty ſtadia. Next in order is a port of the Iſiaci, at the diſtance of fifty ſtadia. From the port of the Iſiaci to the mouth of the river Iſter, called Pſilon, one thouſand two hundred ſtadia. The intermediate places are deſert and nameleſs. Exactly over againſt this mouth there lies an iſland, ſituated directly oppoſite to the courſe of thoſe who ſail with a North wind. Some call this the iſland of Achilles; others call it the chariot of Achilles; and others Leuce, from its colour. Thetis is ſaid to have given up this iſland to her ſon Achilles, by whom it was inhabited. There are now exiſting a temple, and a wooden ſtatue of Achilles, of ancient workmanſhip. It is deſtitute of inhabitants, and paſtured only by a few goats, which thoſe, who touch here, are ſaid to offer

fer to the memory of Achilles. Many offerings are ſuſpended in this temple, as cups, rings, and the more valuable gems. All theſe are offerings to the memory of Achilles. Inſcriptions are alſo ſuſpended, written in the Greek and Latin language, in praiſe of Achilles, and compoſed in different kinds of metre. Some are in praiſe of Patroclus, whom thoſe, who are diſpoſed to honour Achilles, treat with equal reſpect. Many birds inhabit this iſland, as ſea-gulls, divers, and coots innumerable. Theſe birds frequent the temple of Achilles. Every day in the morning they take their flight, and having moiſtened their wings, fly back again to the temple, and ſprinkle it with the moiſture; which having performed, they bruſh and clean the pavement with their wings. This is the account given by ſome perſons. Thoſe, who come on purpoſe to the iſland, carry animals proper for ſacrifice with them in their ſhips, ſome of which they immolate, and others they ſet at liberty in honour of Achilles. Even thoſe, who are compelled by ſtreſs of weather to land upon the iſland, muſt conſult the God himſelf, whether it would be right and proper for them to ſelect for ſacrifice any of the animals, which they ſhould find feeding there; offering, at the ſame time, ſuch a recompenſe, as to them ſeems adequate to the value of the animal ſo ſelected. But if this ſhould be rejected by the Oracle, for there is an Oracle in this temple, they muſt then add to their valuation; and if the increaſed valuation be ſtill rejected, they muſt increaſe it again, till they find, from the aſſent of the Oracle, that the price they offer is deemed ſufficient. When this is the caſe, the beaſt to be ſacrificed ſtands ſtill of its own accord, and makes no effort to eſcape. A conſiderable treaſure is laid up in this temple as the price of theſe victims. It is ſaid that Achilles has appeared in time of ſleep both to thoſe who have approached the coaſt of this iſland, and alſo to ſuch as

have been ſailing a ſhort diſtance from it, and inſtructed them where the iſland was moſt ſafely acceſſible, and where the ſhips might beſt lie at anchor. They even ſay further, that Achilles has appeared to them not in time of ſleep, or a dream, but in a viſible form on the maſt, or at the extremity of the yards, in the ſame manner as the Dioſcuri have appeared. This diſtinction however muſt be made between the appearance of Achilles, and that of the Dioſcuri, that the latter appear evidently and clearly to perſons, who navigate the ſea at large, and when ſo ſeen foretell a proſperous voyage; whereas the figure of Achilles is ſeen only by ſuch as approach this iſland. Some alſo ſay, that Patroclus has appeared to them during their ſleep. I have thus put down what I have heard concerning this iſland of Achilles, either from perſons who had touched there themſelves, or from others that had made the ſame enquiries; and indeed theſe accounts ſeem to me to be not unworthy of belief. I am myſelf perſuaded, that Achilles was a hero, if ever man was, being illuſtrious by his noble birth, by the beauty of his perſon, by the ſtrength of his mind and underſtanding, by his untimely death in the flower of youth, by his being the ſubject of Homer's poetry, and, laſtly, by the force of his love, and conſtancy of his friendſhip, inſomuch that he would even die for his friends.

From the mouth of the Iſter called Pſilon to the ſecond mouth is ſixty ſtadia. Thence to the mouth called Calon forty ſtadia. From Calon to Naracum, which laſt is the name of the fourth mouth of the Iſter, ſixty ſtadia. Hence to the fifth mouth a hundred and twenty ſtadia. Hence to the city of Iſtria five hundred ſtadia. From Iſtria to the city of Tomea three hundred ſtadia. From Tomea to the city of Callantra, where there is a port, three hundred

hundred ſtadia. From Callantra to the port of the Carians a hundred and eighty ſtadia. The diſtrict ſurrounding this port is called Caria. From the port of the Carians to Tetriſias a hundred and twenty ſtadia. Thence to Bizus, a deſerted place, ſixty ſtadia. From Bizus to Dionyſopolis eighty ſtadia. From Dionyſopolis to Odeſſus, where there is a road for ſhips, two hundred ſtadia. From Odeſſus to the borders of Mount Hæmus, which range of mountains is extended even into Pontus, three hundred and ſixty ſtadia. From Hæmus to the city of Meſembria ninety ſtadia. Here there is a road for ſhips. From Meſembria to the city of Anchialus ſeventy ſtadia. From Anchialus to Apollonia a hundred and eighty ſtadia. Theſe are all of them Greek cities, which lie on the left hand of thoſe who ſail into the Euxine ſea. From Apollonia to Cherroneſus ſixty ſtadia. Here there is a road for ſhips. From Cherroneſus to the fortreſs of Aulæon two hundred and fifty ſtadia. From Aulæon to Thynias a hundred and twenty ſtadia. From Thynias to Salmydeſſus two hundred ſtadia. Mention is made of this place by the elder Xenophon, who ſays, that the Grecian army, which he commanded himſelf, came ſo far in their march, when at the concluſion of the expedition he engaged his army in the ſervice of Seuthes the Thracian. The ſame writer has deſcribed at length the dangers that accrue to ſhips at this place, from want of a good harbour; that ſhips forced hither by ſtreſs of weather are apt to be loſt; and that the Thracians who live in the neighbourhood quarrel about the plunder of the wreck. From Salmydeſſus to Phrygia three hundred and thirty ſtadia. From Phrygia to the Cyanean iſlands three hundred and twenty ſtadia. Theſe are the Cyanean iſlands, which the Poets have deſcribed as having been formerly moveable, and liable to change their ſituation. Between theſe the Argo, the firſt ſhip on record, and which carried

Jaſon to Colchis, paſſed. From the Cyanean iſlands to the temple of Jupiter Urius, which ſtands at the mouth of the Euxine ſea, is forty ſtadia. Thence to the port of Daphne, which is denominated the Inſane, forty ſtadia. From Daphne to Byzantium eighty ſtadia.

Such are the obſervations which have occurred in the paſſage from the Cimmerian to the Thracian Boſporus, and to the city of Byzantium.

DISSERTATION

ON

ARRIAN'S PERIPLUS

OF

THE EUXINE SEA.

DISSERTATION.

FLAVIUS ARRIANUS[a], the Author of the work now under conſideration, was a native of Nicomedia, the metropolis of Bithynia, a city ſituated at the extremity of a bay of the Propontis, on the Aſiatic ſide. He was early in life remarkable for learning, which recommended him to the notice of the [b] Emperor Hadrian, and procured for him, although a ſtranger, the freedom of the Roman and [c] Athenian ſtates. He afterwards became Prieſt of Ceres and of Proſerpine in his native city, and was raiſed by his Patron, the Emperor, to the dignity of a Roman Senator, and to the Conſulate. In this character he was made [d] Præfect of Cappadocia, and waged a ſucceſsful war with the Alani, and with the Maſſagetæ. He died probably during the reign of Marcus Aurelius, but at what exact time is not certain. He left ſeveral works behind him of conſiderable merit, and among them the one now before us. His qualifications in Literature and Science, particularly Geography, muſt have been very agreeable to the diſpoſition of the Emperor Hadrian, who was himſelf fond of travelling, and had viſited in perſon a large proportion of his own extenſive dominions.

[a] Dio. Caſſ. ad fin. Vit. Hadr. Imp.
[b] Suidæ Lex. Vox Ἀρριανός.
[c] Lucian in Pædomante.
[d] Suidæ Lex. ut ſupra.

The

The Periplus appears in form of an Epiſtle from Arrian to the Emperor, giving him a geographical, or perhaps, to ſpeak more properly, a topographical ſketch, or ſurvey, of the coaſt of the Euxine ſea, proceeding Eaſtward from Trapezus, and returning to the ſame place by Byzantium from the Weſt. It is written in the Greek language, which was probably more familiar to himſelf than the Latin, and more agreeable to the Emperor, who was attached to the Greek language and [e] literature. He alludes however to Letters or Diſpatches in the [f] Latin language, which alone was uſed in properly official communications.

It is not unlikely that the Periplus was undertaken by command of the Emperor himſelf, and that it was executed when Arrian was Præfect of Cappadocia. Mr. Dodwell thinks that it was performed early in the reign of Hadrian, as one of the petty Kings of that country was advanced to the regal dignity by Trajan, Hadrian's predeceſſor, and was living at the time that the account of the Periplus was written. This conjecture however is weakened by the conſideration, that Arrian mentions ſeveral other Kings of that country, who received their advancement from Hadrian himſelf.

The province of Cappadocia, which included Trapezus, from whence the expedition was fitted out, was well ſuited for ſuch a purpoſe, being probably under his juriſdiction, and as it furniſhed, by his own account, materials for ſhip-building, and other ſtores

[e] Imbutuſque Hadrianus impenſius Græcis ſtudiis, ingenio ejus ſic ad ea declinante, ut a nonnullis Græculus diceretur. *Spartian. Vit. Hadr.* Φύσει δὲ φιλόλογος ἦν ἐν ἑκατέρᾳ τῇ γλώσσῃ. Suid. Lex. Vox Ἀδριανός.

[f] See Caſaubon's note on the above paſſage of Spartian.

for

for a ſea voyage. We ſhould obſerve further, that the Periplus of Arrian is not the hiſtory of one voyage executed by the narrator, as that of Nearchus, and others. It conſiſts of three ſeparate voyages, or expeditions of diſcovery, and theſe perhaps executed by different perſons, and at conſiderable intervals.

The firſt of theſe, in the order of his relation, is the report of his own voyage along the coaſt from Trapezus to Dioſcurias, or Sebaſtopolis; a city ſituated upon the Northern part of the Eaſtern extremity of the Euxine ſea, lying in Latitude 43° 18′ nearly, and in Longitude Eaſt from the Canaries about 60° [a]. This was evidently performed by Arrian himſelf in perſon, and ſeems to be the moſt correct of any.

The next diviſion of the Periplus comprehends the account of the diſtances of the places from one another, which lie upon the Southern coaſt of the Euxine ſea, from Byzantium to Trapezus. Whether theſe are put down from the perſonal experience of the Author, is not aſcertained. Mr. Dodwell thinks that they might be the reſult of his own examination in his journey from Byzantium, when he went to take poſſeſſion of his government of Cappadocia; and this conjecture is not improbable. This part of the Periplus is more correct than the one remaining to be ſpoken of; but leſs ſo, I think, than the former. It is however a valuable performance.

The third and laſt part of the Periplus contains an account of the diſtances between the places that lie on the coaſt of the Euxine

[a] D'Anville, Ancient Geogr. Map of Aſia Minor.—Arrowſmith's Chart places Dioſcurias nearly in Lat. 43° 19′, and in 58° 17′ 50″ E. Long. from Ferro.

ſea, proceeding from Dioſcurias, round the Northern and Weſtern ſhores, as far as Byzantium. This ſurvey, as it ſeems to be, is probably the work of ſome other hand; as it is leſs correct than the former parts, and the materials, of which it is compoſed, might be collected by Arrian from various perſons, in order to complete the circuit of the Euxine ſea.

In the computation of the meaſurements referred to in this Diſſertation, I have followed the calculation laid down by the late Dr. Reinhold Forſter, in the Geographical Diſſertation annexed to Spelman's Tranſlation of Xenophon's Anabaſis, which ſtates, that 960 Greek feet are equal to 967 Engliſh, and, of courſe, that a ſtadium of 600 Greek feet would be equal to 604 Engliſh feet, and 375 decimal parts.

My reaſons for adopting this calculation will be ſeen in a Diſcourſe annexed to the preſent work.

I proceed now to the examination of the Periplus.

The Title of it, according to the Cæſarean MS. is as follows.

Ἀρριάνου Περίπλους Εὐξείνου Πόντου, καὶ
Βιθυνίας τῆς πρὸς τὸν Πόντον.
Περίπλους Παφλαγονίας.
Περίπλους Πόντων τῶν δύω.
Περίπλους τῶν ἐν τῇ Εὐρώπῃ μερῶν τοῦ Πόντου.
Περίπλους Θράκης καὶ πρὸς Πόντον.

Perhaps theſe different heads, or diviſions, as they appear to be, may have been the titles of ſome ancient detached accounts, from which a part at leaſt of the Periplus may have been compiled. The voyage ſeems to have been intended for the purpoſe of geographical

graphical information, and perhaps with a view of conſtructing an Itinerary of this coaſt, ſimilar to thoſe of various other parts by Antoninus. The meaſurements of the diſtances in the firſt part appear to have been taken at ſea; but how they were aſcertained, it is not eaſy to ſay. Several ſhips we know were employed, and perhaps the diſtances may have been computed from a medium of the calculation of each. They are too near the truth to allow us to ſuppoſe, that the time which elapſed in the paſſage from one place to another was the only guide they had in eſtimating the interval between them. They may poſſibly be reckoned according to the meaſurements by land. The commencement of the voyage is dated from Trapezus, a Greek city, and a colony from Sinope, ſituated on the Southern ſide of the Euxine ſea g, nearly in the

g The dimenſions of the Euxine ſea have been variouſly repreſented. I here give the beſt account of its length and breadth I am able to collect from modern writers and geographers.

Firſt then of its length.

Its greateſt length, as meaſured nearly on a parallel of Latitude from Eaſt to Weſt, ſeems to be from the mouth of the Phaſis to the correſponding Latitude on the oppoſite ſide.

According to Laurie's Chart, the mouth of the Phaſis lies in Long. 41° 38′ Eaſt, and Varna on the oppoſite ſide lies in Long. 28° 13′ Eaſt. The difference of theſe is 13° 25′, which in Latit. 42° 30′ amounts nearly to 687 Engliſh miles. Faden's Map of Turkey in Europe makes the mouth of the Phaſis to be in Longit. 41° 28′, and Varna to be in 28° 24′. The difference of theſe is 13° 4′, or nearly 669 Engliſh miles and a half. D'Anville places the mouth of the Phaſis in Longitude from London 42° 31′ 10″, and the oppoſite ſhore (in the ſame Latitude) in 28° 46′ 10″. The difference of theſe is 13° 45′, equal to 703.564 Engliſh miles. Arrowſmith's Chart puts down the mouth of the Phaſis in Long. 41° 21′ 30″, and the oppoſite ſhore on the parallel of 42° in nearly 28°. The difference of theſe is 13° 21′ 30″, equal to 687 Engliſh miles and a half nearly.

According to Citizen Beauchamp, the length of the Black ſea is 214 nautical leagues, equal to 642′, equal to 740.44 Engliſh miles nearly: but I think this calculation over-rated. He computes from the mouth of the Phaſis to the meridian of Trebizond 32.6 leagues, equal to 97′.8, equal to 113 Engliſh miles nearly: but the Charts make the difference of Longitude between Trebizond and the Phaſis to be no more than 1° 40′, equal to 86 Engliſh miles nearly, which makes a difference of 27 Engliſh miles in that portion of the diſtance. It muſt however be conſidered, that as Varna lies 1° 14′ to the North of the Phaſis, he eſtimates the diſtance from S. E. to N. W. but this obliquity will only make the whole diſtance to be 690 Engliſh miles, which is 50 Engliſh miles ſhort of what he ſpecifies.

ſame Latitude with Conſtantinople, but about 10° 41′ 25″ more to the Eaſtward. This city had been in early times, and probably was even in thoſe of Arrian, a place of great trade, and of courſe much reſort of ſhipping, and was alſo the principal rendezvous of the Roman naval force on the Euxine ſea. Both Arrian and Tournefort remark the abundance of materials and other neceſſaries for ſhip-building, which were afforded by the ſurrounding country; and navigation appeared to be their primary object. Arrian tells us, that the ſtatue of the Emperor Hadrian was conſtructed in an attitude pointing towards the ſea[h], as the ſource of their riches and proſperity. Goltzius has given two figures of Trapezuntine coins, one of which exhibits an anchor, and the other the prow of a ſhip, as emblems of naval induſtry. This was the firſt Greek city, which the army led by Xenophon reached in their retreat after the death of Cyrus: and probably the view of the ſea, to which Arrian here

The breadth of the Euxine ſea, reckoned from the Southernmoſt part of the bay of Heraclea to the oppoſite ſhore near Ockſacow, and meaſured on the meridian of 32°, amounts

according to	To	
Laurie's Chart	5° 50′ 30″	= 406 E. m.
Faden's Map	5° 52′	= 408 E. m.
Arrowſmith's Chart	5° 31′	= 383 E. m.

Average of the above calculation,
Length 698 Engliſh miles nearly.
Breadth 392.37 Engliſh miles.

The circumference of the Euxine ſea was eſtimated by Polybius at 22000 ſtadia, equal to about 2518.23 Engliſh miles, or 2750 Greek miles; and this computation approaches very nearly to that of Arrian. The number of ſtadia ſet down in the diſtances ſpecified in the Periplus amount to 22635, from which we muſt deduct 240, as the diſtance from the temple of Jupiter Urius to Byzantium and back again, which interval, as Byzantium does not lie upon the Euxine ſea, cannot be included in the meaſurement of its circumference. This reduces the numbers of Arrian to 22395, which varies from that of Polybius only as 1017 does from 1000, and the whole difference does not amount to 50 Engliſh miles, which is a remarkable approximation, as the calculation of Polybius being expreſſed in round numbers, can only be regarded as a groſs eſtimate. Strabo makes it 25000 ſtadia, or 2861 Engliſh miles, or 3125 Greek miles. It extends, according to the latter writer, between Mæſia Inferior and Thrace to the Weſt, the Hither Aſia to the South, Colchis to the Eaſt, and Sarmatia Europæa and Aſiatica to the North.

[h] In like manner Themiſtocles directed the pulpit for public orations to be turned towards the ſea. Plut. Vit. Themiſt.

alludes,

alludes, was that which took place at the games, which the Greeks celebrated at Trapezus, as a thankſgiving for their reaching a Grecian city, and which were performed, as Xenophon informs us, on the declivity of a hill towards the ſea. Hutchinſon, in his Notes on this paſſage of Xenophon's Anabaſis, remarks, that the altars mentioned by Arrian might be the ſame with thoſe which ſerved as metæ, or goals, at the games above mentioned.

The firſt place that Arrian's fleet reached on their voyage was Hyſſus, a port at the mouth of a river, and a ſmall Roman military ſtation, at the diſtance of 180 ſtadia (equal to 22.5 Greek miles, and to 20.6037 Engliſh) from Trapezus. In D'Anville's map Hyſſus is placed to the Eaſt of Trapezus, as we might expect it to be, from the direction of the intended voyage; but in the text of Ptolemy, it is put down as lying in 15′ of Longitude to the Weſt of Trapezus, and is ſo laid down in the firſt and third maps of Aſia in Bertius's edition. It ſeems indeed ſomewhat extraordinary, that a place to the Weſt of Trapezus ſhould lie in the way of Arrian's fleet, which were meant to proceed Eaſtward. But the maps, if they are to be truſted, explain this difficulty, as Trapezus appears in them to be placed at the Southern extremity of a bay of ſome depth, and Hyſſus is laid down at the Weſtern extremity of the promontory, that forms the bay on that ſide, and might therefore ſerve as a ſtation, or rendezvous, where the ſhips might collect, and put out again to ſea when the wind ſerved; which convenience might compenſate for their deviating a little from their courſe. Pliny[i] ſeems to allude to this ſituation of Trapezus, when he deſcribes it as incloſed by a vaſt mountain, (vaſto monte

[i] Lib. vi. cap. 4.

clauſum,)

clauſum,) and the print in Tournefort's Travels ſeems to coincide with the account in Pliny. It muſt however be owned, that the Peutingerian Tables place the port of [k] Hyſſus at the diſtance of 24 miles to the Eaſt of Trapezus, which differs but little from that aſſigned by Arrian; from which indeed that of Ptolemy, in point of diſtance, does not greatly vary, Ptolemy placing Trapezus in Longit. 70° 45′, Latit. 43° 6′; and Hyſſi Portus in Longit. 70° 30′, and Latit. 43° 20′; ſo that there is a difference of 15′ of Longitude, and 14′ of Latitude, which gives a diſtance equal to about 20 Engliſh miles and a half, or 179 ſtadia and ſome fraction beſides, approaching very near to the computation of Arrian.

From Hyſſus to the river Ophis 90 ſtadia.

No river appears in the place aſſigned by Arrian either in Ptolemy, or in the modern maps; but a city is deſcribed by Ptolemy in this ſituation, which is called in the Greek text Ὄφιας, and Opius in the Latin tranſlation. It is called in the maps in Ptolemy's Geography, Pityuſa, which is ſaid in the margin of the text to have been its ancient name; doubtleſs derived from the pine trees, which both ancient and modern accounts aſſure us grow ſo plentifully on this coaſt. The word Ophis (ſuppoſing, with Arrian, that it is a river) may imply, either that it flowed in a ſerpentine direction, or that its banks or neighbourhood were infeſted with ſerpents. But perhaps the name of this river, or place, whichſoever it be, may admit of a different interpretation. The word Ὄφιος, the name given by Ptolemy, may imply a relation to the

[k] In the Peutingerian Tables it is ſpelt Nyſſilime, which can mean nothing but Ὑσσοῦ λιμὴν, or Hyſſi portus.

drug

drug called [y] Οπιον, which was a [l] Greek as well as a Latin word, expreſſing the [m] ſubſtance, which we call Opium at preſent.

Colchis was famed in all ages for its fertility both in medicinal and poiſonous plants [n].

——Ille et venena Colchica,
Et quicquid uſquam concipitur nefas
Tractavit. HOR. Od. lib. ii. 13.

Herbaſque quas et Colchos atque Iberia
Mittit, venenorum ferax. HOR. Epod. v. 21.

The drugs, with which Medea ſupplied Jaſon, in order to appeaſe the fury of the bulls, which guarded the golden fleece, are called by Apollonius

Θελκτήρια φάρμακα ταύρων.
Argonaut. lib. iii. ver. 738.

words, which imply a ſoothing or anodyne quality. The preparation itſelf is deſcribed by the ſame writer as procured from the root of a plant, which bears a yellow flower, and is about a cubit in height [o]; and, as it ſhould ſeem, the drug was gained by preſſure, or rather perhaps by inciſion, as it is ſaid to be in form of a black juice, collected in a ſhell.

Τῆς εἶην τ᾽ ἐν ὄρεσσι κελαινὴν ἰκμάδα φηγοῦ
Κασπίη ἐνι κόχλῳ ἀμήσατο φαρμάσσεσθαι.
Argon. lib. iii. ver. 858.

This account bears a great reſemblance to Opium. The effects produced, its black colour, and its being collected in a ſhell, which

[l] Pliny calls Opium, Opion. Lib. xx. cap. 18.

[m] This place is called Opiunte in the Peutingerian Tables.

[n] See Tournefort's Travels in Georgia.

[o] Τῷ δ᾽ ἤτοι ἄνθος μὲν ὅσον πηχύιον ὕπερθε
Χροιῇ Κωρυκίῳ ἴκελον κρόκῳ, ἐξεφαάνθη.
Argon. lib. iii. ver. 854.

was

was the method in uſe in the time of Dioſcorides, both with [o] Opium, and with [p] Scammony, and is mentioned by Dr. Ruſſel to be the method practiſed at preſent in the Eaſt for collecting the latter [q] drug, indicates this very ſtrongly. As to its being procured from the root, Dioſcorides ſays, that in his time the whole plant of the Poppy was preſſed, and its inſpiſſated juice made uſe of, which had the name of [r] Meconium, and was much weaker than Opium; and this account is confirmed by [s] Pliny. The juice of the root therefore, though not in uſe at preſent, might have been ſo formerly, and is probably poſſeſſed of ſimilar virtues with that of the reſt of the plant. Mithridates, whoſe kingdom was contiguous to Colchis, and included the place in queſtion, was celebrated for his ſkill in [t] Botany and Medicine. He invented the celebrated Antidote, or Alexipharmic, which has his name, and which has been retained in medical practice even to the preſent day. The principal ingredient is well known to be Opium; and

[o] Porro opii faciundi hæc ratio eſt. Cum ros in eo exaruerit, cultro decuſſatim in ſtellas ne penitus adigatur, ex obliquo in rectum ſummam cutem incidere oportet, lacrimam exeuntem digito in concham abſtergere. Dioſcor. Matthioli Edit. p. 526. Conſtantine, in his Lexicon, Vox Ὄπος, reads a paſſage in Pliny, reſpecting the collection of Opium, "in "conchis," inſtead of "ut lactucis."

[p] Legitur ad hunc modum ſuccus. Capite exempto radix in teſtudinis ſpeciem cultro excavatur, quo fit ut in cavum confluat ſuccus, qui conchis demum excipitur. Matth. Dioſc. p. 610.

[q] The method of collecting the Scammony is this: having cleared away the earth from about the upper part of the root, they cut off the top in an oblique direction, about two inches below where the ſtalks ſpring from it. Under the moſt depending part of the ſlope they fix *a ſhell*, or ſome other convenient receptacle, into which the milky juice gradually flows. Med. Obſerv. vol. i. p. 18.

[r] Aliqui capita ipſa et folia tundunt et prelo exprimunt, terenteſque digerunt mortario in paſtillos, id Meconium vocatur, multum Opio ignavius. Matth. Dioſc. p. 526.

[s] Cum capita ipſa et folia decoquuntur, ſuccus Meconium vocatur multum Opio ignavior. Plin. lib xx. cap. 18.

Suidas and Cælius Rhodoginus both mention a city of the name of Μηκώνη, derived probably from the abundance of poppies that grew in the neighbourhood.

[t] Plin. lib. xxv. c. 2. & 10.

in

in that light almoſt altogether is the preparation regarded by modern practitioners.

The country, of which we are ſpeaking, ſtill produces Opium in great plenty and perfection. Dr. Alſton ſays, that " the Opium of " Natolia, or Anatolia," (the modern name of the country, that lies on the ſouthern ſide of the Euxine, or Black Sea,) " is produced in " greater quantity, and is of a better quality, than what comes from " Egypt [u]."

It is as probable that the name of this place, or river, might be derived from the production of Opium, as that its other and ancient name, Pityuſa, ſhould be derived from the pine trees, which, Tournefort [x] tells us, ſtill grow in great numbers and perfection in that country.

From the river Ophis to the river Pſychrus 30 ſtadia.

The name of this river is doubtleſs derived from [y] its coldneſs, a quality remarked of other rivers in Aſia Minor, particularly the Cydnus, which had nearly proved fatal to Alexander the Great, who bathed in it, and is ſaid to have actually cauſed the death of the Emperor Frederic Barbaroſſa.

[u] Edin. Med. Eſſays, vol. v.

It is remarkable that many of the coins of the cities ſituated upon the ſouthern coaſt of the Black Sea have a reference to medicine. Tournefort ſays, " that many of the medals " of Amaſtris are in honour of phyſic, as a " great many Eſculapius's with ſticks, round " which a ſerpent is winded, and of the God- " deſs of Health with the ſerpents." The ſame may be ſaid of the coins of Tios, Abonitichos, and other places on the ſame coaſt.

[x] Tournefort's Trav. vol. iii. p. 75. Eng. Tranſl.

[y] Ψυχρὸς, cold. Ariſtotle mentions a river of the ſame name in Thrace, probably ſo called for the ſame reaſon. Hiſt. Anim. lib. xii. c. 12.

From the river Pſychrus to the river Calus 30 ſtadia. From the river Calus to the river Rhizius 120 ſtadia.

A port of this name is put down in Ptolemy, probably the mouth of this river, which he places at only 10′, or about 100 ſtadia to the Eaſt of the Ophis, or rather of the place, which he calls Opius, or Ὄπιος.

From the river Rhizius to the river Aſcurus 30 ſtadia.
From the river Aſcurus to the river Adienus 60 ſtadia.
From the river Adienus to Athenæ Ponticæ 180 ſtadia.

Arrian makes the whole diſtance from Trapezus to Athenæ Ponticæ 720 ſtadia, equal to 90 Greek miles, or 82½ Engliſh miles. Its direction is nearly Eaſt. The Peutingerian Tables make this diſtance to be [z] 91 M. P. or 728 ſtadia, very near to the calculation of Arrian. It had its name [a], as Arrian ſays, from a temple in the Grecian ſtyle, which was built there; but the place appears to have been, even in his time, in a deſerted ſtate, the caſtle being in ruins; and the whole was probably noticed here more for its name, than on any other account. This was the firſt place the fleet touched at, being driven in by a violent tempeſt, which endangered them very much. He deſcribes it as preceded by a cloud ſuddenly

[z]

From Trapezus	to	Nyſſilime	24 M. P.
Nyſſilime	—	Opiunte	18
Opiunte	—	Reila	15
Reila	—	Ardinco	18
Ardinco	—	Athenis	16
			91 M. P. = 728 ſtadia.

[a] It is now called Ortouna, or Athenah.

ariſing

ariſing in the Eaſt, which was followed by a violent guſt of wind from the ſame quarter, and oppoſite to the courſe they held. In the ſame manner the cloud, deſcribed in the Book of Kings [b], foretold wind, as well as rain; and Sir John Chardin informs us, that great ſtorms are wont to begin with ſuch a kind of cloud, and that it is the ſign of them at ſea in the Eaſtern countries [c].

The Eaſt wind is often ſpoken of as being of a violent and dangerous nature. It is ſaid in the Book of Pſalms [d] to "break the "ſhips of Tarſhiſh;" and a ſimilar expreſſion concerning it is found in the Prophet Ezechiel [e]. Virgil mentions its ravages in the woods of Mount Caucaſus, a part of which, and that with which Virgil was moſt likely to be acquainted, lies on the Eaſtern border of the Black Sea.

Ipſæ Caucaſio ſteriles in vertice ſylvæ,
Quas animoſi Euri aſſidue franguntque feruntque.
Geor. lib. ii. ver. 439, 440.

It is deſcribed by others as accompanied by clouds, and as raiſing ſuch a ſwell of the ſea, as Arrian tells us was experienced by his fleet.

————quodcunque minabitur Eurus
Fluctibus Heſperiis. HORAT. Carm. lib. i. xxviii. ver. 25.

————ubi nubifer Eurus
Naufragium ſpargens, operit freta. SIL. ITAL. lib. x. ver. 323, 324.

Niger rudentes Eurus inverſo mari
Fractoſque remos differat. HOR. Epod. x. ver. 5.

[b] "Behold there ariſeth a little cloud from "the ſea, of the bigneſs of a man's hand. "And it came to paſs in the mean time, that "the heaven was black with clouds and *wind*, "and there was a great rain." B. I. ch. xviii. ver. 43. 45.

[c] Harmer's Obſervat. vol. i. p. 56.

[d] Pſalm xlviii. 7.

[e] Chap. xxii. 25.

It was alſo a principal inſtrument of the miſchief done to the fleet of Æneas.

——Tres Eurus ab alto
In brevia, et Syrtes urget. Æn. lib. i. ver. 114.

Vix ſeptem convulſæ undis Euroque ſuperſunt. Æn. lib. i. ver. 386.

Ovid ſpeaks of the ſwell of the Euxine Sea in terms nearly ſimilar to thoſe of Arrian.

Inque modum tumuli concava ſurgit aqua.
Triſt. lib. ii. Eleg. x. ver. 20.

Apollonius deſcribes the ſhip Argo, as nearly ſunk in the ſame ſituation with that of Arrian, by the ſwell of the ſea breaking over the middle or ſide of the veſſel.

Ἔνθα μὲν ἠλιβάτῳ ἐναλίγκιον οὔρεϊ κῦμα
Ἐμφέρεται πρωτάροιθεν ἐπαΐσσονται ἐοικὸς,
Αἰὲν ὑπὲρ νεφέων ἠερμένον, οὐδέ κε φαίης
Φεύξεσθαι κακὸν οἶτον, ἐπεὶ μάλα μεσσόθι νηὸς
Λάβρον ἐπικρέμαται καθάπερ νέφος.
Apoll. lib. ii. ver. 169.

The embarraſſment however of Arrian and his aſſociates did not terminate altogether on their arrival at this port. The ſtorm continued, and the wind veered about to different points, as is common both in the Mediterranean, and in other places ſubject to hurricanes. Thus Virgil, deſcribing a ſtorm, ſpecifies ſeveral winds as either blowing at the ſame time, or in rapid ſucceſſion.

Una Eurus Notuſque ruunt, creberque procellis
Africus. Æn. lib. i. ver. 89.

And Ovid in more expreſs terms.

Inter utrumque fremunt immani turbine venti.
Neſcit, cui domino pareat, unda maris.

Nam

Nam modo purpureo vires capit Eurus ab ortu:
Nunc Zephyrus, ſero veſpere miſſus, adeſt:
Nunc gelidus ſicca Boreas bacchatur ab Arcto:
Nunc Notus adverſa prælia fronte gerit. Triſt. lib. i. El. ii. ver. 25.

They ſeem to have been firſt incommoded by the North-Weſt wind, called in that country Thraſcias, or by the Greeks Sciron. This probably brought the thunder and lightning, which Mr. Stuart, in his account of the winds on the Temple of Andronicus Cyrrheſtes at Athens, tells us, is the diſtinguiſhing character of this wind [f]. It came however about to the South, and from thence to the South-Weſt, ſo that in the courſe of the tempeſt the wind ſhifted to every point of the compaſs, like the ſtorm above deſcribed by Ovid.

The harbour of Athenæ Ponticæ [g] proved however a ſufficient protection for moſt of the ſhips; and the trireme, which rode out the ſtorm, under ſhelter of a rock, perhaps owed its ſafety to the promontory ἄκρον Ἀθηναίων, mentioned by Ptolemy. They however uſed the precaution to draw many of their ſhips aſhore in the manner, in which the Grecian fleet is deſcribed by Homer; which ſeems to have been the means of their preſervation, but implied that their draught of water, and conſequently their ability to ſail near the wind, was but ſmall. It ſeems however, from an expreſ-

[f] "It is," he ſays, "accompanied with "fierce and frequent lightnings." Stuart's Athens, vol. i. p. 23.

[g] The harbour of Athenæ Ponticæ was, as Arrian tells us, ſheltered from the N. E. wind, called Βορρᾶς, but expoſed to the North Ἀπαρκτίας, and to the North-Weſt Σκίρων. It ſeems probable that the wind had ſhifted from the laſt mentioned quarter before they reached the harbour, as Arrian tells us, the tempeſt blew at firſt from thence, but came about afterwards to the South and South-Weſt. Had the original wind Σκίρων continued to blow, the harbour would not have afforded to the fleet ſufficient protection.

ſion;

ſion, which occurs a little after, that they were able to ſail with a wind at right angles [h] to the ſhip's courſe, or, as it is expreſſed in nautical language, " with the wind on the beam."

One of the veſſels was wrecked by the ſea breaking over it, but the rigging and naval ſtores were preſerved. He alſo tells us, that they even ſcraped off the wax [i], with which the ſides were ſmeared, which he and other writers repreſent as one of the moſt neceſſary articles in the fitting out ſhips. Wax was produced in great quantity in this country. Xenophon [k], Polybius [l], Pliny [m], and Dioſcorides [n], all mention the abundance of honey; and it appears from Pliny, that part of the tribute of theſe countries was paid in wax [o], the uſe of which in large quantities is, in ſome degree, explained by this paſſage of Arrian. It may appear extraordinary that the uſe of pitch [p] for naval purpoſes being then well known, it was not employed preferably to wax, as being more adheſive, tenacious, and permanent. But it appears that both of them were in uſe mixed together, for naval purpoſes, into a compoſition called Zopiſſa [q].

[h] Πλαγίῳ τῷ κλυδῶνος ἐπειρώμεθα.

It appears from Xenophon's Anabaſis, lib. v. p. 402. ed. Hutch. 8vo. that a North wind (Βορέας) was counted favourable to thoſe, who intended to ſail from the Southern coaſt of the Black ſea to Greece. This, it is plain by the map, muſt have been nearly at right angles to their courſe. I ſuppoſe Βορέας here means the North wind, as it is oppoſed to Notus, and as it ſignifies the North wind on the temple of Andronicus Cyrrheſtes at Athens: but it has not this meaning in Arrian, as Βορέας there means the North-Eaſt, or ſome point near it.

[i] Veget. lib. iv. c. 37. Ovid Metam. lib. xi. ver. 514. Lucan. lib. iii. ver. 685.

[k] Anabaſ. lib. iv.

[l] Wax was one of the articles of trade from this country to Byzantium. Polyb. lib. iv. c. 5.

[m] Lib. xxi. c. 14.

[n] V. Cera et Mel.

[o] Genſque ea, cum ceram in tributa Romanis præſtet, mel (quoniam exitiale eſt) non vendit. Lib. xxi. c. 13.

[p] There was an ancient Athenian law, prohibiting the exportation of wood and pitch, to which ſome add wax. Petit. Leg. Att.

[q] Plin. lib. xvi. c. 12. Dioſcorid. v. Zopiſſa.

Soon

Soon after their ſetting ſail from Athenæ Ponticæ, the North or North-Eaſt wind, (Βορρᾶς) he tells us, calmed the ſea. This effect is much the ſame as is aſcribed to it by other Eaſtern writers. Thus it is ſaid in the Book of Job [r], that "fair weather cometh "out of the North," and in The Proverbs [s], "that the North "wind driveth away rain." Boreas is called by Homer [t] Αἰθριηγενετῆς, or *ſerenitatem inducens*, in ſeveral places. [u] Hippocrates, who may be regarded much in the ſame light with Homer, as an Oriental writer, obſerves, that the North wind produces fair weather, and clears the air, and is on that account the moſt healthy of all the winds. We are next informed, that before noon they reached Apſarus, having, as he ſays, ſailed more than five hundred ſtadia. There is ſome difficulty reſpecting this account of the diſtance. If it be meant of the whole diſtance from Trapezus, it is much too ſmall, indeed nearly by one half, as he himſelf computes it to be a thouſand ſtadia. If it be meant to mark the interval between Athenæ Ponticæ and Apſarus, it is too great, as Arrian ſays it is only 280 ſtadia. Perhaps he might mean, that, by the wind being contrary, they were driven ſo far out of their courſe, that they were obliged to traverſe near double the real diſtance between Apſarus and Athenæ Ponticæ. At Apſarus Arrian took a ſurvey of the fortifications, and reviewed the troops ſtationed there; which circumſtance indicates, that he was one of the military governors, or [x] Proprætors, nominated by the Emperor,

[r] Job, chap. xxxvii. ver. 22.

[s] Prov. chap. xxv. ver. 23.

[t] Il. xv. ver. 171. xix. ver. 358. Odyſſ. v. ver. 296.

[u] Hippocr. de morbo ſacro, §. 15. Tournefort however ſays, that the Turkiſh ſailors on the Black ſea were particularly afraid of the North wind: but he adds, that they were very unſkilful, and that the North wind cauſed little diſturbance to their navigation. Tournefort's Trav. vol. iii. p. 56. Eng. Tranſl.

[x] It was underſtood that the Emperor and the Senate, in their quality of partners in the ſovereignty, ſhould have the nomination of the governors

and not one of the Senatorian Proconſuls. He mentions, that his reports on this ſubject were tranſmitted in the Latin language, in which the properly official communications were always made.

Arrian derives the name of this place from Abſyrtus, the brother of Medea, whom ſhe is ſaid to have murdered at this place, and whoſe ſepulchre was ſtill to be ſeen.

I wiſh to obſerve here, that the numerous traditions and local evidences of the Argonautic expedition, which Arrian diſcovered on this coaſt, and which other writers have recorded to have exiſted in the neighbouring countries, are ſtrong preſumptive proofs that ſuch a voyage was once undertaken, and that the hiſtory of it is not merely an allegorical tale invented by poets, or perſons of fertile and flowery imagination, but a narrative of a real event. The purpoſe of it is undoubtedly very myſterious, and the circumſtances, which accompany it, complicated with poetical imagery and mythological machinery; but that ſuch a hero as Jaſon commanded ſuch an expedition, ſeems to me unqueſtionable. The proofs of it are not derived from Greece [y], the region of fabulous invention, but were found to ſubſiſt in countries barren, uncultivated, and of vaſt extent, ſuch as no forgery of ſuch a kind could influence, or probably penetrate. [z] Strabo and Diodorus obſerve,

governors in their reſpective provinces; that thoſe named by the Senate ſhould be civil officers, merely with the title of Proconſul, but without the power of the ſword, or any military rank; and they were not to remain in office longer than one year; that the officers to be named by the Emperor ſhould have military rank, with the title of Proprætor, and were to act in the capacity of his Lieutenants, accountable only to himſelf, and to hold their commiſſions during his pleaſure. Ferguſon's Hiſt. of the Progreſs and Termination of the Roman Republic, vol. iii. p. 360. ed. 4to.

[y] Græciæ fabuloſitas. Plin. lib. iv. in Præf.

[z] Strabo, lib. i. p. 45, 46. lib. xi. p. 526. Diodorus, lib. xiv. c. 30.

that

that Armenia, Media, Colchis, Iberia, the whole coaſt of the Euxine ſea, the Propontis, and the Helleſpont, were full of heroic [a] monuments of this expedition. It is indeed ſomewhat extraordinary that any of theſe ſhould have remained even to the time of Strabo, ſince he tells us, that they were induſtriouſly deſtroyed by Alexander's Generals, from a ridiculous jealouſy, leſt the fame of Jaſon might outrival that of their maſter. Parmenio, as [b] Strabo tells us, deſtroyed one of this kind at Abdera.

This account is confirmed by [c] Juſtin, who alſo ſays, that nearly the whole of the Eaſt paid divine honours to Jaſon as to their founder, and that the jealouſy of Parmenio prompted him to deſtroy ſeveral of the temples erected in honour of Jaſon.

Tacitus obſerves, that the Iberians and Albanians, nations almoſt barbarous, retained notwithſtanding, even in his time, the tradition reſpecting Jaſon, and the Argonautic expedition[d]. Theſe are facts which cannot be forged, and afford arguments of the authenticity of the hiſtory much ſuperior to any, that can be urged againſt it from its ſeeming improbability and abſurdity, things of which we are at preſent very incompetent judges, conſidering the difference of our age, climate, and manners, and alſo the obſcure and mutilated accounts, which we have of thoſe remote ages. But

[a] Ἡρώιον—μνημεῖον. Heſych. et Phavor. monumentum heroi dicatum.

[b] Strab. lib. xi. p. 530.

[c] Itaque Jaſoni totus ferme Oriens, ut conditori, divinos honores templaque conſtituit, quæ Parmenion, dux Alexandri Magni, poſt multos annos dirui juſſit, ne cujuſquam nomen in Oriente venerabilius quam Alexandri eſſet. Juſtin. lib. xlii. cap. 3.

[d] Feruntque ſe Theſſalis ortos, qua tempeſtate Jaſon, poſt avectam Medeam genitoſque ex ea liberos, inanem mox regiam Æetæ, vacuoſque Colchos, repetivit. Multaque de nomine ejus, et oraculum Phryxi celebrant. Tacit. Annal. lib. vi. cap. 34.

 ſhould

ſhould we preſume to declare all hiſtory fabulous, or unfounded, in which the events did not exactly coincide with our ideas of probability, we ſhould expoſe our own pride and narrowneſs of ſentiment, which cannot ſubmit to credit any thing, but ſuch as we can exactly reconcile to ſuch principles, as we may premiſe as neceſſary to truth.

The hiſtory of the Cruſades, an expedition almoſt as unaccountable as that of Jaſon, undertaken by a ſet of military adventurers, in an age nearly as rude and as warlike as that of the Argonauts, is diſguiſed in the proſe accounts we have of it, with as much [e] imagery as the poem of Apollonius Rhodius, and little leſs incredible. Yet we do not therefore queſtion the exiſtence of Peter the Hermit, of Godfrey of Bouillon, or of Raymond of Toulouſe; or deny, that ſuch perſons conducted armies into Paleſtine, and actually founded a kingdom there, which ſubſiſted for more than two centuries.

But to return to the ſubject.

From Athenæ Ponticæ to the river Prytanis 40 ſtadia. This is marked as a river in D'Anville, but is not ſo ſpecified in Arrian, although I think it is implied. Here was a palace of King Anchialus, probably the one mentioned afterwards by Arrian, as King of the Heniochi. From Prytanis to the river Pyxites 90 ſtadia. This

[e] See the account of the viſion, that led to the diſcovery of the head of the ſpear which pierced the ſide of our Lord, when on the croſs, which was to enſure victory to thoſe, who were in poſſeſſion of this holy relic. Robert. Monach. lib. vii. Baldrici Archiepiſc. Hiſt. Hieroſol. lib. iii. Raymond de Agiles, p. 155. Viſion of the Crucifixion, and of St. Mark the Evangeliſt. Raymond de Agiles, pp. 166, 167. Viſion of Peter the Hermit. Albert. Aquenſ. §. v. Effects of pieces of the croſs in defeating the Turks, recorded in the ſame writer, with much more in the ſame ſtrain. Geſta Dei per Francos.

river

river is mentioned by [f] Pliny, as lying between Trapezus and Apſarus.

From the Pyxites to Archabis 90 ſtadia. This is put down as a river in Ptolemy, but not in Arrian, although, I think, implied. The text of Ptolemy is undoubtedly very corrupt. According to the Latin copy, it is placed in E. Long. 61° 59′, and according to the Greek in 52° E. Long. a difference of full ten degrees, or more than 500 Engliſh miles. The longitude according to D'Anville is nearly 59° 40′ Eaſt. In the maps of Ptolemy it is placed, as it ought to be, to the North-Eaſt of Trapezus and Athenæ Ponticæ. It ſeems to be ſpecified in the Peutingerian Tables under the name of Abgabes; but is there placed too much to the Weſt, being only nine miles, or ſeventy-two ſtadia, from Athenæ Ponticæ; whereas Arrian counts it to be 227 ſtadia, or more than 28 miles.

From Archabis to [g] Apſarus 60 ſtadia. This is the name of a river, and of a caſtle on its banks. It is placed by [h] Ptolemy 80′

[f] Plin. lib. vi. cap. 4.

[g] Now called Gonieh.

[h] "The latitudes laid down in Ptolemy's Geography are very incorrect, and particularly thoſe in the neighbourhood, or under the ſame parallel with Byzantium. He erroneouſly ſuppoſed, as indeed Strabo had done before him, that this city and Marſeilles were in the ſame latitude; and as the latitude of Marſeilles had been aſcertained by Pytheas by the proportion of the length of the gnomon to its ſhadow at the Summer ſolſtice, and found, according to his computation, to be 43° 5′, or according to a more accurate calculation, which included the ſemidiameter of the Sun, 43° 19′ 25″, they reckoned the latitudes of many other places according to their diſtance North or South from the one, which they aſſumed as a ſtandard; which was the ſource of great confuſion, ſince the true latitude of Byzantium is only 41° 1′, and of courſe it was placed by Ptolemy 2° 18′ 25″ too far to the North; a ſpace, which is nearly equal to 160 Engliſh miles; and the ſame error was extended to every place, whoſe latitude was computed from a compariſon of its difference with that of Byzantium." Blair's Hiſtory of the Riſe and Progreſs of Geography, p. 88.

to the Eaſt of Athenæ Ponticæ, which, in the latitude laid down by D'Anville, is equal to 67½ Engliſh miles, or in the latitude, according to Ptolemy, to about 67 Engliſh miles. According to Arrian, it is 287 ſtadia, or nearly 33 Engliſh miles; ſo that theſe computations differ conſiderably. According to D'Anville, Apſarus is but little to the North of Athenæ Ponticæ, ſo that the difference of longitude of theſe two places ſcarcely varies from their true diſtance by ſea. In the Peutingerian Tables Apſarus is ſet down as 36 miles from Athenæ Ponticæ. Pliny ſeems to ſay, that Apſarus was 150, or, as ſome copies read, 140 miles from Trapezus. According to Arrian, it is 1000 ſtadia, or 125 Greek miles, or 114.465 Engliſh miles. From Apſarus to the [i] Acampſis 15 ſtadia. From the Acampſis to the [k] Bathys 75 ſtadia. This river is not, as far as I can find, mentioned by name by any other writer, except Pliny; but probably the Portus Altus ſet down in the Peutingerian Tables, and which is nearly in the ſame ſituation, may be the place meant by Arrian. It appears to have been no unuſual appellation, as a port ſo called (Βαθὺς λιμὴν) in Africa, is mentioned by Ptolemy. From the [l] Bathys to the Acinaſis 90 ſtadia. This river ſeems to have derived its name from the Scythian [m] Sword ſo called, which was worſhipped as a deity. Whether its name was employed to denote the ſtraight courſe of the river, or to indicate that it was a

[i] The coaſt here begins to verge towards the North.

[k] D'Anville ſeems to think the Bathys and the Acampſis the ſame river. They have both of them Greek names, the former implying depth (βαθὺς, *altus*), and the other a ſtraight courſe (ἀκαμπὴς, *rigidus*): but I know not that theſe epithets have any connection, although they are by no means incompatible.

[l] A place called Batumi is ſtill to be found in this ſituation in modern maps. The river ſeems to be the Iſcharuk.

[m] It was the emblem of Mars. Καὶ τῦτ' (ἀκινάκης) ἔϛι τῦ Ἄρηος τὸ ἄγαλμα· τύτῳ δὲ τῷ ἀκινάκει θυσίας ἐπετείυς προσάγυσι προβάτων καὶ ἵππων. Herodot. lib. iv. p. 62. Ed. Weſſel. See alſo Lucian's Jupiter Tragœdus et Toxaris.

ſacred

ſacred ſtream, is doubtful. From the Acinaſis to the Iſis 90 ſtadia. From the Iſis to the Mogrus 90 ſtadia. This river is noticed by Pliny under the name of Nogrus. From the Mogrus to the [n] Phaſis 90 ſtadia. This river preſerves in ſome degree its ancient name, being ſtill called the Faſz, or Rion. Its mouth is placed by Ptolemy in 45° N. Lat. and 72° 30′ E. Long. According to Arrowſmith's Chart it lies in nearly 42° of N. L. and 59° 6′ 50″ E. Long. from the Canaries. The map of the country between the Caſpian and the Black ſea makes it to be 42° 25′ N. L. and 59° 2′ E. from the Canaries. Ptolemy then makes it, according to the laſt computation, no leſs than 13° 28′ too far to the Eaſtward, which is nearly 685 Engliſh miles, a vaſt difference, which muſt effectually confound all calculation.

The mouth of the Phaſis is, according to Ptolemy, $\frac{21}{36}$ of an hour to the Eaſt of Alexandria, which is equal to 35 minutes of time, or 8° 45′ of longitude, which in latitude 42° is equal to nearly 452 Engliſh miles. This calculation, although erroneous, is leſs ſo than the former.

Long. of the Phaſis	—	—	59° 6′ 50″ E. Arrowſmith
Long. of the [o] Pharos at Alexandria			47 30 50 E. Walſh's Journal.

Difference 11° 36′

[n] Pliny ſays it is 1000 miles from Chalcedon to the Phaſis. Arrian makes it to be 8385 ſtadia, or 1048 Greek miles. D'Anville makes it about 13 degrees of Long. and $\frac{1}{3}$ or about 688 Engliſh miles. Arrowſmith's Chart makes it conſiderably leſs, and not more than 630 Engliſh miles.

[o] The Pharos of Alexandria lies, according to Walſh's Journal, in Lat. 31° 13′ 5″ N. L. and in 29° 45′ Eaſt Long. from Greenwich.

N. B. The Iſle of Ferro in the Canaries is 17° 44′ 50″ Weſt of Greenwich. The Long. and Lat. of Alexandria, according to Denon, are

Long. E. from Paris 27° 35′
Latitude 31° 12′ 20″

Difference 10′ more Eaſterly than Walſh's calculation.

equal

equal to 598 Engliſh miles, and 46′ 24″ of time. In this calculation the error of Ptolemy is of an oppoſite kind to the former, as he places the mouth of the Phaſis, compared with the Pharos of Alexandria, 146 Engliſh miles nearly too far to the Weſtward. From Apſarus to the Phaſis is, according to [p] Pliny, 75, or, as ſome copies read, 70 miles, equal to 600, or 560 ſtadia. D'Anville agrees nearly with Arrian. The Ruſſian map makes it 54 Engliſh miles, or about 470 ſtadia.

[q] Strabo ſays, it is 1400 ſtadia from Trapezus to the Phaſis. Arrian makes it 1450 ſtadia, which agrees nearly with Strabo. The diſtance between the Bathys and the Phaſis is, according to Arrian, 360 ſtadia. The map of the country between the Black ſea and the Caſpian makes it 375 ſtadia, differing but little from Arrian. D'Anville's map agrees nearly herewith.

Arrian ſays, that the water of the Phaſis is lighter in the balance, and more changeable in colour, than any water, with which he was acquainted. It may probably be ſoft, as being moſtly rain water, which is alſo light. It is however, according to [r] Hippocrates, a ſluggiſh and almoſt ſtagnant river, and its water not at all coinciding with the character given of it by Arrian. It further appears from Hippocrates that the water of the Phaſis is ſubject to become putrid from its [s] ſtagnation, and the warmth of the ſun; and that thoſe, who drink it, are liable to [t] diſeaſes from

[p] Plin. lib. vi. cap. 4.

[q] P. 548. Paris ed.

[r] Αὐτός τε ὁ Φάσις ϛασιμώτατος πάντων τῶν ποταμῶν, καὶ ῥέων ἠπιώτατα. Hippocrat. de Aer. Aq. et Loc. §. 83. Ed. Coray. à Paris, 1800.

[s] Τὰ δὲ ὕδατα, θερμὰ καὶ ϛάσιμα πίνουσι, ὑπό τε τῷ ἡλίῳ σηπόμενα, καὶ ὑπὸ τῶν ὄμβρων ἐπαυξόμενα. Ibid.

[t] Τήν τε χροιὴν ὠχρὴν ἔχουσι, ὥσπερ ὑπὸ ἰκτέρου ἐχόμενοι. §. 84. Pindar calls them Κόλχοισι κελαινώπεσσι. Pyth. iv. Stroph. 10. verſ. 377. Ed. Heyne.

this

this circumſtance. Arrian, although he uſes an [u] expreſſion denoting clearneſs and tranſparency, allows that it reſembles water impregnated with [x] lead or tin, and that it depoſits a ſediment on ſtanding. He adds, that it does not become putrid by keeping, a quality ſeemingly inconſiſtent with that aſcribed to it by Hippocrates. Very different accounts of this river are given by other writers. Although Hippocrates repreſents it as the moſt ſtagnant of all rivers, others deſcribe it as rapid and violent;

——rapidas limoſi Phaſidis undas. OVID. Met. lib. vii. ver. 5.

Magnus ubi adverſum ſpumanti Phaſis in æquor
Ore ruit. VAL. FLACC. lib. v. ver. 179.

But I think theſe ſeemingly oppoſite accounts may be reconciled, if we conſider, that this river riſes among the mountains of Armenia, which during a conſiderable part of the year are covered with ſnow[y]; and whilſt that remains unmelted, the river may be as Hippocrates repreſents it; but on the melting of the ſnow, it may become rapid and violent, like other rivers that riſe in mountainous countries. It is called Nivoſi by [z] Statius, which indicates ſomewhat of this kind. [a] Hippocrates alſo mentions, that large and violent ſhowers frequently fall in that region, which might contribute to ſwell it. [b] Plutarch ſays, that this river was formerly

[u] Καθαρώτατον.

[x] Chardin makes the ſame obſervation. L'eau en eſt fort bonne à boire, quoique elle ſoit trouble, épaiſſe, et de couleur de plomb. Vol. i. p. 148.

[y] Mount Niphates, which lies to the South of the ſource of the Phaſis, had its name from the ſnows, which cover it; and Mount Caucaſus is ſo called from the ſame circumſtance. Νιφάτης, ſic dictus ἀπὸ τῆς νιφάδος, a nivibus. Vid. Stephan. —Et Caucaſum montem, Graucaſum hoc eſt nive candidum. Plin. lib. vi. c. 17. Le haut du mont Caucaſe eſt perpétuellement couvert de neige. Chardin, liv. i. pag. 155.

[z] Thebaid. lib. xii. ver. 182.

[a] Ὄμβροι τε αὐτόθι γίγνονται πᾶσαν ὥρην πυλλοί τε, καὶ ἰσχυροί. Hippocr. §. 83.

[b] Plut. de Fluv.

called

called Arcturus, which may probably allude to its periodical overflow about the time of year, when this ſtar riſes coſmically, which took place then about the latter end of Auguſt, when the ſnows are melting. Apollonius remarks in the ſame country the wet weather, which accompanied the riſing of Arcturus, which might contribute to the ſame purpoſe, and is agreeable to the obſervation of Hippocrates mentioned above.

Ὕδατι σημαίνων διερὴν ὁδὸν Ἀρκτούροιο.
Argon. lib. ii. ver. 1101.

It may be added in confirmation of what has been juſt obſerved, that the Nile, whoſe annual increaſe is thought to be owing to the ſame cauſe, which is here ſuggeſted reſpecting the Phaſis, begins to increaſe about the Summer ſolſtice, and continues increaſing until September; but as it riſes in very hot countries, it may begin to overflow earlier than the Phaſis, as the ſnow melts ſooner. Somewhat of a ſimilar analogy may, according to Selden, be obſerved between the Nile and Sirius, as is here ſuggeſted between the Phaſis and Arcturus. The Dog-ſtar (Sirius) was, as he thinks, ſo called from Siris, the ancient name of the Nile, as the coſmical riſe of [c] Sirius coincided with the time of the greateſt increaſe of the river.

The ſame circumſtance may account for the different character given of the ſalubrity of the water. That of the Nile is thought unwholeſome, when the river is riſing; but at other times, if al-

[c] Sirio cane, cujus exortu Nili aſcenſus quotannis fiebat, a Siri, id eſt Nilo, etiam procul dubio denominato. Selden. de Vitulo Aureo, Syntagm. i. c. 4. The Nile is called Sihor in various paſſages of Scripture.

lowed

lowed to [d] ſtand, and depoſit its ſediment, as Arrian ſays of the Phaſis, it becomes like that river, limpid, and [e] excellent for drink.

What Arrian ſays reſpecting the ſtatue of Cybele, and its reſemblance, both in attitude and accompaniments, to the one by Phidias at Athens, argues ſtrongly in favour of the early intercourſe, which is ſuppoſed to have ſubſiſted between Greece and this country. The ſtatue of the Goddeſs is deſcribed by Arrian as holding a cymbal in her hand, with lions under her throne, or ſeat. This is exactly the ſame repreſentation, as is to be found in [f] Montfaucon's Antiquities, of which many examples both from coins and [g] ſculpture are produced. Arrian obſerves, that the ſtatue of Cybele at Athens was placed ἐν Μητρῴῳ. This word was applied in general to the temples of Cybele, as appears from many ancient coins and inſcriptions, as well as authors. [h] Pauſanias ſpeaks of a Μητρῷον at Elis in Greece, which he remarks, as ſingular from its not having a ſtatue of [i] Cybele in it.

[k] Julius Pollux ſays, that the temple of Cybele at Athens was called Μητρῶον; and Suidas, Harpocration, and [l] Athenæus add, that it was the repoſitory of the public records, and of the laws.

[d] Pocock's Travels, vol. i. p. 199. Walſh's Journal of the Campaign in Egypt, p. 254.

[e] Harmer's Obſervat. vol. ii. p. 295.

[f] Vol. i. p. 1.

[g] See Muſ. Florentin. vol. i. plate 96.

[h] Lib. i. p. 429. Ed. Kühn.

[i] Cybele was a Phrygian Goddeſs, and much revered throughout the courſe of the Euxine ſea. Jaſon in Apollonius, lib. i. ver. 1094. is commanded to ſacrifice to, and to propitiate her, as being the directreſs of the earth, winds, and ſeas. Strabo tells us, that at Dindymene in Phrygia there was a temple built by the Argonauts, and dedicated to the mother of the Gods. Strab. lib. xiii.

[k] Jul. Poll. lib. iii. cap. 3.

[l] Athenæus ſays, that Apellicon the Grammarian, whoſe library fell into the hands of Sylla at the taking of Athens, was in poſſeſſion of the original legal decrees of ancient times, which had been ſtolen out of the Μητρῷον. Athen. lib. v. p. 214. Ed. Caſaub.

At or near this temple, an anchor of iron was ſhewn, which was reported to have belonged to the ſhip Argo; which Arrian very juſtly rejects as ſpurious, ſince anchors of ſtone only were in uſe at that early period. The fragments of a ſtone anchor, which was reported to have belonged to the ſame ſhip, are properly determined by him to be more probably genuine. Perhaps theſe fragments might be the remains of the anchor, which the Argonauts brought from Cyzicus, where, as Apollonius tells us, they exchanged a ſmall ſtone anchor for a larger of the ſame kind. It is remarkable that Apollonius [m] notices, that the old anchor was laid up as a ſacred depoſit in a temple at Cyzicus, as probably the fragments of the new were preſerved in the time of Arrian in the temple of Cybele.

The caſtle at the mouth of the river appears to have been regularly fortified as a frontier place. He notices, that it was built of baked brick (πλίνθε ὀπτῆς), a circumſtance particularly mentioned to diſtinguiſh it from ſun-dried brick, which formed the walls of many of the cities and caſtles in Aſia Minor, and, as it ſhould ſeem, even in Greece. [n] Xenophon obſerves, that the wall of Media, which extended from the Euphrates to the Tigris, was built of burnt brick, in oppoſition to raw brick. Herodotus notices, that the walls of Babylon were, in like manner, conſtructed of burnt bricks. Pauſanias, ſpeaking of the walls of Mantinea, which were deſtroyed by Ageſipolis, who turned the ſtream of the river Ophis againſt them, tells us, that they were ὠμῆς ὠκοδομημένης τ᾽ πλίνθε, built of raw or crude bricks, which, he ſays, diſſolved by water [o], as wax does by the ſun.

[m] Argon. lib. i. ver. 955.
[n] Anabaſ. lib. ii. p. 145. Ed. Hutch. 8vo.
[o] Pauſan. lib. viii.

Arrian

Arrian obſerves in this part of the work, that the Pontic ſea was much leſs ſalt than the ſea without the Helleſpont, on account of the numerous rivers, which diſcharge themſelves into it. [p] Strabo and other writers make the ſame obſervation, and aſcribe it to the ſame cauſe. Modern accounts agree with ancient [q] in this reſpect.

From the Phaſis to the Chariens 90 ſtadia. This is the Chariſtus of Ptolemy, and, according to him, lies N. E. of the mouth of the Phaſis, with 15′ difference of latitude, equal to 17.4 Engliſh miles. It ſeems in the Ruſſian map to be about ten Greek miles, or 80 ſtadia, from the mouth of the Phaſis. In the Peutingerian Tables, only three miles are ſet down, as the diſtance from the Phaſis to the Chariens, and 16 miles from the Chariens to the Chobus. Theſe numbers are probably erroneous; but the whole diſtance from the Phaſis to the Chobus is not ſo different from the one given by Arrian, as to make it probable that they uſed a different calculation.

From the Chariens to the [r] Chobus 90 ſtadia. According to ſome modern maps, a place of the name of Copi ſtill remains at the mouth of this river. From the Chobus to the Singamis 210 ſtadia. The Greek copy of Ptolemy makes the difference of latitude between the Chariſtus and Siganeum to be 30 minutes, equal, as was then ſuppoſed, to 300 ſtadia, which is exactly the diſtance

[p] Διὸ καὶ γλυκύτατον εἶναι τὸν Πόντον. Strab. lib. i. Ipſum mare Ponticum dulcius quam cætera. *Fragm. Salluſtii. Amm. Marc.* xxii. c. 8.

Copia tot laticum, quas auget, adulterat undas;
Nec patitur vires æquor habere ſuas.
Ovid. Ep. lib. iv. ep. 10.

Vimque fretum multo perdit ab amne ſuam.
Ibid. verſ. 46.

[q] Tournefort remarks, that it is certain that the water of the Black ſea is leſs briny than the water of our ſeas. *Deſc. of the Canal of the Black Sea.*

[r] In D'Anville's map the Chariens and the Chobus ſeem to have changed places, as he lays down the Chobus to the South of the Chariens, whereas Arrian puts it to the North.

laid down by Arrian. The Peutingerian Tables count from the Chariens to Sicanabis 35 miles, or 280 ſtadia. From the Singamis to Tarſuras 120 ſtadia. The Peutingerian Tables make this diſtance to be 16 miles, or only eight ſtadia more than it is reckoned by Arrian. From Tarſuras to Hippus 150 ſtadia. From Hippus to Aſtelephus 30 ſtadia. From Aſtelephus to Sebaſtopolis 120 ſtadia. This place was, in early times, called Dioſcurias from the Dioſcuri (Caſtor and Pollux), who were reported to have [s] founded it. It has now recovered its ancient name, although much corrupted, being called by the Turks Iſkouriah, or [t] Iſagour, although the Greeks, I believe, retain the modern name of Sevatopoli. It is placed by Ptolemy in Latitude 44° 45′ N. and Long. E. 72° 20′. By the Ruſſian map the latitude is 43° 27′ 30″, and by Arrowſmith's Chart 43° 18′. Longitude by the Ruſſian Map, 57° 56′; by Arrowſmith, 58° 21′ 50″. It is reckoned by Arrian to be 2260 ſtadia, equal to 282 Greek miles, or 258.68 Engliſh, diſtant from Trapezus. Pliny ſays, that it is 100 miles diſtant from the Phaſis, which agrees nearly with Arrian, who reckons this interval at 810 ſtadia, equal to 101 Greek miles and a quarter. The medium diſtance in [u] two modern maps is 96 Engliſh miles, equal to 838 ſtadia, or three Greek miles and a half more than Arrian's calculation.

Arrian, having enumerated the rivers, by which he paſſed, proceeds to ſpeak of the inhabitants of the country. His account

[s] Solinus and Ammianus Marcellinus ſay, that Dioſcurias was founded by Amphitus and Cercius, the charioteers to Caſtor and Pollux, from whom alſo originated the nation of the Heniochi. Strabo calls them Rhecas and Amphiſtratus. Strab. lib. xi. Amm. Marcell. lib. xxii. c. 8.

[t] Iſagour is ſtill a road for ſhips, but the place is in ruins, and uninhabited. Chardin, vol. i. p. 54.

[u] Arrowſmith's and Lauric's Charts.

of

of the Drillæ agrees with that of [x] Xenophon, ſave that the latter ſays nothing of their form of government. We ſee by the threats, which Arrian expreſſes towards this people, the manner in which the Romans treated their refractory tributaries; which explains the reaſon, why theſe nations, when they gained the ſuperiority, as they did a few centuries afterwards, retorted the ſame ill uſage on the Romans. The accounts of theſe writers agree very well with thoſe given of the modern predatory inhabitants of theſe countries. It appears, that theſe nations were tributary, and perhaps feudatory, to the Romans, and governed by princes nominated by the Emperors. The deſcription, which Arrian gives of the direction in which he proceeded in his courſe by ſea, is perfectly correct. As far as Apſarus, he obſerves, that their courſe lay Eaſtward, and this place he conſiders as the [y] extremity of the Euxine ſea towards that point; and this is true of it, as to what regards the Southern coaſt, or the right ſide of the Pontus. From thence their courſe lay Northward to the Chobus and the Singamis. At the latter place the ſhore began to verge a little to the Weſtward, or what he calls the left ſide of the Pontus, and continued in that direction to Aſtelephus and Dioſcurias, where his voyage terminated.

The view of mount Caucaſus from Dioſcurias deſcribed by Arrian reſembles that given by [z] Apollonius Rhodius. I do not find that the ſummit of mount Caucaſus is called Strobilus by any other writer. It is undoubtedly ſo named from its reſemblance in ſhape to a pine cone; and the plenty of trees of this kind in the ſurrounding [a] country makes this more evident. Strabo mentions

[x] Xenoph. Anabaſ.

[y] Apollonius, with more propriety, ſuppoſes the mouth of the Phaſis to be the extremity of the Pontic ſea. Lib. ii. ver. 1265.

[z] Lib. ii. ver. 1251.

[a] Virg. Georg. lib. ii. ver. 440.

a moun-

a mountain of this ſhape, which is obſerved indeed to be the general form of ſuch as have been volcanic, which might in early ages have been the caſe with mount Caucaſus. The Periplus now reverts to an account of the diſtances of the ſeveral places from one another, that lie between the Thracian Boſporus and Trapezus.

From Byzantium to the temple of Jupiter Urius 120 ſtadia. This was ſituated on the Aſiatic ſide of the Thracian Boſporus, and nearly on the point of land, which joins that ſtrait on the Eaſtern ſide, and the Euxine ſea on the North. It might poſſibly be on the ſpot, where the Argonauts ſacrificed to the ſame [b] deity, by the advice of Phineus. [c] Polybius ſays, that the place bore the name of Ἱερὸν in his time, and that Jaſon ſacrificed there to the twelve deities, a circumſtance recognized by Apollonius[d]. The Scholiaſt on Apollonius ſays, the ſpot was ſo called in his time. Gyllius ſays, that in his time it bore the name Ἱερὸν, and Tournefort mentions its being called Ioro, which he takes to be a corruption of Ἱερὸν, or poſſibly of Urii. The word οὔριος is ſaid to be particularly applicable to ſea-voyages. It is derived from οὐρὰ, *cauda*, and ſignifies, as we are informed by the Scholiaſt on Thucydides, a wind that blows on the hinder part, or ſtern, of the ſhip, and, by an eaſy accommodation, a fair or a proſperous wind. The Greeks, being defective in navigation, regarded that wind as the moſt favourable, that blew directly towards the point aimed at, although they could ſail with one more oblique, and even with the wind on the beam. The deity here mentioned ſeems to be the ſame with the one, which is called in Apollonius, Διὸς ἰκμαῖος, or *Jupiter humidus*. Thus the Scholiaſt explains it. Perhaps Tournefort's

[b] Apoll. lib. ii. ver. 525.
[c] Lib. iv. c. 39.
[d] Apoll. lib. ii. 533, 534, and the Scholiaſt.

obſer-

obſervation may be thought more applicable to the epithet, when he tells us, [e] "that much more rain falls in the Black ſea than in "the Helleſpont." The word then bore a proper application to a ſituation, which marked the boundary between a moiſt and a dry climate. The diſtance of this [f] temple from Byzantium, as laid down by Arrian, is, as nearly as poſſible, agreeable to modern meaſurements. The Peutingerian Tables appear to ſet it down too far to the Eaſtward: but no dependence is to be placed on them as a map, otherwiſe than by the meaſurements expreſſed in the numbers annexed.

From the temple of Jupiter Urius to the river Rhebas 90 ſtadia. This river ſtill goes by the name of Irva, or Riva, and appears to be, by the map, about nine Engliſh miles, or about 80 ſtadia, from the temple above mentioned. The ſtage to this river is put down in the Peutingerian Tables, Adherbas, which is probably a miſ-ſpelling of Rhebas. The Rhebas is called by Apollonius [g] a ſwift flowing river (ὠκυρόην). Dionyſius Periegetes deſcribes it as a beautiful ſtream flowing into the Pontic ſea near its mouth[h]. It appears from Strabo to be a winding ſtream, as he ſays the road croſſes it ſeven times in a ſhort ſpace. Tournefort however ſays, that, when he paſſed it, it was no better than a brook [i].

From the river Rhebas to Acra Melæna 150 ſtadia. This place is twice mentioned by [k] Apollonius under this name. It is alſo called

[e] Vol. iii. p. 16.

[f] It was probably in this temple, that Darius Hyſtaſpis ſat, when he ſet out on his expedition againſt the Scythians. Herod. lib. iv. p. 320. Ed. Weſſel.

[g] Lib. ii. ver. 349, 652.

[h] Line 795, 796.

[i] Tournefort obſerves, that moſt of the brooks or rivers on this coaſt are either dried up, or reduced almoſt to nothing.

[k] Lib. ii. ver. 349, 653.

by

by Ptolemy Ἀκρίτας ἄκρα, or the indiſtinct cape, or promontory, perhaps from its being often enveloped in [k] clouds, which might alſo be the origin of its other name. It ſtill retains its ancient epithet, being now called Kalin acron, or the Black cape. Its diſtance from the Rhebas, as here laid down, agrees with modern maps, it being in the latter 18 Engliſh miles, which differs only a fraction of a mile from Arrian's computation. It is put down in the Peutingerian Tables, as 25 miles from the temple of Jupiter Urius; but, according to Arrian, it is 240 ſtadia, or 30 Greek miles.

From Acra Melæna to Artanes 150 ſtadia. Some think that this was a fortreſs, not a river. Ptolemy calls it Ἀρτάκη χωρίον. D'Anville adds a river, and there is one about this diſtance in the modern maps. It is ſet down in the Peutingerian Tables under the name of Artane, and is placed at the diſtance of nineteen miles from Acra Melæna, which is as near as poſſible to Arrian's calculation of 150 ſtadia.

From Artanes to Pſilis 150 ſtadia. This ſeems to be mentioned by Ptolemy, but the text is corrupted, or doubtful; and it is uncertain whether the Pſilis or the Rhebas be meant, and the longitude indicates that the latter was underſtood. A place or ſtage called Philium is put down in the Peutingerian Tables, at the diſtance of 19 miles from Artanes, which agrees ſo nearly with the interval aſſigned by Arrian, that there is little doubt that the ſame place is meant by both. The mouth of this river is men-

[k] Trecarris, or the Black mountain in South Wales, is probably ſo called for the ſame reaſon.

tioned

tioned by [l]Apollonius, and confirmed by the Scholiaſt to be a river of Bithynia. It is alſo mentioned by [m] Pliny and [n] Strabo.

From Pſilis to [o] Portus Calpes 210 ſtadia. This place is probably ſo called from its reſemblance in ſhape to a water-pot. The port is accurately deſcribed by [p] Xenophon, being, as he ſays, "ſituated "in Aſiatic Thrace in the midway between [q] Heraclea and By- "zantium. [r]A promontory runs out into the ſea, of which that "part, which lies contiguous to the ſea, is a craggy rock; in height, "where it is loweſt, not leſs than twenty fathoms. The neck of "land, by which this promontory is joined to the continent, is "about 400 feet in breadth, and the ſpace within the neck is "ample enough to afford habitation for ten thouſand men. The "port lies under the rock upon the weſtern ſhore, and cloſe to the "ſea flows a ſpring, plentifully ſupplied with freſh water; this "ſpring is commanded by the rock. This place affords great "plenty of timber, particularly ſuch as is proper for ſhip-building, "in great quantity and perfection, cloſe to the ſea."

Ptolemy makes it to lie in 25′ of longitude to the eaſtward of Pſilis, equal to about twenty-one Engliſh miles, or 183 ſtadia. This river is ſpecified by Apollonius to be [s] remarkable for its depth.

[l] Lib. ii. ver. 654.

[m] Lib. vi. c. 3.

[n] Lib. xii.

[o] Κάλπη· ὑδρία, γάμνος. Heſych. According to Steph. Byz. there was both a city and a port of this name.

[p] Anabaſ. lib. vi.

[q] This agrees nearly with Arrian's computation. According to him,
From Byzantium to Heraclea is 1670 ſtadia.
From Byzantium to Calpe 870 ſtadia.

[r] This is an exact deſcription of Gibraltar, (Calpe) with the difference of the proportions of ſize in its reſpective parts. *Editor.*

[s] βαθυρείοντα τε Κάλπιν. Argon. lib. ii. verſ. 661.

From Calpe to Rhoe Portus 20 ſtadia. I do not find this place mentioned by any other writer. From Rhoe Portus to Apollonia Inſula 20 ſtadia. This iſland was ſacred to Apollo, as we learn from [t]Apollonius Rhodius, and from thence had its name. It was uſually called Thynias, or Daphnuſa. It appears to have been uninhabited in early times. It is called Kerbeh, or Kirbe, in the modern maps.

From Apollonia to Chelas 20 ſtadia. The diſtance from Pſilis to Chelas is ſet down in the Peutingerian Tables as 20 [u] miles, equal to 160 ſtadia. It is ſet down in Ptolemy 20′ to the eaſt of Calpe. In Arrian the ſame ſpace is reckoned to be 270 ſtadia, or 33.75 Greek miles. This river is now called by the Greeks Ava, or Ayala; but Tournefort ſays, the Turks call it Sagari, or Sacari; by the former of which names it appears both in the Peutingerian Tables, and in modern maps. This river was the boundary between Cappadocia and Bithynia. Tournefort ſays, he found no river between the Rhebas and the Sangarius. This river is mentioned by Homer in [v] two places, as a river of Phrygia, ſo that its ancient name has been continued through many ages. [x] Apollonius notices the mouth of this river, as appearing to the Argonauts early in the morning, on the third day of their voyage from the entrance of the Euxine ſea.

Arrian ſays, it is 990 ſtadia from the temple of Jupiter Urius to

[t] Argon. lib. ii. verſ. 688, 689.

[u] Q. if not 28 miles = 224 ſtadia.

[v] Iliad iii. verſ. 187. Il. xvi. verſ. 719.

[x] Argon. lib. ii. verſ. 724. The Scholiaſt ſays, there was a temple of Cybele at the mouth of the river, called ὀρείας Δήμητρος ἱερὸν, probably to mark the boundary between the countries. In like manner Jupiter was under certain circumſtances called Ζεὺς ὀρείος, or Δίος ὀρείος, and in the Latin, Jupiter terminalis.

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the mouth of the Sangarius, or about 113 Engliſh miles; and ſeveral maps agree nearly with this diſtance: but Mr. Arrowſmith's chart makes it to be leſs than 87 Engliſh miles, or about [y]760 ſtadia. The Peutingerian Tables make it 148 miles, equal to 1184 ſtadia. Strabo ſays, that it is 500 ſtadia from the mouth of the Sangarius to Heraclea. Arrian makes it to be 660. Modern maps in general agree with Strabo's computation; but Mr. Arrowſmith's chart makes it only about 30 Engliſh miles, or about 262 ſtadia. Ptolemy makes the diſtance to be one degree of longitude, which in that latitude is about 52 Engliſh miles and a half, or about 460 ſtadia.

From the mouth of the Sangarius to that of the Hippus 180 ſtadia. This diſtance is ſet down in Ptolemy as equal to a degree of longitude, or 52.452 Engliſh miles; but Arrian makes it 22.5 Greek miles, equal to 20.5 Engliſh miles, and is nearer the truth. The Peutingerian Tables make it 19 Greek miles, or about 152 ſtadia. The Hippus is mentioned by Scylax, and by Apollonius, and characteriſed by the [z]latter as a deep river.

From the Hippus to Lilium Emporium 100 ſtadia. D'Anville's map places a river here; if ſo, this was the port at its mouth; but I cannot find any mention of one. There is, however, in all the modern maps, a place called Halebli, at the mouth of a river, which agrees nearly with the ſituation of this place.

From Lilium Emporium to Elæum 60 ſtadia. D'Anville's map

[y] Mr. Arrowſmith's chart ſeems to mean the Sangarius by the Kara: the other maps and the chart make them to be two diſtinct rivers.

[z] βαθυρείοντος ὑφ' εἱαμεναῖς ὑπίοιο. Argon. ii. verſ. 797.

places a river here, and there is one in modern maps in this place, called Kaba-Sakal. A place nearly in this ſituation, of the name of Bylæum, is to be found in the Peutingerian Tables.

From Elæum to Cales Emporium 120 ſtadia. There is in D'Anville's map a river of the name of Cales. If ſo, the port, or emporium, was probably formed by its mouth.

From Cales to the river Lycus 80 ſtadia. This river is mentioned by [a] Apollonius, by Scylax, and by Xenophon; the latter of whom ſays, it was near Heraclea, and 200 feet wide.

From the Lycus to Heraclea 20 ſtadia. Heraclea was a Greek colony, ſaid to be founded by the Argive Hercules. Strabo aſcribes it to the Mileſians, and Arrian and Xenophon to the Megareans. There is in Goltzius a plate of a coin of Heraclea, exhibiting a figure crowned with towers, and bearing a cornucopia filled with fruits, indicatory of the plenty of proviſions, with which it was furniſhed. Strabo and Xenophon, as well as Arrian, notice Heraclea as a haven for ſhips, and it was at one time a conſiderable naval power, but was deſtroyed by Cotta, in the Mithridatic war. It appears from Tournefort to have had no natural harbour, but a mole only, which is now in ruins. Its preſent name is Penderachi, or Elegri, both of which are perhaps corruptions of the ancient name.

It is ſet down in the Peutingerian Tables at the diſtance of only 38 miles from the Hippus. Arrian makes it 380 ſtadia, or 47

[a] Lib. ii. verſ. 726.

Greek

Greek miles and a half. Strabo ſays, that Heraclea is diſtant 1500 ſtadia [b]from Chalcedon. This is probably too large a computation, as it meaſures only [c] 128 Engliſh miles, equal to 1118 ſtadia, on Arrowſmith's chart. Marcianus Heracleota ſays, that it is 1530 ſtadia from the [d] Fanum Jovis Urii to [e] Heraclea, and that it is only 1200 ſtadia in a direct line by ſea. The anonymous author of the Periplus of the Euxine ſea makes it to be 1550 ſtadia. Strabo ſays, that it is 500 ſtadia from the Sangarius to Heraclea. Arrian makes it 560. Arrowſmith's chart makes it to be little more than 35 Engliſh miles, or rather more than [f] 305 ſtadia.

From [g] Heraclea to Metroum 80 ſtadia. I do not find any mention of this place elſewhere. It was probably ſo called from being ſacred to Cybele, or from there being at the place a fane, or temple of that goddeſs, both of which were very numerous on this coaſt, as I before obſerved.

From Metroum to [h] Poſidæum 40 ſtadia. I find no account of this place in any author. It might be ſo called from a temple of Neptune.

[b] Pliny ſays, lib. vi. cap. 1. that Heraclea is 200 miles from the mouth of the Pontus, which is 1600 ſtadia. Arrian makes it 1550 ſtadia.

[c] Laurie and Whittle's charts make it 3° 10′ of longitude, which in lat. 41° amounts to about 166 Engliſh miles, or about 1450 ſtadia. Faden's map makes it 173 Engliſh miles, or 1511 ſtadia.

[d] Xenophon, in the Anabaſis, ſays, that a trireme galley would, in the ſpace of a very long day, ſail from Byzantium to Heraclea.

[e] Heraclea is ſaid by Ptolemy to be 4′ or $\frac{1}{15}$ of a degree, to the weſt of Alexandria.

[f] The chart publiſhed by Laurie makes it 54.5 Engliſh miles, or about 476 ſtadia.

[g] From Heraclea to Amaſtris is by Arrowſmith's chart 61 Engliſh miles; according to Laurie, 63.5; according to Citizen Beauchamp, 60′, or 69.5 Engliſh miles nearly.

[h] Marcianus Heracleota makes Poſidæum to be 100 ſtadia from Heraclea. Arrian makes it to be 120, as does the anonymous author of the Periplus of the Euxine ſea.

From

From Poſidæum to Tyndaridæ 45 ſtadia. This place was probably ſo called from Caſtor and Pollux, the ſons of Tyndarus, who were adventurers in the Argonautic expedition, and forms another local evidence of that event.

From Tyndaridæ to Nymphæum 15 ſtadia. From Nymphæum to Oxinas 30 ſtadia.

Marcianus Heracleota makes it to be 90 ſtadia from Poſidæum to Oxinas, which agrees with Arrian.

From Oxinas to Sandaraca 90 ſtadia. From Sandaraca to Crenides 60 ſtadia. From Crenides to Pſylla 30 ſtadia.

This place is mentioned by Ptolemy, under the name of Pſyllium, and is placed 26′ to [h] the weſt of Tios, or Tion, which is near double the diſtance aſſigned by Arrian. Scyllæum is placed in the Peutingerian Tables 12 Greek miles diſtant from Tion, which is nearer the computation of Arrian.

From Pſylla to Tios 90 ſtadia. Pliny ſays, that Tios is 38 miles diſtant from Heraclea. This is not [i] $\frac{2}{3}$ of the diſtance aſſigned by Arrian. Perhaps the doubling of the Acheruſia Cherſoneſus might cauſe ſo great a difference between the computation by land and that by ſea. The diſtance by land agrees nearly with Pliny's computation.

[h] The Greek copy of Ptolemy makes a difference of 56 minutes of longitude between Pſyllium and Tios.

[i] It ſeems by the Peutingerian Tables to be 42 miles from Heraclea to Tium.

From

From Tios to the river Billæus 20 ſtadia. This river is mentioned by [k]Apollonius as a dark coloured water, and is noticed by Pliny.

From the River Billæus to the river Parthenius 100 ſtadia. This river is mentioned by [l]Homer, and in a commentary on the paſſage, it is deſcribed as "fluens per regiones valde amœnas et valde pla-"cide, unde hoc delicatum nomen nactus eſt." It is called a very gentle river by [m]Apollonius. Tournefort ſays, the Greeks retain its name, calling it Partheni, but the Turks call it Dolap. He confirms the opinion that its name was derived from its beauty, and the flowery meadows through which it flows, which had been before obſerved by [n]Strabo. It is placed by Ptolemy 19′ to the eaſt of Tion, equal to about 16¼ Engliſh miles, or 144 ſtadia, not very different from Arrian. It was the boundary between Bithynia and Paphlagonia.

From the Parthenius to Amaſtris 90 ſtadia. Amaſtris is deſcribed by Strabo as ſituated on a peninſula, the iſthmus of which forms a port on each ſide. This correſponds exactly

[k] Ὅσσης Βιλλαίοιο μέλαν περίαγνυται ὕδωρ.
Argon. lib. ii. ver. 791.
Plin. lib. vi. c. 1. The Billæus is repreſented in a coin of Antoninus Pius under a female form, with ears of corn and a cornucopia. Vaillant, Numiſm. Græc.

[l] Il. ii. verſ. 854. See Damm's Lexic. vox Παρθ.

[m] Καὶ δὴ Παρθενίοιο ἑοὰς ἁλιμυρήεντος,
Πρηΰτάτῃ ποταμῷ, παρεμέτρεον.
Argon. lib. ii. ver. 936.
Scymnus Chius deſcribes the Parthenius as a gentle river, but large enough to be navigable. Verſ. 226, 227.

[n] Strab. lib. xii. In Vaillant's Numiſmat. Græca, there is an account of a medal of Marc. Aurelius, with the river Parthenius on the reverſe, repreſented by the figure of a young man with a reed in his right hand, and leaning on an eminence, out of which the river flows, with an inſcription, AMACTPIANΩN ΠΑΡΘΕΝΙΟΣ.

with

with the deſcription given by Tournefort, who remarks at the ſame time, that both theſe ports are now choaked up with ſand. The goodneſs of its ports gave occaſion for ſeveral medals to be ſtruck, celebrating their convenience and utility. It is now called [o]Amaſtro, and is about 12 Greek miles, or 100 ſtadia, diſtant from the Parthenius by modern maps.

From Amaſtris to Erythinus 60 ſtadia. This place was ſo called, according to [p]Strabo, from two red rocks, like the Saxa rubra on the Flaminian way in Etruria.

From Erythinus to Cromna 60 ſtadia. Cromna is placed by Ptolemy 10′ to the eaſt of Amaſtris, equal nearly to 73 ſtadia, whereas in Arrian it is 120 ſtadia. The diſtance from Cromna to Cytorus is in Arrian 90 ſtadia, but in Ptolemy it is nearly 113.5 ſtadia. But although there be a difference here, yet the whole diſtance between Amaſtris and Cytorus does not vary greatly in the two authors, it being in Arrian 210 ſtadia, and in the Latin copy of Ptolemy 192 ſtadia nearly.

From Cromna to Cytorus 90 ſtadia. This was a place dependent upon Sinope, and had its name from the box-trees that grew there, as we are told by Strabo, and Theophraſtus. Catullus and Virgil both remark the abundance of this tree at the ſame place [q]. Apollonius calls it ὑλήεντα Κύτωρον, which the Scholiaſt explains by

[o] From Amaſtris to Carambis is, according to Arrowſmith, 63 Engliſh miles; according to Citizen Beauchamp, 38′, or 44 Engliſh miles, and according to D'Anville, 54 Engliſh miles.

[p] Strabo ſays, that in his time they were called Erythrini, from their red colour.

[q] Et juvat undantem buxo ſpectare Cytorum. VIRG. Georg. ii. verſ. 437.

ſaying,

ſaying, that this epithet was applied on account of the box-tree growing there in great plenty. The name of Cytorus is partly preſerved in that of a village called Kitros, which is diſtant from Amaſtris, by the map, 25 Greek miles, or 200 ſtadia. Pliny ſays, that it is 64 miles from Tios to Cytorus, which is equal to 512 ſtadia, but, according to Arrian, it is only 420 ſtadia. Ptolemy makes it equal to 435 Engliſh miles, or 380 ſtadia, which calculation is nearer to Arrian than to Pliny.

From Cytorus to Ægialos 60 ſtadia. This place was, in later times, called Ἡωνόπολις, which has the ſame ſignification with Ægialos, importing a place or city on the ſea-coaſt. This, as well as Cromna, Cytorus, and Erythinus, are mentioned both by Homer and Apollonius.

From Ægialos to Thymena 90 ſtadia. This was formerly called Teuthrania, and ſeems to be the place now called Temeneh in Arrowſmith's chart.

From Thymena to Carambis 120 ſtadia. This diſtance meaſures on Arrowſmith's chart 13′ of latitude nearly, equal to about 131 ſtadia. Carambis is a promontory, now known by the name of Cape Piſello, or Comana, among the Greeks; but among the Turks it retains ſomewhat of its ancient appellation, being called Karempi Bouroun. It is the moſt northerly ſpot on the ſouthern ſhore of the Black ſea from the Fanum Jovis Urii to Apſarus. Two maps and one [r]chart of the Black ſea place this promontory in Lat. 41°

[r] D'Anville—Faden—Laurie and Whittle's chart. Ammianus Marcellinus, after Strabo, ſays, that the promontory Carambis is diſtant from the oppoſite one of Criumetopon in the

31′; but Arrowſmith's chart places it in Lat. 42° 24′, or 47′ more to the northward.

Pliny ſays, that the promontory Carambis is diſtant from the Os Ponti 315, or as ſome ſay 350, miles. The latter number approaches nearly to the computation of Arrian, who makes it amount to 2810 ſtadia, equal to 351 Greek miles, which is a cloſe coincidence. In Ptolemy, the difference of longitude between Carambis and the Os Ponti is 4° 56′, equal to 258 Engliſh miles, or nearly to 281½ Greek miles, or 2252 ſtadia. D'Anville makes it to be 275 Greek miles, or about 2200 ſtadia, and Faden's map and Laurie's chart agree nearly herewith. But Arrowſmith's chart differs conſiderably, making the difference to be no more than 4° 11′ of Long. and 1° 7′ of Lat. equal nearly to 226 Engliſh miles, or 1974 ſtadia nearly. This place is deſcribed as a projecting cape by Apollonius.

From Carambis to the promontory Zephyrium 60 ſtadia. From Zephyrium to Abonitichos 150 ſtadia. Ptolemy places a city called Calliſtratia half way between Zephyrium and Abonitichos, but I do not find any mention of it elſewhere. Tournefort ſays, that there is ſtill a place of the name of Abono in that ſituation. The maps remark a caſtle in ruins near this place. Abonitichos is twice mentioned by Lucian, once in the Pſeudomantis, and

Taurica Cherſoneſus 2500 ſtadia. Pliny makes it only 170 miles, or 1360 ſtadia. It meaſures on Laurie and Whittle's chart 186 minutes of latitude, equal to about 1873 ſtadia. Faden's map makes it about 197 Engliſh miles, equal to about 1720 ſtadia. D'Anville makes it nearly 1500 ſtadia, or 187 Greek miles. Arrowſmith's chart makes it to be 117 minutes of latitude, or 1178 ſtadia only. The relative ſituation of theſe places is but imperfectly aſcertained, even by modern geographers.

again in the Alexander Pſeudomantis, with ſome reflections on the folly and ſuperſtition of the inhabitants.

From Abonitichos to the river Æginetis 150 ſtadia. From the river Æginetis to Cinolis 150 ſtadia. This place ſtill retains its ancient name, being now called Cimoli, or Cinoli.

From Cinolis to Stephanes 180 ſtadia. This place alſo keeps its ancient name, being now called Stephane, or, according to Arrowſmith's chart, Iſtifane. Tournefort ſays, it is a beautiful village, in which rank it is placed by Ptolemy.

From Stephanes to Potamos 150 ſtadia. From Potamos to Leptes acra 120 ſtadia. From Leptes acra to Harmene 60 ſtadia. Harmene was a village [s] belonging to Sinope, with a good port, as we are told by Strabo, Marcianus Heracleota, and Scylax. Ptolemy makes the [t] diſtance between Harmene and Carambis to be 786 ſtadia, and [u] Arrowſmith's chart gives 855 ſtadia, but Arrian makes it 930 ſtadia. As Arrian followed the coaſt, the doubling of Cape Stephane would increaſe the diſtance, and perhaps to that amount. It is now called Armiro.

From Harmene to Sinope 40 ſtadia. Strabo makes this diſtance

[s] Xenoph. Anab. lib. vi.

[t] The difference between Harmene and Carambis is, according to Ptolemy,

Long. 1° 36′, Lat. 24′, Latin copy;

Long. 1° 5′, Lat. 1°, Greek copy;

equal, according to the Latin copy, to 84.285 Engliſh miles, or 734 ſtadia nearly. According to the Greek copy, = 88 Engliſh miles, or 768 ſtadia nearly. Average of both 751 ſtadia nearly. The Greek copy gives the latitude both of Carambis and Harmene nearly true, according to ſome maps; but maps, even the moſt modern, vary much from one another.

[u] 98 Engliſh miles.

to be 50 ſtadia. Sinope was a colony of the Mileſians, and the moſt famous of any of the cities on the Euxine ſea. It was the birth-place and reſidence of Mithridates Eupator, who made it the capital city of Pontus. It was ſituated upon the iſthmus of a peninſula, about ſix miles in circuit, and terminating in a conſiderable cape, or head-land. It is mentioned by Apollonius and by Valerius Flaccus, as ſubſiſting in the time of the Argonauts. It had two ports, one on each ſide of the iſthmus, and was remarkable for its tunny fiſhery. The city, and particularly the ſuburbs, were very magnificent, and ornamented with a gymnaſium, a forum, and ſuperb porticos. The land ſurrounding it was fertile, and ſuited both to gardens and agriculture. It was once a ſeat of learning, and of arts, being the birth-place of Diogenes, the Cynic philoſopher; and Strabo mentions the Sphere of Billarus the aſtronomer, which was taken away from this city by Lucullus. Both Strabo and Plutarch mention a celebrated ſtatue, by the ſculptor Sthenis, of Autolycus, who was one of the companions of Hercules, and, as Strabo thinks, one of the Argonauts, and the founder of Sinope, which ſtatue was carried away by Lucullus. Tournefort, who was at Sinope, concurs exactly with Strabo in his account of this place. Its preſent trade conſiſts of ſalted fiſh, particularly young tunnies, as in former ages.

	Stadia.
From Heraclea to Sinope is, according to Strabo,	2000
according to Arrian,	2140
according to Ptolemy,	1881 Gr. cop. / 2157 Lat.cop.
In a ſtraight line, according to D'Anville,	1300
according to Arrowſmith,	1747

From

	Stadia.
From Fanum Jovis Urii to Sinope is, according to Strabo,	3500
according to Arrian,	3690
according to Ptolemy,	3476.5*
In a ſtraight line, according to D'Anville,	2644
according to Arrowſmith,	2733
From Carambis to Sinope is, according to Strabo,	700
according to Arrian,	970
according to D'Anville,	500
according to Arrowſmith,	838
From Cytorus to Sinope is, according to Pliny, 164 Greek miles, equal to - - - - -	1312
according to Arrian, - -	1240
according to Arrowſmith's chart, 115 Eng. miles, or	1004

From Sinope to Caruſa 150 ſtadia. This place ſtill preſerves its name, being called Carſa at preſent, according to Tournefort, or Keſereh, according to Arrowſmith's chart. Tournefort travelled this ſtage himſelf, and found it, as he ſays, 18 miles, and obſerves thereupon, that 18½ miles make juſt 150 ſtadia; and that "it is "ſurpriſing that the meaſures of the ancients ſhould anſwer ſo "exactly as they do to modern computation." In confirmation of this, we may obſerve, that Arrowſmith's chart makes this diſtance to be 19 miles.

From Caruſa to Zagora 150 ſtadia. Zagora in the Peutingerian

* This is the average of the numbers in the Latin and Greek copy.

Tables

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 [y] ſays, that it was (not far from the mouth, I ſuppoſe) two ſtadia, or 1208$\frac{1}{3}$ 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 [z] Apollonius, and by [a] Valerius Flaccus.

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

[y] Xenoph. Anabaſ. lib. v.
[z] Argon. lib. ii. verſ. 955.
[a] Val. Flacc. lib. iii. verſ. 157.

From

From Conopæum to Euſene 120 ſtadia. From Euſene to Amiſus 160 ſtadia. Strabo and Stephanus Byzantinus ſay, that it is 900 ſtadia from Sinope to Amiſus. Arrian makes it 1060. According to the Peutingerian Tables, it is 94 m. p. from Sinope to Amiſus, 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 Amiſus 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 Amiſus 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 Caſalmac. 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 [b]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 [c]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 Phadiſana 150 ſtadia.

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

[b] Argon. lib. ii. verſ. 972.

[c] 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 Fatſa, 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, Vatiza. He mentions the place at the mouth as a village only.

From Phadiſana to Polemonium 10 ſtadia. Pliny ſays, that from Amiſus to Polemonium is 120 miles, equal to 960 ſtadia. Arrian makes it 940 ſtadia, or 117½ miles[d].

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

From Jaſonium to the Inſula Cilicum 15 ſtadia. From the Inſula Cilicum to Boona 75 ſtadia, (now Cape Vona, according to Arrowſmith.[e]) 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.

[d] The Peutingerian Tables make it 127 miles, or 1016 ſtadia.

	M. P.
From Amiſus to Ancon,	22
From Ancon to Heracleum,	40
From Heracleum to Cena,	30
From Cena to Camila,	7
From Camila to Pytane,	8
From Pytane to Polemonium,	20
127 × 8 = 1016.	127

[e] From Cape Jaſonium 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 Ceraſonte, or Kiriſontho[f]. It is well known to have been famous in early times for the cherry fruit; and Tournefort ſays, that at preſent cherry-trees 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[h], 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 Ceraſonte. Arrian makes it 240 ſtadia, or 30 Greek miles.

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

[f] Kereſoun, Arrowſmith—Ghirecin, or Kereſontas, Laurie's chart.

[g] 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 κέρασος. The perſon likewiſe, who anſwers the Sophiſt in Athenæus, ſays, that Diphilus, who lived in the time of Lyſimachus, 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.

[h] This was a promontory, now called Kara Bouroun, or the Black Cape, perhaps for the ſame reaſons as Acra Melæna was ſo called.

Burun,

Burun, at preſent. From Hieron Oros to Cordyla 40 ſtadia. The Peutingerian Tables make it to be 30 miles from Cordyla to Philocalea. Arrian reckons it to be 290 ſtadia, or $36\frac{1}{4}$ 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 Boſporus 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[i], when ſpeaking of the direction of the coaſt.

[i] Lib. xi. p. 497. Ed. Pariſ.

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[k] 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[l] 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[m] to Nitica 150 ſtadia. Beyond Pityus, Theodoret repreſents the people, as ferociouſly ſavage[n], and this is probable from Arrian's account of them, as Nitica was the reſort or the reſidence of the Scythian Phthirophagi, 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,

[k] Bityunta—Map of the country between the Black ſea and the Caſpian. Byzjunta—Arrowſmith's chart.

[l] Theodor. Hiſt. Eccleſiaſt. lib. v. c. 34.

[m] Procopius ſays, 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.

[n] ὠμοτάτοις βαρβάροις.

without

without any marks of diſbelief of their exiſtence; and it is ſaid[o], 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 Neſis 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 Neſis to Maſætica 90 ſtadia. From Maſætica 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[p], and changed their name into that of Colchi. Theſe people were in ſome meaſure ſubject to Rome, as Julius Capitolinus tells us, that

[o] See Hearne's Journey from Prince of Wales's fort to the Copper-mine river, paſſim. *Editor.*

[p] Bell. Goth. lib. iv. c. 13.

Antoninus

Antoninus Pius nominated Pacorus to be their king; and it appears from Procopius[q], that ſomething of the ſame kind, although probably more in ſhew 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 Ἡνίοχος; 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[r], 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

[q] Bell. Perſicum, lib. ii. c. 15.

[r] Laurie and Whittle's chart of the Black ſea. Arrowſmith's chart calls it Kaldofliman.

near

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[s]. Panticapæum was the principal city of the Cimmerian Boſporus, on the European ſide, as Phanagoria was on the Aſiatic. It was a colony of the Mileſians[t], 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 Boſporus, 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

[s] 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.

[t] Harum (ſc. Mileſiarum civitatum) velut mater omnium, Panticapæum. Ammian. lib. xxii. c. 8.

place

place ſet down in the Ruſſian map under the name of Konezek, as it lies on the ſea-coaſt, about $\frac{3}{5}$ 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[u] 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 Kaffa; 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

[u] Ammianus ſays of the Cherroneſus, that it was "coloniarum plena Græcarum." Lib. xxii. cap. 8.

coaſt.

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[x] 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 Cherſon 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.

[x] 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 Odeſſus 80 ſtadia. This is called Odeſſus, or Ordeſſus, by Ptolemy, and is deſcribed by him as lying on the river Axiacus, which does not diſagree with the ſituation aſſigned by Arrian.

From Odeſſus to the Portus Iſtrianorum 250 ſtadia. From the Portus Iſtrianorum to the Portus Iſiacorum 50 ſtadia. From the Portus Iſiacorum to the Pſilon 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° 28′, and in Long. eaſt from Greenwich, 29° 15′, and from Ferro 47° 0′ 50″.

From the Os Pſilon 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 Ruſki Bogaſi, 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[y], or white, from its colour, and is noticed under that name by Ptolemy. It ſeems the ſame that is at preſent called Ilan-Adaſſi, 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[z] in his time by a few goats only; but there was a temple in it, which contained many votive offerings[a], 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 Νάραχον

[y] Philoſtratus ſays, it was 30 ſtadia in length, and four in breadth. Heroic. c. xix. ſect. 16.

[z] The ſuperſtition of the times forbad its being inhabited. Philoſtrat. Heroic.

[a] Donariis eidem 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	Πεύκη	55° 20′	46° 30′	Latin copy and Greek agree	36.5 Eng. miles.
To From	Ἱερὸν	56°	46° 45′	Latin copy and Greek agree	54 Eng. miles.
To From	Θιαγόλα	55° 40′ 56° 15′	47° 15′ 47°	Latin copy Greek copy	26 Eng. miles, Latin copy.
To From	Θιαγόλα ψιλὸς	56° 15′	47°	Latin copy and Greek agree	21 Eng. miles.
To From	Βορείον	56° 30′ 56° 15′	46° 45′ 47°	Latin copy Greek copy	47.5 Eng. miles, Gr. copy.
To From	Ἰναριακίον	56° 20′	46° 20′	Latin copy and Greek agree	26 Eng. miles.
To From	Ψευδόστομον	56° 15′	46° 40′	Latin copy and Greek agree	11.5 Eng. miles.
To	Καλὸν	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″
	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 37½ Greek miles, or 34½ 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 Iſtropolis, although the diſtances do not exactly agree.

From

From Iſtria 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 31¼ 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[b]. Hoffman ſays, in his Lexicon, that there is a lake there, which in its name (Ouvido Jezeoro) carries ſome memorial of that poet. The name of Tomi[c] bears, according to Ovid, a teſtimony reſpecting the Argonautic expedition. Perhaps Tomi might have become more conſiderable[d] 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,

[b] 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.

[c] Inde Tomos dictus locus hic, quia fertur in illo
Membra ſoror fratris conſecuiſſe ſui.
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.*

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

the

the diſtance from Tomiſwar to Mankala is 31¼ 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 Tetriſias Acra 120 ſtadia. This is probably the place called Triſſa 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 Tetriſias to Bizus 60 ſtadia. This is called Bizon in Pliny, and is ſaid by him to have been ſwallowed up by an earthquake [e]. It is called Bihone in the Peutingerian Tables, and is put down as 12 miles diſtant from Triſſa.

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 440 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 Κρουνος, from the ſprings of water in its neighbourhood; and afterwards Dionyſopolis, from a ſtatue of Bacchus being there caſt up by the ſea [f].

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

[e] Lib. iv. c. 11. Mel. lib. ii. c. 2.

[f] Anonymi Peripli Pont. Eux. Steph. Byzant.

In

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 Odeſſus.

From Odeſſus to the foot of Mount Hæmus[h], 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 Miſeure, Miſeuria, or Miſeurin.

From Meſembria to Anchialus[i] 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,

[h] Now called Emireh Burun.

[i] Anchialus is ſtill called Akkiali. In Arrowſmith's chart it ſeems to be called Akliman.

or

or 1224 ſtadia[k]. 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[l] reckons it at 188 miles, or about 1504 ſtadia. It is now called Sizeboli. 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[m] to Cherroneſus 60 ſtadia. From Cherroneſus 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

[k] From Callatis to Triſſa 24 M. P.
Triſſa to Bihone 12
Bihone to Dionyſopolis 12
Dionyſopolis to Odeſſus 32
Odeſſus to Erite 11
Erite to Templ. Jovis 16
Templ. Jovis to Meſembria 16
Meſembria to Anchialus 12
Anchialus to Apollonia 18
153 = 1224 ſtadia.

[l] Lib. iv. c. 12.

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

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. Salmydeſſus 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[n]. The Thracians, who inhabit this coaſt, raiſe pillars, and every man plunders the wreck that is caſt upon his own coaſt. Salmydeſſus 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 Salmydeſſus 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 349 ſtadia, from Salmydeſſus.

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

From the Cyanean rocks to the Fanum Jovis Urii[o] 40 ſtadia.

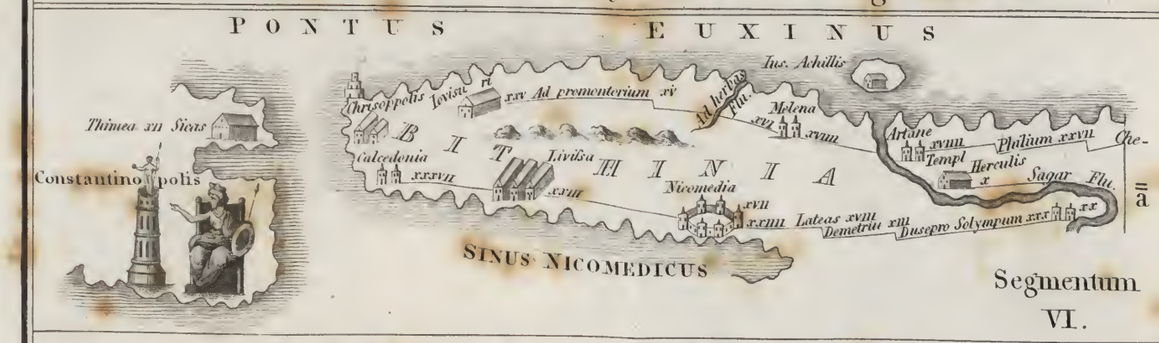
[n] In Arrowſmith's chart it is remarked, that this is the moſt dangerous place, where ſhipwreck is to be feared, being at the entrance of the Boſporus.

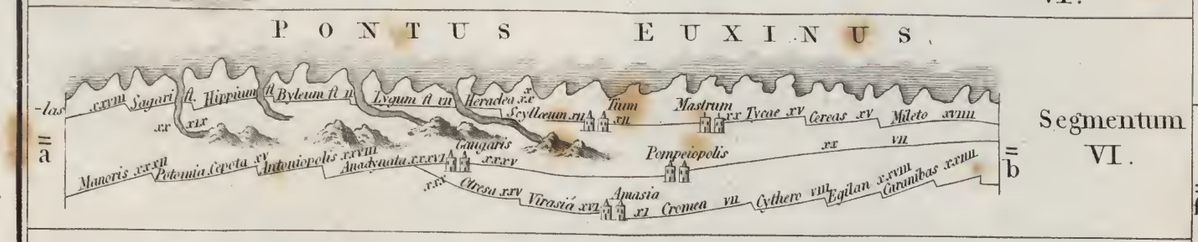
[o] Quid? ex æde Jovis, religioſiſſimum ſimulacrum Jovis Imperatoris, quem Græci Urion nominant, pulcherrime factum, nonne abſtuliſti?—Jovem autem Imperatorem quanto honore in ſuo templo fuiſſe arbitramini? hinc colligere poteſtis, ſi recordari volueritis, quanta religione fuerit eadem ſpecie atque forma ſignum illud, quod ex Macedonia captum in Capitolio

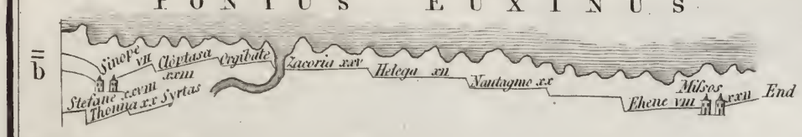
From the Fanum Jovis Urii to Daphne 40 ſtadia. From Daphne to Byzantium 80 ſtadia.

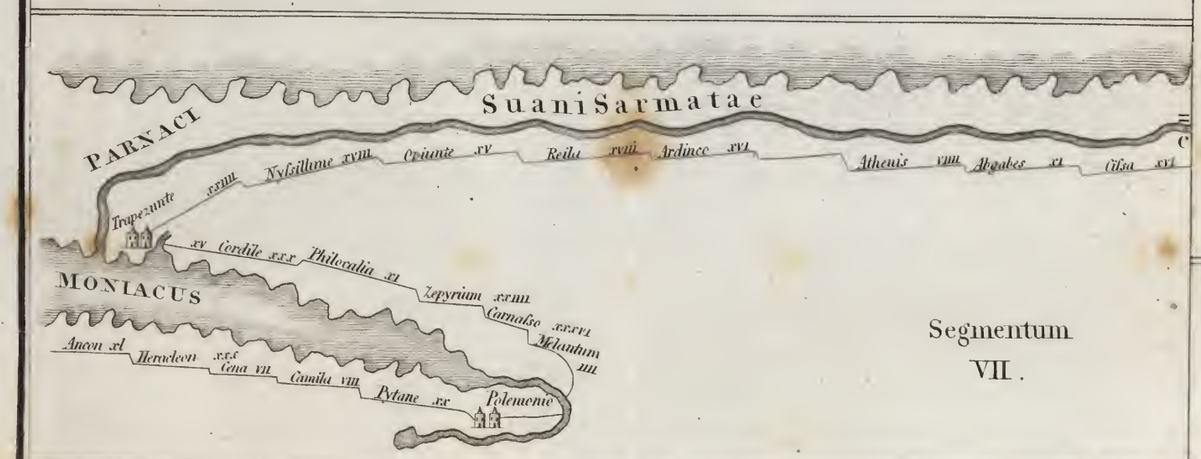
Capitolio poſuerat Flamininus. Etenim tria ferebantur in orbe terrarum ſigna Jovis Imperatoris uno in genere pulcherrima facta, unum illud Macedonicum, alterum in Ponti ore et anguſtiis.—Quod autem eſt ad introitum Ponti; id, cum tam multa ex illo mari bella emerſerint, tam multa porro in Pontum invecta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

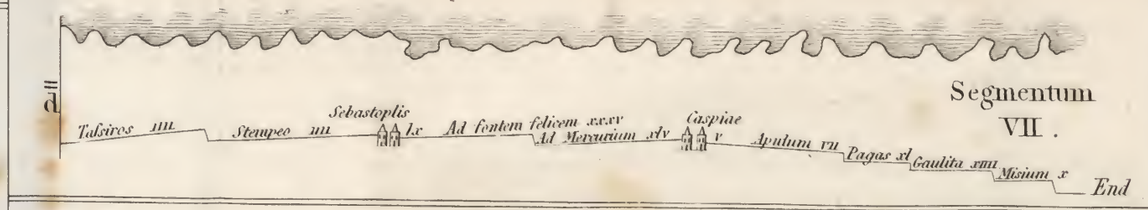
Coast of the EUXINE SEA *from the* Peutingerian Tables.

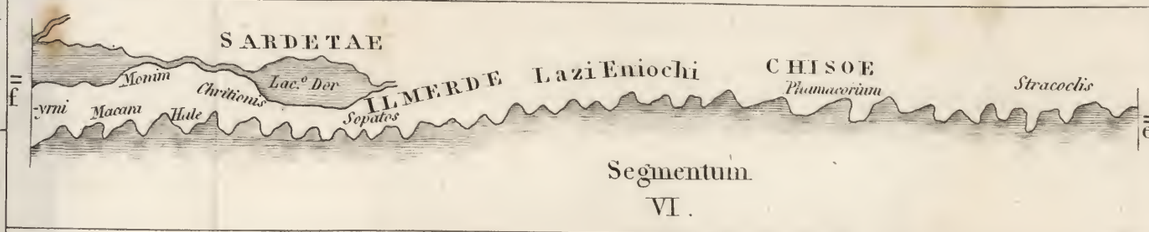


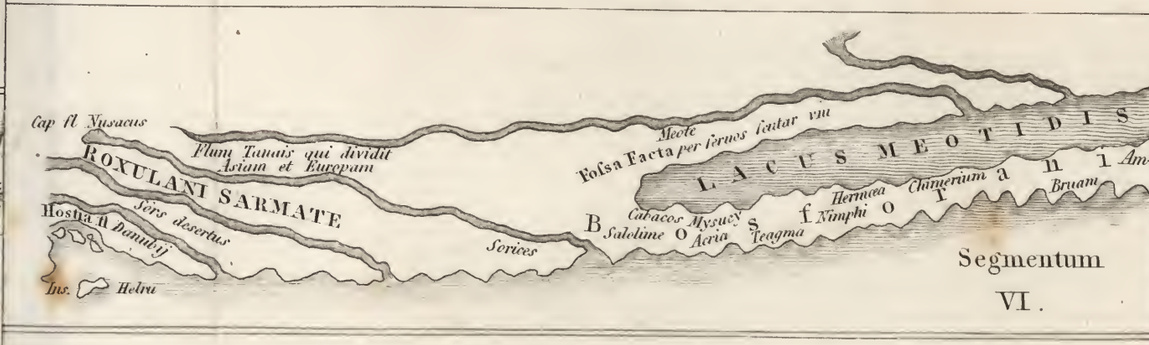












T. Conder Sculp.

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	Hyſſus	180	70 50 0 70 45 0 L. c	43 5 0 43 6 0 L. c.	57 28 0 Arrowſ.	41 2 0 Arrowſ.
Hyſſus	Ophis	90	71 0 0 70 30 0 L. c.	43 0 0 43 20 0 L. c.	58 0 0 D'Anv.	41 7 0 D'Anv.
Ophis	Pſychrus	30	71 0 0 L. c.	43 25 0 41 26 0 L. c.	57 55 50 Arrowſ.	41 3 0 Arrowſ.
Pſychrus	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	Aſcurus	30	71 0 0 71 10 0 L. c.	43 10 0 43 36 0 L. c.	58 3 50 Arrowſ. 58 6 0 Ruſ. map 58 28 24 D'Anv.	41 10 0 Arrowſ. 41 12 0 Ruſ. map 41 10 0 D'Anv.
Aſcurus	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 43 45 0 L. c.	58 25 50 Arrowſ. 59 3 0 D'Anv.	41 15 0 Arrowſ. 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	Apſarus	60	61 59 0 52 0 0	44 0 0	59 35 0 D'Anv.	41 25 0 D'Anv.
Apſarus	Acampſis	15	72 20 0	44 20 0 44 40 0	59 7 0 Ruſ. map	41 37 0 Ruſ. map

From	To	Distance in ſtadia.	Longitude according to Ptolemy.	Latitude according to Ptolemy.	Modern Longitude.	Modern Latitude.
			° ′ ″	° ′ ″	° ′ ″	° ′ ″
Acampſis	Bathys	75				
Bathys	Acinacis	90			59 9 0 Ruf. map 60 0 0 D'Anv.	41 43 0 Ruf. map 41 40 0 D'Anv.
Acinacis	Iſis	90			60 0 0 D'Anv.	41 40 0 D'Anv.
Iſis	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 Arrowſ. 59 5 0 Ruf. map	42 2 0 Arrowſ. 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 [a]	Singames	210			60 18 0 D'Anv.	42 22 0 D'Anv.
Singames [b]	Tarſura	120			60 16 0 D'Anv.	42 47 0 D'Anv.
Tarſura [c]	Hippus	150			60 6 0 D'Anv.	42 57 0 D'Anv.
Hippus [d]	Aſtelephus	30	58 20 0 58 40 0 L. c.	42 15 0 42 45 0 L. c.	60 4 0 D'Anv.	43 2 0 D'Anv.
Aſtelephus	Dioſcurias	120			60 2 0 D'Anv.	43 8 0 D'Anv.
Dioſcurias			72 20 0	41 45 0 44 45 L. c. [e]	58 31 50 Arrowſ. 58 0 0 Ruf. map	43 18 0 Arrowſ. 43 23 0 Ruf. map
Trapezus	Dioſcurias	2260				

[a] Cobi, Chardin. t. i. p. 56.
[b] Tachar, Chardin.
[c] Socom, Chardin.
[d] Schiniſcari, i. e. le fleuve Cheval, Chardin.
[e] It is in Ptolemy (Greek copy) μα, which is 41°, but probably ſhould be μδ, or 44°, as it is in the Latin copy. In chap. 10, Dioſcurias is put down 71° 10′, Long. 46° 5′, both in the Greek and Latin copies.

From

From BYZANTIUM to TRAPEZUS.

From	To	Distance in ſtadia.	Longitude according to Ptolemy.	Latitude according to Ptolemy.	Modern Longitude.	Modern Latitude.
			° ′ ″	° ′ ″	° ′ ″	° ′ ″
Byzantium [f]	Fanum Jovis Urii	120	56 0 0	43 5 0	46 39 39	41 1 0 Blair's Geog. 41 1 24 Requiſ. Tables.
Fanum Jovis Urii	Rhebas	90				
Rhebas	Acra Melæna	150				
Acra Melæna	Artanes	150	56 20 0	43 35 0 43 45 0 L. c.	47 15 50 Arrowſ. 47 16 0 D'Anv.	41 6 0 Arrowſ. 41 0 0 D'Anv.
Artanes	Pſilis	150	57 0 0	43 5 0		
Pſilis	Port. Calpes	210	57 15 0	43 5 0 43 15 0 L. c.		
Port. Calpes	Rhoe	20	57 20 0 57 40 0 L. c.	43 0 0 43 6 0		
Rhoe	Apollonia	20				
Apollonia	Chelæ	20	54 50 0	44 20 0		
Chelæ	Oſt. Sangarii	180				
Oſt. Sangarii	Oſt. Hippi	180	58 0 0	42 15 0	48 47 0 D'Anv.	40 53 0 D'Anv.

[i] The difference of longitude between Byzantium and Trapezus amounts, according to Beauchamp's calculation and Arrowſmith's chart, to 42′ 45″ of time, equal to 10° 41′ 25″, which in that latitude are equal to 558½ Engliſh miles.

Oſt.

From	To	Distance in ſtadia.	Longitude according to Ptolemy.	Latitude according to Ptolemy.	Modern Longitude.	Modern Latitude.
			° ′ ″	° ′ ″	° ′ ″	° ′ ″
Oſt. Hippi	Lilium Emporium	100	71 0 0 l. v. cap. 10.	46 30 0		
			58 20 0	42 45 0		
			58 40 0 L. c. l. v. cap. 1.	42 15 0 L. c.		
Lilium Emporium	Elæum	60				
Eleum	Cales Emporium	120				
Cales Emporium	Lycus fluv.	80				
Lycus fluv.	Heraclea	20				
Heraclea	Metroum	80	59 0 0	43 10 0	50 0 0 D'Anv. 49 10 0 Arrowſ.	41 0 0 D'Anv. 41 10 0 Arrowſ.
Metroum	Poſidæum	40				
Poſidæum	Tyndaridæ	45				
Tyndaridæ	Nymphæum	15				
Nymphæum	Oxinas	30	63 45 0	47 30 0		
Oxinas	Sandaraca	90				
Sandaraca	Crenides	60				
Crenides	Pſylla Emporium	30				
Pſylla Emporium	Tios	90	59 30 0 59 10 0	43 10 0 43 30 0 L. c.		
Tios	Billæus fluv.	20	60 0 0 59 56 0 L. c.	43 10 0 43 30 0 L. c.	50 30 0 D'Anv.	41 12 0 D'Anv.

Billæus

From	To	Distance in ſtadia.	Longitude according to Ptolemy.	Latitude according to Ptolemy.	Modern Longitude.	Modern Latitude.
			° ′ ″	° ′ ″	° ′ ″	° ′ ″
Billæus fluv.	Partheni-us fluv.	100			49 52 50	41 36 0 Arrowſ.
Partheni-us fluv.	Amaſtris	90	60 15 0	43 10 0	50 3 50	41 39 0 Arrowſ.
Amaſtris	Erythinus	60	62 10 0	43 10 0	50 12 50 Arrowſ. 51 0 0 D'Anv.	41 45 0 Arrowſ.
Erythinus	Cromna	60				
Cromna	Cytorus	90	61 0 0	43 15 0		
Cytorus	Ægialos	60	61 0 0	41 20 0	53 39 50 Arrowſ.	41 54 0 Arrowſ.
Ægialos	Thymena	90				
Thymena	Carambis	120			50 59 50	42 11 24
Carambis	Zephy-rium	60	61 20 0	41 25 0 44 26 0 L. c.	52 0 0 D'Anv. 51 6 20 Arrowſ.	41 36 0 D'Anv. 42 23 0 Arrowſ.
Zephy-rium	Aboniti-chos	150	61 10 0 61 30 0	41 15 0 44 20 0 L. c.		
Aboniti-chos	Æginetis	150	62 2 0	41 25 0 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 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	Caruſa	150	63 10 0	44 0 0	52 56 0 D'Anv. 52 53 20 Arrowſ.	41 8 0 D'Anv. 42 1 48 Arrowſ.

From	To	Distance in ſtadia.	Longitude according to Ptolemy.	Latitude according to Ptolemy.	Modern Longitude.	Modern Latitude.
			° ′ ″	° ′ ″	° ′ ″	° ′ ″
Caruſa	Zagora	150			53 2 50	41 45 5
Zagora	Halys fluv.	300				
Halys fluv.	Nauſtathmus	90	64 10 0	43 10 0	53 20 0	40 28 0
Nauſtathmus	Conopæum	50				
Conopæum	Euſene	120				
Euſene	Amiſus	160				
Amiſus	Ancon	160	65 0 0	45 0 0	54 0 0 D'Anv. 54 8 50 Arrowſ.	40 10 0 D'Anv. 41 7 0 Arrowſ.
Ancon	Heracleum	360	66 0 0	43 0 0		
Heracleum	Thermodon	40				
Thermodon	Beris	90	67 0 0	43 15 0	54 45 50	40 58 0
Beris	Thoaris	60				
Thoaris	Œnoe	30				
Œnoe	Phigamus	40				
Phigamus	Phadiſana	150				
Phadiſana	Polemonium	10				
Polemonium	Jaſonium	130	67 15 0	43 5 0	55 19 50	40 57 0
Jaſonium	Inſula Cilicum	15	68 20 0	43 15 0	55 26 50 Arrowſ.	41 1 0 Arrowſ.

Inſula

From	To	Distance in ſtadia.	Longitude according to Ptolemy.	Latitude according to Ptolemy.	Modern Longitude.	Modern Latitude.
			° ′ ″	° ′ ″	° ′ ″	° ′ ″
Inſula Cilicum	Boona	75				
Boona	Cotyora	90			55 33 50 Arrowſ.	41 5 36 Arrowſ.
Cotyora	Melanthius	60	67 5 0	43 5 0		
Melanthius	Pharmatenus	150				
Pharmatenus	Pharnacea	120				
Pharnacea	Arrhentias	30	68 10 0 G. c. 69 20 0	43 20 0	56 5 50 Arrowſ.	40 51 0 Arrowſ.
Arrhentias	Zephyrium	120				
Zephyrium	Tripolis	90	68 20 0	43 0 0	56 20 50 Arrowſ.	40 58 0 Arrowſ.
Tripolis	Argyria	20			56 37 50 Arrowſ.	40 46 0 Arrowſ.
Argyria	Philocalea	90				
Philocalea	Coralla	100				
Coralla	Ἱερὸν ὄρος	150				
Ἱερὸν ὄρος	Cordyla	40				
Cordyla	Hermonaſſa	45	71 20 0	43 15 0		
Hermonaſſa	Trapezus	60	68 0 0	43 0 0		
Byzantium	Trapezus	7055				

From DIOSCURIAS to the CIMMERIAN BOSPORUS.

From	To	Distance in ſtadia.	Longitude according to Ptolemy.	Latitude according to Ptolemy.	Modern Longitude.	Modern Latitude.
			° ′ ″	° ′ ″	° ′ ″	° ′ ″
Dioſcurias	Pityus	350	72 20 0	41 45 0	60 0 0 D'Anv. 58 15 0 Arrowſ.	43 16 0 D'Anv. 43 18 0 Arrowſ.
Pityus	Nitica	150			59 2 0 D'Anv. 57 23 50 Arrowſ.	43 20 0 D'Anv. 43 20 0 Arrowſ.
Nitica	Abaſcus	90				
Abaſcus	Borgys	120				
Borgys	Neſis	60				
Neſis	Maſætica	90				
Maſætica	Achæus	60				
Achæus	Prom. Hercul.	150				
Prom. Hercul.	Aliud Prom.	180				
Aliud Prom.	Vetus Lazica	120				
Vetus Lazica	Achaia Antiqua	150			57 20 0 D'Anv.	43 30 0 D'Anv.
Achaia Antiqua	Pagræ	350				
Pagræ	Sacer Portus	180				
Sacer Portus	Sindica	300			55 15 20 Arrowſ.	44 5 0 Arrowſ.

Sindica

From	To	Distance in ſtadia.	Longitude according to Ptolemy.	Latitude according to Ptolemy.	Modern Longitude.	Modern Latitude.
			° ′ ″	° ′ ″	° ′ ″	° ′ ″
Sindica	Boſporus Cimmerius	540			54 30 50 Arrowſ.	44 42 0 Arrowſ.
Boſporus Cimmerius	Tanaidos Oſtium	60				
Dioſcurias	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	Theodoſia	280				
Theodoſia[i]	Port. Tauro-Scytharum	200	63 20 0	47 20 0	52 56 50 Arrowſ. 53 6 0 Ruſ. map	45 5 0 Arrowſ. 45 20 0 Ruſ. map
Port. Tauro-Scytharum	Halmitis Taurica	600				
Halmitis Taurica	Symboli Portus	520				
Symboli Portus	Cherroneſus Taurica	180	61 0 0	47 15 0		
Cherroneſus Taurica	Cercinetis	600	61 0 0	47 0 0		

[i] It is obſerved in the Travels of Pallas, that the diſtances of thoſe places, which could be aſcertained in the Taurica Cherſoneſus, pretty accurately correſpond with thoſe ſpecified in the Periplus. Pallas, Travels, vol. ii. p. 341.

Cercinetis

From	To	Distance in ſtadia.	Longitude according to Ptolemy.	Latitude according to Ptolemy.	Modern Longitude.	Modern Latitude.
			° ′ ″	° ′ ″	° ′ ″	° ′ ″
Cercinetis	Calus	700	59 40 0	48 30 0		
Calus	Tamyraca	300	59 30 0	48 0 0		
Tamyraca	Oſt. Paludis	300	59 20 0	48 30 0		
Oſt. Paludis	Eona	380	63 0 0	48 20 0		
Eona	Boryſthenes	150				
Boryſthenes	Inſula Deſerta	60	57 0 0	49 0 0		
Inſula Deſerta	Odeſſus	80				
Odeſſus	Port. Iſtrianorum	250	54 50 0	45 15 0		
Port. Iſtrianorum	Portus Iſiacorum	50				
Portus Iſiacorum	Pſilon Os Iſtri	1200				
Pſilon Os Iſtri	Secundum Os Iſtri	60				
Secundum Os Iſtri	Calon Os Iſtri	40				
Calon Os Iſtri	Naracum	60				
Naracum	Quintum Os Iſtri	120				
Quintum Os Iſtri	Iſtria	500				
Iſtria	Tomea	300				

From	To	Distance in ſtadia.	Longitude according to Ptolemy.	Latitude according to Ptolemy.	Modern Longitude.	Modern Latitude.
			° ′ ″	° ′ ″	° ′ ″	° ′ ″
Tomea	Callantra	300	55 0 0	45 50 0	46 0 0 D'Anv.	44 29 0 D'Anv.
Callantra	Carus Portus	180	54 40 0	45 30 0		
Carus Portus	Tetriſias	120	54 40 0	45 30 0		
Tetriſias	Bizus	60				
Bizus	Dionyſopolis	80				
Dionyſopolis	Odeſſus	200				
Odeſſus	Prom. of Mount Hæmus	360				
Prom. of Mount Hæmus	Meſembria	90			46 50 0 Arrowſ.	42 28 0 Arrowſ.
Meſembria	Anchialus	70	55 0 0	44 40 0	46 27 0	42 25 0 Arrowſ.
Anchialus	Apollonia	180	54 45 0	44 30 0		42 34 0
Apollonia	Cherroneſus	60	54 50 0	44 20 0	45 40 0	42 20 0
Cherroneſus	Aulaitichos	250	55 0 0	44 40 0	46 32 0	42 19 0
Aulaitichos	Thynias	120			45 24 0	42 2 0
Thynias	Salmydeſſus	200	57 40 0	43 26 0 43 20 0	45 33 0	41 54 0
Salmydeſſus	Phrygia	330	55 20 0	43 40 0	45 40 0	41 45 0 Arrowſ.
Phrygia	Cyaneæ	320				

Cyaneæ

From	To	Diſtance in ſtadia.	Longitude according to Ptolemy.	Latitude according to Ptolemy.	Modern Longitude.	Modern Latitude.
			° ′ ″	° ′ ″	° ′ ″	° ′ ″
Cyaneæ	Fanum Jovis Urii	40	56 30 0 56 10 0	43 26 0 43 25 0	47 10 0 D'Anv.	41 10 0 D'Anv.
Fanum Jovis Urii	Daphne	40				
Daphne	Byzantium	80				
Panticapæum	Fanum Jovis Urii	10,310				

	Stadia.
From Trapezus to Dioſcurias	2260
From Fanum Jovis Urii to Trapezus	6935
From Dioſcurias to Boſporus Cimmerius	2890
From Panticapæum to Fanum Jovis Urii	10,310
Circuit of the Euxine ſea	22,395 = 2564 Engliſh miles nearly.

ON

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 14½ 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 of Africa, made Colchis be regarded as the Gold Coaſt[a] 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[b], 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 Boſporus.

[a] Strabo, lib. i. et xii.

[b] Strabo, p. 498.

Miletus,

Miletus, the capital of Ionia, the great ſchool for aſtronomical and nautical inſtruction, and the prime ſource from whence moſt of the colonies[c] 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[d], 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

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

[d] Strabo, lib. xi. Herodot. lib. ii. c. 5.

their

their domeſtic or œconomical commerce. Both this ſea and the Palus Mæotis abound in fiſh of a large ſize[e], and excellent quality. This is aſcribed by Pliny[f] 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[g], 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 Boſporus into the Black ſea, and ſwim along the ſouthern coaſt to the Thracian Boſporus, in their way to the Mediterranean. Their growth is very rapid during their paſſage. The fiſhery, according to Strabo[h], 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[i],

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

[f] Plin. lib. 9. c. 15.

[g] 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.

[h] Strabon. lib. vii. p. 320.

[i] A medal ſtruck at Sinope has a tunny on its reverſe. Patin. 317. Piſcis in nummo cælatus 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 προϊοῦσα ὡραιτέρα πρός τε τὴν θήραν, ἢ τὴν ταριχείαν ἐρίν. 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[k]. 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 Archiſtratus, 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[l] of this article of luxury; in which ſentiment another proficient in luxurious eating concurs. The Pontic[m] ſalted meats (ταριχεία Ποντικὰ) were highly eſteemed in Greece, as early as the time of Herodotus, Plato, Ariſtophanes, and Polybius[n], and probably long before. Even Heſiod is cited, as ſpeaking of the Boſporus 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.

[k] Ælian. de Animal. lib. xv. c. 5.

[l] 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.

[m] Athen. lib. iii. p. 118, 119.

[n] Polyb. lib. iv. c. 5.

fiſh

fiſh ſalted were called Melyandria; the parts next the tail, Orea, quaſi ὀρεία; the belly-parts, Hypogaſtria; and when cut into cubical ſhaped pieces, Cybia [n].

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 Amiſus and Sinope, takes its name from the ſalt grounds [o], through which it flows; and Tournefort remarks, that all theſe parts are full of foſſile ſalt, which is found even in the great roads [p] 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 Boſporus, the great exit of the tunny-fiſh from the Palus Mæotis, probably took its name from the trade carried on there, the word Ἁλμευτὴς ſignifying a perſon who deals in ſalted [q] meats, or fiſh.

[n] Athen. lib. vii. p. 303.
[o] Strab. lib. xii. p. 546.
[p] Tournefort's Travels, vol. iii. p. 49.
[q] Τῆς λίμνης ταριχεία. Strabo. The trade of Caffa, or Theodoſia, at preſent is, in a great meaſure, in ſalted fiſh and caviar, as formerly. Arrowſmith's chart.

Halmy-

Halmydeſſus, or Salmydeſſus, had, I ſuſpect, a ſimilar derivation. Cordyla, a place ſo called, which lies near Trapezus, expreſſes [q] 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 Boſporus, and do not acquire the name of Thynni, or Θύννοι, until they are grown to be large, the ſmall and middle-ſized being called Pelamides.

The city of Thynias, in the neighbourhood of Salmydeſſus, had its name alſo, I preſume, from theſe fiſh, it being within a moderate diſtance of the Boſporus, 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.

[q] Cordyla, et hæc pelamis puſilla, cum in Pontum e Mæotide exit, hoc nomen habet. Plin. lib. xxxii. c. 11.

The goods, he ſays, were brought out of India in ſeven days 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[r] 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[s], 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[t]. 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

[r] Μάλιστα πιστεύεσθαι δικαίως. Strab. lib. ii.
[s] Strab. lib. xi. p. 509.
[t] Strab. lib. xi. p. 498.

Oxus;

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 34° 30′ N. L. nearly, and 64° Long.

The diſtrict of Gaur joins to that of Cabul[u], 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[x] to be the largeſt of the Aſiatic rivers, thoſe of India excepted; and Strabo ſpeaks of it, as convenient for navigation[y], inſomuch 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

[u] 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.

[x] Exped. Alex. lib. iii. p. 146. lib. viii. p. 295.

[y] Strab. lib. ii. p. 73.

largeſt river in that neighbourhood. It riſes, he ſays[z], 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[a], 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[a] 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

[z] Strab. lib. xi. p. 500.

[a] Map of the country between the Black and Caſpian ſeas, 1788. Edwards.

of

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[b] days ſail to Amiſus, or to Sinope, from both of which cities the Eaſt Indian goods were diſperſed[c] over Europe and Aſia Minor; and this trade contributed, no doubt, to the aggrandizement[d] of both thoſe cities.

Hippocrates[e] 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[f], pearls[g],

[b] Strab. lib. xi. p. 498.

[c] Strabo ſpeaks of the communication of Amiſus and Sinope with Colchis, Hyrcania, Bactria, and the parts lying towards the Eaſt. Lib. xi. p. 68.

[d] Sinope is called magna et opima by Valerius Flaccus. Argon. lib. v. verſ. 108, 109.

[e] De aere, aquis, et locis.

[f] 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, Rer. Ind. p. 179. et alibi.

[g] 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

and gems[h], dyeing materials[i], drugs[k], perfumes[l], ſpices[m], and ivory[n], 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[o], that it never drained the Roman empire of leſs than 403,645l. annually paid for Indian commodities,

[h] 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.

[i] 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.

[k] 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.

[l] 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.

[m] 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.

[n] 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 ſold for an hundred times the original coſt; and in another place[p] 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.

[p] Plin. lib. xii. c. 18.

ON

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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 nèarer 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 243 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 8¼ 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 ſailing 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 [a].

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* [b] ſhould carry a ſhip in one day from the Athe-

[a] 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.

[b] Βορέη ἀνέμῳ.

nian

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

" 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[d], 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

[c] Herodot. lib. vi. ad finem.

[d] 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 Eteſiæ flabant: harum flatu in orientem navigantibus ſecundum, inde adverſum erat. Tacitus, Hiſtor. lib. ii.

Τῶν δὲ ἀνέμων, οἱ μὲν χειμῶνος, ὥσπερ οἱ νότοι, δυνασεύοντες, οἱ δὲ θέρους, ὡς οἱ Ἐτησίαι λεγόμενοι, μίξιν ἔχοντες τῶν τε ἀπὸ τῆς ἄρκτου φερομένων καὶ ζεφύρων. Ariſtot. de Mundo, cap. iv. p. 853. Ed. Du Val.

Οἱ δ' Ἐτησίαι περιίστανται τοῖς μὲν περὶ δυσμὰς οἰκοῦσιν, ἐκ τῶν Ἀπαρκτίων εἰς Θρασκίας, Ἀργέστας, καὶ Ζεφύρους· ὁ γὰρ Ἀπαρκτίας Ζέφυρος ἐστίν· ἀρχόμενοι μὲν ἀπὸ τῆς Ἄρκτου, τελευτῶντες δὲ εἰς τὰς πόρρω· τοῖς δὲ πρὸς Ἕω περιίστανται μέχρι τοῦ Ἀπηλιώτου. 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 Hiſtiæa, and after three days ſtay " ſailed through the Euripus, and in three days arrived at Pha- " lerus." The diſtance from Hiſtiæa 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[c] 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 $75\frac{1}{4}$ 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

[c] Ἀπέχειν δὲ ΕΦΑΙΝΕΤΟ ἡ ἄκρη πολύον ΩΣ ἡμέρης.

miles.

miles. The difference of latitude between Gibraltar and Alexandria is 4° 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 $29\frac{2}{3}$ 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 [f] 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° 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

[f] Κατὰ τὺς κόλπους κύκλῳ περιπλέοντι ἡμερῶν οέ, 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[g], 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[h] 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° of latitude and 6° 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 Boſporus 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 8½ days ſail more than 1300 ſtadia for every twenty-four hours, equal to 162 Greek miles, or 148 Engliſh miles.

[g] Irwin's Voyage, page 20.

[h] Page 22.

Arrian

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° of longitude, which in latitude 41° 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

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 [a], 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 [b]. Name whence derived.

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 Olympic ſtadium in the moſt general uſe for itinerary purpoſes.

[a] Aul. Gell. i. cap. 1. διὰ τὴν στάσιν. Phavorini Lexicon.

[b] 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. Στάσις δὲ ἐστὶ τῇ λόγῳ, ὅταν ὑπεραίρῃ τῷ μέτρῳ τῇ λόγῳ τὸ πνεῦμα μακρότερον γινόμενον τῇ δυνάσθαι ἐν ἰδίῳ ληφθῆναι τοῦ λέγοντος πνεύματι· τοῦτο γάρ ἐστιν ἡ στάσις, τὸ ἀποτετάσθαι ἐπὶ μακρότερον ἢ χρὴ τὸ πνεῦμα. Hermogen. de Invent. lib. iv.

meaſure,

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[c], "that the pyramids of Egypt were 100 ὀργυιαὶ, "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, (τετραπαλαίστων) 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 [d] Philetærian feet.

From Suidas.

Suidas ſays, the ſtadium [e] contained 600 feet, and the plethron 100 feet.

From Strabo.

Strabo ſays, that moſt people counted [f] 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[g], that a ſtadium contains 125 paces, which, he ſays, make 625 feet; (each paſſus,

[c] Οὕτω αἱ μὲν πυραμίδες εἰσὶ ἑκατὸν ὀργυιέων, αἱ δ' ἑκατὸν ὀργυιαὶ δίκαιαί εἰσι στάδιον ἑξάπλεθρον· ἑξαπέδῳ μὲν τῆς ὀργυιῆς μετρεομένης κὴ τετραπήχεος, τῶν ποδῶν μὲν τετραπαλαίστων ἐόντων, τοῦ δὲ πήχεος, ἑξαπαλαίστου. Herod. lib. ii. c. 149. Ed. Weſſel.

[d] Hero in Iſagoge.

[e] Vox Στάδιον.

[f] Strabon. lib. vii.

[g] 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

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[h] contains 125 Roman paces, that is 625 feet. and by Pliny;

Cenſorinus ſays, that the Italic ſtadium[i] contains 625 feet, the Olympic 600 feet, and the Pythic 1000 feet. and Cenſorinus;

Frontinus ſays, the ſtadium[k] contains 625 feet, and the mile 1000 paces, or 5000 feet, equal to eight ſtadia. and Frontinus;

The author of the treatiſe de Limitibus[l], and the one de Menſuris[m], ſay, "that the ſtadium is the leaſt computation of diſtance "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." and an anonymous writer.

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[n] of Hercules did the

[h] Plin. Nat. Hiſt. lib. ii. cap. 32.

[i] Cenſorin. cap. xiii.

[k] Expoſit. Formarum.—Goeſii Rei Agrariæ Auctores.

[l] Rei Agrariæ Auctores, p. 292.

[m] Ibid. p. 321.

[n] Nam quum fere conſtaret, curriculum ſtadii, quod eſt Piſæ 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, ratione

Explanation 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.

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[o] 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 mile of eight ſtadia, in order to bring it to its proper length.

Cauſes of the errors of ancient writers.

tione proportionis habita, tanto fuiſſe quam aliorum procerius, quanto Olympicum ſtadium longius eſſet quam cætera. Aul. Gell. lib. i. c. 1.

[o] 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 [p] 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 [q] to be divided into miles, each "mile containing a little leſs than eight ſtadia, and erected pillars "of ſtone to mark theſe diviſions."

[p] Ταῦτα γὰρ νῦν βεβηματίσται καὶ σεσημείωται κατὰ σταδίους ὀκτὼ διὰ Ῥωμαίων ἐπιμελῶς. Polyb. lib. iii. ſect. 39.

[q] Vita Caii Gracchi.

By

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 [r] of feet in a ſtadium, though they reckoned by a ſhorter foot.

Mr. D'Anville has, I think, incautiouſly blamed Cenſorinus, for ſaying, that the Italic and the Olympic ſtadia were of different lengths, when he *might* mean only, that the Olympic [s] and the Pythic were different, ſince we can ſcarcely ſuppoſe a man of the learning of Cenſorinus 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.

[r] 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.

[s] 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. Cenſorin. cap. xiii.

Dr.

Dr. Murdoch[t] 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[u], or by its diviſions, and ſpecifies 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. Length of the Roman foot.

Vitruvius[x] 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, 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,

[t] Preface to Buſching's Geography.

[u] Modus omnis areæ 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 quoquoverſus, pedum eſt ſexaginta; actus quadratus, undique finitus, pedibus centum et viginti. Columell. lib. v. cap. 1.

[x] 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.

and

and would therefore uſe the ſame meaſure with that employed in buildings. It appears then that this foot was uſed in ſuperficial meaſurement; and Vitruvius, who derives his meaſures from the proportions of the human body, which he aſſumes as a ſtandard, makes no difference between the foot uſed in the conſtruction of buildings, and that employed in the menſuration of diſtances on the road. The author of the Treatiſe de Menſuris[y] ſays farther, that the meaſures taken from the proportions of the human body are thoſe "quæ ad viatores ſeu ad curſores pertinent."

Romans uſed one kind of foot meaſure only.

We may then, I think, fairly conclude, that the Romans uſed one foot meaſure only, and that the Coſſutian foot was the Roman foot for all purpoſes.

Dr. Murdoch ſpeaks twice of the pes monetalis of Athens, for which he ſeems to cite Greaves, who is ſo far from regarding it as an Attic meaſure, that he calls it the *pes monetalis*[z], or *Romanus*.

Dr. Murdoch again ſays, that the proportion of the pes monetalis to the Engliſh foot is as 19 to 20; and adds, that the term *monetalis* is to be found in Hyginus. It is certainly mentioned twice by that author; but it refers in both places to the *Roman*, and not to the *Attic* foot.

Pes monetalis whence derived.

The word *monctalis* is of Roman[a], not of Greek extraction, and

[y] Rei Agrariæ Scriptores, Goeſii, p. 320.

[z] On the Roman foot.

[a] Μόνητα ἡ Ἥρα παρὰ Ῥωμαίοις. Phav. Lexic. Vocem ab æde Junonis ex arce extitiſſe, quocirca Junonem illam appellatam *Monetam*. Cicero de Divinatione.

The Romans, being in want of money at the time of the war with Pyrrhus, invoked the aſſiſtance of Juno; who replied, in anſwer to their applications, that if the war which they carried

derived from an epithet of Juno, in whoſe temple the money was coined. The pes monetalis, or rather its ſubdiviſions, ſeem to have been the ſtandard for meaſuring the diameter of the ſilver coin; and it appears from Vitruvius [b], and others, that there was much connection between the Greek and Roman meaſures and the Greek and Roman money. The pes monetæ is mentioned frequently by the writers of the middle ages, and is defined from one of theſe by Du Cange, to be "meta monetariis præſcripta in "cudendis nummis, quam omnino obſervare tenentur." From this hint, I examined ſeveral very fair Roman coins [c], both aurei and

carried on was juſt, money ſhould not be wanting. The Romans then, after gaining what they wiſhed, paid divine honours to *Juno Moneta*, or the Adviſer; and decreed, that the money ſhould be coined in her temple. Suid. Lexic. Vox Μόνητα.

[b] Ex eo etiam videntur civitates Græcorum feciſſe, uti quemadmodum cubitus eſt ſex palmorum, ita in drachmis quoque, eo numero uterentur. Illæ enim æreos ſignatos, uti aſſes ex æquo ſex, quos obolos appellant; quadranteſque obolorum, quæ alii dichalca, nonnulli trichalca dicunt, pro digitis viginti quatuor conſtituere.

Palmus autem habet quatuor digitos, ita efficitur, uti habeat pes ſexdecim digitos, et totidem aſſes æreos denarius. Vitruv. lib. iii. cap. 1.

As the denarius contained ſixteen aſſes, ſo the foot contained ſixteen digitos. And as the aſſis was divided into twelve uncias, ſo likewiſe the foot was divided into twelve uncias; and therefore the dodrans is uſed by Frontinus, and the ſemiuncia and Sicilicus by Pliny, for proportionable parts of the Roman foot, as the ſame are uſed by other claſſical authors for proportionable parts of the Roman aſſis or uncia. Greaves of the Roman foot.

[c] The length of the digitus, or ſixteenth part of the Roman foot, is, according to Mr. Greaves, ·72525 decimal parts of an inch; but as ſo many figures denote fractional parts too minute to be aſcertained by actual meaſurement, I have uſed the three firſt figures only; and the reader will remark, in the table annexed, how nearly the diameter of the beaded circle ſtamped upon the Roman coin accords with Mr. Greaves's calculation of the extent of the digitus. Some irregularity takes place; but this may be imputed, either to the inaccuracy of the workmen, or perhaps, in ſome degree, to the inequality of force in the blows of the hammer, with which the ancient money was ſtruck: but the coincidence of this part of the impreſſion with the digitus in the conſular coins, and thoſe of the higher empire, renders it more than probable that this meaſure was intended to be the ſtandard of the dimenſions of the die. The coins referred to were ſelected from a conſiderable number, for the fairneſs of the impreſſion, and the clearneſs with which the beaded circle was marked out. The meaſurements were taken with a pair of fine hair-compaſſes, and a braſs ſcale of inches and decimal parts, made for this purpoſe by Mr. Troughton.

denarii, and found the beaded circle impreſſed on them to coincide very nearly with Mr. Greaves's proportion of the digitus.

Dr. Murdoch himſelf cannot diſcover the length of the Roman itinerary foot, as he calls it, from any of his calculations. In the eſtimation of the diſtance between Bologna and Modena, he computes the Roman foot at one-ſixty-fourth, or a quarter of a digit, leſs than the Engliſh: in reckoning the diſtance between London and Verulam, he makes it to be one-thirty-ſecond, or half a digit, leſs; which differs very little[d] from the proportion aſſigned by Mr. Greaves.

Again, he computes the Roman itinerary foot to be to the Engliſh as forty-five to forty-four, or one-forty-fourth part greater. Such confuſion ariſes from unauthoriſed ſuppoſitions. The Roman itinerary foot, as diſtinguiſhed from the common Roman foot, is to me as viſionary as the pes monetalis of Athens.

Table of the dimenſions of the beaded circle on the circumference of ſeveral Roman Coins.

Gold Coins.	Diameter of the beaded circle in decimals of an inch.	Silver Coins.	Diameter of the beaded circle in decimals of an inch.
Veſpaſian	.71	Claudius	.695
Trajan	.74	Domitian	.725
Trajan	.725	Domitian	.70
Hadrian	.74	Domitian	.69
Reverſe	.725	Domitian	.71
		Trajan	.71
Silver Coins.		Trajan	.71
		Hadrian	.71
Conſular	.695	Hadrian	.705
Conſular	.725	Marc. Aurelius	.725
Conſular	.725	Alex. Severus	.71 bad ſilver
Divi filius	.725	Gordian	.775 bad ſilver
Divus Auguſtus	.725	Philippus	.82 bad ſilver

[d] 967 : 1000 : : 31 : 32.005.

Having

Having thus, I hope, ſettled the length of the Roman, it remains to ſpeak of the Greek foot, and the proportion which theſe bear to one another. Proportion between the Greek and the Roman foot;

This is computed by Greaves to be in the ratio of 25 to 24, the Greek foot exceeding the Roman in that proportion, which is the ſame within a very minute fractional part with that of 1007.29[e] to 967; and this proportion has been adopted by Arbuthnot, and indeed, with an almoſt imperceptible difference, by Dr. Reinhold Forſter.

Our knowledge of this proportion is deduced from how diſcoverable.

1. The difference of number between the Greek and the Roman feet, ſaid to be contained in the ſtadium, there being 600 Greek feet, as we have already ſeen, and 625 Roman feet, which, if we ſuppoſe the ſtadium to be of an equal length in both computations, makes the Greek foot to be longer than the Roman, in the ratio of 25 to 24.

2. The paſſage of Polybius cited by Strabo, and mentioned above, which ſeems to give the ſame proportion.

3. The proportion of the Philæterian foot, which is deſcribed to be $\frac{1}{600}$ part of a ſtadium, and appears to have been the Greek foot, and was, as Salmaſius[f] lays it down, $\frac{1}{24}$ part longer than the Roman foot, or pes monetalis.

[e] 25 : 24 : : 1007.29 : 966.9984.

[f] Sic vigeſima quarta parte major erat pes Græcus et Philæterius, Romano, ſive monetali. Salmaſ. Plin. Exercitat.

4. From the deſcription of the Ptolemaic foot, given by Hyginus[g], which appears to be the ſame with the Greek, and was half an inch longer than the pes monetalis, or as 25 to 24.

5. From the meaſures of ancient buildings, now remaining. "Mr. Stuart," as we are told by the editor of the two laſt volumes of the Antiquities of Athens, "appears to have taken very great "pains to diſcover the true length of the Greek foot, from dif- "ferent meaſures of the temple of Minerva Parthenon; which, from "its name Hecatompedon, was ſuppoſed to contain a meaſure of "an hundred feet, in ſome conſpicuous part of the building."

The difference of the foot, and the proportion it bears to Engliſh meaſure, taken from various parts of the building, are as follows.

TABLE I.

	ENGLISH MEASURE.	
	Inches.	Dec. parts.
I. Length of the upper ſtep in front of the temple gives for one Greek foot	12.	139
II. From outſide to outſide of the angular columns . . .	12.	095
III. From center to center of the front columns	12.	0928
IV. From the Roman foot, by meaſure of the obeliſk of Seſoſtris	12.	11551
V. Length of the architrave	12.	0625
VI. From length of the third ſtep in vol. ii. pag. 8. . .	12.	137
Average of the whole	12.	10697
Average of Nos. I. II. III. V. VI.	12.	0808

[g] Præterea pes eorum qui Ptolemaicus appellatur habet monetalem pedem et ſemunciam. Hyginus de Limitibus conſtituendis.

TABLE

TABLE II.

Suppoſe the Engliſh foot to be as	1000.	
The Greek foot, according to Greaves, is . . .	1007.29	
According to No. I. in the other table	1011.591	
According to No. II.	1008.	
According to No. III.	1007.68	
According to No. IV.	1009.6	
According to No. V.	1005.21	
According to No. VI.	1011.41	
Average of Mr. Stuart's calculations	1008.915	
Proportion of Greek foot to Roman	25 : 23.9614	
Length of Greek Olympic ſtadium, according to Mr. Stuart's calculation of the foot . .	Eng. feet. 605.	Dec. parts. 341

The near coincidence of theſe calculations with thoſe of Mr. Greaves is a ſtrong preſumption of the correctneſs of both, and proves how much thoſe have been deceived who have attempted to reduce the Greek foot to leſs than two-thirds of the Engliſh. But of this more hereafter.

Mr. Rennel's account of the length of the ſtadium conſidered.

Mr. Rennel, in his work entitled "The Geographical Syſtem of "Herodotus," mentions the Olympic ſtadium of 600 feet, but alledges, that, "there is no teſtimony of the application of this "ſtadium to itinerary purpoſes. On the contrary, every portion "of diſtance, as well throughout Herodotus's hiſtory, as the "writings of other Greeks, appears, on a reference to the ground "itſelf, to be meaſured by a ſtade of a much ſhorter ſtandard, "moſt of them riſing above that of Xenophon, which is of 750 "to a degree, but falling below that of Strabo, which is of 700."

To

To Mr. Rennel's aſſertion, that there is no teſtimony of the application of the Olympic ſtadium to itinerary purpoſes by Herodotus, it may be replied, that there is as much teſtimony as could be expected. It is deſcribed as a ſuperficial meaſure by that writer, and its parts or ſubdiviſions particulariſed, and this but a few lines after he had ſpecified the extent of the lake Mœris, which he eſtimates at 3600 ſtadia, or 450 miles, in circumference, a ſpace which Mr. Rennel will ſurely allow to be ſufficient to be accounted an itinerary computation. Now Herodotus never deſcribes any other ſtadium, or gives any reaſon to think, that the one uſed in computing the extent of the lake Mœris was of a different length from the one deſcribed juſt after. It is worth remarking, that Herodotus, at the beginning of the ſame book, tells us, "that thoſe who have but a ſmall portion of land, meaſure it "by the ὀργυιὰ, or fathom; thoſe who have more, meaſure it by the "ſtadium; thoſe who have much, by the paraſanga; and thoſe who "poſſeſs countries of great extent, by the ſchœnus; the former of "the two laſt-mentioned meaſures conſiſting of 30, and the latter "of 60, ſtadia." Now the ὀργυιὰ is mentioned as the next diviſion to the ſtadium in both theſe places, and of courſe we have reaſon to think that the ſame ſtadium was meant in both.

From the dimenſions of the lake Mœris.

In order to prove that Herodotus meant to expreſs a ſtadium ſmaller than the Olympic, Mr. Rennel takes the diſtance between Piſa and Athens, which, he ſays, "ought, if the numbers be not "corrupted, to be accounted deciſive." This diſtance was, according to Herodotus, fifteen ſtadia ſhort of 1500, or 1485 ſtadia; and this, he ſays, agreed nearly with the one between Heliopolis in Egypt, and the ſea. "The direct diſtance," Mr. Rennel ſays, is, "in D'Anville's map of Greece, 105 Greek miles." I have

From the diſtance between Piſa and Athens.

that

that map now before me, and this diſtance meaſures upon it 990 Olympic ſtadia, or 123 Greek miles and $\frac{3}{4}$. If we add to this $\frac{1}{8}$, or 15 miles and $\frac{1}{2}$, for the winding of the road, it will make up 139 miles and $\frac{1}{4}$, equal to 1114 ſtadia of 600 to a degree. Say then, [h] 1114 : 600 : : 1485 : 799.8, or almoſt 800 to a degree.

Let us now ſee what the number of ſtadia to a degree would be by Mr. Rennel's own numbers: [i] 118. × 8. = 944 : 600 : : 1485 : 943.856, both calculations very different from that of Mr. Rennel.

But the road which we may preſume was uſually travelled is as follows:

From Piſa to Corinth	570	Olympic ſtadia, according to D'Anville's map.
From Corinth to Megara	250	
From Megara to Athens	229	
Direct diſtance from Piſa to Athens	1049	

Add $\frac{1}{8}$, or 131 ſtadia, for winding of the road, and the numbers will be 1180 ſtadia. Say then 1180 : 600 : : 1485 : 755.08, a number not very different from the one aſſigned by Mr. Rennel, but not deducible from thoſe calculations which he has ſpecified.

[h] 600 Olympic ſtadia are reckoned equal to a degree, on Mr. D'Anville's map of Greece.

[i] This is the number aſſigned by Mr. Rennel, with the addition of $\frac{1}{8}$ for winding of the road.

The

The diſtance, according to Mr. Rochette's map of Greece, ſtands thus:

From Piſa to Corinth	63	Engliſh miles.
From Corinth to Megara	27	
From Megara to Athens	26	
Diſtance from Piſa to Athens	116	
Add $\frac{1}{8}$ or $14\frac{1}{2}$ miles, for winding of the road	14.5	
	130.5	

Say then, 130.5 : 1485 : : 69.5 : 790.86 for the number of ſtadia in a degree.

From the diſtance between Olympia and Sparta.

But whatever dependence Mr. Rennel may place on this calculation, he owns that the account given by Pauſanias, of the diſtance from Olympia to Sparta, leads to a different concluſion, and gives a ſtadium of no more than 707 to a degree. Pauſanias eſtimates this diſtance at 660[k] ſtadia; and Mr. Rennel ſays, "that on "the map this diſtance is 50 Greek miles, or 56 by the road, "giving a rate of 707 to a degree. The Theodoſian Table has 61 "mille paſſus only, equal to about 49 Greek miles by the road."

The diſtance between Olympia and Sparta is, according to Mr. D'Anville's map, 500 ſtadia, or $62\frac{1}{2}$ Greek miles, equal to 57.23 Engliſh miles, which laſt is nearly the diſtance laid down in Mr. Rochette's[l] map. If we add to this $\frac{1}{8}$ for winding, it will make

[k] Ὁδοῦ δὲ τῆς ἐς Λακεδαίμονα ἐξ Ὀλυμπίας ἐπὶ ἑτέραν γῆλην τὴν ἐν Λακεδαίμονι μέτρα εἶναι σαδίως ἑξήκοντά τε καὶ ἑξακοσίους. Pauſan. lib. vi. p. 492. Edit. Kühn.

[l] This is the ſame with the one in Stuart's Antiquities of Athens.

up

up 562½ ſtadia, or 70 Greek miles, or nearly 64¼ Engliſh miles. Say then, 64.326 : 660 : : 69.5 : 713.09, which is not far from Mr. Rennel's concluſion, though not founded on his calculations.

Let us now ſee how the account will ſtand, according to his own computation. 51.28 Engl. m. = 56 Greek m. : 660 : : 69.5 : 817.22; very different from Mr. Rennel's calculation of 707 to a degree.

As to what Mr. Rennel ſays reſpecting the diſtance being by the Theodoſian or Peutingerian Tables 61 M. P. I anſwer, that I have theſe now before me, in Bertius's edition of Ptolemy's Geography, and find that there are two roads put down from Olympia to Lacedæmon, one the more direct by Melæna, the other following for a conſiderable part of it the ſea-coaſt. The more direct road has the diſtances marked on it no farther than from Olympia to Melæna, which laſt place is ſet down as 12 miles from Olympia, which, by Mr. D'Anville's map, appears to be nearly the true diſtance; but no farther ſpecifications are to be found for the remainder of the way.

The road by the coaſt is as follows; with the diſtances as marked in the tables, and thoſe meaſured in a ſtraight line in Mr. D'Anville's map of Greece.

	Peutingerian Table.	D'Anville's map.
From Olympia to Samaco	15 M. P.	17 M. P.
From Samaco to Cypariſſa	24	18
From Cypariſſa to Pylus	15	14
From Pylus to Methone	30	19
From Methone to Aſine	12	11
From Aſine to Meſſene	30	28
From Meſſene to Lacedæmon	30	30
	156 Total.	137
Add $\frac{1}{8}$, or 17 M. P. to Mr. D'Anville		17
		154 Total.

The agreement between modern and ancient computation is here very remarkable; but I ſuſpect that the road, to which Pauſanias alludes, was more circuitous than the common allowance of $\frac{1}{8}$ will account for.

From the account given by Herodotus of the length of the Boſporus.

Let us now examine ſome of the diſtances of which we may be ſuppoſed to have more accurate accounts, and which Herodotus himſelf is ſaid to have meaſured. He ſays, that the length of the Boſporus is 120 ſtadia. According to the large map of the Propontis, it meaſures 16[m] Engliſh miles; and, according to Mr. Arrowſmith's chart, 13° = 15 Engliſh miles. If we take the medium of theſe two computations, we may ſay, 15.5 : 120 : : 69.5 : 538 nearly.

We know not indeed the points between which Herodotus formed his menſurations; but they could not be far from thoſe

[m] Rochette's map makes it to be 15½ Engliſh miles.

here

here fixed on; and this inſtance would argue, that Herodotus uſed a ſtadium conſiderably greater than even the Olympic. Again, Herodotus ſays, that the Propontis is 1400 ſtadia in length; but by the large map it meaſures, including the Boſporus, which Herodotus ſays belongs to it, 142.5 Engliſh miles. Say then, 142.5 : 1400 : : 69.5 : 683 nearly, a ſtrange diſproportion between two diſtances ſo nearly connected. Of the Propontis.

The ſame writer eſtimates the length of the Helleſpont at 400 ſtadia; but it meaſures, from Gallipoli to the opening into the Ægean ſea, no more than 38 Engliſh miles, or about 331 Olympic ſtadia; though it winds ſo much, that Herodotus's calculation of the courſe of the Strait may be nearly juſt, and indicates, that he meaſured on this occaſion by the Olympic ſtadium. But the truth is, that the meaſurements of Herodotus are in general ſo inaccurate, or ſo corrupted, as not to be depended on, and cannot be regarded as a foundation on which any ſtandard meaſure can be eſtabliſhed, and fully juſtify the obſervation of Dr. Blair[n], that "nothing is more common than to find a confuſion of numbers in "the diſtances given us by ancient authors." Of the Helleſpont.

Mr. Rennel obſerves truly on the diſtance between Piſa and Athens, as laid down by Herodotus, that the diſtance from Heliopolis[o] to the ſea, which Herodotus deſcribes as equal to the other, is not in reality more than 80 Greek miles.

Let us then apply to Xenophon, who, as he travelled himſelf,

[n] Hiſt. of Geography. Strabo acknowledges the ſame inaccuracy, οὐ γὰρ ὁμολογεῖται περὶ τῶν διαστημάτων. Strab. lib. iv. pag. 178.

[o] From Heliopolis to Tanis is 80 Greek miles by D'Anville's map, or $73\frac{1}{4}$ miles by Faden's map. 1802.

Length of the daily march of the army of Cyrus.

the diſtances, which he deſcribes in Aſia Minor, may afford more ſatisfactory information. Mr. Rennel tells us, that "Xenophon's "ordinary march was 150 ſtadia daily, which both he and Hero- "dotus accounts to be equal to five paraſangas." The proper way, I apprehend, of computing the march of Xenophon's army, is to take that part of it where they marched over ground with which they were acquainted; not where they were haraſſed and purſued by the enemy. I would therefore ſelect the account of their march from Sardis to Babylon, a ſpace where the diſtances were meaſured, and more to be depended on than thoſe which occurred when they were traverſing backwards and forwards deſerts, and other difficult and dangerous paths, with which they were totally unacquainted.

March of Xenophon, with the Greek Auxiliaries.

	Paraſangas.	Days journey.	Stadia, according to D'Anville.
From Sardis to the Mæander	22	3	475
From the Mæander to Coloſea	8	1	200
From Coloſea to Celænæ	20	3	475
From Celænæ to Peltæ	10	2	250
From Peltæ to the Market of the Cramians	12	2	
From the Market of the Cramians to Cayſtrus	30	3	600
From Cayſtrus to Thymbrium . . .	10	2	250
From Thymbrium to Iconium . . .	20	3	675
From Iconium to Tyana	25	4	1275
From Tyana to Tarſus	254		535
From Tarſus to Pharus	10	2	
From Pharus to Pyramus	5	1	350
From Pyramus to Iſſus	15	2	300
From Iſſus to the Gates of Cilicia . .	5	1	125
From the Gates of Cilicia to Myriandrus	5	1	150
From Myriandrus to Calus	20	4	600

From

	Paraſangas.	Days journey.	Stadia, according to D'Anville.
From Calus to Daradax	30	5	475
From Daradax to Thapſacus	15	3	930
From Thapſacus to Araxes	50	9	
From Araxes through Arabia	35	5	
From Corſotæ to Pylæ	90	13	
Through Babylonia	12	3	
	474	76	7665

Now 474 divided by 76 gives 6.2368, or almoſt *ſix* paraſangas and a quarter, for a day's journey, not *five*, as Mr. Rennel ſays. Again, 6.2368 multiplied by 30 gives 187.104 ſtadia for a day's march, which, if we count by Olympic ſtadia, is equal to 21.34 Engliſh miles. This meaſure of a day's march differs much from the computation of Mr. Rennel, who aſſigns 15 miles only; but it is more agreeable to the accounts we have from antiquity of ſuch military movements. But more of this preſently.

The fourth column in the foregoing table marks the diſtances between the ſtages mentioned in Xenophon, meaſured from the ſcale of Olympic ſtadia annexed to Mr. D'Anville's map of Aſia Minor. It is continued only from Sardis to Thapſacus, as the limits of the map did not afford an opportunity of purſuing it farther. The diſtance between every ſtage mentioned by Xenophon is not ſet down, as the ſeveral ſtages are not all marked in the map; but this makes little or no difference in the whole diſtance; and the coincidence of the numbers ſpecified by Xenophon with thoſe in D'Anville's map, is very remarkable. The diſtance between Sardis and Thapſacus was, according to Xenophon, 287 paraſangas; which, reckoning 30 ſtadia to a paraſanga, amounts to 8610 ſtadia. According to Mr. D'Anville's map, the ſum of the direct

direct diſtances between each ſtage amounts to 7665 Olympic ſtadia. If we add to this $\frac{1}{8}$, or 958 ſtadia, for winding of the road, the comparative account will ſtand thus.

Diſtance from Sardis to Thapſacus.

According to Xenophon, 8610 ſtadia.	According to D'Anville's map	7665	Olympic ſtadia.
	Add $\frac{1}{8}$	958	
		8623	

Difference from Xenophon 13 ſtadia, or a 663d part of the whole diſtance.

Surely this coincidence, in a ſpace of ſuch an extent, is a ſufficient proof that Xenophon uſed the Olympic ſtadium.

The above calculation for a day's march implies, no doubt, that it was accelerated beyond the uſual rate; and that it was actually ſo, we are expreſsly told by Xenophon himſelf. After having ſaid, that ſome of the marches were very long, he adds, that "upon the "whole, Cyrus appeared throughout to haſten their march, ſtop-"ping no where, unleſs to get proviſions, or for ſomething elſe "that was neceſſary; for he judged, that the quicker he marched, "the more unprepared the king would be to encounter him, and "the ſlower, the more numerous would be the king's army; for "it was obvious to any perſon of attention, that the Perſian em-"pire, though ſtrong with regard to the extent of the country, "and the numbers of men, was however weak by reaſon of the "great diſtances of the places, and the diviſion of its forces, when "ſurpriſed by a ſudden invaſion [p]."

[p] Spelman's Tranſlation of Xenophon's Anabaſis, p. 31. It muſt however, I think, be admitted, that the acceleration of the march of Cyrus could not have been very great, otherwiſe

Arrian tells us, that Alexander marched from the lake Aſcania [q] to Celæne in five days. This is, according to D'Anville's ancient map of Aſia Minor, 1250 Olympic ſtadia, and 143 [r] Engliſh miles by Rochette's map, and the ſame by D'Anville's modern map of Aſia Minor. This makes 250 ſtadia, or 28½ Engliſh miles, for each day's march, allowing nothing for the winding of the road. If ⅛ be allowed on that account, each day's march will be 280 ſtadia, equal to 32 Engliſh miles [s]. Of Alexander.

Herodotus tells us, that 200 ſtadia, or 25 Greek miles, equal to 22.893 Engliſh miles, was a day's journey for a foot traveller; and that 150 ſtadia, or 18¾ Greek miles, was a day's march for an army. Accounts from Herodotus.

Strabo aſſigns 250, or even 300, ſtadia for a day's journey for a foot traveller; and Procopius [t] mentions 210 as the uſual computation. From Strabo. From Procopius.

Vegetius [u], at a time when the Roman diſcipline began to decline, ſays, that the uſual daily march of the army was 20 miles, which was performed in five hours [x]; and that if they accelerated From Vegetius.

wiſe it could ſcarcely have been continued for ſo many days ſucceſſively.

[q] Καὶ ἀφικνεῖται ἐς Κελαίνας πεμπταῖος. Arriani Vit Alexandri, lib. i.

[r] 143 Engliſh miles are equal to 1249.248 Olympic ſtadia.

[s] Alexander, when more at leiſure, marched from Gaza to Peluſium in ſeven days, which is, according to Mr. D'Anville's map, with the allowance of ⅛ for winding of the road, 1237.5 Olympic ſtadia; or, according to a later map, 1252 ſtadia, which is about 178 ſtadia each day, or more than 20 Engliſh miles.

[t] Bello Vandalico, lib. i. c. 1. Procopius ſays, a little after, that it was 40 days journey for a foot traveller from Chalcedon to the Phaſis. The diſtance is, according to Arrian, 8505 ſtadia, or 212.6 ſtadia nearly for each day.

[u] He lived about A. D. 387.

[x] Lib. i. cap. 9.

their

their pace, they could march 24 miles in the ſame time. If this appears to be a greater effort than ſoldiers in the preſent age are equal to, we ſhould conſider the effects[y] of habit and exerciſe. The armour of our own forefathers, which was eaſily carried by them, and under the weight of which they even performed feats of activity, could ſcarcely be ſupported by a man of moderate ſtrength in the preſent age. Vegetius tells us, that in his time the weight of the armour and proviſions, which was carried by the Roman ſoldiers on theſe long marches, amounted to 60 pounds. Yet we have reaſon to believe that this was done without any extraordinary difficulty. Their military exerciſe was a conſtant habituation to fatigue, whereas that of modern times is more adapted to the practice of quick motions, and rapid evolutions, than to the endurance of hardſhip and labour. This circumſtance gave the ſoldiers of antiquity a capacity of performing what we can ſcarcely conceive. Yet we muſt not deny what is ſo inconteſtably proved, from writers[z] of the beſt authority, and indeed from the general tenor of hiſtory.

From Cicero.

Cicero gives nearly the ſame account with Vegetius of the

[y] Livy reckons 25 Roman miles (equal to 200 ſtadia, as appears from the correſponding paſſage in Polybius) to be a day's journey or march for a body of men, on a military expedition. Twenty-five Roman miles were equal to 22.893 Eng. miles. Liv. lib. xxi. ſect. 28.

[z] Pondus bajulare, uſque ad ſexaginta libras, et iter facere gradu militari frequentiſſime cogendi ſunt juniores, quibus, in arduis expeditionibus neceſſitas imminet annonam pariter et arma portandi. Nec hoc credatur eſſe difficile, ſi uſus acceſſerit, nihil enim eſt quod non aſſidua meditatio facillimum reddat. Quam rem antiquos milites factitaviſſe Virgilio ipſo teſte cognoſcitur. Veget. lib. i. cap. 19.

Silvam cædere, portare onera, tranſilire foſſas, natare in mari ſeu fluminibus, gradu pleno ambulare, vel currere, etiam armatos, cum ſarcinis ſuis frequentiſſime convenit; ut quotidiani laboris uſus in pace, difficilis non videatur in bello. Veget. lib. ii. cap. 23.

Roman

Roman diſcipline[a] in his time, and of its effects, which Marius had before experienced in the Cimbric war. Men who could undergo ſuch fatigues might well perform longer marches than thoſe to which Mr. Rennel objects. But, ſays Mr. R. the ſpace of 14½ miles was the mean diſtance travelled by an Indian army. But that of Cyrus was not a tumultuary multitude of that kind. Xenophon himſelf relates a remarkable[b] inſtance how forward the principal perſons among them were to expedite the march of the army by their perſonal exertions. Cyrus himſelf was the moſt conſummate general of the age in which he lived; he commanded forces raiſed in Greece, or in countries connected with it; he himſelf admired and practiſed the Grecian diſcipline; he promiſed himſelf the empire of Perſia, by the aid of the Greeks; and although a tragical accident put an end at once to his life and to his hopes, his allies, in the midſt of an enemy's country, and ſubject to every diſadvantage, returned ſword in hand, in deſpite of all the efforts of their enemies, by a different road, and reached Greece in ſafety. Surely ſuch forces were as capable of a long

[a] Noſtri exercitus unde nomen habent vides: deinde qui labor, quantuſque agminis, ferre plus dimidiati menſis cibaria; ferre, ſi quid ad uſum velint: ferre vallum? Nam ſcutum, gladium, galeam, in onere noſtri milites non plus numerant, quam humeros, lacertos, manus: arma enim membra milites eſſe ducunt. Ciceron. Tuſc. Diſp. lib. ii. ſect. 15.

[b] Once, where the road was narrow, and ſo deep that the carriages could not paſs without difficulty, Cyrus ſtopped, with thoſe about him of the greateſt authority and fortune, and ordered Glus and Pigres to take ſome of the barbarians belonging to his army, and help the carriages through: but thinking they went ſlowly about it, he ordered, as in anger, the moſt conſiderable Perſians who were with him to aſſiſt in haſtening on the carriages. This afforded an inſtance of their ready obedience; for, throwing off their purple robes, where each of them happened to ſtand, they ran, as if it had been for a prize, down a very ſteep hill, in their coſtly veſts and embroidered drawers, ſome even with chains about their necks, and bracelets round their wriſts; and leaping into the dirt with theſe, they lifted up the carriages, and brought them out ſooner than can be imagined. Spelman's Expedition of Cyrus, p. 30, 31.

march as the Roman armies were in the middle of the fourth century.

Mr. Rennel again allows that Strabo reckoned eight ſtadia to a mile, and that ſeemingly on his own judgment; and afterwards ſays, that if the opinion of Polybius is to be followed, one-third of a ſtadium is to be added, as he has allotted $8\frac{1}{3}$ ſtadia to a mile. But I have before produced a paſſage from the works of Polybius, now extant, in which he allows eight ſtadia only to a mile; and it is probable that the paſſage cited by Strabo might be only to accommodate the Greek to the Roman meaſure, if it be not, as I have before hinted, a miſtake of Strabo himſelf.

It is rather incorrect in Mr. Rennel to ſay that $8\frac{1}{3}$ Olympic ſtadia, of 600 feet each, were equal to 5000 feet. If he meaſures the Olympic ſtadium by Roman feet, and allows only 600 of theſe to a ſtadium, contrary to the account given by all the Roman writers, who aſſign 625 Roman feet to a ſtadium, his calculation will hold good; but it is more natural to ſuppoſe that a Greek meaſure ſhould be computed by Greek feet. If theſe were meant, eight Olympic ſtadia, without any addition, though containing only 4800 Greek feet, would be equal to 5000 Roman feet, as has been obſerved before.

Miſtake of Mr. Rennel.

It is unfortunate that a perſon of Mr. Rennel's ſagacity and abilities ſhould fall into ſuch a miſtake, as to ſuppoſe that a figure of eight could be ſubſtituted in place of a figure of nine, in the MSS. of Strabo, when the uſe of the Arabic numerals was not introduced until a later date than that of any good MSS. of that writer, and when the number is not expreſſed by any numeral figures

figures at all, but by the Greek word ὀκταστάδιον [c], which requires more than the change of a ſingle letter to metamorphoſe it into ἐννεαστάδιον.

Teſtimonies concerning the length of the ſtadium, drawn from the meaſures of ancient buildings.

The meaſures of ſome of the ancient buildings may be applied towards aſcertaining the length of the ſtadium, as well as that of the foot.

Pauſanias tells us, that the Peribolus, or wall [d] ſurrounding the court which incloſed the temple of Jupiter Olympius at Athens, was at moſt [e] four ſtadia in circumference. The dimenſions, according to Mr. Stuart, are as follows:

	Feet.	Inches.	Dec. of an Inch.
Length	688	6	5
Breadth	463	5	37
	1151	11	87
			2
	2303	11	74

equal to 2286 Greek-feet nearly, which are one-nineteenth part and a half ſhort of four Olympic ſtadia; but nevertheleſs ſufficiently coinciding with the expreſſion of Pauſanias, ſuppoſing he meant Olympic ſtadia; but not if he meant ſtadia of the dimenſions aſſigned by Mr. Rennel.

[c] Ptolemy aſſigns only 500 ſtadia to a degree, or eight ſtadia and one-third to a minute, or 60 Roman miles, at 625 feet to the ſtadium. Geogr. cap. vii. A Greek or Roman mile is about 75 to a degree on the equator; of courſe 600 ſtadia would be the proper number.

[d] Pauſanias, lib. i.

[e] The words of Pauſanias are, σταδίων μάλιστα τεσσάρων ἐστίν· which means, at moſt or near four ſtadia. Conſt. Lexic. et Steph. Theſaur. Vox μάλιστα.

The length of the area of the Panathenæan ſtadium is yet diſtinguiſhable. It was accurately meaſured by Mr. Vernon, who accompanied Sir George Wheeler to that place, A. D. 1676, and was determined by him to be 630 Engliſh feet; and with this account both Dr. Chandler and Mr. Stuart agree. If we conſider that the racers in the ſtadium, in the courſe called Δίαυλος, returned in the ſame direction in which they ſet out, we may allow 25 feet for the turn at the end round the meta; and if ſo, the length of the courſe will be 600 Greek feet, or 605 Engliſh feet; which, from this meaſurement, I think more than probable.

Opinion of Mr. Barré conſidered.

In the nineteenth volume of the French Memoirs of Literature, including from the year 1744 to 1746, there are ſome diſſertations on the length of the ſtadium, by Mr. De la Barré[f]. That gentleman had conceived a notion, that the ſtadium of Herodotus was only $\frac{3}{5}$ of the length of the one employed by Pliny; and this poſition, which abridges the length of the ſtadium more than any which I have ſeen, is ſupported by him with much learning and ingenuity, though not altogether with candour and impartial repreſentation.

He founds his argument on the length of the Pythic ſtadium, which, Cenſorinus tells us, conſiſted of 1000 feet; whilſt the Italic contained only 625, and the Olympic but 600 feet.

Mr. Barré thinks, that the Romans adopted the Pythic ſtadium from the intercourſe which they had with Greece, when they ſent, as they often did in early times, to conſult the Pythian or Delphic

[f] Sur les Meſures Géographiques des Anciens.

oracle.

oracle. But this is all a conjecture of his own. The Pythic ſtadium never could have been in general uſe among the Romans, as it is never, as far as I can find, noticed, or even named, by any other writer than Cenſorinus, even by thoſe who treat profeſſedly of the menſuration of diſtances. It ſeems probable that it was a local meaſure only, perhaps of the Gymnaſium[g] belonging to the place, and not in uſe elſewhere. But let us examine his arguments.

Argument from the words of Theophraſtus, as tranſlated by Pliny.

He begins with ſaying, that Pliny, tranſlating a paſſage from Theophraſtus, renders the words τρεῖς καὶ δέκα ὀργυιῶν, by *centum triginta pedum*; and as the words ſo applied ſignify that each ὀργυιὰ, or fathom, contains ten feet, which is four feet above the length aſſigned by Herodotus, it follows, that the fathom in the time of Pliny was as five to three to that uſed in the time of Herodotus; and from thence infers, that the ſtadium of Pliny exceeded that of Herodotus in the ſame proportion. But, ſuppoſing the reading to be genuine, all that I can infer from it is, that thirteen fathoms in the time of Theophraſtus were equal to 130 feet in the time of Pliny; and of courſe, that the fathom was increaſed in the proportion of five to three from the time of Herodotus to that of Theophraſtus, a thing difficult to conceive, as the interval was no more than 137 years. But this no ways concerns Pliny's calculation of the length of the ſtadium, which he never reckons by fathoms, but by paces and feet; and ſays poſitively, that a ſtadium

[g] The Pythian games were celebrated at or near Cirrha, in the neighbourhood of Delphi, where, as it appears from Pauſanias and Pindar, there was a horſe-courſe (Ἱππόδρομος) and a ſtadium.

Πυθοῖ τε γυμνὸν ἐπὶ
Στάδιον καταβάντες ἤλεγξαν
Ἑλλανίδα στρατιὰν ὠκύτατι. Pindar. Pyth. Od. xi. verſ. 73.

See alſo Pauſan. Phocic. p. 893. Edit. Kühn.

contains

contains 125 of the former, and 625 of the latter. To ſuppoſe on ſuch a random conjecture that Pliny aſcribed 1000 feet to a ſtadium, when his own words ſo directly contradict it, would be the height of abſurdity.

But let us now examine, from the teſtimony of various writers of authority, Greek as well as Roman, if the meaſure of ten Roman feet would not be utterly inconſiſtent with the deſcription of the ὀργυιὰ, or fathom, itſelf.

Xenophon [h], who flouriſhed only 54 years after Herodotus, deſcribes the ὀργυιὰ to be the meaſure of the diſtance which reaches from the extremity of one arm to that of the other, when both are extended at right angles to the body. Phavorinus [i], Suidas [k], Heſychius [l], and Julius Pollux [m], explain it in the ſame way.

The ſame meaſure, though without a name aſſigned to it, is deſcribed by Vitruvius, who makes it equal [n] to the length of the body. It is alſo evident that Vitruvius meant hereby a meaſure of ſix feet, as he reckons the meaſure [o] of the foot as one-ſixth part of the height.

Of the authors above cited, Vitruvius lived about 126 years be-

[h] Χεῖρες μὲν γὰρ, εἰ δέοι αὐτὰς τὰ πλέον ὀργυιᾶς διέχοντα ἅμα ποιῆσαι, οὐκ ἂν δύναιντο. Memorab. lib. ii. cap. 3. ſect. 19.

[i] Ὀργυιὰ τὸ ἐξηπλωμένον μέτρον τῶν χειρῶν, ἢ τὴν ἔκτασιν τῶν χειρῶν. Phavorin.

[k] Ὀργυιαὶ τὰ μὲν ἰδίων χειρῶν μέτρα. Suidas.

[l] Ὀργυιαὶ ἡ τῶν ἀμφοτέρων χειρῶν ἔκτασις. Heſychii Lexic.

[m] Εἰ δ' ἄμφω τὰς χεῖρας ἐκτείνειας, ὡς καὶ τὸ σέρνον αὐταῖς συμμετρεῖν, ὀργυιὰ τὸ μέτρον. Jul. Polluc. lib. ii. ſect. 158.

[n] Nam ſi a pedibus imis ad ſummum caput menſum erit, eaque menſura relata fuerit ad manus panſas, invenitur eadem latitudo uti altitudo. Vitruv. lib. iii. cap. 1.

[o] Pes vero altitudinis corporis ſexta. Ibid.

fore

fore Pliny; Julius Pollux lived about eighty years later, and Heſychius about 300 years after Pliny. Is it reaſonable then to ſuppoſe that Pliny ſhould aſſign ten Roman feet to a meaſure, univerſally allowed in his own time to be equal to the height of a man, as a ſtandard? Six Roman feet are, in Engliſh meaſure, equal to 69.624 inches, or rather more than five feet nine inches and a half, which is nearly the medium ſize of well-proportioned men. But if Pliny eſtimated the height of a man at ten Roman feet, equal to nine feet eight inches Engliſh meaſure, we muſt ſuppoſe he borrowed his ſtandard from the heroic ages, and was himſelf infected with the "Græciæ fabuloſitas[p]," of which he more than once complains. But I ſuſpect the paſſage cited from Pliny to be corrupt. It is certainly incorrect, as it deſcribes the cedar, whoſe extraordinary ſize he records, as growing in Cyprus, when Theophraſtus expreſsly ſays[q], that it grew in Syria.

Mr. Barré next remarks, that the circumference of the earth, as reckoned by Poſidonius, who lived in the time of Pompey, was 240,000 ſtadia; which number, he obſerves, is to 400,000 (the number aſſigned by Ariſtotle) as 6 is to 10; and concludes from thence, that there was a difference of $\frac{2}{5}$ in the length of the ſtadia, by which they reſpectively calculated. But Poſidonius no where ſays that his computation was derived from Ariſtotle; on the contrary, we know from Cleomedes[r], that it was deduced from an

[p] Lib. iv. Argum. Lib. xii. cap. i. lib. v. cap. i.

[q] Theophraſt. lib. v. cap. 9.

[r] Lib. i. cap. 26.

obſervation

obſervation of the ſtar Canopus [s], made by himſelf. He remarked,

	°	′
[s] Height of the North Pole at Rhodes	36	27
Diſtance from the Pole to the Equator	90	
Declination of Canopus South	52	31
Subſtract this ſum	178	58
From	180	
Remainder . . .	1	2
Add for refraction		24
Apparent altitude of Canopus at Rhodes	1	26
Height of North Pole at Alexandria	31	11
Diſtance from the Pole to the Equator	90	
Declination of Canopus South	52	31
Subſtract this ſum	173	42
From	180	
Remainder . . .	6	18
Add for refraction .		8
Apparent altitude of Canopus at Alexandria	6	26
Subſtract for its apparent height at Rhodes	1	26
Remainder . . .	5	

which is the difference between its apparent height at the two places. Five degrees of latitude, at 69.25 Engliſh miles each, = 346 Engliſh miles, = 3023 Olympic ſtadia; which ſhould be, according to this calculation, the diſtance between Alexandria and Rhodes, ſuppoſing them to lie under the ſame meridian. But Alexandria is 1° 51′ to the eaſt of Rhodes, a ſpace in the latitude of Alexandria equal to 110 Engliſh miles.

Square of 346	119716
Square of 110	12100
Sum	131816
Square root	363.65 E. miles.

for the diſtance from Alexandria to Rhodes, = 3177 Olympic ſtadia. But this diſtance is too ſmall, owing to the proportionally greater refraction at the altitude of 1° 2′, than at 6° 18′, which amounts to 16′ in altitude, and to about 17′ in diſtance.

	°	′
True altitude of Canopus at Rhodes	1	2
at Alexandria	6	18
Difference	5	16

Equal to 364.71 Engliſh miles.

Square of 364.71	133013.37
Square of 110	12100
Sum	145113.37
Square root	380.97 E. miles.

Equal to 3328 Olympic ſtadia, for the diſtance from Alexandria to Rhodes.

Let us now ſee how the calculation of Poſidonius, reſpecting the circumference of the earth, would ſtand, had his obſervations of the reſpective altitudes of Canopus at Alexandria and Rhodes been correct, though without allowing for refraction. The apparent difference of altitude at the two places was, as I before obſerved, 5°. Say then 5° : 360 : : 5000 ſtadia to 360,000 = 41207.4 Engliſh miles, juſt double to his later calculations, being 1000 ſtadia to a degree. By his other computations, derived from the gnomonic meaſurements of Eratoſthenes, and which eſtimate the diſtance only at 3750 ſtadia, it would ſtand thus—5 : 360 : : 3750 : 270,000, or 750 ſtadia to a degree.

Poſidonius, it is evident, made two miſtakes, beſides that of ſuppoſing Rhodes and Alexandria to lie under the ſame meridian; the firſt in ſuppoſing Canopus to have no altitude at Rhodes, whereas it has a real one of 1° 2′,

that this ſtar was but juſt viſible in the horizon of Rhodes, and that at Alexandria its meridian height was a forty-eighth part of a great circle in the heavens, or 7° 30′; and inferred from thence, what part of a great circle on the earth this difference would amount to. The diſtance between Rhodes and Alexandria he took for granted to be 5000 ſtadia; and of courſe the circumference of the earth would be 240,000 ſtadia. Cleomedes was however doubtful of this meaſurement; as he obſerves, that a leſs ſum is to be taken, if the diſtance between Rhodes and Alexandria ſhould be found to be leſs than 5000 ſtadia; which diſtance, Mr. Coſtard[t] very properly obſerves, from Strabo, was not obtained by any attempt at menſuration, but only from the eſtimation of navigators[u]. But when Poſidonius heard that Eratoſthenes had, by gnomonic obſervations, aſcertained the diſtance between Alexan-

1° 2′, and an apparent one of 1° 26′; and the ſecond in over-rating the altitude of the ſtar at Alexandria, which he took to be 7° 30′; whereas it is no more, including the effects of refraction, than 6° 26′. Theſe errors cauſed him to under-rate the extent contained in 7° 30′, although he over-rated the real diſtance.

The following comes nearer the truth:

Diſtance between Rhodes and Alexandria	380.97
Subſtract for difference of longitude	16.26
Remains	364.71 E. miles.

Say then, 316 : 364.71 : : 21600 : 24935.27 Engliſh miles, only five Engliſh miles different from modern calculation, and equal nearly to 21784o Olympic ſtadia, for the circumference of the earth, or 605.11 Olympic ſtadia to a degree on the equator, very near to what it is computed to be in Table IV.

Caſſini obſerved, that the medium number between the calculations of Eratoſthenes and Poſidonius, reſpecting the circumference of the earth, which the former ſuppoſed to be 252,000, and the latter to be 180,000 ſtadia, is 216,000; which number, divided by 360, gives 600 ſtadia to a degree, and 10 ſtadia to a minute.

The reſpective latitudes and longitudes of Alexandria and of Rhodes are as below ſtated.

	Latitude. ° ′	Longit. ° ′
Alexandria, Robertſ. Navig.	31 11	30 17
——— from Denon's Trav.	31 12	29 55
——— from Walſh	31 13	29 45
Rhodes, Robertſon's Navig.	36 27	28 26

[t] Coſtard's Aſtronomy, p. 207.

[u] Strabo, lib. ii. p. 125, 126. Ed. Caſaub. Paris.

dria and Rhodes to be no more than 3750 ſtadia, and taking this interval to be (what it is not) a forty-eighth part of the earth's circumference, he reduced his computation to 180,000 ſtadia [x]; and this meaſure, in which the number of degrees aſſigned by Poſidonius, and the number of ſtadia meaſured by Eratoſthenes, are made uſe of, was received by Marinus [y] of Tyre, and others, and is generally aſcribed to Ptolemy, becauſe he makes uſe of it in his geography.

Beſides, Eratoſthenes, who lived during the interval between Ariſtotle and Poſidonius, and 123 years later than Ariſtotle, had concluded the circumference of the earth to be 250,000 ſtadia; or, as moſt account it, 252,000 ſtadia, from an obſervation of the diſtance between Syene and Alexandria [z], and the reſpective meridian altitude [a] of the ſun at each place.

[x] Strabo, lib. ii. p. 95.

[y] Long's Aſtronomy, vol. i. p. 128.

[z] Eratoſthenis Geograph. Fragmenta, p. 53.

[a] Arat. Phænom. Edit. Oxon. 1672. p. 37. καταστερίσμων.

De ſtadiis Eratoſthenis nihil pro certo affirmare audeo, quale ſtadium in animo habuerit. Hoc tamen expectandum eſſet, aliud Eratoſthenis ſi habuerit ſtadium, a Strabone eſſet indicatum. Nunc autem Strabo octo ſtadia mille paſſibus Romanis adnumerat, cui convenit Plinius, centum viginti quinque paſſus Romanos ſtadio tribuens ſemperque, ubi Eratoſthenis ſtadia paſſuum numero exhibet, hac dimenſione utens. Secundum hæc itaque terræ maximus circulus eſſet 31500 milliaria Romana, ſeu 6300 milliaria noſtra (Germanica) geographica. Nam unum milliare geographicum eſt æquale quinque milliariis Romanis. Error itaque eſſet 900 mill. geograph. Nam ſecundum noſtrorum dimenſiones geographicas ambitus circuli maximi eſt 5400 mill. geograph. Ex hoc ipſo apparere videtur, eo ſtadio, quod Olympicum vocant, uſum fuiſſe Eratoſthenem. Etenim ſecundum ejus dimetiendi rationem, magnitudinem circuli maximi nimiam æſtimare ſane debebat. Secundum accuratiorem dimenſionem autem non niſi 600 ſtadia Olympica uni gradui conveniunt. Stadium Ægyptiacum, quorum quindecim ſunt æqualia uni milliario Romano, nullo modo dimenſioni Eratoſthenis poteſt accommodari adverſus ſtadium Græcum minus teſtatur locus Strabonis. Eratoſthenis Fragm. Edit. a G. C. F. Seidel, Goettingæ, 1789. p. 58.

Univerſum autem hunc circuitum Eratoſthenes in omnium quidem literarum ſubtilitate et in hac utique præter cæteros ſolers, quam cunctis probare video ducentorum quinquaginta,

Archimedes [b], who was contemporary with Eratoſthenes, mentions that 300,000 ſtadia was the number aſſigned by ſome for the circumference of the earth in his time.

The proportion therefore, which Mr. Barré remarks between the numbers of Ariſtotle and thoſe of Poſidonius, was in all probability caſual, and ſerves only to confirm the remark of Dr. Blair, above cited, " that nothing is more common than to find a " confuſion of numbers in the meaſurements given us by ancient " authors."

In order to prove the ancient Greek ſtadium to be only $\frac{3}{5}$ of the length of the one uſed in later times, by which Mr. Barré means thoſe ſubſequent to the age of Alexander, he obſerves, that it had been before remarked, that a Roman mile did not always contain eight ſtadia, but ſometimes only ſeven and a half. This might prove that there was a difference in the length of the mile, but proves nothing reſpecting that of the ſtadium. Strabo ſays, that in his time the uſual computation was eight ſtadia, but that ſome reckoned only ſeven and a half. This difference ſeems however to have been provincial only.

Polybius, as I have before remarked, reckons in general eight ſtadia to a mile; which, he ſays, was according to the Roman meaſurement. Livy appears to have uſed the ſame computation with Polybius. Thus, what Polybius calls *διακόσια στάδια*, lib. iii. ſect. 47. 7. Livy calls *viginti quinque millia*, lib. xxi. ſect. 28.

quaginta, duorum millium ſtadiorum prodidit. Quæ menſura, Romana computatione, efficit trecenties quindecies centena millia paſſuum. Plin. lib. ii. cap. 128. 31.500 × 8 = 252.000.

[b] In Arenario.

What Polybius calls ἀπὸ τῆς πόλεως ἑκκαίδεκα σταδίους, lib. iii. ſect. 101. Livy renders by *duo ferme a Geronio millia*, lib. xxii. ſect. 24. What Polybius calls ἑκατὸν εἴκοσι σταδίους, lib. viii. ſect. 28. Livy calls *quindecim millia*, lib. xxv. ſect. 9. The words of Polybius, lib. xiv. ſect. 4. περὶ γὰρ ἑξήκοντα σταδίους, are rendered by Livy, *ſeptem enim millia itineris erant*, lib. xxx. ſect. 4. where, as Sigonius obſerves, the whole paſſage is cited by Livy from Polybius. Again, περὶ τριάκοντα σταδίους, Polyb. lib. xiv. ſect. 8. is rendered by Livy, *quatuor ferme millia*, lib. xxx. ſect. 8.

Mr. Barré next attempts to prove that the Roman foot was equal to the πῆχυς, or cubit, of the Greeks. Let us ſee how he ſupports this extraordinary poſition.

His firſt argument is drawn from the deſcription of the plant called dracunculus; or, by Dioſcorides, δρακόντιον [c], which the laſt-mentioned writer ſays is two cubits high, and which Pliny deſcribes as "bipedali fere altitudine." Taking it then for granted that Pliny copied Dioſcorides, he would infer, from the laſt-mentioned paſſage, that the foot of Pliny was equal to the cubit of Dioſcorides. But Pliny [d] himſelf is doubtful if the plant he calls dracunculus be in reality the δρακόντιον of the Greeks. The height of the plant (as Mr. Barré would reconcile the accounts) is the only circumſtance in which they agree. Dioſcorides mentions only two kinds, Pliny ſpecifies three; and the deſcription of their qualities in the reſpective authors by no means coincides.

Bodæus a Stapel, the learned editor of Theophraſtus, thinks the

[c] Lib. ii. cap. 160.

[d] Lib. xxxiv. cap. 16.

account

account given by Pliny to be very erroneous; and adds, that the plant ſuppoſed to be the *δρακόντιον* is three feet high [e]; which agrees with the deſcription given by Dioſcorides, ſuppoſing the cubit to be a foot and a half, but not with Pliny's account.

Again, Mr. Barré ſays, that the Greeks employed two different meaſures, or palms, in eſtimating the foot and the cubit; the ſmaller called *παλαιστὴ*, and the larger *σπιθαμή*. The former of theſe he defines to be the breadth [f] of the four fingers, laid cloſe to one another; and the latter to be the breadth of the four fingers, with the addition of that of the thumb, in what he calls its natural ſtate; which he explains to be when it appears a little ſeparated from the fingers, as it always is when the hand is opened.

His definition of the former of theſe meaſures is juſt [g], but not ſo of the latter. The *σπιθαμὴ* is the ſpan [h], not meaſured from the fingers lying cloſe together, but from the thumb to the little finger, when both are extended. Indeed this is what the word itſelf denotes, being derived from *σπίζω*, which both Euſtathius [i] and the Scholiaſt on Ariſtophanes interpret to be of the ſame meaning with *ἐκτείνω*.

[e] Caulem erigit tripedalem. Theophraſt. p. 836.

[f] La paleſte eſt compoſée de quatre doigts de la main joints les uns contre les autres, auquels en ajoutant le pouce dans ſon état naturel, c'eſt-à-dire un peu écarté d'eux, comme il eſt toujours quand la main eſt ouverte, on a la ſpithame. Vol. xix. p. 522.

[g] *Τῶν δὲ μέτρων ἐστὶ μέντοι καὶ δάκτυλος, δοχμὴ δὲ συγκλεισθέντες οἱ τέσσαρες δάκτυλοι.* Jul. Poll. lib. ii. ſect. 157.

Παρὰ τὸ πέλας συνάγειν τὰ ὀσά, id eſt, *πλησίον ποιεῖν τὰς δακτύλας.* Etymolog.

[h] *Εἰ δὲ τὰς δακτύλας ἀποτείνας, ἀπὸ τοῦ μεγάλου πρὸς τὸν μικρότατον μετρεῖς, σπιθαμὴ τὸ μέτρον.* Jul. Polluc. lib. ii. ſect. 157.

Τὸ μέτρον τὸ ἀπὸ τοῦ μεγάλου δακτύλου ἐπὶ τὸν μικρὸν διάστημα. Heſych. vox *σπιθαμή*.

[i] Steph. Theſaur. Græc. Vox *σπίζω*.

Mr.

Mr. Barré again aſſumes firſt, that there was the ſame difference between the σπιθαμὴ and the παλαιστὴ, as there was between the cubit and the foot; namely, that they were each to the other as three to two; and again, that the σπιθαμὴ was equal to four Roman digits only, or a quarter of a foot. Now as he ſuppoſes the σπιθαμὴ to have been equal to the palmus, which was four Roman digits alſo, it follows that four ſpithames, which, according to his computation, are equal to ſix paleſtes, would be equal to the Greek cubit; and as each ſpithame was equal to the palmus, it followed that the Greek cubit would be equal to the Roman foot. But the length he aſſigns to the ſpithame can by no means be admitted. The δῶρον and the παλαιστὴ were only different names[k] for the ſame thing. The word didoron, we are told by Vitruvius[l], implied half a foot; and we learn from Hero[m], that the δῶρον was the third part of the σπιθαμή.

This is agreeable to what might be expected from the derivation of the terms. The breadth of the four fingers of a man's hand of moderate ſize is about three inches, or four Roman digits; and the extent of the fingers when ſtretched out, as above deſcribed, is nearly nine inches, or twelve Roman digits, agreeable to the proportion above laid down.

It appears alſo, that, where accuracy of length is to be ſpecified, the Romans tranſlated the Greek word πῆχυς by the Latin word cubitus. Thus Herodotus[n], deſcribing the cell wherein the body of Oreſtes was depoſited, ſays, that both that and the body were

[k] Julii Polluc. lib. ii. ſect. 157.
[l] Lib. ii. cap. 3.
[m] Hero de Menſuris.
[n] Lib. i.

ſeven

ıeven cubits in length; and Pliny [o], copying profeſſedly from him, tranſlates the word ἑπλαπήχει by *ſeptem cubitorum*; and Aulus Gellius[p] does the ſame, and adds, that theſe ſeven cubits were equal to $12\frac{1}{4}$ Roman feet, which would make the Greek cubit longer than it has hitherto been ſuppoſed in any computation.

Again, the authors of the Septuagint, in deſcribing the height of Goliah, who is repreſented to have been a man of gigantic ſtature [q], tranſlate the correſponding Hebrew words into, ὕψος αὐτῷ τεσσάρων πήχεων καὶ σπιθαμῆς. This, if underſtood to be of the Greek cubit, according to common interpretation, will amount to ſix feet nine inches and ſix tenths of an inch; and, if we reckon according to Aulus Gellius's computation, will be ſeven feet ſeven inches and a quarter; both of them extraordinary heights, though neither of them exceeding credibility; as I have ſeen a man much taller than either.

But if we diminiſh this, according to Mr. Barré's calculation, to four Roman feet three inches, (equal to four Engliſh feet one inch and a quarter,) we ſhall ſink this boaſting giant into a dwarf, and probably make him much inferior in ſtature to his antagoniſt, David, whom he ſo much deſpiſed.

We ſhould conſider that the authors of the Septuagint were perſons of great learning, and knowledge both in the Greek and in the Hebrew tongues; and were alſo prior in date to Dioſcorides by 336 years, and who muſt have known the real length of the

[o] Lib. viii. cap. 16.

[p] Lib. iii. c. 10.

[q] All of gigantic ſize, Goliah chief.
MILTON.

Greek

Greek meaſures in their own time, too well to repreſent a man as a giant, who was only four feet and a quarter in height.

It muſt indeed be owned that the later Greek writers (incorrectly, I think) are apt to confound the ſpithame [r] and the paleſte. Thus Aetius, ſpeaking of the viper, deſcribes it as being in general of a cubit's length; and the longeſt παλαιϛῶν τριῶν. This laſt meaſure would amount but to 12 digits, or only three-quarters of a cubit, ſuppoſing the cubit to be of a foot length only. But if we underſtand that he meant three ſpithames, or thrice three-fourths of a Greek foot, ſuch a meaſure exceeds a cubit in a proper proportion, or as three to two, or as 27 to 18. And this appears to be the real ſize of theſe animals.

Mr. Pennant ſays[s], that "they are ſeldom of a greater length "than two feet; though once he ſaw a female viper almoſt "three feet long." This proves Aetius meant a foot and a half, and not a foot only, by the cubit. Many more inſtances of the confounding the two meaſures may be found in Conſtantine's Lexicon [t].

Mr. Barré next produces an argument from the ſize of the

[r] Illud vero etiam dignum quod admoneatur, Græcos alterum pro altero uſurpare. Conſt. Lexic. Vox παλαιϛή.

Sometimes the true or larger ſpithame was diſtinguiſhed by the name of σπιθαμὴ βασιλική. Thus Hero ſays, "the ὀργυιὰ, or fathom, con-"tained eight royal ſpithames, (of 12 digits "each,) or ſix feet and one common ſpitha-"me." By the latter he undoubtedly meant a meaſure of four digits, or the paleſte; which ſhews that the orguia, which the Greek writers reckon as ſix feet, was by the Romans counted as ſix and $\frac{1}{4}$ of their feet, which makes the proportion of the Roman foot to the Greek to be as 24 to 25.

[s] Britiſh Zoology.

[t] Vox παλαιϛή.

pygmies,

pygmies, which Pliny, Aulus Gellius, and Strabo ſay, were three ſpithames in height; or, as Pliny expreſſes it, "ternos dodrantes "non excedentes;" and Aulus Gellius, "non longiores eſſe quam "pedes duos et quadrantem."

Euſtathius, as Mr. Barré alledges, ſays of theſe people, that they were οὐδὲ πηχυαῖος τὸ μέγεθος, not of a cubit's ſize; and then reckoning the cubit as a foot only, he ſtill farther reduces the ſize of theſe little folks. But I think Euſtathius meant no more than to repreſent in ſtrong terms the diminutive ſize of the pygmies, and not to aſſign to them any determinate proportion. Euſtathius had before obſerved, that the δῶρον, or four fingers breadth, was one-third of the ſpithame; and of courſe, that two ſpithames made a πῆχυς, or foot and a half.

Again, Mr. Barré, taking it for granted that the Greek cubit was equal to the Roman foot, adds, that of courſe 600 Greek feet were equal to 400 Roman feet; and that there muſt be $12\frac{1}{2}$ Olympic ſtadia to make up the mile: and as the Pythic ſtadium was greater by $\frac{2}{5}$, it muſt follow, that ſeven and a half of the latter would be required to make up the mile; and that 7500 Greek feet, equal to 5000 Greek cubits, or 5000 Roman feet, would be equal to a Pythic ſtadium.

But Herodotus [u] and Diodorus [x], neither of whom reckoned by the Pythic ſtadium, aſſign 3600 ſtadia for the circumference of the

[u] Τῆς τὸ περίμετρον τῆς περιόδου εἰσὶ σταδίοι ἑξακόσιοι καὶ τριχίλιοι. Lib. ii. p. 177. Ed. Weſſel.

[x] Τὴν μὲν γὰρ περίμετρον αὐτῆς φασιν ὑπάρχειν σταδίων τρισχιλίων καὶ ἑξακοσίων. Diodor. lib. i. p. 61. Ed. Weſſel.

lake Mœris; and Mucianus[y], a perſon of great authority, and frequently cited by Pliny, ſays, that it is 450 mille paſſus. Now $450 \times 8 = 3600$.

I wiſh to repeat here in ſome degree what I before mentioned curſorily reſpecting the Olympic foot and the Olympic ſtadium. We are told by Aulus Gellius, that theſe meaſures exceeded the others in the ſame proportion as the foot of Hercules did that of ordinary men. The foot, we ſhould recollect, was ſuppoſed to be one ſixth of the height of the perſon. But what muſt we think of the ſtature of Hercules, ſhould the length of his foot be reduced to eight Roman inches[z]? What muſt we think of the common race of mortals at that time, when he who is deſcribed, "corpore excelſiorem quam alios[a]," was only of the diminutive ſize above deſcribed?

I agree with Mr. Barré, that it is probable that Pliny copied Herodotus in his account of the thickneſs and height of the walls of Babylon: but his account is very incorrect, and inconſiſtent with the original, as Mr. Barré, and before him Salmaſius, had obſerved. If the royal cubit was three digits longer than the

[y] Plin. lib. v. cap. 9.

[z] $8 \times 6 = 48$ inches, $= 4$ feet.

Ricciolus obſerves, that if the foot of Hercules, according to the common computation, was $\frac{1}{6}$ of his height, he muſt have been ſix Roman feet three inches high, or rather more than ſix feet one inch and a half, Engliſh meaſure. Apollodorus makes Hercules to be four cubits high, which, according to Mr. Barré, is four feet only.

Τετραπηχυαῖον μὲν γὰρ εἶχε τὸ σῶμα.

Apollod. lib. ii. cap. 4. ſect. 9.

If we even add eight inches, (or one foot more, as calculated by Mr. Barré,) to make up his height ſeven feet, which is ſaid by an ancient writer, cited by Tzetzes, to be his height, it will not bring him to the pitch of what is now accounted an inferior ſtature. See Notes on Apollodorus, ed. Heyne, vol. ii. p. 330.

[a] Aulus Gellius.

common

common cubit, the royal foot could be only two digits longer than the common foot.

It ſhould however be remarked, that Pliny, when deſcribing the extent of the circuit of the walls of Babylon, lays it down as being ſixty miles, which correſponds with the 480 ſtadia of Herodotus, reckoning theſe at eight to a mile, which is very different from Mr. Barré's calculation.

In like manner the city of Nineveh is deſcribed in the book of Jonah as being very great, and about three days journey in circuit, (ὡσεὶ πορείας τριῶν ἡμερῶν.) It is agreed that 20 M. P. are the allotted meaſure[b] for a day's journey, ſo that the whole amounts to 60 M. P. equal to the 480 ſtadia aſſigned by Diodorus for the circumference of that city.

The promontory of Sunium is, according to Strabo, 330 ſtadia from Piræus; and, according to Pliny, 42 Roman miles. Now $330 \div 8 = 41.25$, very near Pliny's calculation, at eight ſtadia to a mile.

Arrian, in the Periplus of the Euxine ſea, ſays, that the diſtance from the Temple of Jupiter Urius to the river Rhebas is 90 ſtadia. This meaſures on the large map of the Propontis about nine Engliſh miles; to which if we add $\frac{1}{8}$, for the winding of the road, we ſhall have about 89.87 Olympic ſtadia, almoſt exact to Arrian's

[b] Hæc menſura legitima putabatur ad iter unius diei, ut ex jureſconſulto clarum eſt. Sic tam apud Græcos, quam apud veteres Latinos diurnum iter viginti millibus paſſuum definiebatur. Salmaſ. Plin. Exercitat. p. 351, 352, where this ſubject is largely diſcuſſed.

calculation. The diſtance from the Rhebas to Acra Melænæ is counted by Arrian 150 ſtadia; but it meaſures by the large map 18½ Engliſh miles nearly. If to theſe we add $\frac{1}{9}$ for winding, we ſhall have upwards of 20½ miles, equal to about 179 ſtadia, or nearly a fifth part more than Arrian's computation. But, on the other hand, from Heraclea to Amaſtris is, according to Arrian, 690 ſtadia; but by Arrowſmith's chart it meaſures, in a ſtraight line, 542 ſtadia; to which if we add $\frac{1}{8}$, it comes nearly to 609 ſtadia, or 81 ſhort of Arrian's computation.

Again, from Amaſtris to Carambis is, according to Arrian, no more than 480 ſtadia; but by Arrowſmith's chart[c] it meaſures, in a direct line, 550, and with the addition of $\frac{1}{8}$, 619 ſtadia. It is obvious that no juſt concluſion reſpecting the length of the ſtadium can be drawn from the two laſt inſtances.

From Sinope to Amiſus is, according to Arrian, 1020 ſtadia; but by Arrowſmith's chart it is, in a right line, 786 ſtadia only; and 884, with the addition of $\frac{1}{8}$. The difference in the diſtance between Amiſus and Ceraſuntum is ſtill greater. Arrian makes it 1570 ſtadia; Arrowſmith's chart no more than 926, in a direct line; and, with the addition of $\frac{1}{8}$, only 1041.

Faden's map however makes it to be 1226 ſtadia, or 1379, with the addition of $\frac{1}{8}$. D'Anville makes it 1110 ſtadia in a direct line, or 1248.7 with the addition of $\frac{1}{8}$. Modern geographers in this inſtance vary nearly as much from one another, as modern do from ancient.

[c] The meaſurements on the chart were made with a due allowance for the difference of the degrees of longitude in different latitudes.

The

The laſt inſtance I ſhall produce from Arrian ſhews a nearer coincidence. From Ceraſus to Trapezus is, according to Arrian, 745 ſtadia. It meaſures on D'Anville's map 660 ; and, with the addition of $\frac{1}{8}$, = 85 ſtadia, makes up 745, agreeing exactly with Arrian. Arrowſmith's chart agrees nearly herewith. It meaſures by that 649 ſtadia; and, with the addition of $\frac{1}{8}$, equal to 81 ſtadia, makes up 730 ſtadia ; not differing ſo much as two Greek miles from the calculation of Arrian.

There is in the 28th volume of the Mémoires de Littérature, page 362, a paper written by Mr. De la Nauze, on this ſubject. He is of opinion that Herodotus, Xenophon, Ariſtotle, and other writers of antiquity, employed a ſtadium of ten to a mile. He begins his proof of this with ſaying, that Herodotus aſcribes fifty fathoms, or ὀργυιαὶ, to the depth of the lake Mœris in Egypt, which is rendered by Pliny fifty paces ; and as the former of theſe meaſures was to the latter in the proportion of 6 to 5, he inferred that the ſtadia of Herodotus were ten to a mile. But firſt, the proportion of 6 to 5 is not correctly the ſame with that of ten to eight. 6 : 5 : : 10 : 8.333. Again, there is reaſon to think that the paſſus, when applied to explain the ὀργυιὰ, means ſix feet, and refers to the expanſion of the arms, not of the legs. Pitiſcus's Lexicon derives it " a paſſis vel expanſis brachiis, et dicitur Græcis ὀργυιὰ, " quæ eſt menſura ſex pedum, quæ inter ambas manus, menſurato " ſimul pectore, continetur expanſas."

Another inſtance adduced by Mr. La Nauze is taken from the ſuppoſed diſtance between Epheſus and Sardis. But this has been ſo differently computed by geographers, modern as well as ancient, that it is difficult to draw any concluſion.

Diſtance

Diſtance from Epheſus to Sardis.

According to Herodotus 540 Olympic ſtadia.
According to Mr. La Nauze, from De Liſle's map of Ancient Greece, 37° = 42.704 Engliſh miles, = 373.075 Olympic ſtadia.
According to Mr. D'Anville, 480 Olympic ſtadia.
According to Mr. Rochette, 66 Engliſh miles, = 576 ſtadia.
According to Mr. Arrowſmith, 59′ 30″, = 68.623 Engliſh miles, = 602.5 Olympic ſtadia.

It muſt be obſerved, that theſe calculations of the modern geographers refer to the direct diſtance. If $\frac{1}{8}$ be added, it will ſtand thus:

De Lisle.

$37 + \frac{1}{8}$ (=4.625) = 41.625 = 48.48 Engliſh miles, = 423 Olympic ſtadia;

which laſt number is to that aſſigned by Herodotus, (540) as 8 to 10.2126; and of courſe ſhould give the laſt-mentioned number for that of the ſtadia contained in a mile.

D'Anville, *Map of Aſia Minor.*

$480 + \frac{1}{8}$ (= 60) = 540;

the ſame with Herodotus, and eight to a mile.

Rochette, *Map of Greece.*

66 Eng. miles, $+\frac{1}{8}$ (=8.25) = 74.25 = 648.7 Olympic ſtadia, or 6.6595 to a mile.

Arrowsmith, *Map of Turkey in Europe.*

68.623 + $\frac{1}{8}$ (=8.57) = 77.201 = 675 Olympic ſtadia, or 6.4 to a mile;

which makes the ſtadium of Herodotus longer than the uſual computation of the Olympic in the proportion of 5 to 4. For 5 : 675 : : 4 : 540.

This

This inſtance then, if it proves any thing, proves the direct contrary to the opinion of Mr. La Nauze.

The ſame gentleman again alledges, that Herodotus has eſtimated a ſhip's ſailing for a day and a night at 1300 ſtadia; whereas Ptolemy allows 1000 ſtadia only; which difference he ſuppoſes to be owing to their employing ſtadia of different lengths. But the voyage of Scylax, whoſe date, though not aſcertained, is confeſſedly much prior to the age of Ptolemy, allows no more than 1000 ſtadia; and Herodotus ſpeaks of 700 ſtadia as a long day's ſail; μακρημερίη: and the words, which aſſign 600 ſtadia as a night's ſail, are in many copies wanting altogether.

The ancient writers made a great difference between a long day's ſail and one of a common day. Xenophon ſays, that a trireme galley could row, in a very long day, (Ἡμέρας μάλα μακρὰς πλοῦς,) from Byzantium to Heraclea; which diſtance is, by Arrowſmith's chart of the Black ſea, 131 Engliſh miles, or 1144 Olympic ſtadia. The longeſt day in that latitude is leſs than 15 hours, and the complement of this number to 24 would allow time ſufficient to complete a voyage of more than 1300 ſtadia (ſuppoſing them to be Olympic) in a day and night.

The laſt inſtance I mean to cite from Mr. La Nauze does, I think, no credit to his candour. He ſays, that Herodotus lays down 200 ſtadia as the extent of a day's journey of a foot traveller; and that Vegetius had mentioned 20 miles as the day's march of the Roman ſoldiers; which, he obſerves, is juſt ten ſtadia to a mile. But Herodotus expreſsly refers to the diſtance travelled by a foot meſſenger, not to the march of armies. When the latter

latter is underſtood, he aſſigns 150 ſtadia only, or 18¾ Roman miles, a diſtance ſufficiently near to Vegetius's calculation.

The above facts and arguments will, I truſt, prove that, where the ſtadium is mentioned, and no ſpecification of a different meaſure appears, the Olympic ſtadium of eight to a mile is underſtood; eſpecially in the earlier writers, as Herodotus, Xenophon, Diodorus, Strabo, Arrian, and even Pauſanias.

APPENDIX.

APPENDIX.

THE learned Biſhop of St. Aſaph, Dr. Horſley, in a note annexed to Dr. Vincent's Account of the Voyage of Nearchus, has expreſſed himſelf to be of a different opinion, reſpecting the length of the ſtadium, from the one above ſpecified. I ſhall take the liberty of examining briefly his Lordſhip's arguments; and muſt requeſt the reader's patience, if I repeat ſome part of what has been urged in the foregoing Diſſertation.

He begins with obſerving, that the circumference of the earth amounted, according to Eratoſthenes's calculation, to 252,000 ſtadia; and, according to Ariſtotle, to 400,000 ſtadia; and infers from thence that the ſtadium of Ariſtotle was to the ſtadium of Eratoſthenes as 252 is to 400, or very nearly as five to eight.

But this propoſition takes it for granted that Ariſtotle and Eratoſthenes agreed in opinion reſpecting the dimenſions of the earth, and differed only in reſpect to their eſtimations of the meaſure which each of them reſpectively employed; a poſition which can by no means be admitted.

It does not appear on what grounds Ariſtotle[a], or rather the mathematicians of his age, eſtimated the circumference of the earth to be 400,000 ſtadia: but this is certain, that Eratoſthenes did not borrow his calculations from them, but formed his opinion from obſervations of his own, which are yet preſerved. He attempted this arduous taſk by an actual meaſurement of a ſegment of a great circle on the globe, making his computation upon the whole by uniting obſervations made in the heavens with a correſponding diſtance, meaſured (as it was ſuppoſed to be) on a meridian of the earth.

The ſegment of the meridian, which he fixed on for this purpoſe, was that between Alexandria and Syene, the diſtance between which places he is ſaid to have meaſured, and found to be 5000 ſtadia. He alſo found that the angle of the meridian ſhadow upon the ſcaphia or ſun-dial at Alexandria was equal, at the ſummer ſolſtice, to $\frac{1}{50}$ part of the circle; and that there was no ſhadow from the gnomon at Syene at the ſame period of time, and at the ſame inſtant of the day.

Suppoſing then Alexandria and Syene to lie under the ſame meridian, he concluded that the diſtance between them was $\frac{1}{50}$ part of a great circle of the earth; and this diſtance being (as was ſuppoſed) by meaſure, 5000 ſtadia, the whole circumference of the earth muſt be of courſe 250,000 ſtadia. But in the account of this proceſs, which is accurately detailed by Cleomedes, not a

[a] Dr. Blair ſuggeſts, that this may be an objection to that work being written by Ariſtotle, as Eratoſthenes was generally allowed to be the firſt who attempted that menſuration. Blair's Hiſt. of Geography.

word

word occurs reſpecting the calculation of Ariſtotle, who, I believe, however great in other inſtances, had not much ſkill in aſtronomy.

Dr. Long laments "that the Babylonic Obſervations, a treaſure "almoſt ineſtimable, and which he neither knew how to make "uſe of himſelf, nor ſo much of their value as to induce him to "uſe the neceſſary means for their preſervation, for the uſe of "thoſe who did, had not fallen into the hands of Eudoxus, ra-"ther than into thoſe of Ariſtotle."

There is then neither proof nor preſumption that Eratoſthenes accommodated his calculation to that of Ariſtotle; or that the itinerary ſtadium was leſs in the time of Ariſtotle than it was in that of Eratoſthenes[b]. But I fear we can place no great confidence either in the obſervations or in the meaſurements of Eratoſthenes. He thought that Alexandria and Syene lay under the ſame meridian; whereas they are found to differ by a ſpace equal to 100 minutes of latitude, equal nearly to 115½ Engliſh miles, Alexandria being ſo much to the weſt of Syene. The difference of latitude is about 7° 20′; ſo that the real diſtance between the two places is about 521 Engliſh miles, equal nearly to 4552 Olympic ſtadia.

This falls ſhort of Eratoſthenes's calculation by 448 ſtadia, equal to 51 Engliſh miles: but we muſt conſider that the diſtance laid down by Eratoſthenes is the one found by meaſurement, which muſt exceed the difference of latitude, ſince the meaſurers

[b] Eratoſthenes lived about 123 years after Ariſtotle.

did

did not diſcover that the two places lay under different meridians. The numbers of Eratoſthenes above ſpecified were not however acquieſced in by ſucceeding aſtronomers, ſince Marinus and Ptolemy allotted, as Dr. Blair obſerves, no more than 3600 ſtadia[c] to that diſtance; as the ſeven degrees twelve minutes (a calculation of the latitude not very different from that of Mr. D'Anville before-mentioned) amounted exactly to that number on the proportion of 500 ſtadia to a degree; which, Ptolemy tells us, was agreeable to menſurations allowed and acknowledged.

The learned Prelate's calculations in the next paragraph are rather incorrect. He ſtates the proportion of the Roman foot to the Engliſh to be as 97 : 100; whereas it appears from Greaves, whoſe meaſurement the Biſhop ſeems to have adopted, to be only 967 : 1000; which makes a difference of nearly $\frac{1}{33\frac{1}{4}}$ part, and amounts nearly to 16 feet in the ſpace of an Engliſh mile; which, although an inconſiderable difference in ſmall diſtances, is neceſſary to be taken into account in the eſtimation of large extents; and this error, by over-rating the length of the Roman foot, vitiates in ſome meaſure his ſubſequent calculations.

This appears in the next ſentence of his Lordſhip's obſervations; where he urges, "that if eight Olympic ſtadia were equal to a "Roman mile, and that Polybius's addition of $\frac{1}{3}$ of a ſtadium was "an error of his own, ariſing from the difference between the "Roman and the Olympic foot, then one Olympic ſtadium would "be 606.25 feet, London meaſure;" which computation over-rates

[c] 3600 × 50 gives only 180,000 ſtadia, or 20603.4 Engliſh miles, for the circumference of the earth.

the

the length of the ſtadium by one foot and 875 decimal parts, equal to 22.5 inches, amounting to more than 15 feet in the extent of an Engliſh mile.

The Biſhop next lays it down, that the opinion of the Greek foot being to the Roman in the proportion of 25 to 24 was erroneous, though current among the Romans themſelves. But it is difficult to ſuppoſe that perſons of rank, ſcience, and education among the Romans were ignorant of the difference between the Greek and the Roman foot, when we conſider the intimate connection which ſubſiſted between the two countries; or that Pliny, perhaps the moſt learned and philoſophical man of the age in which he lived, and who, as appears from works of his, publiſhed by himſelf, and ſtill extant, beſtowed much labour on geographical reſearches, would aſſign 625 feet to a ſtadium, when he muſt know that 600 only was the proper quantity, and that too in a paſſage, wherein he was ſpeaking of the ſtadium only, without any reference to the mile.

Nor can I admit with the learned Prelate, that the Romans, even in their popular valuation of the Greek meaſures, would be apt to reckon eight Olympic ſtadia to be exactly equal to their own mile, taking no account of the fraction mentioned by Polybius, ſuppoſing that ſuch an addition was neceſſary to complete the true extent of the mile.

Can we ſuppoſe this to have been the caſe with thoſe perſons to whom the care of the menſuration of theſe diſtances was committed, when we are told by Polybius, not at ſecond-hand, as in the quotation from Strabo, but in a paſſage now extant in his original

original works, " that the diſtances between places were diſtinctly " and accurately marked and divided by the Romans into portions " of eight ſtadia each ?"

Would it have been conſiſtent with the character of theſe menſores terrarum [d], perſons of rank entruſted with this charge by public authority, to have neglected one part in twenty-five of the diſtance which they were directed to meaſure, which, in large extents, would have amounted to a conſiderable ſpace?

Thus Herodotus tells us, that the circumference of the lake Mœris amounted to 3600 ſtadia; which extent is eſtimated by Mucianus, a perſon of the greateſt authority, and frequently appealed to by Pliny, to be 450 M. P. which is eight ſtadia, and no more, to a mile. Had the third part of a ſtadium been added, it would have amounted only to 432 M. P. or about 18 miles ſhort of Mucianus's calculation; a ſpace too large to be properly overlooked in any ſurvey that pretends to accuracy.

Again, Pliny tells us, that the 252,000 ſtadia, which Eratoſthenes computed to be the circumference of the earth, amounted in Roman meaſure to 31,500 M. P. This, it is obvious, is no more than eight ſtadia to a mile; and it is ſurely very improbable, if Pliny had known (as he muſt have done, had it really been the caſe) that $\frac{1}{3}$ of a ſtadium was neceſſary to be added to make up the

[d] In judicando, menſor bonum virum et juſtum agere debet, nulla admonitione aut ſordibus moveri, ſervare opinionem, et arte et moribus omnis illi artificii veritas cuſtodienda eſt. Totum autem hoc judicandi officium hominem bonum, juſtum, ſobrium, caſtum, modeſtum, et artificem egregium exigit. Aggen. Urbicus de Officio Menſoris.

Via eſt illi ſua lectio, oſtendit quod dicit, probat quod didicit. Caſſiodor. Var. iii. 53.

mile,

mile, that he did not take ſuch an additional quantity into the account, where it would make ſo great a difference.

Two hundred and fifty-two thouſand ſtadia, at eight ſtadia and one-third to the mile, amount only to 30,240 M. P. which is 1260 M. P. ſhort of Pliny's calculation. Can we then ſuppoſe that Pliny, on whoſe ſcientific character it is needleſs to enlarge, would knowingly have paſſed over, as not worthy notice, a ſpace, which, at 75 M. P. to a degree, amounts nearly to 17 degrees of latitude, or about 1153 Engliſh miles?

But the learned Prelate would do well to conſider, that Pliny is not the only Roman writer who has aſſigned 625 feet to the ſtadium. Columella, in a part of his work above cited, which was written profeſſedly to explain the præcepta menſurarum, allots the ſame number with Pliny, both of paces and of feet; and Cenſorinus, Frontinus, together with the authors of the treatiſe de Limitibus, and that de Menſuris, preſerved among the Rei Agrariæ Auctores, all concur in giving the ſame deſcription of this meaſure. Is it poſſible to ſuppoſe writers of ſuch rank and accuracy all uniting in the ſame miſtake, reſpecting a circumſtance of ſuch common occurrence? Is it not more reaſonable and more natural to ſuppoſe the meaning of Polybius to be, that the ſtadium, meaſured by 600 Roman feet, would be defective one part in 24, compared with its length, if meaſured by the ſame number of Greek feet; and that therefore it would be neceſſary to add $\frac{1}{24}$ part, or 25 additional Roman feet, to make up the deficiency? and that theſe 25 feet were really added, the teſtimonies above produced demonſtrate.

The Olympic foot, we are expreſsly told by Aulus Gellius, exceeded the common foot in the ſame proportion as the foot of Hercules exceeded in length the foot of an ordinary man; and this difference appears to be in the proportion of 25 to 24.

It is proper to remark, that all the Greek writers, who deſcribe the Olympic or itinerary ſtadium, and who might be ſuppoſed to reckon by Greek feet, as Herodotus, Hero, and Suidas, concur in aſſigning to this meaſure 600 feet. On the other hand, all the Latin or Roman writers, to whom the Roman foot was more familiar, who deſcribe the ſtadium in uſe among the Romans, uniformly aſcribe to it the meaſure of 625 feet. Yet we have no reaſon to think that the Greek and the Roman ſtadium were of different dimenſions.

The Greek foot, as deduced by Mr. Stuart, from meaſurements of different parts of the Hecatompedon at Athens, exhibits, as I have before ſhewn, as nearly as poſſible, allowing for ſmall inaccuracies in the menſuration, and perhaps for ſome in the conſtruction of the building itſelf, the proportion of 25 to 24, as compared with the Roman foot deſcribed by Mr. Greaves to be ſculptured on the marble monument of Coſſutius at Rome; which proportion coincides with the difference of the number of feet aſſigned to the ſtadium by the Greek, and that aſſigned to the ſame meaſure by the Latin or Roman writers. If Hercules was taller than other men, "aliorum procerius," as it is expreſſed by Aulus Gellius, the meaſure taken from his foot, ſuppoſing that to be in proportion with the reſt of his body, muſt exceed the uſual meaſure of length; and of courſe fewer Herculean feet than feet of the uſual ſize would be required to make up a given length. To this

we

we may add, that the proportion of 25 to 24 is no extravagant or improbable exceſs of ſtature above that of ordinary men, for one ſo celebrated for ſtrength, activity, and other athletic exerciſes, as Hercules is reported to have been.

Suppoſing the height of an ordinary man to be five feet ten inches, Engliſh meaſure, the addition of a 24th part will make that of Hercules to have been rather under ſix feet and one inch, which is no extraordinary height, though ſuperior to the common ſtandard of mankind.

TABLES

OF

THE PROPORTION

WHICH

ANCIENT MEASURES OF LENGTH

BEAR TO

ENGLISH MEASURE.

TO WHICH IS ADDED,

A TABLE

OF THE

EXTENT OF THE DEGREES OF LONGITUDE,

AT EVERY TEN MINUTES OF LATITUDE,

RECKONED FROM

THE EQUATOR TO THE POLE.

TABLE I.

Table of the proportion which Greek Stadia bear to Greek Miles, to Engliſh Miles, and to Engliſh Feet.

Greek Stadia.	Greek Miles and decimal parts.	Engliſh Miles and decimal parts.	Engliſh Feet and decimal parts.	Greek Stadia.	Greek Miles and decimal parts.	Engliſh Miles and decimal parts.	Engliſh Feet and decimal parts
1 equal to	.125	.114465	604.374[a]	17 equal to	2.125	1.945875	10274.358
2	.25	.228930	1208.748	18	2.25	2.06034	10878.732
3	.375	.343395	1813.122	19	2.375	2.174805	11483.106
4	.5	.457860	2417.496	20	2.5	2.289300	12087.48
5	.625	.572325	3021.87	21	2.625	2.403765	12691.854
6	.75	.686790	3626.244	22	2.75	2.518230	13296.228
7	.875	.801255	4230.618	23	2.875	2.632695	13900.602
8	1.	.915720	4834.992	24	3.	2.747150	14504.976
9	1.125	1.030185	5439.366	25	3.125	2.861615	15109.25
10	1.25	1.144650	6043.74	26	3.25	2.976070	15713.724
11	1.375	1.259115	6648.114	27	3.375	3.090535	16318.098
12	1.5	1.373570	7252.488	28	3.5	3.205000	16922.472
13	1.625	1.488025	7856.862	29	3.625	3.319465	17526.846
14	1.75	1.602490	8461.236	30	3.75	3.43395	18131.22
15	1.875	1.716955	9065.61	31	3.875	3.548415	18735.594
16	2.	1.831410	9669.984	32	4.	3.66288	19339.968

[a] The length of the Greek ſtadium, expreſſed as here laid down in Engliſh feet, is correct according to the numbers given by Mr. Greaves, who has employed only two places of decimal figures. If we extend theſe to ſix figures, (and it may be done indefinitely,) the proportion will be as below ſtated.

$$24 : 25 :: 967 : 1007.291666$$

Again, $1007.291666 \times 12 \div 1000 = 12.087509992$

Again, $12.087509992 \times 600 = 7252.5059952$

Again, $7252.5059952 \div 12 = 604.3754933$

which differs from the calculation uſed in the Tables leſs than .018 decimals of an inch, or conſiderably leſs than $\frac{1}{50}$ part of an inch in the extent of a ſtadium.

TABLE I. CONTINUED.

Greek Stadia.	Greek Miles and decimal parts.	Engliſh Miles and decimal parts.	Engliſh Feet and decimal parts.
33 equal to	4.125	3.777345	19944.342
34	4.25	3.891810	20548.716
35	4.375	4.006275	21153.090
36	4.5	4.120740	21757.464
37	4.625	4.235205	22361.838
38	4.75	4.34967	22966.212
39	4.875	4.464135	23571.586
40	5.	4.57860	24174 96
41	5.125	4.693065	24779.334
42	5.25	4.807535	25383.708
43	5.375	4.921995	25988.082
44	5.5	5.036460	26592.456
45	5.625	5.150925	27196.830
46	5.75	5.265390	27801.1204
47	5.875	5.379855	28405.578
48	6.	5.494320	29009.952
49	6.125	5.608785	29614.326
50	6.25	5.723250	30218.7
51	6.375	5.837715	30823.074
52	6.5	5.952180	31427.448
53	6.625	6.056645	32031.822
54	6.75	6.171110	32636.196
55 equal to	6.875	6.295575	33240.570
56	7.	6.410040	33844.944
57	7.125	6.524505	34449.318
58	7.25	6.638970	35053.692
59	7.375	6.753435	35658.066
60	7.5	6.8679	36262.44
100	12.5	11.4465	60437.4
200	25.	22.893	120874.8
300	37.5	34.3395	181312.2
400	50.	45.786	241749.6
500	62.5	57.2325	302187
600	75.	68.6789	362624.4
700	87.5	80.1255	423061.8
800	100.	91.572	483499.2
900	112.5	103.0185	543936.6
1000	125.	114.465	604374
2000	250.	228.930	1,208748
3000	375.	343.395	1,813122
4000	500.	457.86	2,417496
5000	625.	572.325	3,021870
10,000	1250.	1144.65	6,043740
20,000	2500.	2289.3	12,087480

TABLE II.

Of the proportion which Engliſh Miles bear to Greek Stadia.

Engliſh Miles and decimal parts.	Greek Stadia and decimal parts.	Engliſh Miles and decimal parts.	Greek Stadia and decimal parts.	Engliſh Miles and decimal parts.	Greek Stadia and decimal parts.
$\frac{1}{8}$ or .125 equal to	1.09203925	17 equal to	148.517338	40 equal to	349.45256
$\frac{1}{4}$ or .25	2.18407850	18	157.253652	41	358.188874
$\frac{3}{8}$ or .375	3.27611775	19	165.989966	42	366.925188
$\frac{1}{2}$ or .5	4.36815700	20	174.726280	43	375.661502
$\frac{5}{8}$ or .625	5.46019625	21	183.462591	44	384.497816
$\frac{3}{4}$ or .75	6.55223550	22	192.198908	45	393.134130
$\frac{7}{8}$ or .875	7.64427475	23	200.935222	46	401.870444
1	8.736314	24	209.671536	47	410.606758
2	17.472628	25	218.407850	48	419.343072
3	26.208942	26	227.144164	49	428.079386
4	34.945256	27	235.880478	50	436.81570
5	43.681570	28	244.616792	51	445.552014
6	52.417884	29	253.352106	52	454.288328
7	61.154198	30	262.08942	53	463.024642
8	69.890512	31	270.825734	54	471.760956
9	78.626826	32	279.562048	55	480.497270
10	87.36314	33	288.298362	56	489.233584
11	96.099454	34	297.034676	57	497.969898
12	104.835768	35	305.770990	58	506.706212
13	113.572082	36	314.507304	59	515.442526
14	122.308396	37	323.243618	60	524.17884
15	131.044710	38	331.979932	100	873.6314
16	139.781024	39	340.716246	200	1747.2628

TABLE II. CONTINUED.

Engliſh Miles.	Greek Stadia and decimal parts.	Engliſh Miles.	Greek Stadia and decimal parts.	Engliſh Miles.	Greek Stadia and decimal parts.
300 equal to	2620.8942	800 equal to	6989.0152	4000 equal to	34945.256
400	3494.5256	900	7862.6826	5000	43681.570
500	4368.1570	1000	8736.314	10,000	87363.14
600	5241.7884	2000	17472.628	20,000	174726.28
700	6115.4198	3000	26208.942		

TABLE III.

Greek Feet reduced to Engliſh Meaſure.

Greek Feet.	Engliſh Feet, Inches, &c.			Greek Feet.	Engliſh Feet, Inches, &c.		
	Feet.	Inches.	Decimals of an Inch.		Feet.	Inches.	Decimals of an Inch.
1 equal to	1		08748	26 equal to	26	2	27448
2	2		17496	27	27	2	36196
3	3		26244	28	28	2	44944
4	4		34992	29	29	2	53692
5	5		43740	30	30	2	62440
6	6		52488	31	31	2	71188
7	7		61236	32	32	2	79936
8	8		69984	33	33	2	88684
9	9		78732	34	34	2	97432
10	10		87480	35	35	3	06180
11	11		96228	36	36	3	14928
12	12	1	04976	37	37	3	23678
13	13	1	13724	38	38	3	32424
14	14	1	22472	39	39	3	41172
15	15	1	31220	40	40	3	49920
16	16	1	39968	41	41	3	58668
17	17	1	48716	42	42	3	67416
18	18	1	57464	43	43	3	76164
19	19	1	66212	44	44	3	84912
20	20	1	74960	45	45	3	93660
21	21	1	83708	46	46	4	02408
22	22	1	92456	47	47	4	11156
23	23	2	01204	48	48	4	19904
24	24	2	09952	49	49	4	28652
25	25	2	18700	50	50	4	37400

TABLE III. CONTINUED.

Greek Feet.	Engliſh Feet, Inches, &c.			Greek Feet.	Engliſh Feet, Inches, &c.		
	Feet.	Inches.	Decimals of an Inch.		Feet.	Inches.	Decimals of an Inch.
51 equal to	51	4	46148	400 eq. to	402	10	99200
52	52	4	54896	500	503	7	74000
53	53	4	63634	600 equal to a ſtadium.	604	4	48800
54	54	4	72392				
55	55	4	81140	700	705	1	23600
56	56	4	89888	800	805	9	98400
57	57	4	98636	900	906	6	73200
58	58	5	07384	1000	1007	3	48000
59	59	5	16132	2000	2014	6	96000
60	60	5	24880	3000	3021	10	44000
100	100	8	74800	4000	4029	1	80000
200	201	5	49600	5000	5036	5	40000
300	302	2	24400	6000	6043	8	88000

TABLE IV.

Of the proportion which the Minutes upon the Equator, reckoned from one to ſixty, bear to Engliſh Miles and decimal Parts, to Engliſh Feet, and to Greek Stadia and decimal Parts.

N. B. A Degree is reckoned to contain 365640 Engliſh Feet, according to Mr. Picart's calculation.

Minutes.	Engliſh Miles.	Engliſh Feet.	Greek Stadia.	Minutes.	Engliſh Miles.	Engliſh Feet.	Greek Stadia.
1 eq. to	1.154166	6094	10.083127	22 eq. to	25.391652	134068	221.828794
2	2.308332	12188	20.166254	23	26.545818	140162	231.911921
3	3.462498	18282	30.249381	24	27.699984	146256	241.995048
4	4.616664	24376	40.332508	25	28.854150	152350	252.078175
5	5.770830	30470	50.415633	26	30.008316	158444	262.161302
6	6.924996	36564	60.498762	27	31.162482	164538	272.244429
7	8.079162	42658	70.581889	28	32.316648	170632	282.327556
8	9.233328	48752	80.665116	29	33.470814	176726	292.410683
9	10.387494	54846	90.748143	30	34.624980	182820	302.494900
10	11.54166	60940	100.831270	31	35.779146	188914	312.576937
11	12.695826	67034	110.914397	32	36.933312	195008	323.660064
12	13.849992	73128	120.997524	33	38.087478	201102	332.743191
13	15.004158	79222	131.080651	34	39.241644	207196	342.826318
14	16.158324	85316	141.163778	35	40.395810	213290	352.909445
15	17.312490	91410	151.246905	36	41.549976	219384	362.992572
16	18.466656	97504	161.330032	37	42.704142	225478	373.075699
17	19.620822	103598	171.413159	38	43.858308	231572	383.158826
18	20.774988	109692	181.496286	39	45.012474	237666	393.241953
19	21.929154	115786	191.570413	40	46.166640	243760	403.325080
20	23.083320	121880	201.66254	41	47.320806	249854	413.408207
21	24.237486	127974	211.745667	42	48.474972	255948	423.491334

TABLE IV. CONTINUED.

Minutes.	Engliſh Miles.	Engliſh Feet.	Greek Stadia.	Minutes.	Engliſh Miles.	Engliſh Feet.	Greek Stadia.
43 eq. to	49.629	262042	433.574461	52 eq. to	60.016632	316888	524.322604
44	50.783304	268136	443.657588	53	61.170798	322982	534.405731
45	51.937470	274230	453.740715	54	62.324964	329076	544.488858
46	53.091636	280324	463.823842	55	63.479130	335170	554.571985
47	54.245802	286418	473.906969	56	64.633296	341264	564.655112
48	55.399968	292512	483.990096	57	65.787462	347358	574.738239
49	56.554134	298606	494.073223	58	66.941628	353452	584.821366
50	57.70830	304700	504.156350	59	68.095794	359546	594.904493
51	58.862466	310794	514.239477	60	69.25	365640	604.9898

TABLE V.

Of the extent of the Degrees of Longitude in Engliſh Miles and decimal Parts, at every ten Minutes of Latitude, reckoned from the Equator to the Pole.

Degrees.	Minutes.	Length of Degrees of Longitude in Engliſh Miles.	Degrees.	Minutes.	Length of Degrees of Longitude in Engliſh Miles.	Degrees.	Minutes.	Length of Degrees of Longitude in Engliſh Miles.
Equator.		69.25	4		69.08130	8		68.57680
	10	69.24973	4	10	69.06700	8	10	68.54773
	20	69.24885	4	20	69.05203	8	20	68.51883
	30	69.24736	4	30	69.03650	8	30	68.48936
	40	69.24531	4	40	69.02043	8	40	68.45930
	50	69.24271	4	50	69.00375	8	50	68.42865
1		69.23945	5		68.98648	9		68.39740
1	10	69.23565	5	10	68.96863	9	10	68.36563
1	20	69.23125	5	20	68.95020	9	20	68.33323
1	30	69.22646	5	30	68.93120	9	30	68.30360
1	40	69.22086	5	40	68.91160	9	40	68.26675
1	50	69.21454	5	50	68.89142	9	50	68.23263
2		69.20783	6		68.87600	10		68.19800
2	10	69.20500	6	10	68.84915	10	10	68.16268
2	20	69.19260	6	20	68.82740	10	20	68.12683
2	30	69.18410	6	30	68.80486	10	30	68.09400
2	40	69.17500	6	40	68.78173	10	40	68.05340
2	50	69.16535	6	50	68.76600	10	50	68.01583
3		69.15510	7		68.73366	11		67.97770
3	10	69.14426	7	10	68.70900	11	10	67.93880
3	20	69.13285	7	20	68.68354	11	20	67.89966
3	30	69.12085	7	30	68.65756	11	30	67.85980
3	40	69.10825	7	40	68.63100	11	40	67.81935
3	50	69.09510	7	50	68.60380	11	50	67.77837

Degrees.	Minutes.	Length of Degrees of Longitude in English Miles.
12		67.73671
12	10	67.69455
12	20	67.65181
12	30	67.60850
12	40	67.56460
12	50	67.52020
13		67.47510
13	10	67.42951
13	20	67.38340
13	30	67.33663
13	40	67.28930
13	50	67.24141
14		67.19300
14	10	67.14400
14	20	67.09436
14	30	67.04423
14	40	66.99350
14	50	66.94220
15		66.89036
15	10	66.83800
15	20	66.78500
15	30	66.73141
15	40	66.67730
15	50	66.61260
16		66.56736
16	10	66.51156
16	20	66.45520
16	30	66.39827
16	40	66.34078
16	50	66.28271
17		66.22410
17	10	66.16493
17	20	66.10520
17	30	66.04500
17	40	65.98460
17	50	65.92263
18		65.86066
18	10	65.79813
18	20	65.73504
18	30	65.67150
18	40	65.60721
18	50	65.54246
19		65.47716
19	10	65.41130
19	20	65.34490
19	30	65.27793
19	40	65.21040
19	50	65.14233
20		65.07371
20	10	65.00453
20	20	64.93480
20	30	64.86454
20	40	64.79373
20	50	64.7237
21		64.65044
21	10	64.57800
21	20	64.50500
21	30	64.43141
21	40	64.35731
21	50	64.28266
22		64.20750
22	10	64.13160
22	20	64.05550
22	30	63.97864
22	40	63.90130
22	50	63.82341
23		63.74494
23	10	63.66600
23	20	63.58646
23	30	63.50640
23	40	63.42583
23	50	63.34470
24		63.26330
24	10	63.18083
24	20	63.09100
24	30	63.01483
24	40	62.93130
24	50	62.84670
25		62.76181
25	10	62.67641
25	20	62.59050
25	30	62.50430
25	40	62.41743
25	50	62.33953
26		62.24150
26	10	62.15293
26	20	62.06383
26	30	61.97420
26	40	61.88460
26	50	61.79340
27		61.70220
27	10	61.61050
27	20	61.51825
27	30	61.42550
27	40	61.33223
27	50	61.23844
28		61.14413
28	10	61.04930
28	20	60 95400
28	30	60.85809
28	40	60.76171
28	50	60.66481
29		60.56741
29	10	60.46950
29	20	60.37107

Degrees.	Minutes.	Length of Degrees of Longitude in Engliſh Miles.
29	30	60.27214
29	40	60.17270
29	50	60.07274
30		59.97501
30	10	59.88507
30	20	59.76980
30	30	59.66783
30	40	59.56534
30	50	59.46234
31		59.35884
31	10	59.25483
31	20	59.15034
31	30	59.04534
31	40	58.93983
31	50	58.83383
32		58.72732
32	10	58.62032
32	20	58.51270
32	30	58.40487
32	40	58.29538
32	50	58.18740
33		58.08792
33	10	57.96814
33	20	57.85752
33	30	57.74660
33	40	57.63520
33	50	57.52326
34		57.41094
34	10	57.29796
34	20	57.18460
34	30	57.07074
34	40	56.95641
34	50	56.84160
35		56.72628
35	10	56.61050
35	20	56.49425
35	30	56.37750
35	40	56.26027
35	50	56.14260
36		56.02442
36	10	55.90580
36	20	55.78667
36	30	55.66710
36	40	55.54739
36	50	55.42651
37		55.30651
37	10	55.17135
37	20	55.06211
37	30	54.93963
37	40	54.80423
37	50	54.69353
38		54.56972
38	10	54.44550
38	20	54.32080
38	30	54.19562
38	40	54.0982
38	50	53.94390
39		53.81736
39	10	53.69035
39	20	53.56290
39	30	53.43510
39	40	53.30665
39	50	53.17783
40		53.04860
40	10	52.91887
40	20	52.78872
40	30	52.65811
40	40	52.52710
40	50	52.39560
41		52.26366
41	10	52.13126
41	20	51.99845
41	30	51.86518
41	40	51.73150
41	50	51.59735
42		51.46280
42	10	51.32777
42	20	51.19232
42	30	51.05646
42	40	50.91008
42	50	50.78341
43		50.64624
43	10	50.50864
43	20	50.37062
43	30	50.23220
43	40	50.0933o
43	50	49.95400
44		49.81430
44	10	49.67414
44	20	49.53358
44	30	49.39261
44	40	49.25115
44	50	49.10938
45		48.96714
45	10	48.83878
45	20	48.68143
45	30	48.53796
45	40	48.39410
45	50	48.24980
46		48.10510
46	10	47.96000
46	20	47.81448
46	30	47.66855
46	40	47.52224
46	50	47.37551

TABLE V. CONTINUED.

Degrees.	Minutes.	Length of Degrees of Longitude in Engliſh Miles.
47		47.22840
47	10	47.08085
47	20	46.93294
47	30	46.78462
47	40	46.63590
47	50	46.48680
48		46.33730
48	10	46.18740
48	20	46.03712
48	30	45.88644
48	40	45.73534
48	50	45.58391
49		45.43209
49	10	45.27992
49	20	45.12726
49	30	44.97428
49	40	44.82092
49	50	44.66716
50		44.51304
50	10	44.35854
50	20	44.20367
50	30	44.04842
50	40	43.89280
50	50	43.73671
51		43.58044
51	10	43.42371
51	20	43.26661
51	30	43.10915
51	40	42.95131
51	50	42.79312
52		42.63456
52	10	42.47565
52	20	42.31540
52	30	42.15673
52	40	41.99676
52	50	41.83640
53		41.67571
53	10	41.51464
53	20	41.35324
53	30	41.19149
53	40	41.02940
53	50	40.86693
54		40.70412
54	10	40.54100
54	20	40.37750
54	30	40.21367
54	40	40.04952
54	50	39.88501
55		39.72008
55	10	39.56410
55	20	39.38947
55	30	39.22362
55	40	39.05746
55	50	38.89094
56		38.72411
56	10	38.55694
56	20	38.38945
56	30	38.22164
56	40	38.05350
56	50	37.88534
57		37.71629
57	10	37.54715
57	20	37.36913
57	30	37.20800
57	40	37.03795
57	50	36.86759
58		36.69692
58	10	36.52593
58	20	36.35463
58	30	36.18325
58	40	36.01112
58	50	35.83890
59		35.66639
59	10	35.49357
59	20	35.32045
59	30	35.14732
59	40	34.97331
59	50	34.79930
60		34.62500
60	10	34.52981
60	20	34.27551
60	30	34.10033
60	40	33.92486
60	50	33.74911
61		33.57306
61	10	33.39674
61	20	33.22014
61	30	33.04324
61	40	32.86608
61	50	32.68863
62		32.51090
62	10	32.33290
62	20	32.15463
62	30	31.97610
62	40	31.79724
62	50	31.61820
63		31.43812
63	10	31.25922
63	20	31.07934
63	30	30.89920
63	40	30.71880
63	50	30.53813
64		30.35720
64	10	30.17602
64	20	29.99458

Degrees.	Minutes.	Length of Degrees of Longitude in Engliſh Miles.
64	30	29.81290
64	40	29.63095
64	50	29.44874
65		29.26631
65	10	29.08362
65	20	28.90071
65	30	28.71751
65	40	28.53410
65	50	28.35041
66		28.10172
66	10	27.98231
66	20	27.79800
66	30	27.61331
66	40	27.42852
66	50	27.24344
67		27.05813
67	10	26.87251
67	20	26.68682
67	30	26.50084
67	40	26.31461
67	50	26.13820
68		25.94150
68	10	25.75463
68	20	25.56752
68	30	25.38021
68	40	25.19261
68	50	25.00431
69		24.81700
69	10	24.62881
69	20	24.44044
69	30	24.25181
69	40	24.06308
69	50	23.87409
70		23.68490
70	10	23.49550
70	20	23.30591
70	30	23.11613
70	40	22.92614
70	50	22.73591
71		22.54551
71	10	22.35504
71	20	22.16521
71	30	21.97335
71	40	21.78222
71	50	21.59092
72		21.39941
72	10	21.20771
72	20	21.01590
72	30	20.82340
72	40	20.63162
72	50	20.43930
73		20.24674
73	10	20.05402
73	20	19.86112
73	30	19.66806
73	40	19.47428
73	50	19.28144
74		19.08790
74	10	18.89417
74	20	18.70030
74	30	18.50621
74	40	18.31207
74	50	18.11772
75		17.92322
75	10	17.72858
75	20	17.53380
75	30	17.33882
75	40	17.14372
75	50	16.94847
76		16.75310
76	10	16.55751
76	20	16.36190
76	30	16.16610
76	40	15.97015
76	50	15.77407
77		15.57785
77	10	15.38152
77	20	15.18505
77	30	14.98840
77	40	14.79170
77	50	14.59490
78		14.39760
78	10	14.22050
78	20	14.00360
78	30	13.80623
78	40	13.60878
78	50	13.40120
79		13.21323
79	10	13.03540
79	20	12.81782
79	30	12.61981
79	40	12.42170
79	50	12.22343
80		12.02510
80	10	11.82670
80	20	11.62820
80	30	11.43951
80	40	11.23081
80	50	11.03200
81		10.83308
81	10	10.63408
81	20	10.43500
81	30	10.23580
81	40	10.03650
81	50	9.81455

TABLE V. CONTINUED.

Degrees.	Minutes.	Length of Degrees of Longitude in Engliſh Miles.
82		9.63774
82	10	9.43822
82	20	9.23862
82	30	9.03894
82	40	8.83919
82	50	8.63935
83		8.43945
83	10	8.23942
83	20	8.03943
83	30	7.83932
83	40	7.63915
83	50	7.43890
84		7.23860
84	10	7.03823
84	20	6.83780
84	30	6.63732
84	40	6.43678
84	50	6.23618
85		6.03554
85	10	5.83484
85	20	5.63409
85	30	5.43329
85	40	5.23245
85	50	5.03156
86		4.83064
86	10	4.62967
86	20	4.42866
86	30	4.22761
86	40	4.02653
86	50	3.82541
87		3.62427
87	10	3.42301
87	20	3.22188
87	30	3.02064
87	40	2.81938
87	50	2.61809
88		2.41673
88	10	2.21546
88	20	2.01412
88	30	1.81275
88	40	1.61138
88	50	1.40998
89		1.20858
89	10	1.00716
89	20	.80574
89	30	.60431
89	40	.40288
89	50	.20144
90		.00000

TABLE VI.

Of the Greek Numerals, and of the Characters uſed by PTOLEMY *to expreſs Minutes of Longitude and Latitude.*

GREEK NUMERALS.

α 1	β 2	γ 3	δ 4	ε 5	ϛ 6	ζ 7	η 8	ϑ 9
ι 10	κ 11	λ 30	μ 40	ν 50	ξ 60	ο 70	π 80	ϟ 90
ρ 100	σ 200	τ 300	υ 400	φ 500	χ 600	ψ 700	ω 800	ϡ 900
α′ 1000	β′ 2000	γ′ 3000	ι′ 10,000	κ′ 20,000	ρ′ 100,000			

Characters uſed by Ptolemy to expreſs Minutes.

ιβ 5	ϛ 10	δ 15	γ 20	γιβ 25	Ļ′ 30	Ļ′ιβ 35	γο 40	Ļ′δ 45	Ļ′γ 50	Ļ′γιβ 55	α 60

THE END.

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84-B630