A NEW COLLECTION OF VOYAGES, DISCOVERIES and TRAVELS:

CONTAINING

Whatever is worthy of Notice, in

EUROPE, ASIA,
AFRICA and AMERICA:

IN RESPECT TO

The Situation and Extent of Empires, Kingdoms, and Provinces; their Climates, Soil, Produce, &c.

WITH

The Manners and Cuſtoms of the ſeveral Inhabitants; their Government, Religion, Arts, Sciences, Manufactures, and Commerce.

The whole conſiſting of ſuch ENGLISH and FOREIGN Authors as are in moſt Eſteem; including the Deſcriptions and Remarks of ſome celebrated late Travellers, not to be found in any other Collection.

Illuſtrated with a Variety of accurate

MAPS, PLANS, and elegant ENGRAVINGS.

VOL. IV.

LONDON:
Printed for J. KNOX, near Southampton-Street, in the Strand. MDCCLXVII.

THE TRAVELS OF Monſieur MAUPERTUIS,

And his ASSOCIATES of the ROYAL ACADEMY of SCIENCES.

Made by Order of the FRENCH KING, to determine the Figure of the EARTH at the POLAR CIRCLE.

IN order to give a clear idea of this undertaking, it is neceſſary to obſerve, that the great Sir Iſaac Newton and Mr. Huygens had from different obſervations concluded that the earth was flatted at the poles; but upon meaſuring the whole area of the meridian that paſſes through France, and from other operations, it was concluded by ſeveral of the members of the Academy of Sciences at Paris, that the terraqueous globe was prominent at the poles. Hence the members became divided in their ſentiments, and perplexed by their own enquiries, upon ſo important a ſubject, that was juſtly conſidered as having a real influence upon aſtronomy and navigation. To put an end to this diſpute, the French king reſolved that it ſhould be finally decided, and to the great joy of the academy, an order was diſpatched from court for a certain number of the members to go and meaſure the firſt degree of the meridian at the equator.

equator*. Theſe, ſays Monſ. Maupertuis, ſet out a whole year before us. The reſt were commiſſioned northward to meaſure the remoteſt degree they could reach: and the ſame alacrity, the ſame zeal to ſerve their country appeared in thoſe who were to endure the rage of the equator ſuns, and thoſe who were to freeze beneath the polar circle. The travels in the north were wrote by Monſ. Maupertuis, and we ſhall give them in his manner.

The company deſtined for the north, ſays he, was compoſed of four academicians, Meſſrs. Clairaut, Camus, Le Monnier, and myſelf; the abbe Outhier, and M. Celſius, the celebrated profeſſor of aſtronomy at Upſal, alſo aſſiſted at all our operations, and their abilities and advice were of ſingular uſe to us.

No ſooner was the veſſel that carried us arrived at Stockholm, than we reſolved without loſs of time to ſet out for the bottom of the gulph of Bothnia, where we might judge which ſide of the gulph was proper for our operations, better than we could do by truſting to our charts.

We arrived at Tornea time enough to ſee the ſun perform his courſe for ſeveral days together without ſetting; a ſight which ſtrikes with wonder an inhabitant of the temperate zones, even though he knows it is what muſt neceſſarily happen in that climate.

We had flattered ourſelves with the hopes of performing our operations upon the coaſts of the gulph of Bothnia, where we ſhould have the convenience of tranſporting ourſelves and our inſtruments to the different ſtations by ſea, and where the many advantageous points of view, from the iſlands in all our charts, ſeemed to promiſe us ſucceſs. But when we went with great impatience to view them, all our labour ſerved only to convince us, that this deſign was impracticable. The iſlands that line the coaſts of the gulph, and the coaſts themſelves, which we

* See Ulloa's voyage in vol. i. of this collection.

had fancied to be ſo many promontories, that might furniſh us with diſtant points of view from one to another, lay all of them ſo low upon the ſurface of the water, that at a ſmall diſtance, the convexity of the earth muſt ariſe between them and us. So that after ſeveral voyages in purſuance of our firſt deſign of making uſe of theſe iſlands, we were at laſt obliged to give it up.

We now reſolved to endeavour to perform our operations upon the tops of the mountains to the northward of Tornea, though it appeared next to impoſſible. In the deſarts of a country ſcarcely habitable, in that immenſe foreſt which extends from Tornea to Cape Nord, we muſt go through operations that are not eaſy, even where no convenience is wanting. There were but two ways of penetrating into theſe deſarts, both of which we muſt prove; one the ſailing up a river full of cataracts, the other croſſing thick woods and deep marſhes on foot; and if we ſhould be able to make our way into the country, we muſt, after the moſt painful marches, be obliged to clamber up ſteep rocks, and to clear the tops of mountains of the wood that would intercept our ſight. In theſe deſarts we ſhould be forced to take up with the moſt wretched diet, be expoſed to the flies, which in this ſeaſon are ſo inſufferable as to drive the Laplanders and their rain-deer from their habitations, to ſeek ſhelter on the coaſts of the ocean. We were, in fine, to undertake this work without knowing, or being able to inform ourſelves, whether it was practicable; whether the want of one mountain might not, after all our toils, interrupt the ſeries of our triangles; or whether it would be poſſible to find upon the river a baſe by which they might be connected. But if we ſhould ſurmount all theſe obſtacles, we ſhould ſtill have the labour of building obſervatories on the moſt northerly of the mountains; the trouble of carrying thither as numerous a collection of inſtruments as is perhaps to

be

be ſeen in Europe, and of making there the niceſt aſtronomical obſervations: but we were ſo far from being deterred by theſe difficulties, that the proſpect of conquering them filled us with pleaſure.

We ſet out from Tornea on Friday the 6th of July 1736, with a company of Finland ſoldiers, and a good number of boats laden with inſtruments and proviſions. We began our journey by ſailing up the great river, which, riſing in the inmoſt parts of Lapland, purſues its courſe till it falls into the gulph of Bothnia; having firſt divided itſelf into two branches that form the iſle of Swertzar, where is built a town of the ſame name in the latitude of 65° 51′. From this day forward, our only habitation was the deſarts, and our time was ſpent on the ſummits of thoſe mountains which we were to connect by our triangles.

After a voyage of twelve hours, we landed in the evening at Korpikyla, an hamlet by the river-ſide, inhabited by Finlanders; and having for ſome time travelled on foot acroſs the foreſt, arrived at the bottom of a ſteep mountain called Niva, whoſe ſummit, which is a bare rock, we choſe for our firſt ſtation. Upon the river we had been tormented by great flies with green heads, that fetched blood wherever they fixed: but on the top of this mountain we were peſtered with ſeveral other kinds that were ſtill more intolerable. By good luck we found two Lapland girls tending a ſmall herd of rein-deer, but almoſt hid in the ſmoke of a great fire they had kindled: and being told, on enquiry, that they thus defended themſelves from the flies, we had immediately recourſe to the ſame method.

On the 8th of July, at one in the morning, Mr. Camus and I left our company upon Niwa, to reconnoitre the mountains to the northward. We travelled up the river to a high mountain called Avaſaxa, where having cleared its top of the trees, we cauſed a ſignal to be built. Our ſignals were hollow cones, compoſed of a great many large trees,

ſtripped of the bark, by which means they were white enough to be viſible at ten or twelve leagues diſtance.

This being finiſhed, we came down from Avaſaxa, and embarking on the little river of Tenglio, which falls into the great river at the foot of this mountain; we directed our courſe upward to the neareſt place we could find, to a mountain that ſeemed to ſuit our purpoſe; and from thence a march of three hours, over a moraſs, brought us to the foot of Horrilakero. Though extremely fatigued, we got to the top of it, and ſpent the night in cutting down the wood that covered it. Moſt part of this mountain is a reddiſh ſtone, interſperſed with a kind of white cryſtal. Here the flies, more mercileſs than thoſe at Niwa, were not to be driven off by ſmoke, and we were obliged, notwithſtanding the exceſſive heats, to wrap our heads in our cappmudes, a ſort of gown made of rein-deer ſkins, and to cover ourſelves with branches of fir, and even whole trees, which rather ſtifled than defended us from theſe troubleſome inſects.

Having cut down all the wood on the top of Horrilakero, and built a ſignal, we returned by the ſame road to our boats, which we had drawn upon the bank. It is indeed no hard matter to drag along, or even to carry the boats uſed in the rivers of Lapland. A few thin fir boards compoſe the whole veſſel, which is ſo extremely light and flexible, that its beating, with all the forces of the ſtream, againſt the ſtones, which theſe rivers are full of, does it no manner of harm. It is terrible to thoſe not accuſtomed to it, and aſtoniſhing even to thoſe who are, to ſee one of theſe weak veſſels drive down a cataract, in a torrent of foam and ſtones, ſometimes raiſed aloft in the air, and the next moment loſt in the deep. A bold Finlander ſteers it with a long oar, while his two companions row hard to ſave it from the purſuing waves that threaten every moment

ment to overwhelm it. You may then ſee the whole keel by turns raiſed above water, and leaning only with one extremity on the top of a yielding billow. With ſuch courage and addreſs do theſe Finlanders paſs the cataracts; but their art and ſkill in the management of their boats upon other occaſions, is no leſs remarkable: a tree, branches and all, commonly ſerves them both for maſt and ſail.

We now embarked again on the Tenglio, which brought us down into the river of Tornea on our return to Korpikyla. At four leagues from Avaſaxa we left our boats, and after an hour's walk over the foreſt, reached the foot of Cuitaperi, a ſteep mountain; its ſummit is a rock covered with moſs, affording an extenſive proſpect all round, and to the ſouth taking in the gulph of Bothnia: here we erected a ſignal, whence we could diſcover all the others we had raiſed, and then continued our courſe down the river. Between Cuitaperi and Korpikyla we found ſome frightful cataracts, where the Finlanders always ſet their paſſengers aſhore; but our exceſſive fatigue made us chuſe rather to riſk the paſſage in the boat than to walk only an hundred yards. At laſt, on the evening of the 11th, we joined our friends on the top of Niwa, who had deſcried our ſignals, but from the continual fogs, were unable to make any obſervations.

The fogs being at length diſperſed by the cold north wind, we had ſuch a view of our ſeveral ſignals, as to take their angles; and having finiſhed our obſervations there, we ſet up ſignals at Kakama and Pullingi, where having alſo made our obſervations, we all ſet out for Avaſaxa.

This mountain is ſeated on the bank of the river, fifteen leagues from Tornea. Its aſcent is difficult, lying through a wood that reaches half way up, where it is interrupted by ſteep ſlippery rocks; and afterward continued to the very top of the mountain before we cut down ſo much of it as was neceſſary to

open our proſpect. The north-eaſt ſide is a moſt frightful rocky precipice, where the falcons build their neſts. At its foot runs the Tenglio, by which it is encircled. From its ſummit the proſpect is the moſt beautiful that can be imagined; to the ſouth it is unbounded, and diſcovers the courſe of the river to a vaſt extent: toward the eaſt the Tenglio may be traced in its paſſage through ſeveral lakes; and the view is terminated on the north, at twelve or fifteen leagues diſtance, by a prodigious number of hills heaped one upon another. Upon this mountain we ſpent ten days, during which curioſity prompted the inhabitants to pay us frequent viſits, bringing us fiſh and ſheep, and ſuch bad fruits as are produced in the woods.

The day we left Avaſaxa we croſſed the polar circle, and at three the next morning, which was the 31ſt of July, arrived at Turtula, a hamlet where they were cutting their little crop of barley and hay. After having travelled for ſome time in the woods, we embarked on a lake that brought us to the foot of Pullingi, the higheſt of all our mountains, and of exceeding difficult acceſs; as well on account of its ſteepneſs, as the depth of the moſs wherein we were obliged to fix our ſteps. Our ſtay here, which was till the 6th of Auguſt, was no leſs diſagreeable than the aſcent had been painful. We had a whole wood of the largeſt trees to fell, and the flies attacked us with ſuch fury, that our ſoldiers of the regiment of Weſtro-Bothnia, a body diſtinguiſhed for their bravery even in Sweden, and hardened by the greateſt fatigues, were obliged to wrap up their faces, or to ſmear them all over with tar. Theſe inſects alſo poiſoned our victuals; no ſooner was a diſh ſerved, but it was quite covered over with them, while another ſwarm, with all the rapaciouſneſs of birds of prey, was fluttering round, to carry off ſome pieces of a ſheep that was dreſſing for us.

On

On the 6th of Auguſt we left this mountain to go to Pello, where we arrived the ſame day, after having forced our way up four cataracts. Pello is a village inhabited by a few Finlanders; in its neighbourhood is Kittis, the loweſt of all our mountains, where was one of our ſignals. As we were going up, we diſcovered a copious ſpring of pure water, that reſiſts the keeneſt froſts; for when we returned to Pello about the end of winter, while the ſea at the bottom of the gulph, and all the rivers were frozen as hard as marble, we found this ſpring running as in ſummer. We had the good fortune to make our obſervations ſoon after our arrival, and the next day went to Turtula.

For a month paſt we had been inhabitants of the deſarts, or rather of the mountain tops; the earth or rocks ſpread with the ſkins of rein-deer had been our beds; and our food was chiefly fiſh, brought us by the Finlanders, or which we ourſelves had caught; and berries or wild fruit that grew in the woods.

I left Turtula, in company with Meſſrs. Outhier and Celſus, to croſs the foreſt and find the ſignal erected at Niemi; and a frightful journey it was. We ſet out on foot, and walked till we got to a brook, where we embarked in three little boats: but they paſſed with ſuch difficulty between the ſtones, that we were obliged every inſtant to get out of them and leap from one rock to another. The brook brought us to a lake ſo full of little yellowiſh grains of the bigneſs of millet, that the whole water was diſcoloured with them. I took them to be the chryſalis of ſome inſect, and was tempted to fancy, that this inſect muſt be ſome kind of thoſe flies that ſo tormented us, for I could think of no other ſpecies of animals whoſe numbers correſponded to the quantity of grains that covered this large body of water. From the extremity of this lake we had to walk to another of very clear water. Here we found a boat, and putting our quadrant on board, reſolved

to follow it along the ſide of the lake on foot; but the wood was ſo thick, that we were forced to cut our way through it, and were intangled at every ſtep by the depth of the moſs, and the fallen fir-trees that lay acroſs our way.

In all theſe woods there are almoſt as many trees fallen as ſtanding; for the ſoil, after it has reared them to a certain height, can no longer furniſh the proper nouriſhment, nor is it deep enough to allow them to take firm root: whence the leaſt blaſt of wind overſets them; and in all theſe woods nothing is to be ſeen but firs and birches blown down. Time reduces the wood of the latter to duſt, without affecting the bark; and one is ſurprized to find pretty large trees that crumble upon the ſlighteſt touch. This probably gave the Swedes the hint of covering their houſes with this bark, and indeed nothing could be imagined fitter for the purpoſe. In ſome provinces they cover the bark with earth, and form upon the roof a kind of garden, ſuch as are to be ſeen upon the houſes of Upſal. In Weſtro-Bothnia the bark is bound with fir poles that hang down on either ſide of the roof.

Having at length reached a third lake, which was very large, and the fineſt water imaginable; we put our inſtruments and baggage on board two boats we found there, and waited their return upon the coaſt; when we were ferried over to the foot of Niemi.

The fine lakes that ſurround this mountain, and the many difficulties we encountered in getting thither, gave it the air of an inchanted iſland in romance. On one hand you ſee a grove of trees riſe from a plain, ſmooth and level as the walks of a garden; and at ſuch eaſy diſtances, as neither to embarraſs the walks, nor the proſpect of the lake that waſhes the foot of the mountain. On the other, you have apartments of different ſizes that ſeem cut by art in the rocks, and to want only a regular roof to complete them. The rocks themſelves are ſo perpendicular, ſo high,

and

and ſo ſmooth, that you would take them for the walls of an unfiniſhed palace, rather than for the work of nature. From this height we ſaw thoſe vapours riſe from the lake which the people of the country call Haltios, and deem the guardian ſpirits of the mountains. We had been frightened with ſtories of bears haunting this place, but ſaw none. Indeed it ſeemed rather a place of reſort for fairies and genii, than for thoſe ſavage animals.

Having compleated our obſervations, we left Niemi, repaſſed the three lakes, and got back to Turtula. We afterward departed from thence, and ſet out for Horrilakero, entering the Tenglio with four boats. Its cataracts are troubleſome, rather from the lowneſs of the water, and the great number of ſtones, than the rapidity of the ſtream. As we ſailed along, I was ſurprized to ſee upon the banks of this river, roſes of as lively a red as any in our gardens. We compleated our obſervations at Horrilakero on the 17th of Auguſt, and the next day went to Oſwer-Tornea, where our whole company was now aſſembled.

But afterwards going up to Avaſaxa to take the angles that muſt connect the baſe, which we had fixed on the bank of the river with our triangles, we ſaw Horrilakero all in flames. This is an accident not uncommon in theſe woods, where there is no living during the ſummer, without ſmoak, and where the moſs and firs are ſo combuſtible, that a fire once kindled will ſpread over ſome thouſand acres; and the ſmoke of theſe fires have ſometimes retarded our obſervations as much as the thickneſs of the air. As this fire on Horrilakero had been doubtleſs occaſioned by our not taking ſufficient care to extinguiſh thoſe we had kindled there, we diſpatched thirty men to cut off its communication with the neighbouring woods. But three days after, when we had finiſhed our obſervations at Avaſaxa, Horrilakero was ſtill burning; we ſaw it involved in a cloud of

ſmoak, and the flames, which had made their way downward were ravaging all the foreſt below.

By the 9th of September, when we had paſſed ſixty-three days in theſe deſerts, we had finiſhed as compleat a ſet of triangles as we could have wiſhed for: and an undertaking begun in a manner at random, without knowing whether it was at all practicable, had turned out ſo much better than expectation, that it looked as if the placing of theſe mountains had been at our diſpoſal. We had built two obſervatories upon Kittis, in the one was a quadrant of two foot radius, a clock of Mr. Graham's, and an inſtrument which we owed to the ſame gentleman, conſiſting of a teleſcope, moveable about an horizontal axis, which was to determine the direction of our triangles with reſpect to the meridian. The other obſervatory, which was much larger, was built ſo near the firſt, that the voice of him who counted the pendulum's vibrations, could be diſtinctly heard from one to the other. An admirable ſector alſo made by Mr. Graham took up almoſt the whole room. What difficulty we had in carrying up ſo many inſtruments to the top of the mountain, I ſhall not mention; it is ſufficient that we carried them up.

We had ſome ice on the 19th of September, and ſnow on the 21ſt; ſome parts of the river were alſo frozen. On the firſt of November it began to freeze harder, and on the morrow the river was quite frozen up. The ice, which thawed no more, was preſently covered over with ſnow; and this vaſt body of water, but a few days before full of ſwans and other waterfowl, was now one immenſe plain of ice and ſnow. Our work was now in a manner compleated, we had only to meaſure our baſe, which was no more than ſurveying the diſtance between the two ſignals we had erected laſt ſummer; but this was to be done upon the ice of a river in Lapland, at the diſtance of above three leagues, in a country where the cold was growing every day more intenſe. On the 21ſt of December

cember this work was begun. In this ſeaſon the ſun but juſt ſhewed itſelf above the horizon toward noon; but the long twilights, the whiteneſs of the ſnow, and the meteors continually blazing in the ſky, furniſhed us light enough to work four or five hours every day. We lodged at the houſe of the curate of Oſwer-Tornea, and at eleven in the forenoon began our ſurvey, attended by ſo great an equipage, that the Laplanders, drawn by the novelty of the ſight, came down from the neighbouring mountains. We ſeparated into two bands, each of which carried four rods of fir, each thirty feet long. I ſhall ſay nothing of the fatigues and dangers of this operation. Judge what it muſt be to walk in ſnow two feet deep, with heavy poles in our hands, which we were obliged to be continually laying on the ſnow, and lifting again, in a cold ſo extreme, that whenever we would taſte a little brandy, the only thing that could be kept liquid, our tongues and lips froze to the cup, and came away bloody: in a cold that congealed the fingers of ſome of us, and threatened us with ſtill more diſmal accidents. While the extremities of our bodies were thus freezing, the reſt, through exceſſive toil, was bathed in ſweat. Brandy did not quench our thirſt; we muſt have recourſe to deep wells dug through the ice, which were ſhut almoſt as ſoon as opened, and from which the water could ſcarcely be conveyed unfrozen to our lips; thus were we forced to run the hazard of the dangerous contraſt which ice-water might produce in our heated bodies.

Our work, however, advanced apace; for ſix days labour brought it to within five hundred toiſes, where we had not been able to plant our ſtakes ſoon enough: three of the gentlemen therefore undertook this office, while the abbé Outhier and I went upon a pretty extraordinary adventure. We had laſt ſummer omitted an obſervation of ſmall moment; this was taking the height of an object that we made uſe of in meaſuring

ing on the top of Avaſaxa; and to perform this, I undertook to go with a quadrant to the top of the mountain, ſo ſcrupulouſly careful were we that nothing ſhould be wanting to the perfection of the work. Imagine a very high mountain full of rocks, that lie hid in a prodigious quantity of ſnow, as well as their cavities, wherein you may ſink through a cruſt of ſnow as into an abyſs, and the undertaking will ſcarce appear poſſible: yet there are two ways of performing it, one by walking, or rather ſliding along upon two ſtrait boards eight feet in length, which the Finlanders and Laplanders uſe to keep them from ſinking into the ſnow: but this way of walking requires long practice. The other is by truſting yourſelf to a rein-deer uſed to ſuch journies.

The machine drawn by theſe animals is here a kind of boat ſcarcely large enough to hold the half of one's body. As this travelling in the ſnow is a kind of navigation, that the veſſel may ſuffer the leſs reſiſtance in its courſe, it has a ſharp head, and a narrow keel, like an ordinary boat; and on this keel it tumbles ſo from ſide to ſide, that if a man does not take good care to balance himſelf, it will be every moment in danger of overſetting. It is fixed by thongs to the collar of the rein-deer, who, as ſoon as he finds himſelf on a firm beaten road, runs with incredible fury. If you would ſtop him, it is to little purpoſe to pull a ſort of rein that is tied to his horns: wild and unmanageable, it will only make him change his track, or perhaps turn upon you, and revenge himſelf by kicking. If this happens to a Laplander, he turns the boat over him, and uſes it as a buckler againſt the attacks of the rein-deer: but as we were ſtrangers to this addreſs, we might have been killed before we could put ourſelves in ſuch a poſture of defence. We had nothing to defend us with but a little ſtick each of us held in his hand, by way of rudder to ſteer our courſe, and keep clear of the trunks of trees. In this manner

was I to climb Avaſaxa, accompanied by the abbé Outhier; but we were attended by two men and a woman of the country, and Mr. Brunnius their curate.

The firſt part of our journey was performed in a moment; for our flight over the plain beaten road from the curate's houſe to the foot of the mountain can be compared only to that of birds. And though the mountain where there was no track greatly abated the ſpeed of our rein-deer, they got at length to the top of it; where we immediately made the obſervation for which we came. In the mean while, our rein-deer had dug deep holes in the ſnow, where they browzed on the moſs that covers the rocks; and the Laplanders had lighted a great fire, and we preſently joined them to warm ourſelves. The cold was ſo extreme, that the heat of the fire could reach only to a very ſmall diſtance. As the ſnow juſt by it melted, it was immediately froze again, forming a hearth of ice all round.

Our journey up hill had been painful; but now our concern was leſt our return ſhould be too rapid. We were to proceed down the ſteep in conveyances, which, though partly ſunk in the ſnow, ſlid on notwithſtanding, drawn by animals, whoſe fury in the plain we had already tried, and who, though ſinking to their bellies in the ſnow, would endeavour to free themſelves by the ſwiftneſs of their flight. We very ſoon found ourſelves at the bottom of a hill; a moment after this a great river was croſſed, and we were returned back to the curate's houſe.

The next day we finiſhed our ſurvey, and made all poſſible haſte back to Tornea to ſecure ourſelves in the beſt manner we were able from the increaſing ſeverity of the ſeaſon. The town of Tornea, at our arrival on the 30th of December, had really a moſt frightful aſpect. Its little houſes were buried to the tops in ſnow, which, had there been any day light, muſt have effectually ſhut it out.

But

But the ſnow continually falling, or ready to fall, for the moſt part hid the ſun the few moments he might have appeared at mid-day. In the month of January the cold was increaſed to that extremity, that Mr. Reaumur's mercurial thermometers, which at Paris, in the great froſt of 1709, it was thought ſtrange to ſee fall to fourteen degrees below the freezing point, were now got down to thirty-ſeven. The ſpirit of wine in the others was frozen. If we opened the door of a warm room, the external air inſtantly converted all the vapour in it into ſnow, whirling it round in white vortexes. If we went abroad, we felt as if the air was tearing our breaſts in pieces; and the crackling of the wood of which the houſes are built, as it ſplit by the violence of the froſt, continually alarming us with an encreaſe of cold. The ſolitude of the ſtreets was as great as if the people had been all dead: and in this country you may often ſee people who have loſt an arm or leg by the froſt. The cold, which is always very great, ſometimes increaſes by ſuch violent and ſudden fits, as are almoſt infallibly fatal to thoſe who are ſo unhappy as to be expoſed to it; and ſometimes there riſe ſudden tempeſts of ſnow that are ſtill more dangerous. The winds ſeem to blow from all quarters at once, and drive about the ſnow with ſuch fury, that all the roads are in a moment rendered inviſible. Dreadful is the ſituation of a perſon ſurpriſed in the fields by ſuch a ſtorm; his knowlege of the country, and even the mark, he may have taken by the trees, cannot avail him; he is blinded by the ſnow, and if he attempts to find his way home is generally loſt. In ſhort, during the whole winter the cold was ſo exceſſive, that on the 7th of April, at five in the morning, the thermometer was fallen to twenty diviſions below the point of freezing, though every afternoon it roſe two or three diviſions above it: a difference in the height not much leſs than that which the greateſt heat and cold felt at Paris uſually produce

produce in that inſtrument. Thus in the ſpace of twenty-four hours, we had all the variety felt in the temperate zones in the compaſs of a whole year.

But though in this climate the earth is thus horrible, the heavens preſent the moſt beautiful proſpects. The ſhort days are no ſooner cloſed, than fires of a thouſand colours and figures light up the ſky, as if deſigned to compenſate for the abſence of the ſun in this ſeaſon. Theſe fires have not here, as in the more ſoutherly climates, any conſtant ſituation. Though a luminous arch is often ſeen fixed toward the north, they ſeem more frequently to poſſeſs the whole extent of the hemiſphere. It would be endleſs to mention all the different figures theſe meteors aſſume, and the various motions with which they are agitated. Their motion is moſt commonly like that of a pair of colours waved in the air, and the different tints of their light gives them the appearance of ſo many vaſt ſtreamers of changeable taffeta. On the 18th of December I ſaw a phænomenon of this kind, that in the midſt of all the wonders to which I was now every day accuſtomed, raiſed my admiration. To the ſouth a great ſpace of the ſky appeared tinged with ſo lively a red, that the whole conſtellation of Orion looked as if it had been dipped in blood. This light, which was at firſt fixed, ſoon moved, and changing into other colours, violet and blue, ſettled into a dome, whoſe top ſtood a little to the ſouth-weſt of the zenith. The moon ſhone bright, but did not in the leaſt efface it. In this country, where there are lights of ſo many different colours, I never ſaw but two that were red; and ſuch are taken for preſages of ſome great misfortune. After all, when people gaze at theſe phænomena with an unphiloſophic eye, it is not ſurpriſing if they diſcover in them armies engaged, fiery chariots, and a thouſand other prodigies.

During

During the winter we repeated many of our obſervations and calculations, and found the moſt evident proofs of the earth's being conſiderably flatted at the poles. Mean time, the ſun came nearer, or rather no more quitted us. It was now May, when it was curious enough to ſee that great luminary enlighten for ſo long a time a whole horizon of ice; and to ſee ſummer in the heavens, while winter ſtill kept poſſeſſion of the earth. We were in the morning of that long day of ſeveral months; yet the ſun with all his power wrought no change either upon the ice or ſnows.

On the 6th of May it began to rain, and ſome water appeared on the ice of the river. At noon a little ſnow melted; but in the evening, winter reſumed his rights. At length, on the 10th, the earth which had been ſo long hid began to appear; ſome high points that were expoſed to the ſun ſhewed themſelves, as the tops of the mountains did after the deluge, and all the fowls of the country returned. At the beginning of June, winter yielding up the earth and ſea, we prepared for our departure back to Stockholm, and on the 9th ſome of us ſet out by land and others by ſea.