

retreat, from the field of battle in Babylonia to *Cotyora*; no less than 7 months must have been employed between the commencement of the expedition, which was at *Ephesus*, (Lib. II. c. 5), and the battle: and of course nearly a whole month must have been employed at *Sardis*, and on the march to it, from *Ephesus*. So that the commencement of the expedition, at *Ephesus*, may be reckoned to have taken place on the 7th of February, B. C. 401.

The detail giving, as we have before remarked, 87 days, from the time of arriving at the truce villages, to the first snow: places the latter event, on the 6th of December. Again, the same detail giving 69 days from the first snow to *Trebisonde*, fixes the arrival at that place to the 13th of February, B. C. 400.

The time between *Trebisonde* and *Cotyora*, is incompletely given; but, with the month spent at *Trebisonde*, and 10 days at *Cerazunt*, may be taken roundly at two months.

It has been remarked above, that *Xenophon* states the interval of time between the battle of *Cunaxa* and the arrival at *Cotyora*, at eight months; and that the detail falls short by about 3 weeks. For, as the arrival at *Trebisonde* is here fixed to the 13th of February; and that at *Cotyora* two months later, or to the 13th of April; whilst the battle is supposed to have been fought on the 7th September, it is evident that the interval of time, is short of 8 months, by 3 weeks: as also, that following *Xenophon's* account, the arrival at *Cotyora*, should be the 7th of May. One cannot hesitate to adopt *Xenophon's* time, in the aggregate; because it is probable that the length of the interval of time employed, during the retreat, was strongly impressed on his mind: so that it was always

present with him, although he might be unable to recollect the whole detail. And it is possible also, that his detail may have originally agreed with the aggregate, but has since been corrupted. One cannot suppose that he would palpably contradict himself.

Between *Cotyora* and *Chrysopolis* (at the *Bosphorus*), the time employed by the way, may easily be collected; but the length of their stay at *Heraclea*, any more than at *Calpé*, can only be guessed by circumstances. At the port of *Sinope* they staid 5 days. If the whole of their stay at *Heraclea* and *Calpé*, was equal to 18 or 20 days (and less can hardly be supposed), the whole time from their arrival at *Cotyora*, to their arrival at *Chrysopolis*, adding the 45 days sojourn at the former, may be taken at three months: and then their arrival at *Chrysopolis* would be about the 7th of August, according to the aggregate given by Xenophon.

As Xenophon says (Lib. VII. c. 48), that whilst the army was encamped in the open field, under the walls of *Perinthus*, it was "in the heart of winter," one cannot refer this expression to an earlier period than far on, in the month of December. It was immediately after this, that they joined Seuthes; very soon after which, we hear of the very severe cold, when the *wine* as well as the *water* was frozen in the vessels. And this may therefore have been about, or rather after, Christmas. So that the Greeks must have staid either at *Chrysopolis*, or in the neighbourhood of *Byzantium* or *Perinthus*, from the middle of August to the middle of December. With Seuthes they were two complete months; and it is said to have been *in winter*: which, it no doubt was: probably from the middle of December, to the middle of February.

It may be supposed, that after their engagement to serve with the Lacedæmonians, they lost no time in passing over into Asia. Dr. Forster supposes them to have been incorporated with the troops, under Thimbron, in March; which appears probable. So that the whole interval of time, between the departure of the expedition from *Sardis*, and the return of the remains of the army, to that neighbourhood (*Parthenium*), was full two years: in which the numbers were diminished about one half.

The following table is calculated, on the above supposition, that the Greeks forded the Euphrates, at *Thapsacus*, on the 5th of August; of their arrival at the truce villages, on the 10th of September; and of having the first snow in Armenia, on the 6th December.

The detail of the time, in the *Anabasis*, is the only guide to the comparative dates, until the arrival at *Cotyora*; when they are checked, by the interval of 8 months from the battle of *Cunaxa*; it being impossible to find out where the omissions lie; and what proportion of them were before, and what after the arrival at Trebisonde. Probably, the difference may be owing to the omission of days of halting, in the course of the detail.

Although in the arrangement of the following table, the gathering of the date fruit has chiefly determined the point of time, yet it is not improbable, that the Greeks may have arrived at the villages, at a period somewhat later; because the low state of the Euphrates, and the falling of the first heavy snows, would have been expected to happen rather later, than the point of time deduced from the gathering of the date fruit. It is evident, however, that of the three circumstances, that

respecting the date fruit, is the one that claims the chief regard, as being the most regular, in point of season.

Halts	As they left <i>Epbesus</i> 7 months before the battle, their departure may be reckoned		
Days	to be about the	7th Feb.	B. C. 401
	Left <i>Sardis</i> about	6th March	
20	Arrive at <i>Celæne</i>	20th —	
5	—— <i>Caystrus</i>	1st May	
20	—— <i>Tarsus</i>	6th June	
7	—— <i>Myriandrus</i>	6th July	
5	Ford the Euphrates at <i>Thapsacus</i>	5th August	
—	At the <i>Pylæ</i>	1st Sept.	
—	Battle of <i>Cunaxa</i>	7th —	
26	Arrive at the <i>Truce Villages</i>	10th —	
—	At <i>Sitace</i>	11th Oct.	
3	Massacre at the <i>Zabatus</i>	29th —	
—	Ascend the <i>Carduchian</i> mountains	20th Nov.	
—	First snow in <i>Armenia</i>	6th Dec.	
—	Crossed the <i>Eastern Euphrates</i>	13th —	
8	Arrive at the Villages of Refreshment	18th —	
—	—— the <i>Harpasus</i> river	19th Jan.	400
30	—— <i>Trebisonde</i>	13th Feb.	According to Xenophon
45	—— <i>Cotyora</i>	13th April	7th May
—	—— <i>Heraclea</i>	- -	1st July
—	—— <i>Chrysopolis</i> and the <i>Bosphorus</i>	- -	7th August
—	Join <i>Seuthes</i>	- -	5th Dec.
—	* — <i>Thimbron</i>	- -	5th March
			399

Dr. Forster supposes the following dates, p. 334 :

Battle of <i>Cunaxa</i>	-	At the latter end of September	B. C. 401.
In the snows of <i>Armenia</i>	-	Beginning of January	400.
Arrival at <i>Trebisonde</i>	-	Towards the end of February.	
Arrival at <i>Cotyora</i>	-	Beginning of June.	
Left <i>Cotyora</i>	-	Latter end of July.	
Joined <i>Seuthes</i>	-	End of November.	
—— <i>Thimbron</i>	-	In March	399



## CONCLUSION.

The Author has now, to the best of his ability, completed his plan; which had for its object, a critical examination of the Geography of the **EXPEDITION** of **CYRUS** the Younger, and the **RETREAT** of the **TEN THOUSAND GREEKS**; through those parts of their route, which stood the most in need of that kind of illustration. It must be acknowledged, that the first four books of the **ANABASIS**, contain the most interesting part of the whole: for although much information, and that of various kinds also, is contained in the three last books, yet the transactions are not of a character to interest so deeply; or to rise so high in our estimation. And perhaps the work might have been thought no less perfect, as a piece of history, (and doubtless much more dignified), had it terminated with the arrival of the Greeks at Trebisonde; and the remainder made a portion of general history. For one cannot but be disgusted, at finding those, who had so long figured as heroes, in the former part of the history, degenerated into pirates and buccaneers, towards the conclusion.

Of all the records of human actions, that have travelled down to us, this appears to be, on the whole, the best fitted to inspire confidence in our own resources. It ought therefore to be more particularly studied by military men; as containing many important lessons, as well of tactics, as of policy. The statesman will have impressed on his mind, the importance of a proper choice of commanders: such as may inspire confidence, rather than terror; and induce a pride of obedience, that rises superior to the frowardness of self-will; or

the impatience of bodily sufferings. By such men, discipline may be enforced, even in those ranks, where a spirit of liberty prevails, to the utmost extent; as amongst the Spartans and Athenians, of whom we have been speaking. A commander may also learn, from the unaffected details of Xenophon, to place his own transactions before the public eye, in a clear point of view: and in the recital of his own acts, to do himself ample justice, without offending the delicacy of his readers. But even the reader, who is neither a military man, nor a statesman, may find in the *Anabasis*, not only much rational amusement, but many lessons useful in common life. Moreover, we learn from this, and a few other instances, out of the ordinary course of events, what may be accomplished by exertion, aided by consummate wisdom and undaunted courage. The long continued struggle of the Greeks, with difficulties of every kind, stamps a degree of fame on their characters, superior to all that we meet with in history. Much fame is built on the trial of a single day: but in this case, the endurance of bodily sufferings, and privations, super-added to personal dangers, was such, as to exercise their patience and fortitude, not only for days, but for months; and these as constantly stood the trial.\*

\* We regard the courage and perseverance of our countryman, CAPTAIN, now ADMIRAL, WILLIAM BLIGH, and his boat's crew, as one of those remarkable instances.

Driven by mutineers from the command of his Majesty's ship *BOUNTY*, when in the Pacific Ocean, in 1789; he, with 17 others of the crew, was committed to an open boat, 30 feet in length; with a quantity of provisions equal only to about 9 days ordinary allowance, for that number of people (18 in all); and with water for little more than 3 days: but what proved of the utmost importance in the sequel, 8 bottles of wine and rum. With this *modicum* of provisions, he daringly undertook to conduct them to the Molucca Islands, three thousand six-hundred miles distant (which is 500 miles

more than the breadth of the Atlantic Ocean, between Portugal and Virginia), in the hopes of reaching their native country from thence. Of this distance, 2600 miles lay through the vast Pacific Ocean; the waves of which, during the frequent stormy weather, often curled over their heads, and threatened them with instant destruction. At the end of 48 days, they arrived at the island of Timor, having still remaining in store, 11 days provisions; which the PROVIDENT ATTENTION, the RESOLUTE DISCIPLINE, and the PATIENT EXAMPLE of the Commander, had induced them to reserve; that in the event of their missing Timor, they might be enabled to reach Batavia.

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The distresses of the Greeks, from the time of the massacre of their Generals, to their arrival at Trebisonde, continued about 106 days.

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## APPENDIX.

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## APPENDIX.

A PROPOSAL FOR THE IMPROVEMENT OF THE GEOGRAPHY OF THE ROUTE OF THE TEN THOUSAND, BY ENQUIRIES ON THE SPOT, CONCERNING THE POSITIONS OF CERTAIN PROMINENT POINTS : AND IN COMMON WITH IT, THAT OF ALEXANDER, THROUGH THE SAME COUNTRIES : THE WHOLE OF WHICH ENQUIRIES WILL BE EQUALLY APPLICABLE TO THE IMPROVEMENT OF MODERN GEOGRAPHY.

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## PART I.

*The Improvement of the Geography of the foregoing Route, might easily be accomplished, by the aid of Europeans, who travel on the score of curiosity in Asia—The benefit would extend to General Geography, at large : Modern as well as Ancient—The task to be divided amongst several travellers—Great simplicity of the process required—Observations are often neglected through diffidence of ability to make them—Enumeration of the principal positions which require correction ; with hints for the mode of proceeding—Asia Minor—Sinus Issicus—Syrian and Cilician Passes—Myriandrus—Course of the Euphrates—Field of Cunaxa—Median Wall—Sitace—Opis—River Tigris—Zabatus—Over-hanging Cliffs—Carduchian Mountains—*

Centrites and Teleboas .Rivers—Eastern Euphrates—Kha-noos—Villages of Refreshment—Harpasus, Gymnias, and Mount Theches, or Teke—Tumulus of Stones—Trebisonde.

## PART II.

*Concerning the modes of taking the direction of the route ; and of computing the distances—Substitute for the Magnetic Compass, when the latter cannot be conveniently used—Mode of using the Substitute—Examples—Modes of computing distances—Itinerary Measures, in Turkey, Persia, &c.—Remarks.*

1. **I**N this enterprising age of discovery, in which so many generous spirits have not only relinquished their comforts and their ease ; but have actually perished, in the attempt to add to the general stock of knowledge ; one may hope, or even expect, that some will be induced to try the experiment of improving the geography of the routes of Cyrus and of Xenophon ; in such parts as are at present the least known, or have been the least subjected to geographical arrangement. There can be little doubt, but that it may be greatly improved, by a diligent and careful attention to the objects around them. Moreover, the improvement of modern geography will be going on, at the same time with that of the ancient.\*

In the expectation that such may be the event, the author has judged, that a portion of his time may not be ill employed

\* And since Cyrus and Alexander passed at times over the same ground ; and at other times, very nearly over the same ; some particulars relating to the route of the latter, may doubtless be collected : as in *Cilicia*, and at the *Tigris*, &c.

in offering his sentiments on the most promising mode of pursuing the enquiry.

It may first be proper to state, that much valuable matter for the improvement of general geography may be collected, without any great exertion ; and by persons who possess the most moderate portion of mathematical knowledge ; and moreover with a very few portable instruments : that is to say, a pocket sextant, with an artificial horizon, and a small pocket compass. A watch, every traveller is provided with ; but in this case, it ought to be a good one ; as much will depend on knowing the exact time of day. Observations for the longitude are quite out of the question here.

It is probable, that it arises from a mistaken idea, that much previous knowledge is required, in order to be able to collect materials for geography ; that so few persons have attempted it. But a qualification is very easily obtained.

It happens that the points which require correction, are so numerous, and withal so widely dispersed, that it could not be expected, that any one person, whatsoever talents, leisure, and facilities, he might possess, would be equal to the task of examining the whole. Therefore, different travellers might confine their enquiries and examinations to such different parts of the route, as fell within the limits which they had prescribed for their respective tours. Thus, to supply what was wanting in *Asia Minor*, might be a sufficient task for one traveller ; a second might trace the general course of the Euphrates ; and a third might endeavour to fix certain critical points, or stations, along the Tigris ; as *Opis*, and the *over-hanging cliffs* : or even to trace the general course of the river itself. Others might examine the tract between the supposed position of



*Gymnias* and *Trebisonde*; as also the line of the route from the quarter of *Bedlis* (or from the northern foot of the *Kouristan* mountains, that is the *Carduchian*); to that of *Khanoos*; and to the *Euphrates*, in the line towards *Yezidkoi*, and *Koban-kupri*.

The different objects which are required, for the illustration of the geography of the *Anabasis*, will be given here, in regular succession, as they occur, in the course of the history; as this mode appears to afford the easiest means of reference; and to be the most favourable to the memory. But the enquirer, it is hoped, will not lose sight of the subject of the general geography at large; which is still so deplorably deficient, in that part of the world. For although he may fail in obtaining satisfaction, respecting the subject of the *Anabasis*; yet the result of every enquiry directed towards it, will infallibly produce materials for the improvement of general geography; both ancient and modern: so that it is barely possible that his time and labour should be lost.

The *outset*, through *Asia Minor*, requires more particularly, an attention to the positions of *Celænæ*, *Peltæ*, *Caystrus*, and *Tyana*: for although these may be received at present, as assumed positions, of sufficient authority to mark the progress of the armies, in a general way; yet they want the exactness required for systematic geography, even of the most general kind; *Peltæ* and *Tyana* in particular. As for the rest, as *Sardis*, *Colóssæ*, the *Kramians*, *Iconium*, *Tarsus*, and *Issus*; these perhaps may be regarded as fixed, in the view of general geography; at least, according to the mode in which any large portion of the Turkish empire, is likely ever to be done.

The whole route from *Tyana* to *Tarsus*, should be noted, in

respect of the *direction of its course*, and the distribution of the intervening objects; particularly the pass over Mount *Taurus* (commonly called, by the ancients, the pass of *Cilicia*), near *Tyana*; and the towns and villages now in existence. Enquiries should also be made, respecting the sites of those recorded in the ancient itineraries; amongst which, the one answering to *Podandus* (*Bodando*) is said to be still existing. The quality of the country should also be described; and in effect, every particular should be noted, that would enable the traveller to compare the ground with the description in *Xenophon*; and with the ancient itineraries: that named from *Jerusalem* more particularly.

The best guide to *Tyana*, is perhaps the village of *Anabil* or *Enabil*, situated in the road from *Kisariah* and *Develi-Karahissar*, to *Tarsus*; and at 6 hours travelling (of caravans) to the south-east of *Karahissar*. *Anabil* is presumed to be the *Andabalis* and *Andavilis* of the itineraries: and which was 16 Roman miles short of *Tyana*, in the way from *Archelais Colonia*, (which is supposed to have stood on, or near, the site of the present *Akserai*), to *Tarsus*. The traveller would do well to study the position and direction of this Roman road, as well as the modern ones in the same quarter; in order to be a perfect master of the nature of the communications, on which the movements of *Alexander*, as well as of *Cyrus* and *Xenophon*, are to owe their developement.\*

The gulf of *Issus*, or *Scanderoone*, furnishes so many

\* Enquiries might also be made, whether the names of *Thymbrium*, *Tyriaum*, *Philomelium*, and the *Camp of Cyrus*, at *Tyana*, are still known, in those countries; as also concerning the Roman Roads; and particularly that between *Dorylæum* and *Philomelium*.

important heads of enquiry, as would amply repay a deliberate survey of its whole extent : but at all events, the whole of its eastern coast, together with the two bays in which it terminates, on the north and south ; and the outlines of the *bases* of the adjacent mountains ; should be carefully examined : for on the knowledge of certain particulars, in this part, a right understanding and discrimination of the passes, so famous in the history of Alexander, and of the younger Cyrus, will be obtained. And this knowledge appears not only to be wanting at present, but to have been wanting amongst the Greeks and Romans, even at no long interval after the date of the transactions themselves.

The result of such an enquiry would probably be a more satisfactory proof of the site of *Issus* ; of the river *Pinarus*, which was near it ; of the ground which formed the *two maritime* passes (the one on the sea-shore, mentioned by Xenophon ; and that on the ascent, by Arrian) ; the ancient coast of the bay of *Myriandrus*, now filled up with alluvions ; together with the site of the city itself : and finally, the upper pass of *Amanus*, by which Darius advanced to *Issus*, whilst Alexander was seeking him on the side of *Syria*. (See above, page 38, *et seq.* )

Perhaps the best mode of pursuing this enquiry with effect, will be, first to seek the ruins of a gate, and a causeway leading from it, supposed to have been a street of the city of *Castabala*,\* (the *Catabolo* of the itinerary) situated at the northern

\* *Castabala* appears in Q. Curtius, on the route of Alexander. The *causeway*, as it is reckoned, is probably the pavement of a street of the city. The same circumstances occur in several other sites of cities, in the east ; where they pass for causeways.

extremity of the gulf of *Issus*, or *Scanderoone*. The gate is now named *Demir-kapi*.

From thence, southward, *Baiæ* (now *Bayas*) was 17 Roman miles:\* but *Issus*, and the river *Pinarus*, must have been short of *Bayas*; the former (supposed to have stood on the site of the present village of *Oseler*, called also *Karabolat*) about 6 or 7, and the latter 3 or 4 miles. It would be proper however, to note every rivulet of any size, together with its name, position, and direction.

The stream called *Deli-sou*, taken by the author, for the *Pinarus*, lies about midway between *Oseler* and *Bayas*; but nearest to the former. As the field of *Issus* is supposed to have been divided by this river, as being the only ground that suits the description given by *Arrian*, the observer cannot be too exact, in every particular relating to it. The course of the river should be traced, at least to the place where it issues from the mountains (*Amanus*); and it should be observed, whether in its passage through the opening, it does not form a deep bend towards the north, along a kind of bay or recess in the mountains; by which, those who stood at the remote part of the bay, on the northern bank, could see the backs of those who were drawn up, on the opposite bank: for this is *Arrian's* description of this part of the field. The width of the plain should also be carefully noted, between the parallels of *Oseler* and *Bayas*. And although it is not very probable, that any remains of the altars erected by *Alexander*, on the northern bank of the *Pinarus*, should be visible at this day; yet as *Cicero* saw, and remarked them, it is possible that there may

\* The distance appears to be under-rated. It is 17 in one itinerary; 16 in the other: and named *Baiæ* in one; *Bais* in the other.

yet be the remains of the foundations : and the space to be examined is not extensive.

It is suspected that the *upper pass* of *Amanus*, by which Darius came to *Issus*, whilst Alexander was at *Myriandrus*, lay through the same gap, by which the *Pinarus* river, issues from Mount *Amanus*. Some information respecting such a passage, may possibly be obtained, either at Bayas, or at Oseler.

The pass on the sea-shore, called by Xenophon, the gates of *Syria* and *Cilicia*, was situated at the distance of an ordinary march southward from *Issus* : probably about 14 British miles : and at about 7 (in the same direction) from Bayas. Here, the observer may perhaps take the small river *Mahersy* (supposed to be the *Kersus* of Xenophon) for his guide ; as this latter ran through the fortifications of the pass, situated on the low ground adjacent to the beach. Here it must be recollected, that a wide space of morassy ground has been formed, adjacent to the ground of the pass ; and as Xenophon says that the ground within the pass, was formed of *inaccessible cliffs*, this particular should also be attended to, as furnishing a mark for ascertaining the position of the ancient pass.

A little way to the south of the *Mahersy* river, the hills encroach on the sea : and here it is conceived was the pass described by Arrian, to have been possessed by Alexander's troops, on the morning preceding the battle of *Issus*. Certain ruins, named Jonas's Pillars, appear to occupy the spot where the pass was situated : possibly, a part of its defences, if ever it was fortified. This ground should also be examined, in order to ascertain what the nature of the impediment was, which constituted the pass, spoken of by Arrian. He only

says that the troops were confined to a very narrow front ; and descended from a hill.

The site of *Myriandrus*, and the trace of the shore of its ancient bay and port, next claim attention. Since it was situated at the distance of a day's march southward from the *maritime* strait, according to Xenophon and Arrian, whilst the southern termination of the gulf of Issus, is no more than about 6 or 7 miles from that strait, it is evident that the S. E. angle of the gulf, in which the bay and port of *Myriandrus* were situated, must have been filled up by matter lodged there ; partly by the sea currents, partly by the land floods, from the mountains of *Amanus* and *Pieria*. The boggy nature of the soil there, plainly indicates such a change ; which is moreover corroborated, not only by tradition, but by the visible extension of the land, and the consequent removal of the habitations, at Scanderoone, at the present day. (See above, page 55.)

There are said to be ruins, near a spring named Jacob's well, several miles inland, and to the southward of Scanderoone (or *Alexandria*) ; and near the great road leading from the latter, to the inland pass of Bylan. Here one would look for the site of *Myriandrus* : but it may be difficult to trace the ancient sea-coast ; because the level of the newly-formed land, must necessarily have been raised, by constant accessions of matter from the hills : so as to obliterate the margin of the ancient sea-coast.

It would, however, be curious to examine the state of Godfrey of Boulogne's castle, situated on the new land ; in order to compare its height from the *present level*, with that reported by Mr. Drummond about 60 years ago.

It has been mentioned, page 65, *et seq.* that Xenophon has

taken no notice of the remarkable pass of Bylan (*Pictanus*); any more than of the rivers that ran through the plain, since denominated from *Antioch*.

The *Chalus* of Xenophon cannot be mistaken in the modern Koik, or river of Aleppo: or the *Daradax*, in the Fountain of Fay. (See above page 65.) No information, applicable to the present inquiry, is likely to be obtained, between Fay and the place of conflux of the Khabour (*Araxes*). However, a general tracing of the Euphrates, *here*, would prove a most useful addition to geography: as the present maps are very deficient in the detail of its course: and below the conflux, the great detours of the stream, must have affected the direction and length of the line of march; since the army of Cyrus would naturally have made it their constant watering place. Consequently, a knowledge of this particular, would enable a geographer to form a better judgment of the distances marched *by the road*, within any given points in the geography: for at present nothing more is known than the distances in *direct lines*, skirting the general course of the river, from Baghdad, through Hit, Rahaba, Racca, &c.

In order to render such a *tracing* still more useful, observations of latitude should be taken, at proper points; as Baulus, Racca, Erzi, Annah, and Hit; or very near those places; as also, at some station on the Euphrates, nearest to Baghdad: with which latter place, it should be connected, by general bearings, and computed distances.

The *Pylæ* form the next point of consideration: what the nature of the object (or objects) so named by Xenophon, may be; whether it be named from defiles that shut up the road, along the river side; or from the river itself, being there pent



up by mountains or hills on both sides, from whence it is known to emerge as from a strait, into the plains of Babylon. That there are mountains, or high hills, which answer generally to this description, as well in quality, as in position, is certain: but more particulars are wanting; and which might probably be ascertained, by following the course of the Euphrates, from Hit downwards to Feluja; or to that point in its course, which approaches nearest to Baghdad.

The place of the field of battle of *Cunaxa*, appears to have been nearly about Feluja; and not far below the site of Anbar. A hill is described at *Cunaxa*, in the *Anabasis*; and as hills or eminences seldom occur in this part, which is composed chiefly of alluvial soil; such a one, if found here, would probable aid the research: for by calculating the marches, it would be about 17 G. miles below the outlet of the uppermost canal; 50 from the *Pylæ*; and 30 short of Baghdad. And in this position, a hill, or eminence, was actually remarked by P. Texeira, in 1605: but without any reference to the subject of the *Anabasis*.

It may be added, that the entire course of the Euphrates, in respect of its *detail*, in this quarter, being unknown, every portion of it, that could be obtained, would be an acquisition to geography. The places of the outlets of the different canals, together with their courses towards the Tigris, are equally important. And finally, it should be understood, that it is not yet known, with any degree of accuracy, how any one given point on the Euphrates is situated, with respect to another such point on the Tigris.

It would be worth the enquirer's while also to continue the

tracing of the Euphrates, as low down as Hillah;\* and afterwards to trace the bed of the *Nahr-Malka* river (or canal), from *Modain*, upwards, to the place of its former outlet from the Euphrates.† Any other remarks on the ancient beds of canals, in the narrow tract of the Isthmus, might also be useful.‡

Any person whose curiosity would lead him to the examination of the above subjects, could not find himself on the soil of *ancient Babylon* (as he would be at Hillah), without a strong desire to employ a convenient portion of his leisure, in endeavouring to trace the foundations of its walls, or the cavities which contained them; and to examine every species of its remains.§

\* Between Hillah and Basrah, there is a tracing already made, by Mr. Ives's party, in 1758.

† It is preferable to begin at *Modain*, because it is well known, that the canal opened into the Tigris at *Seleucia*, (which afterwards formed a part of *Modain*, or *the two cities*; *Seleucia* and *Ctesiphon*.) It might not be so easy to find its outlet from the Euphrates in the first instance; for as there was more than one canal, there might be a loss of time. Sir Harford Jones informed the authr, that the bed of the *Nahr-Malka* was clearly to be seen, in the way from Hillah to Baghdad.

‡ Although there may possibly be no traces of the *Median Wall* to be seen above ground, yet its masonry being cemented with bitumen, part of the foundations may remain. In Julian's expedition, in the 4th century, the remains of it were seen, near the Euphrates. As it appears to have been built across the narrowest part of the Isthmus, one would look for the termination of it, nearly opposite to Baghdad. Our Pict's wall was in existence, previous to the time of Julian, yet its remains were visible, down to the present age.

§ Since the above was written, Mr. Rich's very interesting Memoir on the Ruins of Babylon, has appeared. As the Euphrates appears to have changed its course through those ruins; leaving them *all* on the *eastern* side, the ground between them should undergo a very strict examination, with a view to detect the course of the ancient bed of the river.

*Opis*, appears to be the *opprobrium* of ancient geography, in this quarter. It ought, by the *Anabasis*, to be looked for at about 34 G. miles in direct distance, above Baghdad, on the eastern bank of the Tigris, near the site of Akbara; 80 below Senn, taken for the *Cænæ* of Xenophon. But this depends on the position of *Sitace*, from whence it was distant 20 parasangas up the Tigris. (See above page 123, *et seq.*)

If however, there should be errors in the report of the distances in the *Anabasis*; and that *Opis* should have been much nearer to *Sitace* than the 20 parasangas; or *Sitace* itself lower down; and on the other hand, *Cænæ* much farther down than is given; Dokhala, situated at the conflux of the Lesser Dcállah river, with the Tigris, *may* have been the site; and the river in question the *Physcus* of Xenophon. As it was a large and opulent city, there ought to be *remains*; unless the numerous towns built by the Mahomedans, should have required all the materials. But sepulchres may still remain. It may also be worth the enquiry and examination, whether the Tigris may not have changed its course, and left the site of *Opis* inland?

The Tigris offers, in addition to the above particulars, the points of conflux of the two rivers of the name of *Zab* (the uppermost of which, is the *Zabatus* of Xenophon);\* also the mountainous ridge of Zaco, and the over-hanging cliffs, so famous in this history.

The points of conflux rest at present on the authority of the Arabian geographers, and European travellers; but a tracing of the whole course of the Tigris, above Baghdad, together

\* These two rivers, called in that country the *Greater* and *Lesser Zab*; were respectively named by the Greeks, the *Lycus* and *Caprus*.

with observations for the latitude, would prove a most valuable addition to geography, and at the same time settle these positions, satisfactorily. It would not perhaps be difficult in the execution, if traced *downwards* by boat, from Mosul to Baghdad; and from Mosul *upwards* by land.

The position of the over-hanging cliffs, is the most important of any, as being the term of the progress of the Greeks, along the river. The latitude of that place, would be highly useful: and that of Mosul being already known, the intermediate positions of the ridge of Zaco, and the town of Jezirah, would easily be fixed, by their respective proportions of the distance, from the extremities of the line thus obtained, by the bearing and difference of latitude. The cliffs are supposed to be about 11 G. miles above Jezirah.

On the day on which the Greeks arrived at these insurmountable cliffs, they had been compelled to dislodge the enemy from a hill, over which their road lay; or which commanded the road. Accordingly, this hill, conjointly with the cliffs in question, will infallibly mark the place of ascent of the *Carduchian* mountains.

It is possible that the passage across these mountains, in the line followed by the Greeks, is much too dangerous to be attempted by our travellers; even if it could be traced out. But there is (or was) a regular caravan route, which crosses the route of the Greeks, from west to east; and is a portion of that, leading from Diyarbekir to Wan, by way of Bedlis; a place well known from the strength and importance of its pass:

\* Since the course of the Tigris, lies so near the meridian, the distances may easily be obtained by observations of latitude, and general bearings.

A valley which is noted by Cartwright, seems to answer to that one, into which the Greeks descended, one day's march short of the eminence, situated over the river *Centrites*. (See the *Anabasis*, Lib. IV. c. 9 and 10.) This valley and eminence may possibly lead an enquirer to the pass over that river, made use of by the Greeks; as they seem then to have got into a road, that led northward, through Armenia. But if this fails, it would be most convenient to proceed to Bedlis, itself; from whence there is a great public road to Erzerum.\* It may be supposed, that the road taken by the Greeks, would, at no great distance from the *Centrites*, (which is taken to be the river of Bedlis: See above, page 201;) fall into this great road; whose direction should have been a little to the west of north. Therefore, of course, the traveller from Bedlis, northward, would soon fall into the track of the Greeks: first coming to the river called by them, *Teleboas* (the *Arsanius* of Lucullus; and recognised in the Aksou, or White River, of the present geography).† According to the distance at which they might strike the course of this river from Bedlis, (or from the foot of the *Carduchian* mountains, generally,) they would be prepared, where to look for the *first villages of refreshment*; which lay to the south of the Euphrates. For as Xenophon, who may be supposed to have proceeded on a northerly course, from the passage of the *Centrites*, came to the *Teleboas* in 6 marches, or perhaps 56 G. miles *direct*; whilst Lucullus, who went N. E. towards *Artaxata*, came to the same river in 4 marches; the course of it must be much northerly. An important route in M. Niebuhr's 2d volume, joined to the authority of a map, in M. Delisle's Atlas, authorises us to believe,

\* See above page 208, note †.

† See note, page 207.

that *Yezid-koi*, (or the village of the *Jesidians*) situated on the Aksoy river, answers to the above village (or cluster of villages) seen by Xenophon, at three marches from the crossing place of the *Teleboas* river; 9 from the *Centrites*. (See above, page 215.)

If these villages are found, in the expected situation, it might be hoped, that a continuation of the same *northerly* course, would point out the place of Teribazus' camp, at the small pass; as well as the ford of the Euphrates, beyond it: and finally, the memorable cluster of villages, in which the Greeks were so well sheltered and recruited; as the whole appears to lie within the compass of 40 or 50 miles.

The villages of the *Jesidians* are placed, according to the route in M. Niebuhr, at 19 hours from Khanoos towards Wan; that is, of course, to the south-east. Therefore should the villages of refreshment to the *north* of the Euphrates, be found, it will not be difficult to ascertain their position, in respect of Khanoos. There is indeed a *bare possibility* that these villages may be Khanoos itself;\* but in that case Khanoos must be situated more to the northward, than the line of route of the caravan from Erzerum to Wan, which passes through Khanoos, would warrant. And moreover, the history describes a more northerly direction to the route of the Greeks, in this quarter, than can be supposed of any line that could pass through Khanoos, from the quarter of Wan and Yezid-koi, towards Erzerum.

\* Khanoos is the capital town of the district of the same name: and it appears that a *Satrape* resided in the neighbourhood of Xenophon's village. (Lib. IV. c. 24.)

In this quarter of Armenia, the villages, or hamlets, lay together in clusters, which clusters were very thinly scattered. The villages appear to have been walled; but the defence of them neglected.

Taverniere stopt at a village, or cluster of villages, named *Halicarcara*, on the northern bank of the Arash; at about 15 miles to the eastward of Comasour; where the inhabitants had subterraneous habitations, like those described by Xenophon. The weather is described by Taverniere, as being very severe, in March; the snow then lying so deep, as to prevent the caravan from moving. It is calculated that this place may be no more than 20 miles to the north-east of Xenophon's station; where the snow lay 6 feet deep, in December. *Halicarcara* itself, cannot be the place of refreshment of the Ten Thousand; as the two sites are on different sides of the Arash; (the *Phasis* of Xenophon).

In the case of finding the site of the villages of refreshment, the ford, &c. they may readily be connected with the modern geography, by means of the bridge of Koban-kupri, over the river Arash; a well-known position.

From about this point, the Greeks were at fault, in respect of their road towards Trebisonde, (owing to the loss of their guide); when, after a very long interval, they found themselves on the banks of the *Harpasus*; a river flowing from Georgia, into the Arash (or *Araxes*). That river is sufficiently known for the present purpose, under the name of Harpa-sou: but *Gymnias*, the next point recorded in the history, can only be guessed. It is supposed, from reasons given above, (in page 235, *et seq.*) to be the same with Comasour. If this idea should obtain credit enough, with any traveller, to adopt it, by way of experiment, he would of course trace the road thence to Trebisonde. After a journey, equal to 5 marches, (probably long ones, as the Greeks may be supposed to have, at that time, recovered their spirits, and to be full of hopes),



he might expect to arrive, according to the history, at the summit of a high mountain, from whence the sea<sup>1</sup> was visible; and which prospect occasioned such tumultuous joy in the hearts of the long-suffering Greeks. This mountain, as we have seen, was named *Theches*, and appears to have been a part of the lofty ridge, named at present *Teke*, and *Tekman*; and lying to the northward of Erzerum.

The Greeks, after passing this mountain, descended into a valley, well-wooded and watered; and after some days march, re-ascended the mountains, which formed the [eastern] boundary of the *Colchians* of Trebisonde. These are all prominent objects: and if they follow each other, in this order, and at the required distances from each other, one would be led to conclude that the Greeks came by the *south-east*, to the district of Trebisonde: and not by the *east*, as some have supposed. (See above, page 245, *et seq.*)

One circumstance appears to be uncontrovertible. The valley into which they descended from the *prospect* mountain, appears clearly to be that, now denominated from the town of Baibort: for there is no other such valley to fix on: and it seems equally clear, that the place where they ascended the *Colchian* mountains, is at the opposite side of that ridge, which M. Tournefort ascended, on the third day from Trebisonde, in his circuitous journey to Erzerum.\* But M. Tournefort kept to the mountains for a considerable time, and did not descend into the valley of Baibort, till he had advanced 70 miles to the eastward of Trebisonde. Therefore it would seem, that his route could only coincide with that of the Greeks, within the space comprised between Trebisonde, and

\* Because, it appears from Hajy-Kalifa, that there was a pass in that quarter.

the place where *he* ascended, from the west, those mountains, which *they* crossed, and descended, in coming from the east: that is, the mountains named *Colchian*, by Xenophon; but *Mesjidi* by Hajy Kalifa.

But as the position of *Gymnias*, and the line of course on which the Greeks proceeded from thence to the valley of the *Macronians*, and the *Colchian* hills, are objects of curiosity, equal to any of the others, the inquisitive traveller and lover of antiquities, will not perhaps give up his research, until he is fully satisfied, what the circumstances of the locality, will, in any case, allow: and which of the systems appears the most plausible.

If he be supposed to set out from Trebisonde, in the first instance, in order to examine the roads leading from thence to the *south-east* and *east* (and it would seem unavailing to look to any other quarter, considering where the river *Harpasus* is situated), he would, of course, first enquire from those persons who had been in the habit of travelling on those roads, concerning the nature of the countries through which they led; and how far the ground, and the intermediate distances, accorded with the description in Xenophon: that is, in respect of the crossing place of the *Colchian* mountains, the valley of the *Macronians*, and the summits from whence the sea can be seen. Moreover, whether there be any *Tumulus* of stones, known to exist any where, on the summit of a mountain, from whence there is a view of the sea, on a road leading to Trebisonde, from the east, or south-east? Whether there be any town, in those quarters, in a situation that may suit that of *Gymnias*: and with a name, whose root is at all similar to it? And lastly, whether there be any honey of the quality

described, in the *Colchian* villages, now known; and where it is to be found?

It would also be a proper point of enquiry, whether at this time, persons who go from *Trebisonde* to *Irwân* (vulg. *Erivan*), and to the *Harpa-sou* (or the contrary), go by way of *Comasour*, or cross the valley of the *Shorak* (or *Apsarus* river)?

His attention will doubtless be led towards this quarter: because it may possibly happen, that a series of objects exactly similar to the other, may be found in the *direct line* between the *Harpa-sou* and *Trebisonde*; that is, entirely across the whole valley of the *Shorak*. But if so, one can conceive no other, than that the Greeks were carried from the bottom of the valley, through which their road lay, to the top of mount *Teke*, merely to be shown the sea; and then marched down again: whereas, one naturally collects, from the thread of the history, that the mountain of *Theches* lay in their proper road.

One cannot but suppose that the *Tumulus* erected by the Greeks, must be known to the people of the country around it, although ignorant of its origin. It must have been situated in a place, where some great road crossed a high mountain, from whence the sea was visible, though perhaps at a very great distance. And the place must have abounded with loose stones, or enough could not have been so speedily collected to form a *Tumulus* of any bulk: and this is described as being "*a mount of considerable size.*" (Lib. IV. c. 41.) Where loose stones abound, the place may be expected to be bare of wood; so that the mount itself, would of course be more obvious to the view, than in a woody situation. It is not likely that its materials would be removed: for, situated on a bleak

mountain, (as the ridge of Teke is described to be by Hajy-Kalifa); it could not well interfere with cultivation; nor can the materials be well applicable to use, in such a situation. We are very sanguine in the expectation that it may be found. If it should, it would doubtless lead to a knowledge of the situation of *Gymnias*: and at once develop the general line of the route from the river *Harpasus*.

A traveller, properly furnished with information at Trebisonde, would know what routes were the most promising, in respect of the objects of his researches: and should he succeed in this part, although the clue might be lost, at the Harpasou, yet he might perhaps, recover it again, at the villages of refreshment, on the north of the Euphrates; taking the bridge of Koban-Kupri for his point of departure, and proceeding thence to the south-eastward, to the mountains of *Ala*, situated about 18 or 19 miles distant. It is conceived that these villages will be found in the skirts of the mountains, about midway between the towns of Khanoos and Deli-Baba.\*

The positions in the route of the Greeks, along the Euxine, to *Cotyora*, are, with the exception of the latter place, better known than any of the inland positions. We have heard of no traces of *Cotyora*; but it is probable that they may be found at about 15 G. miles to the S. E. of Cape Jason, or Yasoun; as *Cotyora*, in the Periplus of Arrian, is 180 stades from Cape Jason.

The routes, during the short campaign in *Thrace*, are not sufficiently marked in the history, to encourage enquiry.

\* These ideas are rendered more precise, by the observations of James Morier, Esq. made during his journey from Persia to Constantinople, in 1809.

II. *Concerning the Modes of taking the Direction of the Route ;  
and of Estimating the Distance.*

Since a magnetic compass cannot be used at ordinary times, on the road, by reason of its being disturbed by the motion produced in travelling ; nor perhaps, in the Turkish dominions, at all times, without giving offence ; it may therefore be proper to describe a coarse, though useful, manner of taking a bearing, without the aid of a compass ; and which, with practice, will be even more exact ; because of the unsteadiness of the other. A watch may be used at once, for the purpose just mentioned, as well as for shewing the time. It is well known that, as the sun's bearing ( or Azimuth ), gives the hour of the day, so the time of day will give the sun's bearing ; the latitude and declination being known. The tables necessary to this purpose, will be found in a very portable book, in common use with mariners, called *The Mariner's Compass Rectified*. First, are the tables of the sun's declination, for each day ; and secondly, a table for each degree of latitude ; in which the bearing of the sun is given in *whole* points of the compass ; with the hour of the day, at which it arrives at each of those points. And although a point contains  $11\frac{1}{4}$  degrees of a circle, yet this is near enough for the purpose ; and perhaps as near as the bearing of the sun can be taken, by this method. But it will be easy to proportion the interval of time, between two points of bearing, to any fraction of a point : if judged necessary.

The operation of finding the bearing, by the above method, need only to employ a few minutes on the road : the calculation will best be performed afterwards, when at full leisure.

In order to take the angle between the sun and the object required; the watch, of course, is to be employed as an instrument for taking horizontal angles. However, the compass being divided into 32 points, whilst the watch has 60 divisions; an awkward fraction arises; since two of these divisions are equal to 12 degrees, and a point contains no more than  $11\frac{1}{4}$ . But this difficulty has the easiest remedy possible; which is, to mark the points on the dial plate, with red colour, with a fine pen, from 1 to 16, on each side of the hour VI.; it being proposed to point that part of the watch to the object; and reckoning thence, to the *right* or *left*, according to the position of the sun, at the time. The operation therefore is very simple: for the watch being held out before the observer, and pointed towards the object, whose bearing is required, nothing more is to be done, than noting over what point on the dial-plate, the sun bears: and then writing down both that and the time of day. Care must be taken to add to the point of bearing, R or L, for *right* or *left*, of the VI.; and to the time, H and M for hours and minutes.\*

Should the sun be very far to the right or left, or behind, the shadow will answer the purpose: in many cases, perhaps better.

Having by this process obtained the angle between the object and the sun; together with the time of day, the following is the method to be pursued, in order to obtain the bearing of the object, sought.

The sun's declination being found, in its proper table, and

\* If the observer prefers the mode of writing down the points round the whole circle, from 1 to 32; instead of 1 to 16, on each side of VI.; the R and L will be got rid of: but perhaps the former method will occasion the least trouble in the end.

the latitude known, (that is, to the nearest degree, only) the table of bearings for that parallel, is to be referred to. In that table, under the proper column of declination, and opposite to the hour of the day, the desired bearing of the sun will be found. And finally, the angle which the object made with the sun, being reckoned to the right, or left, of that bearing, according as the case may be, the result will be the required bearing of the object : and that clear of variation.\*

## EXAMPLE.

January 1, 1815, in lat.  $40^{\circ}$  north, at 1 h. 30 m. P. M. ; the sun was 3 points to the *left* of a certain object. The declination is found in the table to be about 23 degrees south. .

In the table for lat.  $40^{\circ}$ , under  $23^{\circ}$  declin. S, and opposite to 1 h. 30 m. in that column, is found the bearing of S. S. W. ; or 2 points ( $22\frac{1}{2}$  degrees) to the *westward* of *south* : which is, therefore, the bearing (or Azimuth) of the sun at half past one. Then, the sun having been three points to the *left* of the object ; or, in other words, the object 3 points to the *right* of the sun, the *bearing* of that object must have been *five* points to the [right, or] *westward* of *south* ; that is, S. W. by W.

If on the contrary, the sun had been 3 points to the *right* of the object, the bearing of the object would have been *one* point to the *eastward* of *south*, or S. by E.

## EXAMPLE II.

On the same day, and in the same place, at 2 hours, P. M. ; the sun was found to be *two* points to the *left* of another object.

\* It will be obvious to the reader, that although the bearings of *objects*, alone, are mentioned ; yet that the same process applies to the line of direction of the road, when no distant objects that lie near the line of it, present themselves.



In the same column of declination ( $23^{\circ}$ ) no time is given between 1 h. 30 m. when the sun bears S. S. W. ; and 2 h. 20 m. when S. W. by S. But taking the proportion of the difference (of 50 min.) between 1 h. 30 m. and 2 h. 20 m. which is, of course, 30 min. or  $\frac{3}{4}$  ; and also  $\frac{3}{4}$  of the angle between S. S. W. and S. W. by S. the result will be  $6\frac{3}{4}$  degrees : and this added to  $22\frac{1}{2}^{\circ}$ , answering to S. S. W. will give S.  $29\frac{1}{4}^{\circ}$  W. for the bearing of the object. Or in points of the compass, somewhat more than S. S. W.  $\frac{1}{2}$  west.

Although it is certain that the differences of time, between the different points, do not proceed in arithmetical proportion, yet the error arising on the just mentioned process, is not considerable enough to merit notice, in these calculations ; seeing that the error can never be equal to half a point of the compass.

The watch is to be kept regulated to *apparent* time ; or with the sun.\*

As the latitude cannot, from various causes, be taken exactly in the place that could be wished, it would be a good rule, to take it as often as opportunity offered.

Much information respecting the positions of distant towns, or other objects, to the right and left of the road, may be obtained, by enquiring their *bearing* from different points in the road : and then forming them into triangles, of which the *bases* will be the distances travelled, between those points. Enquiry should be made, at as many points as may be convenient ; in order that one line of bearing may serve as a check to another.

\* This method was originally pointed out, for the use of the African Missionaries ; it being peculiarly adapted to passages across deserts : but it is obvious, that it is applicable to all situations..

People in one part of a country, generally know how other (principal) places, or remarkable objects, bear from them, although not in sight: and can point out the line of direction; which lines may be set by the compass; or, if there be any objection to the use of it, then by Azimuth, as in the former cases of bearing. And if several lines of bearing, are to be taken from the same station, one may be used as an *observation line*,\* and the angles of the others measured from *that*, by the sextant.

The distances, of course, can only be computed; and this is accomplished, in Turkey and Persia, chiefly by *time*; that is, the interval of time required to travel over the ground, by a man, walking at an ordinary pace. It is on this ground, that the ordinary computations are founded; and which are to be so understood, in the statements of distances amongst the natives. There are also itinerary measures in both countries, but they are more vague than the others.

But there being, of course, other modes of travelling, which give different rates; such as on horseback; and in caravans with mules or camels; &c. it will be necessary to treat of them; in order that, let our traveller's mode be what it may, he may have an opportunity of knowing, what the result of enquiries, relating to the subject, has produced. The author has,

\* By an *observation line* is meant, a line of bearing, terminating on an object, from which angles are to be measured horizontally, by a sextant, to other objects. So that the bearing of one object being adjusted, that of the others will, of course, be known, by adding the quantity of the angle in each particular case, to the former. It is obvious that if the angles are extended beyond the scope of the sextant, each way; another line, or lines of observation, will become necessary. If there be a choice of objects, the *sharpest* and *best defined*, should be chosen; as a *faint* one would become indistinct by reflexion.

accordingly, subjoined the results of his own calculations, of the rates, on the general modes of travelling in Turkey and Persia, (within which two countries, generally, the route of the Ten Thousand lay) ; and none but those who have made the experiment, can readily believe, how nearly the *means*, on different lines of distance, agree amongst themselves.

In the application of those rates, it is to be considered, that, as the distances, on *right* lines, between places, can alone be applied to the geography, it became necessary to establish a general proportion, between the *road distance* and the *direct distance* ; which has been done, according to the result of much enquiry into the subject. It has appeared, that *one ninth part* may be deducted from the road distance : in other words, that 9 miles by the road, will give 8 on a straight line. But although this is given as a *general rule*, the judgment of the traveller will of course, decide, on the proportion, when the circumstances of the ground, are such as to require it ; taking this canon, as a middle course.\*

Here follow the results of different enquiries, made with a view to ascertain the scale of the itinerary measures, and rates

\* The allowance of one part in nine of the road distance, for winding, appears to be exactly the same proportion with that adopted by M. D'Anville, whose experience, derived from a close application to study, during a life protracted to an unusual length, was perhaps greater than that of any other person on record. This proportion, however, is not meant to be applied *generally*, to roads in the improved state of those of many European countries ; but rather to what may be termed *natural* roads. But it certainly happens that the road between London and York, has a winding of *more* than *one in nine*. For, if the maps are to be trusted, the distance on a right line, is 175 British miles : and the shortest road being 198, the difference is 23 miles : which gives a proportion of 1 in 8,6. This is doubtless much more than could have been expected ; but as the distance\* consists almost entirely of difference of latitude, one cannot expect any considerable error in the *direct distance* between the two places.

of travelling, by time, in Western Asia. The latter is the most common mode of reckoning; and for the most part, by *hours*; but also by days journeys. The number of examples from whence these results are drawn; together with the labour of research and calculation, is beyond what would readily be supposed. The itinerary measures are of 4 denominations: 1. The *Persian Farsang*; 2. The *Turkish Agatch*; 3. The *Turkish, or Greek Mile*; and 4. The *Russian Werst*.

1. The *Persian Farsang*. This, in ordinary use, appears to be about  $3\frac{1}{2}$  British miles, by the road: or reduced to direct distance, in order to be applied to the construction of geography, 2,65 Geographic miles.

2. The *Turkish Agatch*. This appears to be exactly the same with the former, and probably may have been adopted from it: and this appears the more probable, as it is only in use in the quarter towards Persia; where the boundaries of the two countries have fluctuated.

3. The *Turkish, or Greek Mile*. This, taken on a mean of 900, along the southern coast of the Black Sea, is found to be of the standard of about 87 to a degree: and reduced to direct distance, 0613 Geographic mile.

4. *Russian Werst*. This appears to have been originally the same with the Greek mile: and from whence the Turkish mile also has been derived. In effect, the three agree together, within  $\frac{1}{18}$  or  $\frac{1}{19}$  part.

The distances measured by time, are next to be considered. These admit also of 4 varieties, in common use: one of which, however, branches out into two. They are: 1st, Ordinary journeys of single travellers, or of small parties, on foot.

2d, The same, on horseback. 3d, Caravan Travelling; either with camels, or horses and mules. And 4th, The *mean* march of an army.

1. The day's journey of a traveller on *foot*, (not as a *courier*, or in a *caravan*), may be taken at 22 to 24 British miles, by the *road*; and which, reduced to *direct* distance, may give somewhat under 18 G. miles, for one day, or for a very few days: but if reckoned on a line of many days, collectively, about  $17\frac{1}{2}$ . For each hour, the *direct* distance may be reckoned at  $2\frac{1}{2}$  to  $2\frac{3}{4}$  G. miles; on a supposition that the rate by the road, is  $3\frac{1}{4}$  to  $3\frac{1}{2}$  British miles.

2. Journeys of the like class of travellers, on *horseback*, in Turkey and Western Persia. These are, of course, less reducible to rule, than the others, as it respects *whole* journeys: but may be taken on the whole at 26 to 30 B. miles, by the road; and in *direct* distance, from 18 to 23 G. miles. For single hours, applied to geographical construction, about  $2\frac{2}{3}$  G. miles *direct*. It must be observed, that *travellers* only *walk* their horses; although the *Tatars* (or *couriers* in Turkey,) ride post.

3. *Caravan* Journeys. Camels on the *Arabian* desert, on short intervals, make about 16 G. miles *per* day, in *direct* distance: but on long ones, only from 15 to  $15\frac{1}{2}$ . Mules 17 to 18. The hourly rate of camels, on the road, is about  $2\frac{1}{2}$  British miles, only; giving in *direct* distance, about  $2\frac{1}{8}$  Geog. miles, across the desert.

M. Niebuhr favoured the author with routes of caravans in Asia Minor, by which it appeared, that on 376 hours of travelling, on the different roads, the general mean was 2,23 G. miles, *direct*; or only just short of  $2\frac{1}{4}$ . These caravans are

supposed to have been composed chiefly of horses and mules ; but no doubt, with an intermixture of camels. The rate, which is above that of camels, may be accounted for, by Professor Carlyle's account of his journey through Asia minor. After *long journies*, they waited some hours for the coming in of the camels, with the baggage. Now, as the loaded caravans only make journies of about 8 hours, the camels would not probably be more than 4 miles behind, at the close of the caravan day's journey ; or perhaps, may set out earlier, than the horses and mules, in order to come in with them.

4. The Mean *Marches of Armies*. As so much has been already said, in the preliminary chapter, concerning this subject, it may only be necessary to say, in this place, that they are taken at 14 to  $14\frac{1}{2}$  British miles, by the road ; and in *direct* distance, if for a very few marches, 11 G. Miles each ; but on a considerable number reckoned together, as one line of distance, about  $10\frac{1}{2}$ . For further particulars respecting the marches, see page 5, *et seq.*

It will, doubtless, occur to the traveller, that in the construction of his map, the 'proportion of the *direct* distance, to *road* distance, must be subject to *different* rules, when given in TIME, than when given in ITINERARY MEASURES of any kind. For the *time lost*, by ascending and descending hills, will, in most cases, subtract more from the direct distance, than what arises from the mere *inequality of ground*. Thus, for instance, by the ascent and descent of a hill, no more than  $\frac{1}{10}$  of a mile, in point of *distance*, may be lost ; but as much *time* may be lost by it, as would have carried a person, more than twice that distance over even ground. And when lofty and difficult *mountains* occur, it is impossible to give any rules.

These computed distances, whether obtained by itinerary measures, or by time, are still to be regarded as *comparative*, only: since in most cases, the *positive* quantity of distance, must be regulated by the space, between the two extreme points of the line of distance, on the map. Absolute distance can only be obtained, by the means of celestial observations; or by lines of distance, extended between places, so determined; and which lines have been regulated by the mean of many reports; and have also been subjected to a variety of lateral checks, in order to ascertain the points in which they vary from right lines.



## ADDENDA.

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### I. Concerning the Itinerary Measures, employed by Xenophon. [Refers to p. 5, *et seq.*]

A CIRCUMSTANCE seems to shew, that Xenophon gave his statement of the length of the daily March, on the authority of the Persians; although the account has, no doubt, been since corrupted, in many places.

At ordinary times, he gives the number of parasangas, *positively*; but on the day of the battle of *Cunaxa*, he expresses himself differently. For in lib. i. c. 44, he says, that the Camp of the preceding day, (and to which they returned, the next night), "*was said to be*" 4 parasangas from the field of battle.

This surely implies that the length of the March in question, rests on a different authority from that of the others: and that previous to the battle, Xenophon had been in the habit of obtaining from the proper officer, the statement of the distances: (see the note to page 6) but that the change of circumstances had rendered it no longer practicable. For had the length of the marches, to that time, depended on the judgment of Xenophon, he would have been equally able to decide on this one; perhaps better, as he went *twice* over the ground.

## II. Note on the Mean Marches of Armies. [Refers to pages 5 and 6.]

THE Author flattered himself, that he should have been enabled to exhibit in detail, and on the very best authority, the rate of marching, performed by the imperial Russian armies, during their memorable marches in 1815; from Doubno in Little Russia, and from Riga; to Manheim and Mayence, respectively: marches of more than two to three months, including the necessary halts. The acquisition of the necessary documents, was highly desirable, in order to prove the zeal and energy, with which the ranks of those armies advanced, in order to meet and to encounter, with the utmost promptitude, an enemy whom they regarded as having broken his faith, with the GREAT PUBLIC; and whose power was only to be employed, as the scourge of mankind. It is said, that the Russian commanders found it necessary to restrain the ardour, with which their troops were advancing, in order to prevent their finally sinking, under the fatigue of the march.

Unfortunately, the author could only obtain the dates of the departures and arrivals of those armies; together with the days, on which they passed through certain of the principal places, in their route: but without any specification of the number of *halting days*. Of course, the materials so obligingly communicated by General Count Michel Woronzoff, are incomplete, in respect of obtaining the desired result, of the length of the *mean march*; although the distances are regularly given, throughout.

The only use therefore that can at present be made of those tables of marches, is to endeavour to arrive at some kind of *approximation* towards the mean march, by allowing such a *proportion* of halts as has usually obtained in the marches of the Imperial Russian armies; combined with the peculiar circumstances of the case in question. It is highly probable, that no other halts were made, than were necessary to the well being of the troops, and to the preservation of the draught cattle, which accompanied them.

It has been stated to the author, by his excellency General Count Woronzoff, that the Russian armies, in time of war, generally march four days, and halt on the fifth. (In time of peace they march three, and halt on the fourth): but if necessary, in time of war, they march 5 or 6 days without halting; as happened in 1812, during its retreat; and afterwards, in pursuit of the French army, during the same winter. The army of Count Langeron employed an interval of 69 days, between the date of its leaving Doubno, which was the 7th of April, and its arrival at Manheim, on the 15th of June. If the ordinary rate of marching, in time of war, be taken, that is, one halt in five days, the number of marching days will be 55. The distance marched, is given by Count Woronzoff, at  $195\frac{3}{4}$  German miles; each of which being equal to 4 geographic miles, there will arise 783 geographic miles, equal to about 905 British: and the result will be 16,45, or nearly  $16\frac{1}{2}$  British miles for each march: which is *full two* miles more than has been considered as a *mean* march, throughout the present work.

But if it be true, that the universal sentiment amongst the troops, was, as before stated; and that they had been allowed to proceed according to the rate, said to be adopted, in cases

of emergency; that is, to march 5 or 6 days consecutively, without halting; such a proportion of halts, would give a mean march of 15,44, or  $15\frac{1}{2}$  British miles; which is still *one* full mile above the length adopted. Where the truth lies, it is impossible to tell: but one fact is certain, that taken either way, this Russian march exceeds the result, arising from the mean of all the numerous examples of marches, collected by the author.

The other army under General Paskewitch, left Riga on the 25th of March (1815), or 13 days previous to the departure of the other from Doubno; and arrived at Mayence, the 28th of June, 13 days after the arrival of the other, at Mannheim. The interval therefore, was 95 days. If here, the ordinary rate, in time of war, of one in 5, be taken, 76 marching days will remain. The distance set forth by the same authority, is  $222\frac{1}{4}$  German miles; but as there seems to be an error between Glogau and Leipzig, of 6 such miles, too little, the real distance will, of course, be  $228\frac{1}{4}$ , equal to 913 geographic miles, or about 1055 British,\* and the proportioned mean march, will be under 14 such miles (13, 88). But if the proportion of halts be taken at one in 6 or 7 days, the result will be no more than about  $13\frac{1}{4}$ , which appears improbable.

In fact, the author is totally in the dark, respecting the details of these celebrated and important marches; as well as of the appointments of each of those armies; and which may have very materially affected their progress, as well as the proportion of halting days.

However deficient these documents may prove, in respect

\* About 100 miles short of the length of the road from *Ephesus* to the field of *Синара*.

of shewing the length of the mean march, yet they afford a satisfactory proof of the due proportion adopted, between the *road* and the *direct* distance, in a general view. M. D'Anville had long ago determined that  $\frac{1}{9}$  part should be deducted from *road* distance, generally; or, which is the same thing,  $\frac{1}{8}$  added to the *direct* distance. The author had also adopted the same proportion, after a long experience.

It is obvious that this rule cannot be expected to apply on very long lines of distance, such as those just mentioned, of 900 and 1000 miles; because that in so great an extent of country, some obstacle will oppose itself, and change the general course of the road. The author's method has therefore been, to divide any long line of distance, into portions of 80 to 120 miles, as the most diverging points of the road, presented themselves: and then to take the whole sum, collectively, as the *straight line* intended. It is on this ground, that the  $\frac{1}{8}$  is calculated.

It appears then, that between Doubno and Manheim, the direct line, drawn as above, was in the proportion of one in 8,85 shorter than the trace of the road. On that from Riga to Mayence, it was only one in *ten*. (See also the note to page 317).\*

\* General Count Woronzoff was pleased to communicate to the author, a system of marching, adopted by the late Marshal Count Souworoff; and which, from him, obtained the name of Souworoff's *careless*, or *easy* March; meaning that the troops were free to march without any kind of order or restraint, save that of keeping together, in their respective corps. As it appeared to the Author to be curious, and little known, he has given it here, in the Count's own words.

“ At the end of every ten *versets*, they halt about one hour, and then proceed. They have besides, two halts of 4 hours each, in the 24 hours; one for dinner, and the other for rest, at night. In this manner, and particularly if the halts occur in convenient places, the army may continue marching, without any exhaustion, a whole

It was not till after the book was printed, that the author examined the history of the famous march of the Great Duke of Marlborough, of six or seven weeks, from Brabant to the field of Blenheim, at the Danube, in 1704. The character of this march, was not that of one made at leisure, but rather the contrary: for it is said that "General Churchill was very expeditious, in following the Duke (his brother); though in such a manner as not to over-fatigue the troops."\* The Duke had gone before with the cavalry, with a view to prevent a junction of the French with the Bavarians; leaving the infantry, &c. to follow.

It is not easy to collect from military histories in general, the particulars necessary to the purpose of forming an accurate conclusion, respecting the *mean* length of the marches, made during any of the expeditions recorded in them. In the just mentioned march, such particulars are more commonly wanting: so that, it is only between *Coblentz* and *Great Gardach* (near *Hailbron*), 13 days, that the necessary information is to be found.

The halting days during this interval, of 13 days, were 3 in number; and the marching days, consequently, 10: and on these ten arises a mean of less than 14 British miles per day.

"fortnight together; and nothing in the world can surpass the expedition of such a kind of marching: for then one may safely say, that the troops will march from 40 to 45 versts in 24 hours."

This may account for the wonderful marches, made by Marshal Souworoff, in Germany, Italy, &c.

\* "The method he took, for this end, was, to begin his March, every morning, by break of day, and encamping in their new camp, before the heat of the meridian sun incommoded them; so that the remaining part of the day's rest, till the next morning at day break again, was almost as refreshing as a day's halt." (This was in May and June). Lediard's History of the Duke of Marlborough, Vol. I. page 192.

In that part of the march previous to their arrival at *Coblentz*, although no clear result can be obtained, yet the rate may easily be perceived to be much the same, as beyond *Coblentz*.

After the separation of the Cavalry, at *Great Gardach*, the progress of the infantry is not reported in detail, during the long separation that followed.

On the whole, nothing is more certain, than that the Duke of Marlborough's march to *Blenheim*, does not exceed, if it even comes up to, the standard assumed for the mean march.

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III. Concerning the Inundations of the Euphrates, in the quarter between *Feluja* and *Baghdad*. [Refers to the *hollow tract* left by a former course of the river, page 76, line 10.]

Mr. Rich observes in his *Memoir*, page 13, that "the most remarkable inundation of the Euphrates, is in the line between *Felugiah* and *Baghdad*." This is precisely the line of the hollow tract, intended in that place; in which the inundation is said to have "a depth sufficient to render it navigable for loaded rafts, and flat bottomed boats."

---

IV. Concerning the depth and rate of motion, of the Euphrates; explanatory of the subject of the Canals, &c.

[Refers to page 80, line 6]

It appears also by the same *Memoir*, page 13, that the Euphrates at *Hillah*, has a depth of 15 feet, when its waters are



low; and it appears that between Rûmkala and Beer, at about 700 miles above its mouth, it was 10 feet deep, when low.

Mr. Rich states the rate of motion of the stream, through the site of Babylon, to be about  $1\frac{1}{2}$  mile *per* hour, when lowest; 3 when swoln. Between Beer and Rûmkala, it was judged to be somewhat more than  $2\frac{1}{2}$ : and Mr. Irwin reckoned it at 3, in the quarter between Annah and Erzi. Both of these reports have a reference to the seasons, when the river was low.

\*.\* The Ganges was found to be 30 feet deep when low, at a place 500 miles from the sea. Its current was taken at a rate, below 3 miles per hour, at the same place, and in the same season: and it is probable that most capital rivers, flowing through alluvial tracts, run at the rate of between  $2\frac{1}{2}$  and 3 miles per hour, when clear of the *tides-way*; and in the absence of floods.

---

V. Note on a passage in the *Anabasis*, concerning the river Tigris: omitted in its place, p. 88, line 13.

Whilst the Greeks yet remained on the field of *Cunaxa*, on the evening of the day after the battle, Clearchus assigns as a reason for not marching to attack the king, (lib. II. c. 5) that "between them and the king lay the *Tigris*, a navigable "river, which could not be passed without boats; and those "they had not."

According to the present geography, it appears that the *proper* Tigris, could not have been intended; but doubtless,

there was a river in the question, and it is probable that the *Didgel* or *Lesser Tigris* was that river. However, the king's fears must have been very great, to have carried him so far out of the way of the Greeks.

It is indeed impossible to know what the exact course of the Tigris was at that day; but as Pliny (lib. vi. c. 27) describes the separation of the Tigris into two branches, at *Apamia*, 125 M. P. short of Seleucia; and their reunion, after forming the *Mesene* of *Mesopotamia*; the *Didjel*, which must have been one of those branches, of course existed at that time: and it is probable, that Pliny wrote from Macedonian statements; made perhaps within a century or two, after the time of Xenophon. The *Didjel* may have been a river of much greater bulk and depth, at that time, than at present: for it is now inconsiderable in breadth; and also fordable. It may probably be considered as an ancient course of the main stream of the Tigris: and which, ever since the change, has been diminishing: examples of which are to be found, in most great river.

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VI. On the great elevation of the point of view, from whence the sea was first seen by the Greeks, from M. Theches, or Teke. [Refers to the note in page 249.]

It being now known, from Mr. Browne, that the plain of Erzerum itself, is about 7000 feet above the level of the sea; whilst the ground on which the castle of Teke stands, rises in a mountainous chain above it, (that of *Agatsbashi*,) it is probable that Teke itself stands at an elevation of an English mile and half above the Black sea. Of course, the view from

the crest of that ridge, must be very extensive; and the report of Hajykalifa, that "from its great elevation, the weather is so severe that in some years they have no harvests;" appears very probable.

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VII. Concerning the period of swelling of the Euphrates.  
[Refers to page 278.]

Mr. Rich says, (memoir, page 13,) "In the middle of the winter the Euphrates increases a little, but falls again, soon after: in March it again rises, and in the latter end of April is at its full, continuing so, till the latter end of June. The most remarkable inundation is at Felugiah, 12 leagues to the westward of Baghdad; where, on breaking down the Dyke which confines its waters, they flow over the country, and extend nearly to the banks of the Tigris.\* On May 24th, 1812, laden rafts were brought from Felugiah, to within a few hundred yards of the northern gate of Baghdad."

In respect of the first particular, the partial swelling in winter; this being at the same season with a like swelling of the Tigris, reported by M. Niebuhr, is probably owing to a similar cause; the winter rains.

With respect to the time of the first rising and filling of the Euphrates, one may conclude that Mr. Rich had been misinformed. Mr. Eyles Irwin, who travelled along it, during 5 or 6 days in the beginning of April, and crossed it at Annah; says (writing on the first day of that month,) "the Euphrates is now expected to begin to rise."

It does not therefore appear probable that it should arrive

\* See page 76, line 8, for the hollow tract, &c.

at its height, during the course of that month ; any more than that it should continue in that state, during an interval of two months. But the fact of its being in flood, on the 24th May, is however established, on the personal knowledge of Mr. Rich ; and appears probable in itself.

Mr. Ives's party were told on the 6th of May, whilst in the *Marshes of Semowha*, that the river did not commonly overflow the *Marsh Lands*, so soon.

Pliny appears to have believed that the principal floods of the Euphrates, were in the early part of July ; and that the river was fallen to its ordinary state, by the middle of September. (lib. vi. c. 26.)

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