

A
V O Y A G E
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A SUCCINCT
ABRIDGMENT
OF A
VOYAGE

Made within the
INLAND PARTS
OF
SOUTH-AMERICA;

FROM THE
Coasts of the *South-Sea*, to the Coasts of *Brazil*
and *Guiana*, down the River of *Amazons*:

As it was read in the Public Assembly of the
Academy of Sciences at *Paris*, *April 28, 1745*.

By Monf. *DE LA CONDAMINE*,
of that ACADEMY.

To which is annexed,
A MAP of the *Maranon*, or River of *Amazons*,
drawn by the same.

L O N D O N,
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T H E

P R E F A C E.

IT is well known to every one, that, for these ten years, several astronomers of the academy have been sent, by the king's order, to the *Equator*, and the *Polar Circle*, there to measure exactly the degrees of the Earth; whilst other members of the academy were employed on the same operations in *France*. Under any other reign, all these distant and difficult undertakings, with the number of observators, and implements, necessary for the performance of them, could only have been the product of a long peace; under that of *Lewis XV.* they were formed, and hapily executed, during the continuance of two bloody wars; And whilst his Majesty's armies flew from one end of *Europe* to the other, for the assistance of his allies, his mathematicians, dispersed over the surface of the earth, were at work under the *Torrid* and *Frigid Zones*, for the improvement of the sciences, and the common benefit of all nations.

They have brought back, as the fruit of their labours, the decision of a celebrated question;
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tion ; a decision, whose usefulness, Geography, Astronomy, Natural Philosophy in general, and Navigation in particular, will share in. They have cleared up a doubt, wherein the lives of mankind were concerned. These motives, were well worth their taking all the pains it has cost them, to accomplish this design ; whereof the academy never lost sight, since their first establishment, and which they have now successfully compassed.

Without insisting upon the direct and evident consequences, that may be drawn, from the exact knowledge of the diameters of the earth, towards bringing Geography and Astronomy to the utmost perfection, the diameter of the *Equinoctial*, now proved to be longer than that which traverses the globe from one *Pole* to the other, affords us a new argument, (not to say a new demonstration) of the Earth's revolution upon its own axis ; a revolution, which is common to all the heavenly system. The labours of the members of the academy, both in the mensuration of degrees, and in their experiments made, and brought to perfection, with so great exactness, in different latitudes, diffuses a new light over the theory of gravitation, which, in our days, has begun to emanate out of obscurity. It enriches Natural Philosophy, in general, with new problems, hitherto not to be solved, concerning the quantities and directions of gravity, in the different parts of the Earth ; in short, it leads us into the way of yet more impor-

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important discoveries; as that of the nature and true laws of universal gravitation, that power which animates the heavenly bodies, and governs all throughout the universe.

The mistakes, which the knowledge of the earth's true figure may help mariners to avoid, are they the less mistakes, because there remain yet others, which are hitherto without remedy? No certainly. The nearer the art of navigation arrives to perfection, the more sensible men will be, of the usefulness, of having the earth's figure determined. Perhaps the moment is at hand, when its advantage will be evidently discovered by sailors. But, supposing it should not be so, is it less real? At least, this is certain; the more reason there was, to doubt whether the Earth was oblong, or level, towards the *Poles*, of the more importance it was, even for the consequences of practice, to know, what might be depended on, by decisive mensurations.

The first proposed, and the last finished, of the three voyages, which, of late years, were undertaken, to measure the degrees of the earth, was that to the *Equator*, begun in 1735, by Messieurs *Godin*, *Bouguer*, and me. The public have been several years informed, of the success of those members of the academy, who made their observations under the *Polar Circle*, and in our climates; and M. *Bouguer*, who arrived in *France* before me, has given an account to the public assembly, of the academy, on *November 14*, 1744, of

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the result of ours, under the *Equinoctial Line*; as also, of the agreement between the latter, that of the *north*, and that of *France*; each of which, being compared with either of the other two, proves the earth's being level towards the *Poles*. A more particular account thereof, is reserved for *The History of our Mensuration of the Earth*; that is, of our astronomical observations, and our trigonometrical operations, in the province of *Quito*, in *South-America*; a work, for which we are responsible to the academy and the public, because it was on that account we were sent.

The question of the earth's figure being decided, and the curiosity of the public abated upon that head, I thought to excite it somewhat more, at the public assembly of the 26th of last *April*, by a succinct account of my voyage, upon the river of the *Amazons*, which I ran down, from the place where it begins to be navigable, to its mouth; and which I surveyed for above a thousand leagues. But the abundance of matter, not having allowed me to confine myself, to the bounds prescribed in my lecture, which likewise were but small, I was obliged to make new retrenchments, as I went on, which necessarily interrupted the order and connection of my first extract; wherefore I now publish it, in the same form, wherein I compiled it originally.

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Not to baulk the expectation, of those who only seek for extraordinary occurrences, with agreeable descriptions of foreign manners, and unheard of customs, in a book of travels, I ought to apprize them, that, in this treatise, they will find but little to satisfy them. I was not at liberty, to lead the reader indifferently, to all the objects, that might have been proper to please his curiosity; though an historical journal, which I have kept constantly, for these ten years, might have supplied me with the necessary materials for that purpose; but this was neither the place, nor was it now the time, to make use thereof. My business was, to render an account of a map, which I have drawn, of the course of a river, that traverses vast regions, almost unknown to our geographers; as also, to give some representation and idea thereof, in an abstract, intended to be read to the Academy of Sciences. In a work of this nature therefore, where I was not to aim so much at amusing, as at instructing, all that did not relate to Geography, Astronomy, or Natural Philosophy, must necessarily appear a digression, foreign to my subject; nevertheless, it was not just, to tire out the patience, of the greatest part of those, who composed the public assembly, by a list of barbarous names, of nations and rivers, and by a journal, of the altitudes of the sun and stars, of latitudes and longitudes, of measures, of courses, of distances, of soundings, of variations of the compass, of experiments of the
Barometer,

Barometer, &c. And yet these were the best part of the materials of my narrative, and those wherein its greatest merit consisted; at least, this was the only point, that could distinguish it from other ordinary voyages. I have endeavoured, then, to take a middle way, between these two extreams; I have referred all the particulars, relating to the astronomical and geometrical part, to the memoirs of the academy, or to the collection of our observations, which is to follow hereafter. I have here given, only the principal inferences drawn from thence, with the situation of the most remarkable places; keeping always to the order of my narrative. I have discoursed, however, somewhat at large, upon the article of the *American Amazons*, because I thought it might reasonably be expected from me. I have interwoven, with my remarks, relating to Natural Philosophy and History, some occurrences, merely historical, when they have not misled me too far from my subject. I could not, without rambling from it entirely, avoid entering, into some geographical discussions, which were closely connected therewith; such as, the communication of the river of *Amazons* with the *Oroonoko*, formerly allowed, afterwards denied, and at length newly made fully apparent, by decisive evidence. Such also as the searches after the situation of the *Village of Gold*, and the boundary set up by *Texeira*; that after the lake *Parima*, and the city of *Manoa*; as also,
that

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that after the river of *Vincent Pinço*, &c.—Each of these articles, might have furnished me with matter for a dissertation; however, I have treated thereof but cursorily, well knowing, how very indifferent, most readers are about such points, though useful, and even entertaining, to those who like this kind of learning.

The little map, of the course of the river of *Amazons*, annexed to this treatise, will be sufficient to fix the reader's imagination, till I can publish one larger, and more accurate, in our memoirs; but this shall not make its appearance, till I have rendered it as exact, as I possibly can, by digesting into order, all my calculations of courses and distances, and correcting them by my astronomical observations. This could not have been done, but imperfectly at present, as I still wanted observations of longitude, made under some well known meridian, to supply the defect of those, that could not be taken at *Paris*, in correspondence with mine, at diverse places on my way.

I have subjoined, to the course of the river of *Amazons*, the topography of the province of *Quito*, taken from the map of the triangles of our meridian. I have inserted the description of the coasts of the same province, with the road from *Quito* to *Lima*, and that from *Quito* to *Popayan*, from my particular travels, and those of M. *Bouguer*. The rest of the map has been extracted from diverse memoirs, journals,

journals, and notes, which were communicated to me in the country, by several intelligent missionaries and travellers. M. *D'Arville*, geographer to the king, whose ability is well known, was very helpful to me, in reducing into order, and putting together, these scattered materials, to imbellish my map therewith.

I have followed the orthography, of the *Spaniards* and *Portuguese*, with regard to the names in those two tongues, and even to the *Indian* names of places, under the dominion of those crowns; being willing thereby to avoid the inconvenience, of rendering them unintelligible, in the original authors.



A

V O Y A G E

T H R O U G H T H E

Inner Parts of *South-America*.

TOWARDS the end of *March*, 1743, after having spent six months in a desert, at *Tarqui*, near *Cuença* in *Peru*, being employed night and day, in struggling with a sky very unfavourable to astronomers, I received advice from M. *Bouguer*, that he had made diverse observations, near *Quito*, at the *northern* extremity of our *meridian*, of a star, situated between our two *zeniths*, on many of those very nights, when I had observed the same, for my part, at the *southern* extremity of the same line. By these simultaneous observations, on the importance whereof, I had strongly insisted, we had gained the singular advantage, of being able to conclude directly, and without any hypothesis, what was the real amplitude, of a segment of three

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degrees of a meridian, whose length was known to us geometrically; and to draw this conclusion, without having any thing to fear, from its variations, whether optical or real, and even imperceptible, in the motion of the star itself; since it had been seen at the same instant, by both the observators, at the two extremities of the segment. M. Bouguer, having returned to *Europe* some months before me, communicated this our result, to our last public assembly, which agrees with that, of the operations made under the *Polar * Circle*. Neither does it agree less with the last, that were performed in † *France*, all of them concurring, to prove the earth to be a spheroid, level and flat towards the *Poles*. Having set out in *April*, 1735, a year before the members of the academy, who were sent towards the *north*, we returned seven years too late, to inform *Europe* of any thing new, concerning the figure of the earth. Since that time, this subject has been treated of afresh, by so many able hands, that, I hope, my referring to the memoirs of the academy, the detail of my particular observations upon this head, and renouncing my right, too dearly purchased, which I might otherwise have had, to entertain this assembly thereupon at present, will be taken very kindly.

Neither will I stop, to mention here the other academical labours, independent of the measure of the earth, to which we applied ourselves, both together and separately, either in our way from

* By Messieurs de Maupertuis, Clairaut, Camus, and le Monnier, members of the academy; the Abbé Outhier, one of its correspondents, and M. Celsius, professor of astronomy at *Upsal*

† By Messieurs Cassini de Thury, and the Abbé de la Caille.

Europe to America, at the places where we made some stay, or after our arrival in the province of *Quito*, during the frequent intervals, caused by obstacles of every kind, which did but too much delay the course of our operations. It would be necessary, for this end, to make an abstract, of a great number of memoirs, sent to the academy for seven or eight years; some of which are not even arrived in *France*; and most part of the rest whereof, have never yet appeared, even in abstracts, in our collections. I will not therefore mention here, our astronomical or geometrical determinations, of the Latitude and Longitude of a great number of places; of the observation of the two *solstices* of *December 1736*, and *June 1737*, and of the *obliquity of the Ecliptic*, which results from thence: nor our experiments of the *Thermometer* and *Barometer*; the declination and inclination of the *Needle*, and the velocity of *Sound*; the *Newtonian Attraction*, the length of the *Pendulum*, in the province of *Quito*, at various elevations, above the level of the sea; the dilatation and condensation of *Metals*; nor of two voyages I made, one in 1736, from the coasts of the *South-Sea*, up the *River of Emeralds*, and the other in 1737, from *Quito* to *Lima*.

In short, I shall avoid giving an account of the two pyramids, which I had erected, to ascertain for ever the two boundaries, of the fundamental basis of all our measures; thereby to prevent the inconveniences, that have been but too much experienced in *France*, for want of the same precaution, when required, to prove the basis of *M. Picard*. “ The inscriptions drawn up, before our departure, at the academy of the *Belles Lettres*, and since put upon those pyramids, “ (with the alterations that the circumstances of

“time and place required) was informed against, by the two lieutenants of the king of *Spain’s* vessel, our assistants, as injurious to his catholic majesty, and the *Spanish* nation. I defended, for two years, the law-suit brought against me personally, on this account, and gained it at last, peremptorily, even at the parliament of *Quito*.” What passed on this occasion, with many other entertaining occurrences of our voyage, which the distance of places has greatly disfigured, in the accounts that have come hither, are rather the subject of an historical relation, than of *academical* memoirs: I shall confine myself, therefore, in this, to what relates to my return to *Europe*.

In order to multiply our opportunities of making observations, it has been long agreed, between Messieurs *Godin*, *Bouguer*, and myself, to return by different ways. I resolved upon chusing one almost unknown, and which I was sure no one would envy me; namely, that of the river of *Amazons*, which traverses the whole continent of *South-America*, from *west* to *east*, and is justly reckoned the largest river in the world. I proposed to myself, to render this voyage beneficial, by drawing a map of this river, and collecting the observations of every kind, which I might have an opportunity of making, in a country so little known. What relates to the singular manners and customs, of the different nations which live upon its sides, would be much more proper, to excite the curiosity of a great number of readers; but I thought, that, in the presence of an audience, to whom the language of natural philosophy and geometry is familiar, it would hardly be excusable in me, to expatiate upon subjects, foreign to the design of the academy. Nevertheless,
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in order to be the better understood, I cannot avoid premising some things, concerning the river in question, and the first persons who failed thereon.

It is commonly believed that the first *European*, who discovered the river of *Amazons*, was *Francis Orellana*; who embarked in 1539, pretty near *Quito*, on the river *Coca*, which, as it runs lower, takes the name of *Napo*; from thence falling into another larger, and letting the boat go, without any other guide than the stream, he arrived at the *North-Cape*, on the coast of *Guiana*, after a navigation of 1800 leagues, according to his reckoning. The same *Orellana*, was lost ten years afterwards, with three vessels, wherewith he was entrusted in *Spain*, without being able again to find, the real mouth of the river he was seeking. [His meeting, as he says, with some women armed, against whom an *Indian Cacique* bid him be upon his guard, caused it to be called the *River of Amazons*. Some have given it the name of *Orellana*, but, before his time, it was already termed *Maranon*, from the name of another *Spanish* captain. The geographers, who have made two different rivers of the *Amazon*, and the *Maranon*, being deceived, like *Laet*, by the authority of *Garcilasso*, and *Herrera*, were, no doubt, ignorant, not only that the greatest part of the * *Spanish* authors, who wrote first upon this head, called this river *Maranon*, even in 1513, but also that *Orellana* himself says, in his relation, that he met the *Amazons*, in coming down the *Maranon*, which is unanswerable. In effect, it has always retained this name, without interrup-

* See *Peter Martyr*, *Fernandez de Enciso*, *Fernandez de Oviedo*, *Pedro Cieça*, and *Augustin Zarate*.

tion, amongst the *Spaniards*, for above two hundred years, throughout its whole extent; and even from its source in upper *Peru*. Nevertheless, the *Portuguese*, who have been settled at *Para*, an episcopal see, situated towards the easternmost mouth of this river, ever since 1616, only know it thereabouts, by the name of the *River of Amazons*; and up higher, by that of *Solimoes*; and they have transferred the name of *Maranon*, or *Maranbaon*, in their idiom, to a city, and a whole province, or captainship, adjoining to that of *Para*. As for my part, I shall call it indifferently by the name of *Maranon*, or the *River of Amazons*.

In 1560, *Pedro de Ursoa*, being sent by the viceroy of *Peru*, in search of the famous golden lake of *Parima*, and the city *del Dorado*, which were thought to be on the banks of the *Amazon*, entered this river, by another, which ran into it, from the *south*, and whereof I shall speak, in its proper place. The end of *Ursoa* was yet more tragical, than that of *Orellana*, his predecessor: he perished by the hand of *Aguirre*, a mutinous soldier, who got himself declared king. Having thus done, he went down the river, and, after a long voyage, the particulars whereof were never yet well known, having carried murder and rapine wherever he came, his career was stopped, by his being seized and quartered in the isle of *Trinity*.

Mean while, such voyages gave no great insight into the course of this river; and some particular governors made, afterwards diverse attempts towards it, with as little success; the *Portuguese*, however, were more fortunate than the *Spaniards*.

In 1638, almost a hundred years after *Orellana*, *Pedro Teixeira*, being sent by the governor of *Para*,

Para, at the head of a numerous detachment of *Portuguese* and *Indians*, went up the *Amazon*, to the mouth of the *Napo*; and afterwards up the *Napo* itself, which carried him pretty near *Quito*, whither he went by land with some of the *Portuguese*; and as both nations were then under the same master, he was well received by the *Spaniards*. He returned a year after to *Para*, by the same way, being accompanied by the fathers *D'Acunha*, and *D'Artieda*, Jesuits, appointed to give an account, to the court of *Madrid*, of the particulars of that voyage. They reckoned the distance from the hamlet of *Napo*, where they embarked, to *Para*, 1356 *Spanish* leagues, which are more than 1500 sea leagues, and above 1900 of our ordinary ones. The relation of this voyage, was published at *Madrid* in 1640; the *French* translation whereof, made in 1682, by M. *Gomberville*, is in every body's hands.

The very faulty map, of the course of this river, drawn by *Sanfon*, from this relation, which is merely historical, has since been copied by all geographers, for want of new memoirs; and we never had a better till 1717.

Then appeared, for the first time, in *France*, in the twelfth volume of *Edifying and curious Letters*, &c. a copy of a map engraved at *Quito*, in 1707, and drawn in 1690, by father *Samuel Fritz*, a *German* Jesuit, who was a missionary on the banks of the *Maranon*, which he surveyed throughout its whole length. By this map it was discovered, that the *Napo*, which, even in the time of father *D'Acunha's* voyage, was reckoned the real source of the *Amazon*, was but an inferior stream, which increased that of the *Amazon's* with its waters: and that the latter, under the name of the *Maranon*, issued from a lake near *Guanuco*,

thirty leagues from *Lima*. As for the rest, father *Fritz*, without a pendulum or telescope, could not possibly determine any point of longitude; having only a wooden semicircle, of three inches *Radius* for the latitudes, and besides being indisposed, when he went down that river to *Para*. One need only read his journal in manuscript, whereof I have a copy, to see that many obstacles, at that time, and afterwards on his return to his mission, prevented his making the observations, that were necessary for rendering his map correct, especially towards the lower part of the river. This map was only accompanied with some few notes upon the same sheet, and almost without any historical account; insomuch, that nothing more is known at present in *Europe*, of the countries traversed by the *Amazon*, than what they were informed of, above a century ago, by father *D'Acunha's* relation*.

The *Maranon*, after issuing from the lake, whence it takes its rise, in about eleven degrees south latitude, runs towards the north, to *Jaen de Bracamoros*, for the length of six degrees; from whence it directs its course towards the east, almost parallel to the equinoctial line, as far as the *North-Cape*, where it discharges itself into the ocean, directly under the equator; after having run from *Jaen*, where it begins to be navigable, thirty degrees in longitude, or 750 † common leagues, reckoned, by reason of the windings, at 1000, and 1100 leagues. It receives, from the north and south, a prodigious number of rivers, several of which run five or six hundred leagues, and

* The work called *El Maranon, o Amazonas*, is but a confused collection, without form, or accuracy.

† Thirty degrees of longitude with us make but 600 leagues.

some whereof are not inferior to the *Danube*, or the *Nile*. The banks of the *Maranon* were peopled, no longer than a century ago, by a great number of nations, who withdrew into the inner parts of the continent, as soon as they saw the *Europeans*. There are now to be seen, but a small number of little towns, inhabited by the natives of the country; who have been newly drawn out of their woods, either themselves, or their fathers, some by the *Spanish* missionaries, towards the upper part of the river, and others by those of *Portugal*, who are settled in the lower part thereof.

There are three ways, which go from the province of *Quito* to that of *Maynas*, which gives its name to the *Spanish* missions on the banks of the *Maranon*: these three ways cross that famous ridge of mountains, always covered with snow, known by the name of the *Cordeliers of Andes*. The first, almost under the *equinoctial line*, on the east of *Quito*, passes by *Archidona*, and leads to *Napo*; this was the road taken by *Texeira*, at his return from *Quito*, in company with father *D'Acunba*. The second, is by a narrow pass, at the foot of the burning mountain *Tonguragua*, lying in one degree and a half *south* latitude. By this way we come to the province of *Canelos*, after crossing several torrents, whose confluence forms the river *Pastaza*, which enters the *Maranon* a hundred and fifty leagues above *Napo*. These two are the roads usually taken by the missionaries of *Quito*, the only *Europeans* who frequent these countries; whose communication, with the neighbouring province of *Quito*, is almost wholly put a stop to by the before-mentioned *Cordeliers*, which are only passable during a few months in the year. The third road, is by *Jaen*

de Bracamoros, lying in about five degrees and a half *south* latitude, where the *Maranon* begins to be navigable. This way is the only one of the three, whereby beasts of burden, and saddle-horses, can pass to the place of embarkation; by the other two, one must travel many days on foot, and have every thing carried upon the shoulders of *Indians*; notwithstanding which, this is the least frequented of the three, both on account of its being a great way about, and the continual rains, which render the roads almost unpassable, in the finest season of the year; and also by reason of the difficulty and danger, of a famous narrow and rapid pass, called the *Pongo*, which we meet with on coming out of the *Cordeliers*. It was chiefly to have a view myself, of this passage, whereof they never spoke at *Quito*, but with an admiration mixed with fear, and to comprehend, within my map, the whole navigable extent of this river, that I chose this way.

I set out then from *Tarqui*, the most *southern* boundary of our meridian, and five leagues *south* of *Cuença*, on *May 11, 1743*. In my journey to *Lima*, in 1737, I had followed the common road from *Cuença* to *Loxa*; at this time I took a compass about, and went by *Zaruma*, in order to place it upon my map. I ran some hazard, in fording over the large river of *Los Jubones*, then greatly swelled, and always very rapid; but hereby I escaped a yet greater danger, namely, of being murdered by some villains, who were employed, as I have been since informed, to lie in wait for me, (on account of my prosecuting the assassins of *M. Seniergues*, our surgeon,) on the high road to *Loxa*.

From a mountain, over which I passed, on my way to *Zaruma*, may be seen *Tumbez*, a port on
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the *south-east*, beyond the line, where the *Spaniards* first landed, when they conquered *Peru*: and it was properly from this point, that I began to turn my back on the *South-Sea*, in order to cross the whole continent of *America*, from *east* to *west*.

Zaruma, which is situated in three degrees and forty minutes, *south* latitude, gives its name to a small province on the *west* of that of *Loxa*. However, *Laet*, as exact as he is, makes no mention thereof, in his description of *America*. This place was formerly somewhat famous, for its golden mines, now almost forsaken. The gold is of the most indifferent kind, and only of fourteen carats; it is mixed with silver, and, nevertheless, is very soft, and pliable under the hammer.

I found the height of the barometer, at *Zaruma*, to be twenty-four inches and two lines; it is well known, this height does not vary, in the *torrid zone*, as in our climates. We have found at *Quito*, for whole years together, that its greatest difference never exceeded a line and a half. M. *Godin* was the first, who observed that its variations, which are much about a line in twenty-four hours, have pretty regular alternatives; which being once discovered, affords us a rule for judging the height of the quicksilver at a medium, by one single experiment. All those we had made, upon the coasts of the *South-Sea*, with those I had repeated, in my journey to *Lima*, had taught me what the medium of that height was, when on a level with the sea; from whence I can conclude, pretty exactly, that the situation of *Zaruma* is about the height of seven hundred fathoms, which is not half so high as that of *Quito*. In this calculation, I made use of the table, drawn up by M. *Bouguer*, upon a hypothesis, which hitherto corresponds,

better than any other, with our experiments of the barometer, made in different altitudes, geometrically determined. I was come from *Tarqui*, a pretty cold country, and I felt it very hot at *Zaruma*, though I was hardly on any lower ground, than on the top of mount *Peleus* in *Martinico*; where we found it excessive cold, on going from a country that was low and hot. I here suppose, it is already known, that, during our long residence in the province of *Quito*, under the *equinoctial line*, we have almost constantly found, that, according as the height of the ground was more or less, it determined almost wholly, the degree of heat of that place; and that one need not ascend two thousand fathom, to remove from a valley scorched by the sun beams, to the foot of a vast heap of snow, as ancient as the world, wherewith a neighbouring mountain shall be covered.

I met with several rivers in my way, which it was necessary to cross, upon bridges of rope, made of the bark of trees, or of that kind of osier, called *Lianes* in our *American* islands. These *Lianes* being interwoven into net-work, form a sort of gallery in the air, extending from one side to the other, and hanging upon two large cables of the same substance, whose ends are fastened, on each bank, to the branches of trees. The whole resembles pretty much a fishing-net, and yet more an *Indian bamac*, reaching from one shore to the other. As the meshes of this net are very large, and the foot might slip through, they strew some reeds, on the bottom of this harbour, turned topsyturvy, to serve instead of a floor. It is easy to perceive, that the weight, alone, of all this work, and yet more, that of the person, who passes over it, must make this whole machine swag greatly; and if it is considered, that the passenger, when
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he is in the midway, especially if the wind be any thing high, is exposed to terrible swingings, it may easily be judged, that such a bridge, sometimes above thirty fathoms long, appears somewhat frightful at first sight. Nevertheless, the *Indians*, who are naturally far from intrepid, pass over it running, and laden with all the baggage and pannels of the mules, whom they make swim over; and they laugh to see a traveller boggle at it, which makes him soon ashamed, to shew less resolution than they. Neither is this the most singular, or most dangerous kind of bridge, that is used in this country; but the description of them would cause me to digress too far from my subject.

I repeated, in passing by *Loxa*, the observations of latitude, and the height of the barometer, I had before made in 1737, in my journey to *Lima*; and I found the result the same. *Loxa* is not so high as *Quito*, by about three hundred and fifty fathoms, and the heat is there sensibly greater: the mountains in the neighbourhood are but hillocks, in comparison of those of *Quito*; notwithstanding which, it is from thence the waters of that province have their source; and the same little hill, named *Caxanuma*, where the best *Quinquina* grows, gives rise to some rivers, which take a quite contrary course, the one to the west, which run into the *South-Sea*, and the others to the east, which enlarge the *Maranon*.

On *June* the 3d, I spent the whole day on one of these hills; yet, with the help of two *Indians* of the neighbourhood, whom I had taken to guide me, I could not, in all that time, pick out above eight or nine plants of *Quinquina*, that were fit to be transported. These I had put, with earth dug upon the spot, into a box of a sufficient size; which

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was carried, with care, upon the shoulders of a man, who kept within my sight, to the place where I embarked. This I did, in hopes of preserving some one of them, which I might leave in trust at *Cayenne*, if it was not in a condition, to be actually carried over to *France*, for the king's garden.

From *Loxa* to *Jaen*, we pass over the last hills of the *Cordeliers*; and all this way, one travels almost wholly through woods, where it rains every day, for eleven, and sometimes twelve months of the year; so that it is impossible there to dry any thing. The baskets, covered with the hides of oxen, which are the trunks of that country, rot, and stink intolerably. I passed by two towns, which have now only the names of such, viz. *Loyola* and *Valadolid*; though both of them were rich, and well peopled by *Spaniards*, within less than a hundred years; but they are at present reduced to two small hamlets of *Indians*, or *Metis*, and removed from their former situation. Even *Jaen* itself, which is still called a town, and ought to be the residence of the governor, is now but a sorry village. The same thing has happened to most of the towns of *Peru*, that are distant from the sea, and much out of the road from *Cartagena* to *Lima*. I met all along this way a great many rivers, which I was obliged to cross, some by fording over; others over bridges, of the sort before-mentioned; and others over floats, or rafts, made upon the spot, with the timber, which nature has provided in all these forests. These rivers, being joined together, form another very large and rapid, called *Chinchipé*, which is bigger than the *Seine* at *Paris*. I went down it upon a float, for five leagues, to *Tomependa*, an *Indian* village, within sight of *Jaen*, agreeably situated at the confluence of three rivers.

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The *Maranon* is the middlemost, and receives the river *Chachapoyas* from the *south*, as it does *Cbincbipé* from the *west*, by which I came down.

This junction of three rivers, is in five degrees thirty minutes *south* latitude; and from this place the *Maranon*, notwithstanding its windings, approaches still nearer and nearer to the *equinoctial line*, till it comes to the sea. Even below this place the river grows narrower, and opens itself a passage between two mountains, where the rapidity of its stream, with the rocks that obstruct its way, and several falls, render it unpassable; so that what is called the port of *Jaen*, the place where one is obliged to go to embark, is four days journey from the town, upon the little river *Cbuchunga*, whereby one goes down into the *Maranon*, below the water-falls. Nevertheless, an express, which I had dispatched from *Tomependa*, with orders from the governor of *Jaen*, to his lieutenant at *St. Jago*, to send me a canoe to the port, had surmounted all these obstacles, upon a small float, made of two or three pieces of timber; which is sufficient for a naked *Indian*, and excellent swimmer, as indeed they are all. From *Jaen* to the port, I crossed the *Maranon*; but found myself, several times, again upon its banks. Within this space, this river receives diverse torrents from the *north*, which, in heavy rains, carry along with them a sand mixed with spangles and grains of gold. The *Indians* go then to gather up exactly the quantity necessary for paying their tribute and capitation; and that only when they are greatly pressed to bring it; at any other time, they would tread it under foot, rather than take the pains requisite to gather, and cleanse it. Throughout this country, both sides of the river
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are covered with *Cacao*, which is no less excellent than what is cultivated; but the *Indians* value it, as little as the gold.

On the fourth day, after my departure from *Jaen*, I forded twenty-one times over the torrent of *Chuchunga*, and crossed it once afterwards in a boat; the mules, on approaching their baiting place, leapt into the river, all laden as they were, and swam over; so that my instruments, books, and papers were all wet. This was the fourth accident of this nature, I had met with, in my journey over the mountains; and my misfortunes did not cease until I embarked.

I found at *Chuchunga* a hamlet of ten *Indian* families, governed by their *cacique*, who understood about as much *Spanish*, as I did of his language. I had been obliged, at *Jaen*, to rid myself of two servants, natives of the country, who might have served me as interpreters; necessity had made me find a way to do without them. The *Indians* of *Chuchunga* had but small canoes, fit for their own use; and that I had sent for to *St. Jago*, by an express, could not come thither in less than a fortnight; wherefore, I engaged the *cacique* to cause his people to make me a float or *balse*, which is the name they give it in that country, as well as to the wood whereof it is formed; and I desired it large enough to carry myself, with my instruments and baggage. The time requisite, for preparing the *balse*, afforded me sufficient leisure, to dry my books and papers, leaf by leaf; a precaution as needful as tedious. The sun did not appear till towards noon, but that was enough to take the height; and I found myself in five degrees twenty-one minutes *south* latitude; and I knew by the barometer, which was sixteen lines lower than at the sea-side, that two hundred

hundred and thirty-five fathoms above its level, there are rivers navigable, without interruption: nor will I affirm they cannot be so at a greater height, I only simply relate the consequence I drew from my own experience. Nevertheless, it is very likely, that the place, where a river, (which, to reckon from this hamlet, runs above a thousand leagues,) will first bear a boat, must be somewhat higher than those, where the generality of rivers begin to be navigable.

On July 4th, in the afternoon, I embarked in a little canoe, with two oars, having before me the *balse*, guarded by all the *Indians* of the hamlet. They were in the water up to the middle, to guide it in dangerous places, and to hold it between the rocks, and in the little falls, from being carried away by the violence of the stream. Next morning, after many windings, I entered the *Maranon*, about four leagues to the north of the place where I embarked. There the *Maranon*, properly so called, begins to be navigable; and it became necessary to enlarge and strengthen the float, which had been made proportionable only to the channel of the small river, down which I had come. That night the river swelled ten feet; so that it was necessary to remove, in haste, the harbour, which served me for a shelter, and which the *Indians* make with admirable dexterity and speed. I was detained in this place three days, by the advice, or rather by the order, of my guides, to whom I was obliged to refer myself; accordingly, they had full time to prepare the *balse*, and I to make my observations. I measured geometrically the breadth of the river, and found it to be a hundred and thirty-five fathoms, though already fallen between fifteen and twenty fathom. Diverse rivers, which it re-

ceives above *Jaen*, are broader, which made me judge it to be very deep; and, in effect, with a line of twenty-eight fathom, I could not find any bottom, when hardly above one third from the shore. I could not sound it at all, in the middle of the channel, where the way of a canoe, when let go with the stream, was at the rate of a fathom and a quarter in a second. The barometer, which was higher, than when at the port, by four lines, shewed me, that the level of the water was lower above fifty fathoms, than at *Chuchunga*, from whence I had come down in eight hours; I observed also, the latitude at the same place; and found it to be five degrees and one minute south.

On the 8th, I proceeded on my way, and passed through the narrow pass, or straits of *Cumbinama*; which is not above twenty fathom broad, and somewhat dangerous, by reason of the many stones that are therein. Next day I came to that of *Ejurrebragas*, which is of another kind; the river being stopped short by a steep rock, against which it runs, in a direct line, is obliged to turn off suddenly, and make a right angle with its former course. Accordingly, the dashing of the stream, with the great rapidity it acquires, by the channel's being narrower, has worked a deep hollow in the rock, where the waters on the shore are kept in, being beaten back by the rapidity of those in the middle: and my float, upon which I then was, being driven by the course of the stream into this hollow, did nothing but whirl round and round, for an hour and some minutes. The whirling waters, indeed, in moving in a circle, brought me often back towards the channel of the river, where meeting with the main stream, they formed such waves, as would infal-

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libly have sunk a canoe; but the largeness and solidity of the float secured it in this respect; however, I was still driven back, by the violence of the current into the bottom of the hollow; from whence I had not got out, but through the dexterity of four *Indians*, whom I had kept with me, and also a small canoe, at all events. These having rowed the length of the reach under the shore, climbed up the rock, from whence they threw me some *lianes*, (which are the ropes of that country) though not without difficulty, wherewith they towed the *balse*, till they had drawn it again into the stream. The same day, I went through another narrow pass, called *Guaracayo*, where the channel of the river, being kept in between two large rocks, is not thirty fathom over; but this is only dangerous in great swells. That same evening, I met the great canoe of *St. Jago*, which was coming up the river, to take me in at the port; but must have been six days, in getting only to the place, from whence I had set out in the morning, and had run down in ten hours.

On the 10th, I arrived at *St. Jago de las Montanas*; now a hamlet, at the mouth of a river of the same name; but formed out of the ruins of a city, which had originally given name to the river. Its banks are inhabited by an *Indian* nation, called *Xibaros*, who were formerly *Christians*; but have revolted about a hundred years from the *Spaniards*, to free themselves from working in the gold mines of their country. Since that time, having retired into inaccessible woods, they keep themselves independent; and prevent the passing up and down that river, whereby one might come conveniently, in less than eight days, from the neighbourhood of *Loxa* and *Cuença*, whence I set out by land about two months before.

The dread of these *Indians*, has obliged the rest of the inhabitants of *St. Jago*, to change their abode twice ; and within about forty years, to come down to the mouth of that river, where it falls into the *Maranon*.

Below *St. Jago*, one meets *Borja*, a city almost of the same kind as the former ; notwithstanding its being the capital of the province of *Maynas*, which contains all the missions of the *Spaniards* on the banks of the *Maranon*. *Borja* is only separated from *St. Jago*, by the famous *Pongo de Mansericbé*. *Pongo*, formerly *Puncu*, in the language of *Peru*, signifies a Port ; this name is given, in that tongue, to all the narrow passes ; but this is called so, in particular, by way of pre-eminence. 'Tis a passage, which the *Maranon*, turning to the east, after running above two hundred leagues to the north, opens for itself in the midst of the *Cordeliers* ; having worked itself a channel, between two parallel walls of rock, that are almost perpendicular. 'Tis somewhat more than an age, since some *Spanish* foldiers of *St. Jago* discovered this passage, and run the hazard of venturing through it. Two missionaries, of the province of *Quito*, followed them soon after ; and founded, in 1639, the mission of *Maynas*, which extends a great length down the river. Being arrived at *St. Jago*, I was in hopes of going on to *Borja* the same day, and it required no more than an hour to have got thither ; but notwithstanding my repeated expresses, and the orders and recommendations wherewith I was always well provided, (but whereof I seldom saw the performance,) the timber of the large float, whereon I was to have passed the *Pongo*, was not yet felled. I contented myself therefore with having mine strengthened by a new border, wherewith I had it encompassed, to stand the first

first strainings of those shocks, that are almost unavoidable in the windings, for want of a rudder; whereof the *Indians* never make use for their floats: as for their canoes, they are so light, they guide them with the same *pagaye*, which serves them for an oar. Next day after my arrival at *St. Jago*, it was impossible for me to overcome the opposition of my conductors, who did not think the river yet low enough, to venture through that pass; all I could prevail on them, was to cross over, and wait for the favourable moment, in a small creek, near the entrance into the *Pongo*; where the rapidity of the current is so great, that though there are no falls properly so called, the waters seem as coming down a precipice, and, by their dashing against the rocks, make a noise altogether dreadful.

The four *Indians* of the port of *Jaen*, who had attended me till then, being less curious than I, of taking a near view of the *Pongo*, were already gone before by land, by a foot-path, or rather by stairs hewed in the rock, to wait for me at *Borja*; having left me that night, as they had done the former, with only a negro slave, upon my float. I was very fortunate in having refused to part with him; since an accident there befel me, whereof, perhaps, there never was an example. The river, which had sunk twenty-five feet, in thirty-six hours, continued to fall visibly; and in the middle of the night, part of a large branch of a tree, that was concealed under the water, having found entrance, between the pieces of my float, where it made its way farther and farther, as fast as that fell, together with the river, had I not had presence of mind, and been quite awake, I was just upon the point of remaining fastened, and suspended in the air, by that branch of the tree; where

where the least, that could have befallen me, must have been the loss of all my journals, and papers of observations, the fruits of eight years labour. By good luck, I found the means, at last, to disengage my *balse*, and set it again afloat.

I took advantage, of my forced stay at *St. Jago*, to measure geometrically the breadth of the two rivers; I took also the angles necessary for forming a topographical map of the *Pongo*.

On the 12th of *July*, at noon, I had the *balse* loosened, and put off from the shore; and was soon drawn, by the current of the water, into a narrow and deep gallery, if I may use that expression, that was cut sloping in the rock, and in some places perpendicular; and, in less than an hour, I found myself at *Borja*, three leagues below *St. Jago*, according to the common way of reckoning: Nevertheless, the *balse*, which did not draw half a foot of water, and, by the bulk of its lading, presented to the resistance of the air, a surface seven or eight times as large as it did to the current, could not take the whole velocity of the stream; and, this velocity itself abates considerably, as fast as the channel of the river grows wider, on approaching *Borja*. In the narrowest part I judged, that we made two fathoms a second, by comparing our way then, with what it made in other rapid passes, where it was exactly measured.

The channel of *Pongo*, wrought by the hands of nature, begins a small half league below *St. Jago*, and becomes narrower and narrower, as it runs on; insomuch, that from two hundred and fifty fathoms at least, which is its breadth at the meeting of the two rivers, it is at last but twenty-five fathoms over in its narrowest part. I know, that hitherto they have reckoned the breadth of the *Pongo* at only twenty-five *Spanish vares*, which
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amount but to ten of our fathoms; and that it is commonly said, they pass from *St. Jago* to *Borja* in a quarter of an hour; but, as for my part, I observed, in the very narrowest place, it was at least three lengths of my float to each shore. I reckoned, by my watch, fifty-seven minutes, from my first entrance into the streights to *Borja*; and all being put together, I find the measures to be as I have said; nay, how much soever I strive to reconcile my calculation with the received opinion, I can hardly find it two leagues, of twenty to a degree, from *St. Jago* to *Borja*, instead of three, which is the general way of reckoning.

I struck twice or thrice, very hard, in the windings, against the rocks; which would be enough to frighten a man, were he not forewarned of it; a canoe would be broken into shatters, a thousand times, and without remedy; (inasmuch, that they shewed me, as I passed by, the place where a governor of *Maynas* was lost;) but the pieces of a float being neither nailed, nor bound together with ropes, the flexibility of the *lianes*, which joined them together, has the same effect as a spring, which should deaden the blow, and they take no precaution, against these shocks. The greatest danger, for the latter, is of being carried away into a whirlpool, out of the current, as it happened to me in the streights of *Escurrebragas*. It was not above a year before, that a missionary, who was thus served, remained there two days, without any provision; and had died with hunger, if a sudden swell of waters had not driven him again into the stream. There is no going down the *Pongo* in a canoe, but when the waters are sufficiently low, so that the canoe may be steered, without being too much commanded by the current; when they are at the lowest, the canoes may
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also go up again, with abundance of difficulty, but the *balfes* never.

Being arrived at *Borja*, I found myself in a new world, far from all human commerce, upon a sea of fresh water; and in the midst of a labyrinth of lakes, rivers, and canals, that penetrate every way into an immense forest, which they alone render passable. I met there with new plants, new animals, and new men. My eyes, that had been accustomed, for seven years, to look at mountains, that lost themselves in the clouds, were never weary of gazing round the *horizon*, without having the view interrupted, by any other obstacle, than the little hills of the *Pongo*; which were about soon to disappear from my sight: in lieu of that variety of different objects, which diversify the cultivated plains of *Quito*, they were presented with a prospect, altogether uniform, of water and verdure, and nothing else. We tread there upon the earth without seeing it; so much is it overspread with thick herbs, plants, and bushes, that it would require a good deal of trouble to clear the space of a foot square. Below *Borja*, even for four or five hundred leagues, a stone, even a single flint, is as great a rarity as a diamond would be. The savages of those countries don't know what a stone is, and have not even any notion of it. It is diversion enough to see some of them, when they come to *Borja*, and first meet with stones, express their admiration of them by signs, and be eager to pick them up; loading themselves therewith, as with a valuable merchandize; and soon after despise and throw them away, when they perceive them to be so common.

But, before I proceed any farther, I think it will be proper to say somewhat of the genius and
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character of the original inhabitants of *South-America*, commonly, though improperly, called *Indians*. We do not here mean the *Creolians*, whether *Spanish* or *Portuguese*; nor yet of those diverse sorts of men, that have sprung from the mutual intercourse between the *White Europeans*, the *Blacks* of *Africa*, and the *Red Americans*, since the former first got footing there, and have introduced likewise the *Negroes* of *Guinea*.

All the ancient natives of the country, are tawny, of a colour somewhat reddish, and more or less clear. This variety of shades in their complexion, is probably owing chiefly, to the different temperature of the air, in the several climates they inhabit, varying from the intense heat, of the *torrid zone*, to the nipping cold, caused by the vicinity of the snow.

This diversity of climes, with that of woody countries, plains, mountains, and rivers, as also the difference of their diet, and the little correspondence the neighbouring nations have with each other, with a thousand other causes, must necessarily have produced great variety, in the several occupations and customs of these people. Besides, it may easily be imagined, that a nation, who have been Christians, and subject to the crowns of *Spain* or *Portugal*, for an age or two, must inevitably have learned some of the manners of their conquerors; and consequently, that an *Indian*, who lives in a town or village of *Peru*, must differ from a savage, in the inner parts of the continent; and even from a new inhabitant of the missions, lately settled upon the banks of the *Maranon*. It would be needful, therefore, in order to give any one an exact idea of the *Americans*, to make almost as many descriptions, as there are nations amongst them. Nevertheless, as all the *European* nations,

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though differing amongst themselves in tongues, manners, and customs, would still have somewhat in common to all of them, in the eyes of an *Asiatic*, who should examine them attentively ; to all the *American Indians*, of the several countries, which I had an opportunity of viewing, in the course of my travels, have seem'd to me, to have certain touches of resemblance, in common with each other ; and, some slight particularities excepted, which it is scarce possible for a traveller, who only has a transient view of things, to observe, methought, I perceived, all of them, at the bottom, to be of one common temper, whereof insensibility is the basis ; which, whether it ought to be honoured with the name of apathy, or branded with that of stupidity, I leave to others to decide.

This proceeds, undoubtedly, from the small number of their ideas, which extend no farther than their necessities. Gluttons, even to voracity, when they have wherewith to satisfy themselves ; yet moderate, when they needs must, even to shifting without any thing, or seeming to desire aught. Pusillanimous and cowardly to the last degree, if drunkenness does not transport them ; enemies to labour ; unmoved by any incentive to glory, honour, or gratitude ; wholly intent upon the object that is before them ; and always determin'd thereby, without any regard to futurity ; incapable of foresight and reflection ; giving themselves up, when not under restraint, to a childish joy, which they express, by skipping about, and immoderate flights of laughter, without either meaning or design : thus they pass their lives without thought ; and grow old, without having taken leave of infancy ; all the failings whereof they retain.

If these reproaches could only be cast upon the *Indians* of some provinces of *Peru*, who are slaves
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in all respects but in name, one might imagine this degeneracy, almost to the level of brutes, proceeded from the servile dependence wherein they live; the example of the modern *Greeks* sufficiently proving, how apt slavery is to degrade mankind. But the *Indians* of the missions, and the savages, who enjoy their liberty, being, at least, as much limited in their conceptions, not to say as stupid, as the others, one cannot observe, without being mortified, how little a man, when wholly left to the guidance of mere nature, differs from the brutes.

All the languages of *South-America*, whereof I have had any knowledge, are very barren; many of them are full of energy, and susceptible of elegance, especially the ancient *Peruvian* tongue; but all of them are equally void of terms, to express abstracted and universal ideas; an evident proof, how little progress the understandings of these people have made. *Time, duration, space, being, substance, matter, and body*, all these words, with many others, have no term equivalent to them in their speech: and not only the names of metaphysical essences, but even those of moral ones, cannot be expressed by them, but imperfectly, and by long circumlocutions. They have no words among them, which answer exactly to the terms *virtue, justice, liberty, acknowledgement, ingratitude*, all which seems very hard to be reconciled, with what *Garcilasso* advances, concerning the policy, industry, arts, government, and genius, of the ancient *Peruvians*: if the love of his country has not blinded him, it must be owned the present inhabitants have greatly degenerated from their ancestors. As to the other nations of *South-America*, it is not known, that they have ever been any other than *Barbarians*.

I have drawn up a vocabulary of the words, most in use, in diverse *Indian* tongues; the comparing of which, with those of the same signification, in other tongues of the inland countries, may not only serve to prove the various transmigrations of these people, from one extremity to the other of this vast continent; but also, when the comparison can be made, with several languages of *Europe*, *Africa*, and the *East-Indies*, may be perhaps the only way, to discover the origin of the *Americans*: a conformity of tongue, well evidenced, would, no doubt, decide the question. The words *abba*, *baba*, or *papa*, with that of *mamma*, which seem to be adopted, with little or no variation, from the ancient *eastern* languages, into most part of the *European* tongues, are also common to a great number of *American* nations, whose speech is otherwise very different. Now, should these words be looked upon, as the first sounds children can articulate, and consequently as those, which parents, in all countries, hearing their children pronounce them, must naturally have chosen preferably to others, to express those relative ties of fatherhood and motherhood; it would still remain to be known, why, in all the *American* tongues, wherein these words are used, their mutual signification has been retained, without confounding the one with the other. By what chance, for example, in the dialect of *Omagua*, in the center of the continent, and some others adjacent, where the words *papa* and *mamma* are in use, it has never happened that *papa* signified mother, and *mamma* father; but the contrary is always observed amongst them, as well as in the *eastern* and *European* tongues? It is very probable, that, amongst the native *Americans*, we might meet with other terms, whose conformity

mity well proved, with those in another language of the ancient times, might give some light into a question, hitherto abandoned to mere conjecture.

I was staid for at *Borja*, by the reverend father *Magnin*, of the district of *Friburgh*, a *Jesuit* missionary, from whom I met with all the civilities and kindneses, I could have expected from a countryman and friend. I had no need with him, nor afterwards with the other missionaries of his order, of the recommendations of their friends at *Quito*; and yet less of the passports, and orders of the *Spanish* court, which I carried with me. Besides diverse curiosities, belonging to natural history, this father presented me with a map he had drawn, of the *Spanish* missions of *Maynas*; as also, with a description of the manners and customs of the neighbouring nations. During my stay at *Cayenne*, I assisted M. *Arthur*, physician to the king, and counsellor of the head council of that colony, in translating this treatise from the *Spanish* into *French*, which is well worthy of the public curiosity. I observed the latitude at *Borja*, to be four degrees twenty-eight minutes *south*.

I set out from thence *July* 14th, with the same father, who was willing to keep me company to *Laguna*; and on the 15th, we left, to the north of us, the mouth of the *Morona*, which issues from the burning mountain of *Sangay*, whose embers are projected across the provinces of *Macas* and *Quito*, and fly sometimes beyond *Guayaquil*. Somewhat farther, and on the same side, we came to the three mouths of the river *Pastaza*, which has been already mentioned. It was then so much overflowed, there was no landing in any part; this prevented my measuring the bigness of the largest mouth, which I reckoned to be
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four hundred fathom, and almost as wide as the *Maranon*. I observed, a little farther, that evening, and next morning, the setting and rising of the sun; and I found, as at *Quito*, eight degrees and a half declension, from the *north* to the *east*. From two amplitudes, thus observed successively, one may conclude the declension of the needle, without knowing that of the sun; it being sufficient to mind the change of the sun in declension, within the interval of the two observations, if it be considerable enough, to be observed with the compass.

On the 19th, we arrived at *Laguna*, where *Don Pedro Maldonado*, governor of the province *das Esmeraldas*, had been waiting for me six weeks. To this gentleman, as well as to his two brothers, and all the family, I owe this public testimony, that he distinguished himself, on all occasions, amongst those, from whom our academical detachment received good offices, during our long stay in the province of *Quito*. I had found him, as well as myself, inclined to go down by the river of the *Amazons*, in his passage to *Europe*. He had followed the second of the three roads already mentioned, in coming down the *Pastaza*; and had arrived, much sooner than me, at our rendezvous at *Laguna*, though we had both set out, almost at the same time, the one from *Quito*, and the other from *Cuença*. He had made by the way, with the help of a compass and portative dial, the necessary observations for describing the course of the *Pastaza*; to which I had advised him, and had supplied him also, with the means to perform it.

Laguna is a large village, of above a thousand *Indians* bearing arms, and gathered together out of diverse nations; it is the principal mission of all *Maynas*. It is situated in a dry and high soil,
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which is hard to be found in those countries ; and on the banks of a large lake, five leagues above the mouth of the *Guallaga*, which has its source, like the *Maranon*, in the mountains on the east of *Lima*. It was by this river, that *Pedro d'Ursoa*, whom we have already mentioned, came into the *Maranon*. The memory of his expedition, and of the events that caused his fatal end, is still preserved by the inhabitants of *Lamas*, a small town, adjacent to the port where he embarked. The breadth of the *Guallaga*, at its meeting with the *Maranon*, might then be about two hundred and fifty fathom, or four times as wide as the *Seine* at *Port-Royal* ; yet this is but a very middling river, in comparison of most of those that will be spoken of hereafter.

At *Laguna*, I made diverse observations of the latitude, both by the sun, and by the stars ; and determined it to be five degrees fourteen minutes. I staid there the longer, by twenty-four hours, to try to observe the longitude ; but I lost sight of *Jupiter* in the vapours of the horizon, before I could see the first of his *Sattelites* emerge from the darkness.

On the 23d, *M. Maldonado* and myself, set out from *Laguna*, in two canoes, between forty-two and forty-four feet long, and only three broad ; being each made of one single trunk of a tree. The rowers are placed from the head towards the middle, the traveller with his things at the stern ; and they are sheltered from the rain, by a long roundish roof, of palm leaves, artfully interwoven together, whereat the *Indians* are very dexterous. This sort of harbour has an interval open in the middle, to give light into the canoe, and enter it commodiously ; as also a sliding roof,
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of the same sort, which goes over the other, and covers this opening, (when desired,) so it answers, at once, the end of a door and window.

We resolved to go on night and day, in order to overtake, if possible, the brigantines, or large canoes, which the *Portuguese* missionaries dispatch every year to *Para*, to fetch their provision. Our *Indians* rowed all day; but only two kept watch at night, one at the head, and the other at the stern, to keep the canoe in the middle of the stream.

In engaging to draw a map, of the course of the river of *Amazons*, I had taken care of a remedy for the inaction, which a continual easy navigation must have otherwise occasioned; and which the want of a variety of new objects, might have rendered tedious. I was obliged to be always attentive to the compass, with a watch in my hand, to observe the alterations in the direction of the river's course, and the time we took in running from one winding to another: as also to examine into the various breadths of its channel, and of the mouths of those rivers it received; to view the angle they formed in entering therein, with the several islands we met with, and their length; but, above all, to measure the velocity of the stream, with that of the canoe, sometimes by land, and sometimes in the boat itself, by diverse methods, which it would be too much to explain here. In short, every moment was employed; frequently I measured and sounded geometrically the largeness of the river, with that of those that fall into it; I took the meridian altitude of the sun almost every day, and often observed its amplitude at its rising and setting; in all the parts where I made any stay, I likewise set up the barometer. I shall not mention these observations, for the future,
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but in the most remarkable places, reserving a more ample account for our particular assemblies.

On the 25th, we left, to the *north* of us, the river *Tigris*, which may very possibly be larger, than that which bears the same name in *Asia*, but which, not being so fortunately situated, is here lost, in a number of others much more considerable. The same day, we stopp'd in pretty good time, and on the same side, at a new mission of savages, called *Yameos*, newly drawn out of their woods. Their language is inexpressibly difficult, and their manner of pronouncing it, yet more extraordinary than that. They suck in their breath when they speak, and hardly sound any vowel. They have words, which we could not write, even imperfectly, without using at least nine or ten syllables; yet, when they pronounce them, they seem only to be three or four. *Poettarrarorincouroac* signifies, in their tongue, the number three; fortunately for those who have to do with them, their arithmetic goes no farther; and how incredible soever it may seem, this is not the only *Indian* nation that is in this case. The language of *Brazil*, spoken by a people not quite so unpolish'd, labours under the same deficiency; so that, in order to reckon, they are forced to have recourse to that of the *Portuguese*.

The *Yameos* are very expert in making long trunks, which are the *Indians* most usual hunting-weapons. They fit thereto small arrows, of the wood of the palm-tree, which they trim, instead of feathers, with a roll of cotton, that exactly fills the hollow of the trunk; and these they project with their breath, thirty or forty paces, scarce ever missing their aim; so that so simple an instrument supplies advantageously, amongst all these nations, the want of fire-arms. They dip the Points of
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these little arrows, as well as those which they use with bows, in a poison so deadly, when fresh, that it kills, in less than a minute, any animal, of which the shaft has drawn blood. Though we had guns, we hardly ate any game, that was kill'd otherwise. Nay we have often met the point of the arrow, between our teeth; wherein there is no manner of danger, the poison only operating, when mix'd with blood; but then it is as fatal to man, as to other animals. The antidote for this poison is salt, or sugar; the latter of which is yet most infallible: I shall speak, in the proper place, of the experiments made thereof by me, at *Cayenne*, and at *Leyden*.

Next morning, being the 26th, we met to the south of us the mouth of the *Ucayala*, one of the largest rivers that swell the *Maranon*; nay, there is some reason to question, which of the two is the principal stream, and which is but a branch that falls into it. At their mutual junction, the *Ucayala* is larger, than the river where it loses its name. The sources also of the *Ucayala* are the most distant, and the most copious; it draws to it the waters of divers provinces, of upper *Peru*, and has already received the *Apurimac*, which renders it a considerable river, in the same latitude, where the *Maranon* is yet but a torrent; besides, the *Ucayala*, at its confluence with the *Maranon*, drives it back, and makes it change its course. On the other hand, the *Maranon* has taken a longer compass, and has been already enlarged, by the rivers of *St. Iago*, *Pastaza*, and *Gualлага*, &c. when it meets with the *Ucayala*: besides, it is certain, the *Maranon* is every where of an extraordinary depth. It is also true, that the *Ucayala* has never been sounded; and that both the number, and bigness, of the rivers it receives, is hitherto a secret;

secret ; so that, upon the whole, I am persuaded, this question can never be rightly decided, till the *Ucayala* becomes better known. It began so to be, when the missions, newly established on its banks, were forsaken, after the insurrection of the *Cunivos*, and *Piros*, who massacred their missionary in 1695.

Below the *Ucayala*, the *Maranon* grows larger visibly, and the number of its islands increases. On the 27th, in the morning, we landed at the mission of *St. Joachim*; consisting of divers *Indian* nations, and especially of those of the *Omaguas*; formerly a powerful nation, which, about an age ago, peopled the banks and islands of the *Maranon*, for the length of about two hundred leagues, below the *Napo*. They are not, however, reckon'd the original inhabitants of that country; and it is very probable, they came and settled on the sides of the *Maranon*, after falling down some of those rivers, which have their rise in the kingdom of new *Granada*; whence they fled, to avoid being reduced under the *Spanish* Government, when they conquer'd that kingdom.

A nation, which bears the name of *Omagua*, and is settled towards the source of one of those rivers, with the custom of wearing cloaths, which is only found amongst the *Omaguas*, of all the nations, which live on the banks of the *Maranon*, as also some traces of the ceremony of baptism, and some disfigured traditions, retained by them, confirm this conjecture of their transmigration. The *jesuit*, *Samuel Fritz*, already mentioned, had converted them all to the *Christian* religion, towards the end of the last century; and they then reckon'd up thirty villages, mark'd by name, upon the map of that reverend father, whereof we could now only see the ruins, or rather the place,

where they were once situated. All their inhabitants, terrify'd by the incursions of some Buccaneers of *Para*, (who came to carry them away for slaves, even from the midst of their own settlements,) dispersed themselves either up and down the woods, or amongst the *Spanish* and *Portuguese* Missions.

The name of *Omaguas*, in the *Peruvian* tongue, as well as that of *Cambevas*, given to them by the *Portuguese* of *Para*, in the language of *Brazil*, signifies *flat-head*; and, in effect, these people have the odd custom, of squeezing, between two boards, the foreheads of their new-born children, to make them of this strange shape, that they may the more resemble (as they say) the full-moon. The language of the *Omaguas* is as agreeable, and as easy to pronounce, and also to learn, as that of the *Yameos* is harsh and difficult; neither is it at all like either that of *Peru*, or that of *Brazil*; which are spoken, the one above, and the other below, the Country of the *Omaguas*, the whole length of the river of *Amazons*.

The *Omaguas* make great use of two sorts of plants; one of which is called, by the *Spaniards*, *Floripondio*, whose Flower resembling a bell turn'd upside down, has been described by the *father Feuillée*: the other, in the language of *Omagua*, is named *Curupa*, some seeds whereof I have brought with me; both of these are cathartick, or purging. But these people make use of them, to intoxicate themselves therewith, for the space of twenty-four hours, during which time they have strange visions. They take also the *Curupa* reduced to powder, as we do snuff; but with somewhat more formality. They make use of a pipe, form'd out of a reed, and ending in a fork, in short, shaped like a Y; each of the
branches

branches of this instrument, they put into one of their nostrils; which operation, being followed by a violent drawing in their breath, causes them to screw up their faces, after a manner, very ridiculous to an *European*, who would have every thing conformable to his own customs.

It may easily be judged, how great the abundance and variety of plants must be, in a country, which moisture and heat contribute equally to render fertile. Those of the province of *Quito* have not, undoubtedly, escaped the observation, of *Monf. Jof. de Jussieu*, our fellow-traveller; but I will venture to say, that the multitude, and diversity of plants and trees, to be met with on the banks of the river of *Amazons*, during its whole course, from the *Cordeliers des Andes* to the sea, and on the sides of divers rivers, that lose themselves therein, would find ample employment, for many years, for the most laborious botanist; as it would also for more than one designer. I speak here, only of the labour it would require, to make an exact description of these plants, and to reduce them into classes, and range each under its proper genus and species. What would it be, if we comprehend herewith, an examination into the virtues ascribed to them by the natives of the country? An examination, which is undoubtedly the most attractive of our attention, of any branch of this study. It is not to be questioned, indeed, but ignorance and prepossession have greatly multiplied and exaggerated these virtues; but, are the *Quinquina*, the *Ypecacuana*, the *Simaruba*, the *Sarsaparilla*, the *Guaiacum*, the *Cacao*, and the *Banilia*, or *Vanelloes*, the only useful plants that *America* produces? And the singular virtues of these being well known, and sufficiently proved, is not this encouragement

agement enough, to proceed to new enquiries? All I cou'd do, was to gather some seeds, of those I met with in my way, as often as it was possible.

The plants, which seem'd to me, for the generality, to draw most the eyes of new-comers, by their singularity, were those *Lianes*, or sorts of oñers, already mentioned, which serve instead of ropes; and wherewith *America* abounds in all the hot and woody countries. They have this property in common to them all; that they grow up winding round the trees and shrubs they meet, and being arrived at their branches, which are sometimes at a very great height, they shoot out threads, or filaments, which falling down in a perpendicular line, work themselves into the earth, take root afresh, grow up again, ascending, and descending alternately: others again being carried obliquely by the wind, or some chance, fasten frequently upon neighbouring trees, and form a confusion of cordage, hanging down, and extending every way, which yields the eye a prospect, very like that of a ship's tackling. There are hardly any of these *Lianes*, which have not some particular quality ascribed to them; some of which have been very well confirmed, as is that of the *Ypecacuanana*. I have myself seen in several places one kind, which emits a very strong smell, so plainly resembling that of garlick, that it is easily to be known by that alone. There are some as large, and even larger than a man's arm; some choak the tree, round which they cling, and make it actually die away, by winding themselves so hard about it; which has caused the *Spaniards* to call it *Matapalo*, or *wood-killer*. Sometimes it falls out, that the tree withers away, rots, and wastes as it stands; so that there remains only the windings

ings of the *Lianes*, which form a kind of wreathed column, self-supported, and transpierced through and through, which art would find it very difficult to imitate.

The gums, rosins, and balsams; in short, all the juices, which flow, upon incision, from divers sorts of trees, as well as the different oils extracted from thence, are not to be numbered. The oil drawn from the fruit of a palm-tree, called *Unguravl*, is (as they say) as sweet, and reckoned by some as palatable, as *Florence-oil*. Some there are, like that of *Andiroba*, which yield a fine light, without any ill smell. In many parts the *Indians*, instead of oil, light themselves with the *Copal*, bound round with the leaves of the *Banana-tree*; others, for the same end, make use of certain seeds, put within the hollow of a pointed rod, which, being run into the earth, serves at the same time as a candlestick. The rosin, named *Cabout-chou*, in those countries, of the province of *Quito*, adjacent to the sea, is also very common, on the banks of the *Maranon*, and serves for the same uses. When it is fresh, they work it with molds, into what shape they please, and it is impenetrable by the rain; but, what renders it the most remarkable, is its great elasticity. They make bottles thereof, which it is not easy to break; boots, and hollow bowls, which may be squeez'd flat, and when no longer under restraint, recover their first form. The *Portuguese* of *Para*, have even learnt of the *Omaguas*, to make squirts or syringes thereof, that have no need of a piston, or sucker; they are made hollow, in the form of a pear, when scoop'd, having a little hole at the small end, to which a pipe of the same size is fitted; they are then filled with water, and by squeezing them, they have the same effect, as a common squirt.

squirt. This machine is mightily in vogue amongst the *Omaguas* ; when they meet together by themselves, for any merry-making, the master of the house never fails to present one, to each of his guests ; and the use of the squirt, with them, is always the prelude, to their most solemn feasts.

We changed both our canoos, and our attendants, at *St. Joachim* ; from whence we set out, on the 29th of *July*, ordering our matters so, as to arrive at the mouth of the *Napo*, time enough to observe the *emersion*, of the first of *Jupiter's satellites*, on the night between the 31st of *July*, and the first of *August*. I had not, since my setting out, any determined point of longitude, whereby to correct my distances from *east* to *west* ; besides, the voyages of *Orellana*, *Texeira*, and father *D'A-cunha*, which have render'd the *Napo* famous, and the pretensions of the *Portuguese*, to the jurisdiction over all the territories on the sides of the river of *Amazons*, as far as *Napo*. caused this to be a point, which it was of great importance to settle. I made my observation very fortunately, notwithstanding divers impediments ; and thereby reaped the first fruits, of the trouble it had cost me, to carry a telescope eighteen foot long, through woods, and over mountains, for above a hundred and fifty leagues. My fellow-traveller, full of the same zeal, was both on this occasion, and divers others, wherein he assisted of great service, as well by his understanding, as his activity. I observed, at first the meridian altitude of the sun, in an island, over against the largest mouth of the *Napo* ; I found it three degrees, twenty-four minutes *south* latitude ; I judged the whole breadth of the *Maranon*, to be nine hundred fathoms, below the island, not being able to measure but one branch geometrically.

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As for the *Napo*, it seemed to me to be six hundred fathoms over, above the islands, that there divide it into several branches : and, to conclude, I observed also the same night the *emersion* of the first of the *satellites*, and took immediately after the altitude of two stars, in order to determine the time. The intervals of the observations were measured by a good watch, so that I might spare myself the trouble of setting up, and regulating a pendulum, which would scarce have been possible. I found, by my calculation, the difference of the meridians, between *Paris* and the mouth of the *Napo*, to be four hours, and three quarters. This determination will be yet more exact, when we have the actual hour of the observation, in some place, whose longitude is known, and where this *emersion* was visible. Immediately after my having taken the longitude, we set out again on our way ; and next morning, being the first of *August*, we landed, ten or twelve leagues below the mouth of the *Napo*, at *Pevas*, now the last of the *Spanish* missions on the banks of the *Maranon*. Father *Fritz* had extended them above two hundred leagues farther, but the *Portuguese*, in 1710, took possession of the greatest part of these territories. The savage nations, adjacent to the banks of the *Napo*, were never entirely reduced under the dominion of the *Spaniards* ; some of them, from time to time, have massacred the governors, and missionaries who have attempted it ; but, within these fifteen or twenty years, the *Jesuits* of *Quito* have again return'd to some of their former settlements, and have founded on the banks of that river some new missions, at present very flourishing.

The name of *Pevas*, now given to the little town, where we landed, belongs also to an *Indian* nation, who are now part of its inhabitants; but many *Indians*, of various nations, are likewise there gathered together, each of which have a different tongue; and this is frequent throughout all *America*. Sometimes it happens, that a tongue is only understood by two or three families, the miserable remains of one people, destroy'd and devour'd by another! For, although there are no cannibals upon the banks of the *Maranon*, there are still some *Indians* in the inland countries, particularly towards the north, and in going up the *Tupura*, who eat their prisoners. Most part of the new inhabitants of *Pevas* are not yet *Christians*; being only savages lately drawn out of their coverts and lurking places: all that has been attempted, therefore, hitherto, has been only to humanize, or make them men, which is no easy task.

I ought not to enlarge at present upon the manners and customs of these nations, and many others I have met with, but as far as they may have any relation to *physicks*, or natural history; wherefore, I shall give no description of their dances, instruments, feasts, arms, or implements for hunting or fishing; nor yet, of their whimsical ornaments, such as the bones of animals, or fish, stuck through their nostrils or lips; or their cheeks, having as many holes in them as a sieve, which serve as a case for feathers of all colours; but anatomists will, perhaps, find occasion, to make some reflections on the monstrous extension of the lobe, of the lower extremity of the ear, in some of these people; notwithstanding which, its thickness is not sensibly diminish'd. In effect, we have been surprized, at seeing the tips of some of their
ears

ears four or five inches long, and with a hole bored through, of between seventeen and eighteen lines diameter; and yet more, on being assured that we had not beheld any thing remarkable in that kind. They put at first through this hole a little wooden cylinder; in the room of which, they afterwards substitute another larger, in proportion as the hole grows wider; till at last the tip of the ear hangs down upon their shoulders. Their chief finery consists in filling up this hole with a large nosegay, or tuft of herbs and flowers, which serves them instead of a pendant.

It is usually reckoned between six and seven days running from *Pevas*, the last *Spanish* mission, to *St. Paulo*, the first of those of *Portugal*; which is under the care of some fathers of the order of *Mount Carmel*; but we ran it in three days, and as many nights: the whole way, between these two places, one does not meet with any habitation, on either side of the river. Hereabouts begin the large islands, formerly inhabited by the *Omaguas*; and the channel of the river grows there so considerably larger, that one single branch of it is sometimes between eight and nine hundred fathoms wide: and as this great extent gives the wind a mighty power, it sometimes causes actual storms, which have frequently overset the canoos. We ourselves met with two tempests, in our passage from *Pevas* to *St. Paulo*; but, through the singular experience of the *Indians*, they are very rarely surprized in the midst of the river; and there is no imminent danger, but when one has not time, to seek a shelter, at the mouth of some river or brook, which is often to be met with. As soon as the wind ceases, the current of the river, which breaks the waves, soon restores it to its former calmness.

One of the greatest dangers in this voyage, is in meeting with some trunk of a tree rooted up, half buried in the sand or mud, and hid under water; which would endanger the canoos splitting, or whirling round and round: as once happen'd to us, on approaching the shore, to cut some wood, whose virtue, in curing the dropsy, had been highly extoll'd. In order to avoid this inconvenience, they keep off from the sides; and for the trees carried down by the stream, as they that, they are seen at a distance, so that it is easy to avoid them.

I don't here speak of another accident much more uncommon, but always fatal, whereof there is some danger in coasting too near the banks of the river; namely, the sudden fall of some tree, either through decay, or because the earth, which sustain'd it, has been insensibly undermined and worn away by the waters. Divers canoos have been thereby dash'd in pieces, and swallow'd up with all the rowers; were it not for some mischance of this nature, it would be a thing unheard of for an *Indian* to be drowned.

There is not at present any warlike nation at enmity with the *Europeans*, on the banks of the *Maranon*; all having either submitted, or retired farther within their recesses: nevertheless, there are yet places, where it would be dangerous to lie ashore. Some years ago, the son of a *Spanish* governor, whom we knew at *Quito*, having undertaken to go down the river, was surprized, and massacred in the woods, by some savages of the inland parts, whom an unfortunate chance caused him to meet near the river's side, where they never come but by stealth. The story was told us by his fellow-traveller, who narrowly escaped the
same

same danger; and is now settled in the *Portuguese* missions.

The missionary of *St. Paulo* having been beforehand apprized that we should soon arrive there, kept in readiness for us a large canoo, pirogue, or brigantine, with fourteen rowers, and a master. He also supplied us with a *Portuguese* guide, in another canoo, and we received from him, and the other monks of his order, such entertainment, as made us forget we were in the centre of *America*, five hundred leagues distant from the countries inhabited by the *Europeans*. Here, instead of houses and churches of reeds, we began to see chapels, and other buildings of stone, brick, and with walls of earth, neatly whiten'd. We were also agreeably surprized to find, in the middle of these deserts, that all the *Indian* women wore shifts of *British* linnen; besides having trunks with iron locks and keys in their families; as also, looking-glasses, knives, scissars, needles, combs, and divers other little *European* conveniences; which their husbands provide for them every year at *Para*, in the voyages they make thither, to carry the *cacao* they gather, without cultivating, on the banks of the river. In effect, their commerce with *Para*, gives these *Indians*, and their missionaries, an air of ease, which, at first sight, distinguishes the *Portuguese* missions from those of the *Castilians* towards the source of the *Maranon*. There every thing shews plainly how impossible it is for the missionaries of the crown of *Spain* to supply themselves with any of the conveniences of life; having no correspondence with the *Portuguese*, their neighbours, as they come down the river; but having every thing from *Quito*, whither they hardly send once a year; and from which they are more effectually separated by the *Cordlers*,
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than they would be by a sea a thousand leagues over.

The canoos, whereof the *Portuguese* make use, and with which we were furnish'd after our arrival at *St. Paulo*, are abundantly larger, and more commodious than the *Indian* canoos, with which we were forced to content ourselves in the *Spanish* missions. The trunk of a tree, which forms the whole body of the *Indian* canoos, makes only, amongst the *Portuguese*, so far of the bottom and sides as is under water. They first cleave, and hollow it with proper instruments; then they open it, by the help of fire, in order to make it wider; and as it thereby is render'd so much the more shallow, they heighten it by raising it with planks, which they fasten to the body of the vessel with futtocks; and the helm of these canoos is so placed, that its play is no way incommodious to the little cabin, or chamber, that is at the stern. Some of these brigantines are sixty foot long, seven in breadth, and three and a half in depth; and there are some yet larger, that have forty rowers. Most part of them have two masts, and carry sails; which are of great service to go up the river, by the help of the *east* wind, which generally blows there from *October* till towards *May*. About four or five years ago, one of these brigantines, of a middling size, being cover'd with a deck, and rigg'd out by a *French* captain of a merchant-man, he embark'd therein at *Para*, with three sailors of his own country, stood off to sea, to the great astonishment of all the inhabitants, and ran from *Para* to *Cayenne* in six days; a passage, which, as will be seen, took me up two months, in a vessel belonging to the same port: But I was then obliged to let them carry me along the Coast, after the custom of that country; which

which also suited me best, for the compleating my map.

We ran in six days, and as many nights, from *St. Paulo* to *Coari*; not including about two days stay at the intermediate missions of *Tviratoba*, *Traquatoba*, *Paraguay*, and *Tefé*. *Coari* is the last of the six settlements of *Portuguese* missionaries of the order of *Carmelites*. The five first were form'd of the remains of the old mission of father *Samuel Fritz*; and consisted of a great number of different nations, most part of them transplanted. The whole six are situated on the *south* side of the river, where the land is highest, and not subject to inundations. Between *St. Paulo* and *Coari* we met several large and fine rivers, which fall into that of the *Amazons*, and are there lost. The principal, on the *south* side, are *Yutai*, larger than *Yuruca*, which comes next, and whose width, at the mouth, I found, on measuring, to be three hundred sixty-two fathoms: after these follows the river *Tefé*, call'd by father *D'Acunba*, *Tapi*, and that of *Coari*, which some years ago was reckon'd only a lake. All these run from *south* to *north*, and come from the mountains on the *east* of *Lima*, and on the *north* of *Cusco*. All of them are likewise navigable, for several months, on going upwards from their mouths; and divers *Indians* have affirm'd, that they have seen on the banks of the *Coari*, but far up within the land, an open country, with many flies, and abundance of large cattle, some of whose hides they brought with them. These objects, which were quite new to them, prove that these rivers water some countries very different from theirs; and which, undoubtedly, border upon the *Spanish* colonies of upper *Peru*, where, it is well known, the cattle have mul-

multiplied greatly. The *Amazon* likewise receives from the *north*, within the same interval, two large and famous rivers: the first is the *Xça*, which comes down, like the *Napo*, from the neighbourhood of *Pasta*, on the *north* of *Quito*, to the *Franciscan* missions of *Sucumbas*, where it is call'd *Putumayo*; the second is the *Xupura*, whose source is a little more towards the *north* than the *Putumayo*; and which, towards the upper part thereof is term'd *Caqueta*, a name utterly unknown at its mouths, which discharge themselves into the *Maranon*. I say mouths in the plural, because it has actually seven or eight, formed by as many branches, which separate successively from the main stream; and this so far from each other, that there is above a hundred leagues distance between the first and the last. They give the name of *Xupura* to one of the most considerable of these branches; and to conform myself to the custom of the *Portuguese*, who extended this name as they went up that river, I not only call thus, the branch formerly term'd so by the *Indians*, but also the main stream, from whence this branch and the others issue. All the countries which they water are so low, that, at those times when the *Amazon* swells, they are entirely overflow'd; so that they pass in canoos from one branch to the other, and even to lakes within the land. The banks of the *Xupura* are inhabited, in some parts, by those savage nations before mentioned, who mutually destroy each other; and several of whom still eat their prisoners. Neither this river, nor the different branches, that fall lower into the *Amazon*, are hardly ever frequented by any other *Europeans*, than some *Portuguese* of *Para* who come thither, and purchase slaves fraudulently:

lently: we shall return to the *Yupura*, when we treat of the *Rio Negro*.

It was in these parts, an *Indian* village was situated, where *Texeira*, in going up the *Amazon*, in 1637, received in exchange, from the antient inhabitants, some jewels of gold, which were assey'd at *Quito*, and judg'd to be of twenty-three carats. Hereupon, at his return, he gave this village the name of the *village of gold*; he also set up a boundary there, and took possession thereof for the crown of *Portugal*, on the 26th of *August*, 1639, by an instrument, which is still in the archives of *Para*, where I saw it. This instrument, signed by all the officers of his detachment, specifies, *That it was on a rising ground, over against the mouths of the Golden River.*

Father *D'Acunba* assures us, that by divers ways, which he points out, one may go from the *Yupura* to the *Yquiari*, which he calls the *Golden River*; he adds, that the inhabitants of *Yquiari* traded in gold with the *Manaos* their neighbours, who again dealt therein with the *Indians* on the banks of the *Amazon*, from whom he bought himself a pair of gold pendants. Father *Fritz* informs us in his journal, that in 1687, which is fifty years after father *d'Acunba*, he had seen between eight and ten canoos of *Manaos*, whom he falsely calls *Manavos*, who had come from their habitations on the banks of the *Turubech*, by the means of an inundation, to trade with *Yurimaguas*, his *Catechumens*, on the north side of the *Amazon*. He likewise says, they used to bring, amongst other things, some little plates of beaten gold, which they themselves received in exchange from the *Indians* of *Yquiari*: all these places and rivers are pointed out in that father's map. Now

so many witnesses agreeing together, and all of them persons of credit, will not allow us to question the truth of these facts; nevertheless, the river, the lake, the gold mine, the boundary, and even the *village of gold*, whose existence has been attested by so many evidences, have all disappear'd, like an enchanted palace, and even upon the spot, the very memory of them is lost.

Even in the time of father *Fritz*, the *Portuguese*, forgetting the title whereon they ground their pretensions, began to maintain, that the boundary set up by *Texeira* was situated above the province of the *Omaguas*; and at the same juncture, father *Fritz*, missionary from the crown of *Spain*, running into another extream, pretended it was only placed about the river *Cuchivara*, which is above two hundred leagues lower. In effect, it fell out here, as it always does in disputes of this nature; each of them have exaggerated their own pretensions. For, as to the boundary fix'd at the *village of gold*, if we examine well the country, where the fourth *Portuguese* mission, as we come down the river, called *Paraguari*, is situated, *viz.* upon the south side of the *Amazon*, and some leagues above *Tefé*, (where I observed three degrees and twenty minutes south latitude) we shall find it agrees with all the marks of the situation of that famous village, specified in *Texeira's* instrument, and dated from *Guayaris*; as also with those in father *D'A-cunha's* relation. Consequently, the *Yupura*, whose principal mouth is over against *Paraguari*, will be the *Rio de Ouro*; whose mouths, mentioned in the same instrument, were over against that village. It remains to know, what is become of the *Turulesch* and the *Tquiari*, to which father *D'A-cunha* gives the name of the *Golden River*; and into which he says one goes by the *Yupura*; but this

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is what I have had somewhat more trouble to discover. I believe, however, I have clear'd up this point, and perhaps, have also found out the foundation of the fable of the *Lake Parima*, and *D'Orado*; but order and perspicuity require us to refer this discussion to the article of *Rio Negro*.

In the course of our navigation, we had examined the *Indians* of divers nations, and made enquiry amongst them, if they ever had any knowledge of those warlike women, whom *Orellana* pretended he had met with, and fought: and whether it was really true, they lived separated from all intercourse with mankind, (unless it was once a year, when they admitted them, for the sake of propagating their species,) as is asserted by father *D'Acunba*, in his account of them, which is well worth reading for its singularity. They all told us, they had been informed the same by their parents, adding thereto a thousand other particulars, too long to be repeated, but which all of them served to confirm, that there has been, in this continent, a commonwealth of females, who lived by themselves, without having any males amongst them; and that they have retired towards the *north*, far up within the inland countries, either by *Rio Negro*, or some other of those ~~ryers~~ rivers, which come down from that quarter into the *Maranon*.

Amongst the rest, an *Indian* of *St. Joachim d'Omaguas* told us, that we might, perhaps, still find an old man at *Coari*, whose father had seen these *Amazons*; and on our arrival afterwards at that place, we were inform'd, that the *Indian* of whom he spoke was dead, but we saw his son, who seem'd to be about seventy, and commanded the other *Indians* of that district. He assured us, that his grandfather had actually seen those females

males pass by at the mouth of the river *Cuchivara*, whither they had come from that of the *Cayamé*, which disembogues itself into the *Amazon*, on the south side, between *Tefé* and *Coari*. He added, that his grandfire had spoke with four of them, one of which had a child at her breast, and told us the names of each of them; as also, that, on going from *Cuchivara*, they crossed the great river, meaning the *Maranon*, and directed their course towards *Rio Negro*: I omit certain improbable circumstances, which have no relation to the principal point. Below *Coari* also, the *Indians* every-where gave us the same account, differing only in some few particulars, but all agreeing as to the main article.

The *Topayos*, (especially, of whom we shall treat more at large, in its proper place, as well as of certain green stones, which are call'd by the name of the *Amazons*;) affirm, they had them by inheritance from their fathers; who had them of the *Cougnantainscouima*, that is, in their tongue, the *women without husbands*, amongst whom they are to be found in great plenty.

An *Indian* also of *Mortigura*, a mission adjacent to *Para*, offer'd to shew me a river, which would carry one up to within a little distance of the country, now actually inhabited by these *Amazons*: this river is call'd *Irijo*, and I have since pass'd by its mouth, between *Macapa* and the north cape. By the account of the same *Indian*, at the place where this river ceases to be navigable, by reason of its falls, it was necessary, in order to come at the residence of the *Amazons*, to travel several days through the woods, to the westward, and afterwards to cross a mountainous region.

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An old soldier, of the garrison of *Cayenne*, now living near the falls of the *Oyapoc*, assured me, that being of a party which were sent up, in 1726, into the inland country, in order to make discoveries, they penetrated as far as the *Amicouanes*, a nation with long ears, who live beyond the sources of the *Oyapoc*, and near those of another river that falls into the *Amazon*; where he had seen several of those green stones afore-mentioned about the necks of their wives and daughters; and that having ask'd those *Indians* where they got them, they answer'd, they came from the *women without husbands*, whose territories were seven or eight days journey farther, to the *westward*. This nation of the *Amicouanes* live remote from the sea, in a hilly country, and where the rivers are not yet navigable; wherefore, it is not at all likely, they should have received this tradition from the *Indians* of the *Amazon*, with whom they had no manner of intercourse; knowing only the nations contiguous to their own country, from amongst whom the *French* party had taken guides and interpreters.

Now, what is first to be observed, is, that all the proofs I have already mentioned, with others I have here passed over in silence, as also, those related in the enquiries made in 1726, and since by two *Spanish* governours, *Don Diego Portales*, and *Don Francisco de Torralva*, his successor, of the province of *Venezuela*, agree in the whole about the reality of the *Amazons*; but, what is not less worthy our attention, is, that, whilst these several relations fix the present retreat of the *American Amazons*, some on the *east*, some on the *north*, and some on the *west*, all these various directions concur, in placing the common center, where they all meet in a point, namely, at the
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mountains in the heart of *Guiana*, a region, whither neither the *Portuguese* of *Para*, nor the *French* of *Cayenne*, have ever yet penetrated.

Notwithstanding all this, I must own, I should not easily believe these *Amazons* were now actually settled there, unless we had some more positive account of them, from time to time, from the *Indians* bordering on the *European* colonies, on the coasts of *Guiana*; and yet, this ambulatory nation may again have changed their abode. But, what seems to me more probable than any thing else, is, that they have now laid aside their ancient customs; whether they have been subdued by any other nation, or, whether their daughters, being weary of their solitude, have at last forgot the aversion their mothers had to mankind: wherefore, though, at present, no actual traces of this female republick should remain, this would not be sufficient ground for us to affirm there never was any such.

Besides, it would be enough to prove the reality of the fact, if there ever has been, in *America*, a female settlement, where no men lived in common with the women; their other customs, and particularly that of cutting off their right breasts, which father *D'Acunha* ascribes to them, on the credit of the *Indians*, are additional, and independent circumstances, that probably, have been alter'd, and perhaps added, by the *Europeans*, prepossessed with the manners attributed to the ancient *Amazons* of *Asia*; and the love of relating somewhat wonderful and surprizing, may have induced the *Indians* since to adopt it into their accounts. In effect, it is not said, that the *Cacique*, who forewarn'd *Orellana* to be upon his guard against these *Amazons*, called by him *Comapuyaras*, made any mention of their cutting off one breast;

breast; and our *Indian of Coari*, in what he told us of his grandfather, who saw four *Amazons*, one of whom actually suckled a child, spoke not one word of this particular, so very likely to draw his attention.

To return to the main point; if, in order to deny it, the improbability, and almost moral impossibility of such a female republic's being able to establish itself, and subsist, should be alledg'd, I would neither insist upon the examples of the ancient *Asiatic Amazons*, nor yet of those modern ones of *Africa*, because what we read thereof, either in the ancient or modern historians, is at least intermingled with many fables, and liable to be disputed. I would content myself with only observing, that if ever there could be any *Amazons* in the world, it must be in *America*; where the vagabond lives of the women, who often follow their husbands to the wars, and are not a jot happier when at home in their families, might naturally put it into their minds, and at the same time afford them frequent opportunities to escape from the hard yoke of their tyrants; by endeavouring to provide themselves a settlement, where they might live independent, and, at least, not be reduced to the wretched condition of slaves, and beasts of burthen. Such a resolution, if taken, and executed, would not be at all more extraordinary, or more difficult, than what happens every day in all the *European* colonies of *America*; where it is but too common for slaves, when ill used, or discontented, to run away in whole droves into the woods, and sometimes alone, when they can't get company, and there to spend many years, sometimes all their lives in solitude.

I know that all, or most part, of the *Indians* of *South-America*, are liars, credulous, and fond of any thing surprizing; but none of these people ever heard talk of the *Amazons* of *Diodorus Siculus*, or *Justin*. Nevertheless, a report of such a nation had obtain'd footing amongst these *Indians* in the center of *America*, before the *Spaniards* had penetrated thither; and mention has also been made of them since, among people who had never seen *Europeans*. This is evident, from the advice given by the *Cacique* to *Orellana* and his company; as also from the traditions related by the fathers *D'Acunha* and *Barazi*. Can it be believed, that savages, of countries remote from each other, had agreed, without any foundation, to invent the same story; and that this pretended fable had been so universally adopted at *Maynas*, at *Para*, at *Cayenne*, and at *Venezuela*, amongst so many nations, who don't understand, neither have any communication with each other?

As for the rest, I have not here enumerated all the authors, and travellers, of the several nations of *Europe*, who, for above two centuries, have affirmed the reality of the Existence of the *American Amazons*, whom some of them pretend even to have seen. I have contented myself with reciting those new testimonies thereof, which *Mons. Maldonado* and myself had an opportunity of collecting by the way. One may see this point treated of, in the apology for the first volume of the *Critical Theatre*, of the celebrated father *Feijoo*, a *Spanish Benedictin*, written by his learned pupil father *Sarmiento*, of the same society.

On the 20th of *August*, we set out from *Coari*, with a fresh canoo, and other *Indians*. The *Peruvian* tongue, wherein *Mons. Maldonado*, and our servants were well versed, and whereof I had
myself

myself a little smattering, had served us, to make ourselves understood by the natives in all the *Spanish* missions, where they have endeavour'd to render it the general language; and at *St. Paulo* and *Jesé*, we had *Portuguese* interpreters, who spoke that of *Brazil*, which had, in the like manner, been introduced into all the *Portuguese* missions: But, not having found any at *Coari*, whither we could not get, notwithstanding all our diligence, till after the departure of the missionary's great canoe for *Para*, we found ourselves amongst *Indians*, with whom we could only converse by signs, or by the help of a short vocabulary of questions, which I had drawn up in their tongue; and which, unfortunately for us, did not contain any answers thereto. However, I made a shift to get some insight from them, especially into the names of the rivers. I observed also, that they were acquainted with several fix'd stars, and gave the names of animals to divers constellations. For instance, they call the *Hyades*, or bull's head, *Tapiera Rayouba*, from a word which, at present, signifies in their tongue, *the jaw of an ox*; I say at present, because, since oxen have been transported from *Europe* to *America*, the *Brazilians*, as well as the natives of *Peru*, have call'd them by the same name, which each of them gave, in their language, to the *elk*, the largest four-footed beast they were acquainted with, before the arrival of the *Europeans*.

Next day after our departure from *Coari*, in pursuing our course down the river, we left on the *north* side of us one of the mouths of the *Yupura*, almost a hundred leagues distant from the first; and the day following we passed on the *south* side the mouths of the river, now called *Purus*, but formerly *Cuchivara*, from the name

of a village near its entrance into the river of the *Amazons*. It was in this village the grandfather of the old *Indian* at *Coari* was visited by four of those warlike females, as was before observed. The *Purus* is not a jot inferior to the largest of those that fall into the *Maranon*; and, if the *Indians* are to be believed, it is equal thereto. Seven or eight leagues below their junction, perceiving the river free from islands, and between a thousand and twelve hundred fathoms over, I made the *Indians* row hard against the stream, in order to keep the boat, as much as possible, in the place, and could not find any bottom at the depth of a hundred and three fathoms.

On the 23d we entered *Rio Negro*, or the *Black River*, another sea of fresh water, which falls into the *Amazon* on its *north* side. The map of father *Fritz*, who never entered therein, and that last drawn by *De Lisle*, from that of the before-mentioned father, make this river run from *north* to *south*; whereas it is certain, by the report of all those who have gone up it, that it comes from the *west*, and runs to the *east*, only inclining a little to the *south*: nay, I am myself a witness, that its course is so for several leagues above its entrance into the *Amazon*; into which it runs in such a parallel line, that, were it not for the transparency of its waters, whence it derived its name of the *Black River*, it might be easily mistaken for a branch of the *Amazon*, only separated from it by the intervention of an island. We went up *Rio Negro*, two leagues to the fort built there by the *Portuguese*, at its narrowest part, which, on measuring, I found to be twelve hundred and three fathoms, and where I observed the latitude to be three degrees nine minutes. This is the first settlement of the *Portuguese* on
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the north of the *Amazon*, as one comes down. *Rio Negro* has been frequented by that nation above a century ; and they there carry on a great trade for slaves. They have there continually a detachment from *Para*, which encamps on its banks, to keep the *Indians* that inhabit them in awe, and favour the traffic before-mentioned, within the limits prescribed by the laws of *Portugal* ; and every year this flying camp, to which they give the name of the *Company of Redemption*, penetrates higher up into the country. The captain commandant of the fort was absent when we arrived there, and we stay'd but twenty-four hours.

All the country hitherto discover'd, on the banks of the *Rio Negro*, is peopled by *Portuguese* missions, of the same *Carmelite* monks, whom we had met on coming down the *Amazon*, since our having pass'd the *Spanish* missions. On going up this river for a fortnight, or three weeks, they find it yet broader than at its mouth, by reason of the great number of islands, and lakes, which it forms ; and, all this way, the land is high, so that it is never overflow'd, neither are the woods so thick ; in short, it is a country quite different from that on the sides of the *Amazon*.

On our arrival at this fort, we had a particular account, of the communication of *Rio Negro* with the *Oroonoko* ; and consequently, of the latter with the *Amazon*. I will not here enumerate all the different proofs of this communication, which I had carefully collected by the way ; the most authentic thereof, at that time, being the not to be suspected evidence of a female *Indian* of the *Spanish* missions, on the banks of the *Oroonoko*, with whom I had spoken, who had

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* Of the nation of the *Causacani*, and of the village and mission *Santa Maria de Bararuma*.

come in a canoo from thence to *Para* ; because all these testimonies will become useless for the future, and must give place to one of a later date. I have just been informed, by a letter from the reverend father *John Ferreyra*, rector of the jesuit's college, that the *Portugueze*, of the flying camp at *Rio Negro*, having sailed up from one river to another in 1744, met with the superior of the jesuits, of the *Spanish* missions, on the banks of the *Oroonoko*, and came back with him, by the same way, without disembarking, to their camp on the side of *Rio Negro*, which maintains a communication between the *Oroonoko* and the *Amazon* : The truth thereof can, therefore, no longer be disputed. It would be in vain, in order to render it doubtful, to cite the authority of the late author of the *Oroonoko illustrated* *, who, after having long been a missionary, on the banks of that river, represented this communication as impossible, so lately as in 1741 ; no doubt, he did not then know, that his own letters to the *Portugueze* commandant, and the chaplain of the *Company of Redemption*, were come from his mission on the *Oroonoko*, by this very way, by him represented as only imaginary, as far as *Para* ; where I myself saw the originals, in the hands of the governor : But this author is himself fully undeceived, in this particular, as I have been informed by *Monf. Bouguer*, who saw him, in 1744, in the *West-Indies*, at *Cartagena*.

This communication of the *Oroonoko* with the *Amazon*, newly confirm'd, may, with the more justice, be allow'd as a discovery in geography, because, although the intercourse, between these two rivers, is plainly represented upon the old maps,

* See *El Orinoko ilustrado*. Madrid, 1741. Page 18.

maps, all the modern geographers had suppress'd it in the new ones, as if by agreement; and it was treated as chimerical, even by those, who, one would have thought, should have been the best informed of its reality. Nor is this, in all likelihood, the first time, that probabilities, and conjectures merely plausible, have got the better of the well-avouch'd accounts of travellers; and that a spirit of criticism, carried too far, has caused that to be flatly denied, which ought only to have been treated as dubious.

But how is this communication kept open, between the *Oronoko* and the *Amazon*? Nothing but an accurate map of the *Black River*, which we shall have, when the court of *Portugal* please, can fully explain this to us. In the mean while, this is the notion I have formed thereof, on comparing the various accounts, I have collected, during the course of my voyage, with the several relations, memoirs, and maps, both in print, and manuscript, which I have been able to discover, and consult, as well upon the spot, as since my return; and, above all, on comparing them with those sketches of maps, my fellow-traveller and I have often drawn, under the eye, and according to the narratives, of the most intelligent missionaries and travellers, who have gone up and down the *Amazon* and the *Rio Negro*.

From all these put together, and clear'd up by each other, it follows, that a small *Indian* village, in the province of *Mococa*, somewhat to the east of *Pasto*, as also more to the north by a degree, gives its name of *Caqueta* to a river, on whose banks it is situated. In advancing some way farther, this river is divided into three branches; one whereof runs to the
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North-east, and is the famous *Oroonoko*; which discharges itself into the sea, over-against the isle of *Trinity*; the other takes its course towards the *east*, only inclining somewhat to the *south*, which is what is called by the *Portuguese*, as it advances farther, *Rio Negro*: a third branch, inclining yet more to the *south*, is the *Yupura*, so often before mentioned; which, as has been observed, in its proper place, is subdivided into several others. What remains farther to be known, is, whether it separates from the main stream above the two former branches, or, whether it is itself a part of the second branch, named *Rio Negro*: this is what I have, as yet, no knowledge of, but by guess; though some reasons induce me to think the first supposition most probable. However that be, it is still certain, that if the *Yupura* is once found to be a branch of the *Caqueta*, whose name was never so much as heard of, on the banks of the *Amazon*, all that father *D'Acunha* says of the *Caquetta*, and the *Yupura*, becomes easy to be understood, and reconciled. It is well known, that the different names, given to the same places, and especially to the same rivers, by the various people who live upon their banks, have always proved the bane of geography.

It is in this island, the largest in those parts of the world yet discover'd, or rather in this new *Mesopotamia*, formed by the *Amazon* and the *Oroonoko*, united together by the *Black River*, that search has long been made, for the imaginary *Golden Lake of Parima*, with the equally chimerical city of *Manoa del Dorado*; a search, which has cost the lives of so many men, and, amongst others, of Sir *Walter Raleigh*, a famous navigator, and one of the greatest men *England*
ever

Ever produced, whose tragical end is sufficiently known. It is easy to perceive, by the expressions of father *D'Acunba*, that, in his time, they were far from being undeceived, with relation to this fine fable. I will, therefore, beg pardon, for a short geographical detail, which too properly belongs to the main article of my subject to be omitted; and which may likewise serve to clear up the origin of a romance, which nothing but the thirst of riches could have induced any one to believe; such as that of a city, whose house-tops, and walls, were cover'd with plates of gold; as also that of a lake, whose sands were of the same precious metal.

It will here be necessary to recall to mind, what has been before said, with relation to the *Golden River*; and the other facts already cited, and extracted from the accounts of the fathers *D'Acunba* and *Fritz*.

The *Manaos*, according to the last of these authors, were a warlike nation, dreaded by all their neighbours, who long withstood all the attempts of the *Portuguese*, with whom they are at present at peace, many of them being now settled, in the colonies and missions of the *Black River*. Some of them still make incursions into the territories of the savage nations, and the *Portuguese* employ them, to carry on their traffic in slaves. They were two of these *Indians*, who penetrated as far as *Oroonoko*, and carried off from thence, and sold to the *Portuguese*, the female *Indian*, of whom I have already spoken. Father *Fritz* says expressly, in his journal, that these *Manaos*, whom he saw come and traffic with the *Indians* on the banks of the *Amazon*, and who had their gold from the *Xquiari*, had their abode on the sides of the river *Turubecb*. By much enquiry, I have
been

been informed, that, on going up the *Yupura* for five days, one finds on the right hand a lake, which may be cross'd in a day, call'd *Marabi*, or *Parabi*, which, in the *Brazilian* tongue, signifies *river-water*; and that, on dragging the canoo from thence, when it is too shallow, to other places that are overflow'd in the time of the inundations, one comes to a river call'd *Yurubech*, by which one may go down in five days into *Rio Negro*; which latter, some days voyage higher, receives another, named *Yiquiari*, that has many water-falls, and comes from a country abounding in mines and mountains. Can it be doubted whether these are the *Yurubech* and *Yquiari*, of the fathers *D'Acunba* and *Fritz*. The latter of these, upon the report of the *Indians*, of whom it is hard to get any clear and plain accounts, especially when one must have an interpreter, represents the course of these two rivers, as different from what it really is; making the *Yurubech* fall into the *Yquiari*; and this latter again into a great lake high up within the land, but their names are scarce alter'd. One sees, on the map of father *Fritz*, a great colony of the *Manaos* in the same parts, whom he calls *Xenefiti*, and of whom I could never get any positive account; but there is nothing extraordinary herein, the nation of the *Manaos*, having been transplanted and dispers'd: However, it is very probable, that the fable of the city of *Manoa*, had its rise from the capital of the *Manaos*; I stick only to such facts as are certain. The *Manaos* had a considerable settlement in these parts; they border'd upon a great lake, and even upon several great lakes, for they are very common in a low country, subject to inundations; the *Manaos* get gold from the *Yquiari*, and
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made small plates thereof; these are all matters of fact, which, by the help of exaggeration, might give rise, as was before observed, to the fable of the city of *Manoa*, and the *Golden Lake*. Should it be objected, that there is still a wide difference, between the small plates of gold of the *Manaos*, and the golden roofs of the city of *Manoa*; and that there is the same between the gold spangles, wash'd out of the mines by the waters of the *Yquiari*, and the gold sand of lake *Parima*; yet it can't be denied, that, on one hand, the greediness and prepossession of the *Europeans*, bent upon finding, at any rate, what they were in search of; and on the other hand, the natural propensity of the *Indians* to lye and exaggerate, (which might be heighten'd by their being concern'd, in point of interest, to remove, to a good distance from themselves, such troublesome intruders,) might easily create some resemblance between accounts so seemingly dissimilar, and might alter and disfigure them so far, as to render them not to be known again. The history of the discoveries of the new world, affords us more than one example of such transformations.

I have now in my hands an extract of a journal, with a sketch of a map, drawn by a traveller *, who, probably, is the most modern of all those, that were ever bent upon this discovery: It was shewn to me at *Para*, by the author himself; who in 1740, went up the *Essequiba*, which discharges itself into the ocean between *Surinam* and the *Oroonoko*. He says therein, that, after having traversed many lakes, and vast regions, sometimes dragging, and sometimes carrying his canoe, with incredible labour and fatigue, and

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* *Nicholas Hortsman*, a Native of *Hildersheim*.

without finding any traces of what he was in search of, he came at last to a river that runs to the *south*, which carried him into *Rio Negro*, into which it enters on the *north* side. The *Portuguese* have given it the name of *Rio Blanco*, and the *Hollanders* of *Essequiba* that of *Parima*; undoubtedly, because they believ'd it would lead them to the lake so called; as the same name has been given to another river, at *Cayenne*, for a similar reason. As for the rest, let it be believed, if people please, that the lake *Parima* was one of those which this traveller cross'd; yet he found so little resemblance therein with the idea he had conceived of the *Golden Lake*, that he seem'd to me very far from approving of this conjecture.

The limpid and clear streams of the *Black River*, or *Rio Negro*, had hardly lost their transparency, by their intermixture with the whitish and troubled waters of the *Amazon*, when we came, on the *south* side, to the first mouth of another river, no way inferior to the former, nor less frequented by the *Portuguese*. They have named it *Rio de la Madera*, or the *River of Wood*; perhaps, on account of the many trees it carries down its stream, at the time of its inundations. It will be sufficient, in order to give some notion of the length of its course, to say that, in 1741, they went up thereon to the neighbourhood of *Santa Cruz de la Sierra*, an episcopal See, in *Upper Peru*, situated in seventeen degrees and a half *south* latitude. This river is call'd *Mamora*, towards its upper part; where the missions of the *Moxes* are establish'd, whereof the *Jesuits* of the province of *Lima* publish'd a map in 1713, which was inserted in the twelfth volume of *Edifying and Curious Letters*; but the most remote source

of the *Madera* is near the mines of *Potosi*, and not far from the head of the *Pilcomayo*, which falls into the great river of *La Plata*.

The *Amazon* below *Rio Negro*, and the *Madera*, is commonly a league over ; and when it forms any islands it is sometimes two or three ; nay, at those seasons, when it has its inundations, it is no longer confined within any limits. It is here the *Portuguese* of *Para* begin to give it the name of *Amazon* ; for, up higher they only know it by that of *Rio de Solimoes*, or the *River of Poisons*; a name which was probably given it on account of the envenom'd arrows, whereof we have already spoken ; which are the most usual weapons of those nations that live upon its banks.

On the 28th, we pass'd by the river *Jamundas*, on our left, which father *D'Acunha* calls *Cunuris*, and pretends was that, where *Orellana* was attack'd, by those warlike women, whom he call'd *Amazons*. Somewhat lower, on the same side, we landed at the foot of *Pauxis*, a *Portuguese* fort, where the stream of the river is confined within a strait, nine hundred and five fathoms in breadth. The ebbing and flowing of the tide comes as high as this place ; at least, it may be sensibly perceived there, by the swelling of the river, which is observed every twelve hours, and which falls later every day, as it does on the sea-coasts. The greatest height of the flood, which I measured at *Para*, being hardly more than ten foot and a half at the spring-tides, it follows that the declivity of the river, from *Pauxis* to the sea, that is, for the length of two hundred leagues, and upwards, or three hundred and sixty, according to father *D'Acunha*, can hardly be above ten foot and a half : And this agrees with the height of the quicksilver, which

I found, at the fort of *Pauxis*, fourteen fathoms above the level of the water, to be about a line and a quarter less than at *Para*, on the sea-side.

It may easily be conceived, that the tide of flood, which is observed at the *north* cape, at the mouth of the river of *Amazons*, cannot reach as high as *Pauxis*, two hundred leagues, and upwards, from the sea, in less than several days, instead of five or six hours, the usual time allow'd by the sea for that purpose. And, in effect, from the sea-coast to *Pauxis*, there are twenty stations, if we may so call them, which point out the progress of the tide each day, in coming up the river. In all these places, the effect of the tide of flood is seen, at the same hour as on the sea-side; and supposing, to render this more clear, that these different stations are about twelve leagues distant from each other, the same effect of the tides will be observed within the limits of those respective stations, at all the intermediate hours; that is, according to the supposition of twelve leagues, at an hour later from league to league, as it advances farther from the sea. The same may also be observed of the tide of ebb, at answerable hours. Besides, all these alternative motions, each in their respective places, are subject to fall, daily later and later, as on the sea-coast. This sort of progress of the tide, by undulations, very probably takes place likewise in open sea; and one would think, these retardations, in its course, ought to be yet greater and greater, from the point where the ebbing of the waters begins, even till they come back to the coasts. The proportion wherein the velocity of the tides abates, in going up the river; two contrary currents, which are observed at the time of flood, one at the surface of the water, and the other at some depth below it; two others also, one of which runs upwards

wards along the fides, and makes its way swiftly, whilst the other, in the midst of the stream-runs downwards, and advances slowly; and lastly, two other contrary currents, which are frequently seen, on approaching the sea, in transverse canals, form'd by nature, through which, the tide flows into the river, on two opposite fides, at the same time: All these *phænomena*, whereof I know not that many have been observed before, with their different combinations, and various other accidents of the tides, which, undoubtedly, are more common, and more diversify'd than any-where else, in a river, where they probably run up to a greater distance from the sea, than in any other part of the known world, would certainly afford room for many curious, and, perhaps, new remarks: But, in order to give the less into conjecture, it would be necessary to have a series of exact observations, which would require a long stay in each place; a delay, which did not at all suit with my just impatience to return to *France*, after an absence that had already lasted almost nine years. Nevertheless, I did not fail to observe at *Para*, and in the neighbourhood of the *north* cape, another *phænomenon*, of the spring-tides, which is more extraordinary than any of the former, and whereof we shall treat in its proper place.

We were received at *Pauxis*, as indeed we had been every-where, since our arrival within the dominions of *Portugal*; the commandant of the fort detained us there four days, and one at his country-seat; after which he accompanied us to the fortress of *Curupa*, between six and seven days journey below *Pauxis*, and just half way to *Para*. The strictest, and most favourable orders, both for the safety and convenience of my passage, had been sent before me to every place; and they

they extended to all my company : I was indebted, for all the advantages thereby procured me, both on my way, and at *Para*, to a minister who loves the sciences, and knows the utility of them ; the very same, whose vigilance was not wearied out, by providing for all the necessities of our numerous company, during our long stay at *Quito*.

In less than sixteen hours, we ran from *Pauxis* to the fortress of *Topayos*, at the mouth of a river of the same name, which is also one of the first rank : It comes down from the mines of *Brazil*, and runs through divers unknown countries, inhabited by warlike and savage nations, whom the *jesuit*-missionaries labour to civilize.

Of the ruins of the town of *Tupinambara*, formerly situated in a large island, at the entrance of the river *Madera*, was formed that of *Topayos* ; and its inhabitants are almost the sole remains of the brave nation of the *Tupinambas*, who two hundred years ago govern'd *Brazil*, where their language is still retain'd. Their story, and their long wanderings, may be seen in the relation of father *D'Acunba*.

It is amongst these *Topayos*, that those famous green gems, call'd by the name of *Stones* of the *Amazons*, and which it yet remains a secret whence they originally come, are more easily to be had than elsewhere. They were formerly much sought after, on account of the virtues attributed to them, of curing the stone, the stone-cholick, and the epilepsy ; inasmuch that a treatise has been publish'd concerning them, under the name of the *Divine Stone*. The truth is, they neither differ in colour or hardness from the *oriental jasper* ; they resist the file ; and it cannot be imagined which way the *Americans* could cut them, and form them into the shape of divers animals.

This,

This, undoubtedly, gave rise, to a story hardly worth being refuted, though it has been very seriously reported ; namely, that these stones were nothing else originally, but the mud of the river, which they moulded into what figure they pleased, by working it with the hand, when newly taken out; and which afterwards acquired its present extream hardness, on being exposed to the air. Should one be sufficiently complaisant, to admit readily of this wonder, as to which some credulous persons could not be undeceived, till after their having in vain made tryal of this simple process, there would still remain another problem, of the same nature, to be proposed to our lapidaries; namely, concerning the round and polish'd emeralds, bored through with two conic holes, diametrically opposite to each other, upon one common axis, which are yet to be found in *Peru*, in the province of *Esmeraldas*, forty leagues from *Quito*, on the banks of the river *St. Iago* ; together with divers other monuments of the industry of its antient inhabitants. As to the green stones before-mentioned, they grow every day scarcer and scarcer, both because the *Indians*, who set a great value on them, will not easily part therewith, and because of the great number, that have been already carried to *Europe*.

On the 4th of *September*, we began to see plainly some mountains, towards the *north*, twelve or fifteen leagues within the land; this was a kind of a new sight to us, who had travell'd two months, from the time of our passing the *Pongo*, without seeing the least hillock. Those we then beheld, were the foremost of a long ridge of mountains, that reaches from *west* to *east*, whose summits are the points, whence the waters of *Guiana* take their rise. Those which direct
their

their course towards the *north*, form the rivers on the side of *Cayenne* and *Surinam*; and those which run to the *south*, after a very short progress, lose themselves in the *Amazon*. According to the tradition of the country, it is to these mountains the *Amazons* of *Orellana* have retired; they have also another tradition, not less generally received, and whereof they pretend to have had more evident proofs; which is, that these mountains abound in mines of divers metals: this point, however, is no better cleared up than the former, though it is of such a nature, as to excite the attention, of a much greater number of curious enquirers.

On the 5th in the evening, at sun-set, I observed the variation of the compass, to be five degrees and a half from *north* to *east*. Not having met with any place where to land, I made my observations upon the trunk of a tree rooted up, which the stream had driven to the side of the river. We had the curiosity to measure it, and found its length, between the root and the branches, to be eighty-four foot; and its circumference twenty-four, though it was dry'd up, and stripp'd of its bark. By this, wherewith we met by chance, by the largeness of the *Pirogues*, whereof we have spoken, that are made out of the single trunk of one tree; and by a table of one only piece, between eight and nine foot long, and four and a half broad, which we afterwards saw at the governor of *Para's*; one may judge the height and beauty of the woods on the banks of the *Amazon*, and of the several rivers that fall into it.

On the 6th, towards the approach of night, we left the main stream of the *Amazon*, over-against the fort of *Paru*, situated on the *north* side,

side, and newly rebuilt by the *Portuguese*, on the ruins of an old fort, which the *Dutch* formerly had there. At this place, in order to avoid crossing the mouth of the river *Xingu*, where many canoos have been lost, we went out of the *Amazon* into the latter, by a natural canal of communication. The islands, which divide the mouth of the *Xingu* into divers streams, prevented my measuring its breadth geometrically, but, to judge by the eye, it could not be less than a league. It is the same river which father *D'Acunba* calls *Paranaiba*, and which father *Fritz*, in his map, terms *Aoripana*. *Xingu* is the *Indian* name of a village, some leagues up the river, where there is a mission; it comes down, as well as that of *Topayos*, from the mines of *Brazil*, and has a fall on going seven or eight days upwards from its mouth, notwithstanding which, it is afterwards navigable for above two months. Its banks abound with two sorts of aromatic trees, the one call'd *cuchiri*, and the other *puchiri*. Their fruit is almost as large as an olive, which they grate, in the same manner as a nutmeg, and make use of for the same purposes. The bark of the former has the taste and smell of a clove, which the *Portuguese* call *cravo*; which has induc'd the *French* of *Cayenne*, corruptly to name the tree that produces it the *crabe-tree*; and if the spices, that are brought us from the east, left us any thing farther to desire, in this kind, these would be better known in *Europe*: they enter into the composition, of divers strong waters both in *Italy* and *England*.

After the junction of the *Xingu* with the *Amazon*, the breadth of this latter is so great, it would scarce be possible to see from one side to the other, even if the large islands, which occur one after the other, would allow a free passage for the

sight. There we began to be entirely freed from the *mosquito's*, *maringains*, and gnats of all sorts, the greatest inconvenience we were troubled with, during the course of our voyage. They are indeed so intolerable, that the very *Indians* themselves do not travel, without a little tent of callico, to shelter themselves under during the night. There are certain times, and places, especially in the country of the *Omaguas*, when one is continually surrounded with a thick cloud of these flying insects, whose stings cause an excessive itching : but it is a certain fact, and worthy of observation, that, from the mouth of the *Xingu*, one is no more pester'd with them ; at least, they are very seldom seen, on the right bank of the *Amazon*, as one goes down the river, whilst the opposite side is continually infested with them. After having reflected some time thereon, and viewed well the situation of the place, I judged this difference to proceed, from the river's altering its course thereabouts, and turning towards the north ; and as the east wind blows there almost continually, it must necessarily carry those insects to the western side.

We arrived, on the 9th in the morning, at the *Portuguese* fortrefs of *Curupa*, which was built by the *Dutch*, when masters of *Brazil*. The king's lieutenant there received us with extraordinary honours, the three days we stay'd being one continual feast ; in effect, he entertained us with a magnificence that border'd upon profusion ; and which the country by no means seem'd to allow of. *Curupa* is a little *Portuguese* town, where there are no other *Indians*, but the slaves of the inhabitants ; it is situated very agreeably, on a rising ground, on
the

the *south* bank of the river, eight days sail above *Para*.

From *Curupa*, where the ebbing and flowing of the river is very sensibly to be perceived, the boats only go by the help of the tide. Some leagues below this place, a little branch of the *Amazon*, called *Tagipuru*, separates itself from the main stream, which runs to the *north*, and taking a quite contrary course towards the *south*, incompasses the large isle of *Joannes*, or *Marayo*, misrepresented on all the Maps. From thence it winds round to the *north* by the *east*, describing a semicircle, and soon after is lost in a sea, if we may so call it, formed by the confluence of several large rivers, wherewith it meets successively. The most considerable of these are, first, *Rio de dos Bocas*, or the river with two mouths, formed by the junction of the rivers *Guanapu* and *Pacajas*, above two leagues over at the mouth, which all the old maps, as well as *Laet*, call the river of *Para*. Secondly, the river of the *Tocantins*, larger yet than the former, which may be gone up for several months, and which comes down, like those of *Topayos* and *Xingu*, from the mines in *Brazil*, some fragments whereof may be seen in its sands. Thirdly, the river *Muju*, which I found, two leagues within the land, to be seven hundred and forty-nine fathoms wide; and whereon I met a frigate belonging to his *Portuguese* Majesty, that was running up full sail several leagues higher, in quest of some fine wood for joiners and cabinet-makers, that is very scarce, and dear, in all other parts. It is on the *eastern* shore of the *Muju*, the city of *Para* stands, immediately below the mouth of the river *Capiu*, which had just before received another, called *Guama*. Nothing but the sight of a map, can

give one a clear idea, of the situation of this city, upon the confluence of so many rivers; and shew, that it is not without some foundation, its inhabitants are far from imagining themselves upon the side of the *Amazon*; since, it is probable, not one drop of its waters wash the walls of their town: Just as we may properly say, the *Loire* does not arrive at *Paris*, tho' the *Loire* has a Communication with the *Seine*, by the canal of *Briare*. In effect, there is good reason to believe, the great quantity of running waters, which separate the main land of *Para* from the isle of *Joannes*, would not be sensibly diminish'd, should the communication of these streams with the *Amazon*, be intercepted, by the obstruction, or deviation, of that small branch of this river, which comes to take possession, if we may so say, of all of them, by robbing them of their names. All this, if people please, shall be allow'd to be only a dispute about words; notwithstanding which, I shall continue, in order to conform myself to the received opinion, to say, that *Para* is upon the *eastern* bank of the *Amazon*; it suffices that I have explained how this is to be understood.

I was conducted from *Curupa* to *Para*, without being consulted about the choice of my way, between divers islands, by narrow canals, and full of windings, that pass from one river to another; by which means they avoid the danger of crossing them at their mouths. But what contributed to my safety, and would also have been for the ease of another traveller, was extremely inconvenient for me, whose principal design was to compleat my map. I was forced, therefore, to redouble my attention, that I might not lose the
chain

chain of my routs, in that winding labyrinth, of isles and canals without number.

I have not as yet spoken of the singular fish that are found in the *Amazon*, nor of the various kinds of uncommon animals, one sees upon its banks : These articles alone would furnish matter for a particular treatise, and this single study would require a voyage on purpose, and a traveller who had no other avocation ; wherefore I shall only mention some few of the most extraordinary.

At *St. Paulo d'Omaguas*, I took a draught, after the life, of the largest of fresh-water fish hitherto known, which the *Portuguese* and *Spaniards* have called the *Sea-Cow*, or the *Bull-Fish*, and which we must not, by any means, confound with the *Phoca*, or *Sea-Calf*. This, we are now treating of, feeds upon the grass on the sides of the river, and its flesh and fat pretty much resembles veal. The female has paps, which serve to suckle its young. Some have endeavour'd to render its likeness to a cow or bull, yet more compleat, by arming it with horns, whereas nature has not provided it with any. It is not amphibious, if we speak properly, since it never comes entirely out of the water, neither can it ; having only two fins, pretty near its head, and shaped like small wings, about sixteen inches long, which serve it both as arms and feet ; so that it only advances its head out of the water, to reach the grass upon the river-sides. That, whereof I took a draught, was a she, seven foot and a half long, and two broad where it was biggest ; though I have since seen some larger. The eyes of this animal, are by no means proportionable to the size of its body ; being round, and but of three lines diameter ; and the hole of its ears is yet smaller,

smaller, seeming only like that made by a pin. Some have thought this fish peculiar to the river of *Amazons*; but it is no less common in that of *Oroonoko*. It is also found, though not so frequently, in that of *Oyapoc*, and divers others, in the neighbourhood of *Cayenne*, and on the coasts of *Guiana*, and probably elsewhere. It is the same that is called *Lamentin* at *Cayenne*, and the *French American Islands*; only, I believe, there may be some small difference in the kind. It is never found in open sea, and very seldom near the mouths of rivers; but it is met with above a thousand leagues from the sea, in most of the rivers that fall into the *Amazon*, as the *Guallaga*, *Pastaga*, &c. It is only stopp'd in the *Amazon* by the *Pongo* of *Borja*, whereof we have spoken above; but this is no hindrance to another fish, as small as that is large, called *Mixano*, several whereof are not so long as a finger. They come every year, in shoals, to *Borja*, towards the latter end of *June*, when the river begins to fall; but they are not remarkable for any thing, except the strength with which they swim up against the stream. As the narrow channel of the river, necessarily draws them together near that pass, one may see them cross over, in great companies, from one side to the other, and alternatively surmount, under one shore or the other, the extraordinary rapidity and violence, wherewith the waters force their way, through this strait pass. They catch them with the hand, when the river is low, in the cavities of the rocks of *Pongo*; where they rest to recover their strength, and whereof they make use, as of steps, to get up the stream.

I saw, in the neighbourhood of *Para*, a sort of *Lamprey*, whose body, like that of the common
Lamprey,

Lamprey, has a number of holes therein ; but it has also the same property, as the *Torpedo*; whoever touches it with the hand, or even with a stick, being immediately affected, with a painful numbness in the arm ; nay, sometimes, they say, this numbness is so great, as wholly to take away the use of the limbs; so that, no longer being able to support the body, it falls to the ground ; but, of this last fact, I never was a witness. *Monf. de Reaumur* has discover'd the secret, of that hidden spring, in the *Torpedo*, which produces this surprizing effect*.

The tortoises, or turtles, of the *Amazon*, are much sought after at *Cayenne*, as more delicious than any others. They have them in that river of divers sizes and kinds ; and in such vast plenty, that they alone, with their eggs, would be sufficient to support all the people that live upon its banks. There are also some land-tortoises, call'd *Jabutis* in the *Brazilian* tongue, which they prefer, at *Para*, to any of the others ; all of which may be kept out of water, and especially these last, for several months, without any sensible nourishment.

Nature seems to have favour'd the general propensity of the *Indians* to laziness, by preventing their necessities : The lakes and marshes, which are to be met, at every step, on the sides of the *Amazon*, and sometimes a good way up within the land, are fill'd with all sorts of fish, at the seasons when the river overflows its banks ; and when the waters fall away, they remain inclosed therein, as in natural ponds or *Reservoirs*, where they catch them with all the ease imaginable.

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* See the *Memoirs* of the *Academy* in 1714.

Not only so, but in the province of *Quito*, and in the various countries thro' which the *Amazon* passes, as also at *Para* and *Cayenne*, there are many sorts of plants, very different from those known by us in *Europe*, whose leaves and roots, being thrown into the water, have the property of intoxicating the fish; in which condition they float upon the surface, and may be taken up with the hand. In effect, the *Indians*, by the means of these plants, and of the pallisades, wherewith they bar up the mouths of the lesser rivers, can catch as many fish as they please: This done, they smoke-dry them upon hurdles, in order to keep them; for which purpose they very seldom use salt, tho' those of *Maynas*, get a sort of fossil-salt, out of a mountain adjoining to the banks of the *Guallaga*; and those, under the dominion of *Portugal*, have it from *Para*, whither it is brought out of *Europe*.

Crocodiles, or rather *Alligators*, which are of the same nature, are very common throughout the whole course of the *Amazon*, and even of most of the rivers that fall therein. One may sometimes see them twenty foot long; and perhaps, there may be those which are yet more: I had already beheld a great many on the river of *Guayaquil*. They will lie whole hours, and even whole days, upon the mud, stretch'd out in the sun, and motionless; so that one not used to them, would take them, for trunks of trees, or long pieces of timber, cover'd with a rough and dry bark. As those on the banks of the *Amazon* are less sought after and hunted, than in other places, they are not much afraid of men; so that, in the time of the inundations, they sometimes enter the cottages of the *Indians*; and there are more examples than one, of this fierce animal's

mal's having taken a man out of a canoo, even within sight of his companions, and having devoured him, without its being in their power to help him.

The most dangerous enemy of the *crocodile*, and perhaps the only one, that dares engage with him, is the *tyger*; and indeed, to behold them in combat with each other, must be a curious sight; but it can only be the effect of a fortunate chance; the account given thereof, by the *Indians*, is as follows: The *crocodile* raises his head above water, to seize the *tyger*, when he comes to the river-side to drink, as he does, on the like occasions, by oxen, horses, mules, and, in short, every thing that happens in his way. Here-upon the *tyger*, plunges his claws into the *crocodile's* eyes, the only part where he can hurt him, by reason of the hardness of his scales; and the latter, diving under the water, drags the *tyger* along with him, who will sooner drown than let go his hold. The *tygers* I have seen in *America*, and which are very common in all the hot and woody countries, have not seem'd to me to fall short, either in size or beauty, of those of *Africa*: There is one sort of them, whose skin is only brown, without being spotted. The *Indians* are very dexterous at engaging these beasts, with the spontoon, or half pike, their usual weapon on a journey.

I never met on the banks of the *Amazon*, nor indeed any-where, but in the province of *Quito*, with the animal, call'd, by the *Indians* of *Peru*, in their tongue, *puma*, and by the *Spaniards* of *America*, a *lion*. I know not whether it deserves this name, the male having no main, and being much smaller than those of *Africa*: I did not see it alive, but stuff'd with straw.

It would not be at all strange, that *bears*, which only settle in cold countries, and are to be found on several mountains in *Peru*, should not be to be seen in the woods of the *Maranon*, whose climate is so very different; nevertheless, I there heard talk of an animal call'd *ucumari*, which is exactly the name of a *bear* in the *Peruvian* tongue; but I had not an opportunity, of satisfying myself, whether the creature was the same.

The *elk*, which is found in some woody parts of the *cordeliers* of *Quito*, is neither uncommon in the forests of the *Amazon*, nor in those of *Guiana*: I give here the name of *elk*, to the animal, call'd by the *Spaniards* and *Portuguese*, *danta*, and in the *Peruvian* tongue, *uagra*; tho' it is term'd in that of *Brazil*, *tapijra*, and in that of *Galibi*, on the coasts of *Guiana*, *maypouri*. As the main land, adjacent to the isle of *Cayenne*, is part of that vast continent, through which the *Amazon* passes, and is contiguous to the countries water'd by that river, most of the same animals are to be found in all those regions.

On my passing by the *Yameos*, I took a draught of a sort of *weazel*, that is easily made familiar, but I could neither pronounce, nor write the name whereby they call'd it; I met the same again in the neighbourhood of *Para*, where it is term'd *coati*, in the *Brazilian* tongue; it is mentioned by *Laet*.

The most common game, and that which is most in request, amongst the *Indians*, on the banks of the *Amazon*, is the *ape*, or *Monkey*: In effect, throughout my navigation down that river, I saw so many of those animals, and heard talk of so many various kinds thereof, that only to reckon them up would require some time. Some
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of them are as large as grey-hounds, some again as small as rats ; I speak not of those known under the names of *sapajous*, but of others yet less, and difficult to be tamed, whose hair is long, and bright, generally of a chefnut-colour, and sometimes spotted with a sort of yellow. Their tails are twice as long as their bodies ; their heads small and square ; their ears sharp and prominent, like those of dogs and cats, and not like other apes or monkees, whom they resemble very little, having more the air and look of a little lyon : They are called *pinches*, at *Maynas*, and *tamarins*, at *Cayenne*. I have had several of them, but could not keep any alive ; they are of that sort called *sabius* in the *Brazilian* tongue ; and in *French*, by corruption, *sagouins* ; *Laet* has made mention of them, and cites *L'Ecluse* and *Lery* upon that head. The governor of *Para* presented me with one, which was the only one of its kind ever seen in the country ; the hair of its body being as bright as silver, and of the colour of the finest fair tresses, whilst its tail was of a shining chefnut, inclining to black. It had still another singularity yet more remarkable ; its ears, sides of the face, and nose, were of such a lively red, one could scarce be induced to believe it was its natural colour. I kept it a year, and it was yet living, when I was writing this, almost in sight of the coasts of *France*, where I pleased myself with the thought of bringing it alive. But, in spite of the continual precautions I took, to preserve it from the cold, the severity of the weather killed it in all probability. As I had no convenience, aboard of ship, to put it to be dry'd in a slack oven, as *Monf. Reaumur* contrived for the keeping of his birds, all, I could do, was, to preserve it in brandy, which, perhaps, may be

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sufficient,

sufficient, to shew I have not exaggerated in this Description.

There are, besides, divers other uncommon creatures, but which have most of them been described, and may be found in several parts of *America*; such as various kinds of wild boars, and rabbits; also the *pac*, the *fourmilier*, the *porcupine*, the *flow*, the *taton*, or *armadillo*, with many others, of some whereof I have taken draughts, or whereof the draughts, taken by *Monf. de Morainville*, were left in the hands of *Monf. Godin*.

It is not at all surprizing, that in climates so hot, and so moist, as those whereof we have been treating, serpents and snakes of every kind should abound. I have read, in I know not what author, that none of those on the banks of the *Amazon* are venomous; and, indeed, it is certain, that some of them are by no means mischievous; but, it is also certain, the bites of some of them seldom fail of being mortal. Of this kind, the most dangerous, is the *rattle-snake*, which is sufficiently known. Of the same nature also is the serpent call'd *coral*, remarkable for the variety and liveliness of its colours; but the most uncommon, and singular of all, is a large amphibious serpent, between twenty-five and thirty foot long, and above a foot over, as is affirmed, which the *Indians* of the province of *Maynas* call *yacu mama*, or *mother of the water*, and which, they say, lies generally in those great lakes, formed within the land, by the inundations of the river. Of this creature they relate such strange stories, that I should still be in some doubt of their truth, even tho' I were to fancy I had seen them; and which I would not venture to repeat here, but after the late author, already cited, of the *Oroonoko illustrated*, who relates them very seriously. This monstrous snake, according

According to the account of the *Indians*, not only swallows up a whole buck, but, as they assert, draws towards it, irresistibly, by its breath, all the animals that approach it, and devours them. Many *Portuguese*, at *Para*, attempted to persuade me, of things almost as improbable, concerning the manner, whereby another large snake, kills men with its tail. I suspect it to be of the same kind, as is found in the woods of *Cayenne*; where the only thing wonderful, relating thereto, may be reduced to one single fact, confirmed by experience, namely, that one may be bitten thereby, and carry the marks of it, without any danger; tho' its teeth of a size, are very fit to inspire any one with terror: I have brought two of their skins with me, one of which is scarce less than fifteen foot long, quite dry'd as it is, and above a foot broad; nay, undoubtedly, there are some yet bigger. For these skins, and divers other curiosities relating to natural history, I am indebted to the jesuits of *Cayenne*, *Monf. de L'Isle-Adam*, commissary of the marine; *Monf. Arthur*, physician to the king; and several officers of the garrison.

The worm, call'd by the *Maynas*, *suglacuru*, and at *Cayenne*, *macaque*, grows, and is nourished within the flesh both of men and animals; there it remains till it comes to the bigness of a bean, and causes an intolerable pain; but it is not very common. I took a draught of the only one I ever saw, at *Cayenne*, and have kept the worm itself in spirit of wine; they say, it is bred in the wound made by the sting of a *mosquito*, or *maringoin*, but hitherto the animal that lays the egg was never yet discover'd.

The Bats, which suck the blood of horses, mules, and even men themselves, when they don't secure themselves from them, by sleeping
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under a tent, are a nuisance, common to most of the hot countries in *America*; and some of them are of a monstrous bigness: At *Borja*, and in divers other places, they have entirely destroyed the great cattle, which the missionaries had introduced there, and which began to multiply in those parts.

The number of birds, of different kinds, that are found in the forests of *Maranon*, seems even to surpass that of four-footed beasts; it is observed, however, that hardly one of them has any agreeable note, so, it is chiefly, for the lustre and variety of the colours of their plumage, they are taken notice of, and valued. Nothing comes up to the beauty of the feathers of the *colibri*, whereof many authors have made mention, and which is frequent in *America*, throughout the whole *torrid zone*. All the remark I shall make thereon is, that tho' it is generally reckoned to be only in hot climates, I never saw them in a greater number than in the gardens of *Quito*, whose temperate climate borders rather upon cold than excessive heat: Neither is the *toucan*, whose red and yellow beak is monstrous, in proportion to its body, and whose tongue, which resembles a fine pen, is reckon'd to be endued with singular virtues, peculiar to the countries whereof I speak. The various kinds of *parrots* also, and *aras*, different in size, colour, and figure, are not to be number'd; the most uncommon of the *parrots*, are those which are entirely yellow, with a little green at the extremity of their wings: I only saw two of this kind at *Para*. They are quite strangers there to the grey sort, the tips of whose wings are of a flame-colour, and which is so common in *Guinea*.

The *Maynas*, *Omaguas*, and divers other *Indians*, make some works in feathers; but they neither come up to the art, nor the neatness of those of the *Mexicans*. The

The *Indians*, on the banks of the *Oyapoc*, have found the way artificially to ingraft, if we may so call it, a new plumage upon their *parrots*, of natural colours, tho' different from those they had originally received from nature: This they do by pulling some of their feathers, and rubbing the part with the blood of certain frogs, which is call'd at *Cayenne*, *ornamenting a parrot*. Perhaps, the whole secret consists in bathing the part pull'd with some sharp liquor; or, perhaps, there is no need of any preparation, and it is an experiment yet to be made. In effect, it does not seem a whit more extraordinary, to see red or yellow feathers grow upon a bird, instead of green that have been pluck'd from it, than to see white hairs grow upon the back of a horse that has been hurt, in the room of black which were there before.

Amongst several very singular birds, I beheld one at *Para*, as large as a goose, whose plumage is not at all remarkable; but then the tops of its wings were arm'd with a spur, or very sharp horn, like a large prickle, half an inch long. It has, besides, upon its bill, another small and flexible horn, of the length of a finger; it is call'd *cabuitabu*, in the *Brazilian* tongue, from a word coin'd in imitation of its note.

The bird called *trompetero*, by the *Spaniards* in the province of *Maynas*, is the same that is named *agami* at *Para* and *Cayenne*. It is very easily familiarized, and is not remarkable for any thing, but the noise it makes sometimes, whence they have given it the name of the *trumpet-bird*. It is entirely without any grounds, that some have taken this noise for its song, or natural note; for it appears to be formed in, and to issue from, an organ, directly opposite to the throat.

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The famous bird, called at *Peru* *contur*, and by corruption *condor*, which I have seen, in several parts of the mountains of the province of *Quito*, is also to be found, if what I have been assured is true, in the low countries, on the sides of the *Maranon*. I have observed them hovering over a flock of sheep, and it is very probable, nothing but the sight of the shepherds prevented their attempting somewhat; it being an opinion universally received, that this bird will carry off a buck, and has sometimes prey'd upon a child. It is even pretended, that the *Indians* hold out to it, as a lure, the figure of a child, made of a very glutinous clay, upon which it descends with an excessive rapidity, and strikes its pounces into it so deep, that it can never after get away.

On the 19th of *September*, almost four months after my departure from *Cuença*, I arrived within sight of *Para*, called by the *Portuguese* the *Grand Para*, that is the *Great River*, in the language of *Brazil*. We landed at a house dependent on the college of *Jesuits*, where we were received by the provincial, the reverend father *Don Joseph de Souza*; and where the rector, the reverend father *Don Juan Ferreyra* detain'd us eight days; procuring us all the amusements the country afforded, whilst a lodging was preparing for us in the city. On arriving at *Para*, on the 27th, we found there a convenient house, richly furnish'd, with a garden, from whence we might have a full view of the sea, and exactly situated as I had desired it, for the convenience of my observations. The governor and captain-general of the province gave us such a reception, as we might very well have expected, by the orders he had issued concerning us, to the commandants of the fortresses in our way, as well as by his recommendations

commendations to the provincials of the different missionaries, with whom we had met.

In effect, on coming to this place, immediately after our leaving the woods of the *Amazon*, we could almost have fancied ourselves transported to *Europe*: We found ourselves in a large city, adorned with streets finely laid out, and handsome houses; most of them rebuilt within these thirty years, of stone and shards, as also magnificent churches.

The direct intercourse between *Para* and *Lisbon*, from whence there comes every year a fleet of merchantmen, affords those, who are well to pass, an easy means of supplying themselves with all conveniences. They receive *European* goods in exchange for the product of the country; which, besides some gold-dust brought from the inland parts towards *Brazil*, consists of all the various useful commodities, that the regions bordering on those rivers, which fall into the *Amazon*, or on the sides of the *Amazon* itself, can yield. Such as the bark of the *cuchiri*, or clove-tree; the *sarsaparilla*, the vanilloes, sugar, coffee, and above all, the *cacao*, which is the current money of the country, and what chiefly conduces to the riches of the inhabitants.

The latitude of *Para*, in all probability, had never been observed by land; accordingly, they assured me, on my coming thither, that I was exactly under the equinoctial line. The map of father *Fritz* places this city in one degree of *south* latitude; but I found it, by several observations that agreed together, to be one degree, twenty-eight minutes; which does not differ sensibly from *Laet's* Map, tho' it was never follow'd, as I know, by any of the geographers who came after him. In the new *Portuguese* directory, or

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road-book, *Para* is placed in one degree, forty minutes. As to its longitude, I am provided with materials for settling it precisely, by the eclipse of the moon I observed there, *November 1, 1743*, and by two immersions of the first of *Jupiter's satellites*, on the 6th, and 29th of *December* following. Till I can obtain some observations conformable thereto, from some place whose longitude is well known, not having met with any at *Paris*, I judge, by calculation, the difference between the meridian of *Para*, and that of *Paris*, to be about three hours, twenty-four minutes to the *west*: I pass here in silence over my observations upon the declination and inclination of the needle, as well as those upon the tides, which are pretty irregular at *Para*.

An observation of more importance, and more immediately relating to the figure of the earth, the chief end of our voyage, was that concerning the length of the pendulum of mean time, or rather, the difference of this length at *Quito*, and at *Para*; one of these cities being on the sea-side, and the other between fourteen and fifteen hundred fathoms above the level of the ocean, and both of them under the equinoctial line; for a degree and half here is of no consequence. I was enabled to observe this difference, by the help of an invariable pendulum, twenty-eight inches long, which I shall describe elsewhere; which keeps its vibrations sensibly for above twenty-four hours; and wherewith I have made a great number of experiments at *Quito*, and on the mountain *Pichincha*, seven hundred and fifty fathoms above *Quito*. By the mean result, of the nine experiments made at *Para*, the two most widely distant of which gave but the difference of three vibrations in 98740, I found
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my pendulum made at *Para*, in twenty-four hours mean time, thirty-one or thirty-two vibrations more than at *Quito*, and fifty or fifty-one more than at *Pichincha*. From which experiments I conclude, that under the equator, two bodies, one whereof should weigh sixteen hundred pounds, and the other a thousand, when on a level with the sea, being carried, the former to 1450, and the latter to 2200 fathoms height, would each of them lose above a pound of their weight; just as the same ought to happen, were the same experiments made under the 22d and 28th parallel, according to Sir *Isaac Newton's* table, or towards the 20th and 25th, to judge by comparing the experiments, made immediately under the equator, in divers parts of *Europe*. The former numbers are only pretty near the matter; and I reserve to myself the liberty, to make some small alterations therein, by applying thereto the proper equations, when I give a particular account of my experiments relating to the pendulum.

During my stay at *Para*, I made two or three little trips, in a canoo to the places circumjacent; and I took advantage thereof, for the improvement of my map. I could not compleat it, however, without having a view of the real Mouth of the *Amazon*, and coasting along its north-side to the north-cape, where its course ends. This reason, together with divers others, having determin'd me to go from *Para* to *Cayenne*, from whence I might proceed directly to *France*, in the man of war that was expected there, I would not, like *Monf. Maldonado*, take advantage of the opportunity, of going in the *Portuguese Fleet*, which set out for *Lisbon*, December 3, 1743: I was, therefore,

detained at *Para* till the end of the same month, though not so much by their threatening me with contrary winds, which reign at that season, as by the difficulty of procuring a set of rowers; the small-pox, which then made great havock there, having put to flight most of the *Indians* of the villages round about.

It has been observed at *Para*, that this disease is yet more fatal to the *Indians* of the missions, newly drawn out of their woods, who go naked, than to those who wear cloaths, and who were born, or have lived long amongst the *Portuguese*. The first, who are a kind of amphibious creatures, almost as often in the water as on land, and inured from their infancy to the inclemencies of the weather, may, perhaps, have their skins more condensed than those of other men; and one might be induced to think this single circumstance alone, might render the eruption of the pock more difficult in them. And the custom these same *Indians* have of anointing their bodies with *roucou*, *genipa*, and divers other thick and fat oils, which close up the pores, and must at last obstruct the perspiration, may, perhaps, contribute to increase this difficulty. This conjecture is confirm'd, in some measure, by another remark; namely, that the negro-slaves, newly transported from *Africa*, who have not the same custom, withstand this distemper better than the natives of the country. However, be the case as it will, a savage *Indian*, newly come from the woods, if attack'd by this disease, is generally a dead man: But, wherefore is it not the same with the artificial small pox? Fifteen, or sixteen years ago, a *Carmelite* missionary, in the neighbourhood of *Para*, seeing all his *Indians* die, one after another, and having learn'd from a news-paper the secret of inoculation,

tion, which then made a great noise in *Europe*, prudently judged, that, by using this remedy, he might, at least, render that death doubtful, which was but too certain, in having recourse only to the common remedies. An inference so plain could not fail of arising in the minds of all those who were capable of reflection; this friar, however, was the first, who had the courage to try the experiment in *America*. He had already lost half his *Indians*; many others were taken ill daily; he ventur'd, therefore, to inoculate the pock on all those who had not yet had that distemper, and did not lose one of them: Whereupon another missionary of *Rio Negro* follow'd his example, and with equal success.

After such convincing and authentick proofs, it will, undoubtedly, be judg'd, that in the contagion of 1743, which caused my detention at *Para*, all, who had any *Indian* slaves, had recourse to so salutary a remedy for their preservation. I should have thought the same myself, had I not been a witness to the contrary; at least, no one as yet had any such design, when I left that place: It is true half the *Indians* were not then dead.

On *December 29*, I embark'd at *Para* for *Cayenne*, in a canoe belonging to the general, with twenty-two rowers, and all the conveniences I could desire; being well provided with refreshments, and furnish'd with recommendations to the *Franciscans* of the reform of *St. Antonio*, who have their missions in the island of *Marajo* or *Joannes*; and who were to supply me with a new set of *Indians*, as I pass'd by, to continue my voyage. Nevertheless, the want of a correspondence between *Para* and *Cayenne*, with divers other accidents, prevented my finding a good

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experienced pilot, in four villages of these fathers, where I landed the beginning of *January*, 1744. Being deprived of this assistance, and subject to the little experience and timidity of my *Indian* rowers, and above all, to that of the *Portuguese Mammelus* or *Metis* *, who was given me to command them in their own tongue, and had taken it into his head, that I was likewise to be under his orders, I was detained two months upon a voyage, which I might have perform'd in less than a fortnight; and this delay prevented my observing by land the comet that appeared about that time: It was lost in the rays of the sun, before I could reach *Cayenne*.

Some leagues below *Para*, I cross'd the eastern mouth of the *Amazon*, or the branch of *Para*, separated from the main stream, or the western mouth, by the large island known by the name of *Joannes*, or more commonly, at *Para*, by that of *Marajo*. This island alone takes up almost the whole space that parts the two mouths of this river; it is of an irregular figure, and above a hundred and fifty leagues round. In all the maps they have substituted instead thereof a multitude of small islands, which would seem as placed there at a venture, if they did not appear to be copy'd in the Map called *the Light of the sea*, which, in this part, is full of accounts, as false as they are particular. The branch of *Para*, at the place where I cross'd it, five or six leagues below the city, was already above three leagues over, and continued to grow wider and wider. I coasted along the island, steering to the north, for thirty leagues, to its last point called *Maguari*; beyond which I turned

* *Mammelus*, is the name given, in *Brazil*, to the children of the *Portuguese*, begotten upon *Indian* women.

turned to the *west*, keeping still along the coast of the island, which runs above forty leagues, and hardly deviates from the equinoctial line: I pass'd also within sight of two large islands, which I left towards the *north*, one call'd *Machiana*, and the other *Caviana*, both at present deserted, but formerly inhabited by the nation of the *Arouas*, who, though dispersed in divers parts, have still retain'd their own particular tongue. The soil of both these islands, and also of great part of *Marajo*, is entirely drowned, and almost uninhabitable. I quitted the coast of *Marajo*, where it inclines back to the *south*, and fell again into the true channel, or main stream of the *Amazon*, over-against the new fort of *Macapa*, situated on the *western* side of that river, and removed by the *Portugucze* two leagues to the *north* of the old one. It would be impossible, in this place, to cross the river in ordinary canoos, if the channel were not divided into several, by the intervention of small islands, under shelter whereof they go in greater safety, by watching their time to pass from the one to the other; notwithstanding which, it is still above two leagues from the last island to *Macapa*. In this last passage, I cross'd again, and for the last time, the equinoctial line; which I had approach'd insensibly from the place of my embarkation; for, on the 18th and 19th of *January*, I observed, at the new fort of *Macapa*, or rather, on the ground designed for building the new fort, three minutes *north* latitude.

The ground of *Macapa* is raised two or three fathoms above the level of the water, and only the side of the river, is cover'd with trees; the country, up higher within the land, being quite open, and level; the first I had met with of that kind, since my leaving the *Cordeliers* of *Quito*.
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The *Indians* affirm, it continues the same as one goes *northward*; so that one may ride from thence to the sources of the *Oyapoc*, through vast open plains, only separated here and there, by little clusters of straggling trees. From the neighbourhood of the sources of *Oyapoc*, one may see towards the *north*, the mountains of the *Aprouague*, which may also be discover'd very distinctly, in open sea, at many leagues distance from the coasts; how much easier then may they be seen from the neighbouring heights of *Cayenne*? All this being supposed, it is evident, that on setting out from *Cayenne*, in five degrees of *north* latitude, and travelling towards the *south*, we might conveniently have measured two, three, and perhaps four degrees of *Meridian*, without going out of the *French* territories; and we might, besides, have discover'd, by the way, the inland countries, whereof we never yet had any tolerable account. In short, had it been thought proper, with the passports of *Portugal*, the measure might have been carried on, to the parallel of *Macapa*, that is, to the equator itself. The execution of this scheme would have been more easy, than I believed it myself, when I propos'd it to the academy, a year before the voyage to *Quito*, (where it was supposed we should meet with less difficulty,) was thought of. Had my notion been approved of, it is very probable we should have been at home many years before; but it was only by an actual survey of the places themselves, we could be sure what I propos'd was practicable.

Between *Macapa* and the *north* cape, in that part, where the main stream is the most confined, by the intervention of islands, and above all, over-against the largest mouth of the *Arawari*, which enters the *Amazon* on the *north* side, the tide of flood exhibits an extraordinary phenomenon

Phænomenon. During the three nearest days, to the full and new moons, the season of the spring-tides, the sea, instead of flowing near six hours, as at other times, rises to its greatest height in a minute or two; but, it may well be imagined, this cannot happen quietly. One may hear, at the distance of a league or two, a dreadful noise, which gives notice of the approach of the *Pororoca*, the name assigned by the *Indians* of those parts, to this terrible torrent. In proportion as it draws nearer, the noise grows still greater, and, in a short time, one may see a liquid promontory, between twelve and fifteen foot in height, advance forwards; this is followed by a second, and that by a third, and sometimes a fourth, upon the heels of each other, which take up the whole breadth of the channel. This prodigious mass, of accumulated waters, rushing forwards with inexpressible rapidity, breaks down, and carries before it, every thing that resists it; so that I have seen, in some places, a large spot of earth torn away, with large trees rooted up, and ravages of all kinds, the astonishing effects of this *Pororoca*. Wherever it comes, it clears all the shore, as if it had been carefully swept; the canoes, pirogues, and even the barks, have no other means of securing themselves, from the fury of this *Barre*, (that is the name given it by the *French* at *Cayenne*) but by casting anchor, in a place, where there is a great depth of water. I shall not enter here, into a more particular account of this matter, nor of its explanation; I will only point out the causes thereof, by saying, that after having viewed it attentively, in diverse places, I always observed, that this did not happen, but when the rapid spring-tide, being engaged, and pent up, within a narrow channel, met with some sand-bank, or shelf, in the way, which obstructed

its passage. That there, and no where else, began this impetuous, and irregular motion of the waters; which ceased again, a little beyond the bank, when the channel once more grew deep, or considerably wider. They say, somewhat of the same nature happens, at the islands of *Orkney*, on the *north* of *Scotland*, and at the mouth of the *Garonne*, in the neighbourhood of *Bordeaux*, where they call this effect of the tides, the *Mascaret*.

The fear of the chief of my *Indians*, that we should not be able, in the five days, which still remained, before the spring-tides of the full moon, to reach the *north* cape, from which we were now but fifteen leagues, and beyond which we might have found a creek, made them resolve, in spite of my remonstrances, to wait nine whole days, in a desert island, till the full moon was well over; and we got from thence to the *north* cape, in less than two days. The next morning, when it was entered into the last quarter, and we had consequently neap-tides, we ran foul of a shoal of mud; and the sea then ebbing, retired a good distance from us. Next day, the flood did not come so far as the canoe, and, in short, I remained there a-ground, almost a week, during which, my rowers, being no longer able to use their oars, had no other employment, than to wade a good way, up to the middle in mud, in quest of some brackish water, to quench their thirst. As for my part, I had all the time needful, to repeat my observations, within sight of the *north* cape; and to be heartily tired, with finding myself, all the while, in one degree fifty-one minutes *north* latitude. My canoe, which had sunk deep into a hardened slime, was now become a solid observatory; and I found there, the variation of the compass, of four degrees *north-east*, to be two degrees and a half less, than at *Pauxis*;

Pauxis; in short, I had also time enough, during a whole week, to cast my eyes all around, without being able to discover any thing, but *Mangliers*, instead of those high mountains, whose summits are described with great exactness, in the account of the coasts, annexed to the maps of the *Light of the Sea*, a book, that has been translated into all languages, and which seems, in this part, as if made rather to mislead, than to direct sailors. At last, at the spring-tides of the new moon, the beginning of that very *Pororoca*, so much dreaded, set us again afloat, though not without great danger; having not only raised up the canoe, but making it plough through the mud, with greater velocity, than I had experienced in the rapid current, of the famous *Pongo*; towards the upper part of that river, I had so lately run down, as far as it was navigable, and the mouth whereof I now at last beheld. Accordingly, my map of the course of the *Amazon* ended here; nevertheless, I continued to take a draught of the coasts, and observe the latitudes as far as *Cayenne*.

Some leagues to the west of this *Seven Day Shoal*, and in the same latitude, I met with another mouth of the *Arawari*, now choaked up with sands. This mouth, with the deep and wide channel, that leads to it, as one comes from the north, between the main land of the north cape, and the islands that cover the cape, are the river and bay of *Vincent Pinço*. The Portuguese of *Para*, had their own reasons, for confounding it with the river *Oyapoc*, whose mouth under *Cape Orange*, is in four degrees fifteen minutes, north latitude. The article of the treaty of *Utrecht*, which seems to make the *Oyapoc*, and the river of *Vincent Pinço*, but one and the same river, does not hinder them, from being actually above fifty leagues

distant from each other. This point will not be contested, by any one of those, who have consulted the old maps, and perused the original authors, who wrote concerning *America*, before the establishment of the *Portuguese* in *Brazil*. On *February* 23d and 24th, I observed, at the *French* fort of *Oyapoc*, three degrees fifty-five minutes, *north* latitude; this fort, lies six leagues up the river, upon the *north* side.

At length, after two months navigation, by sea, and by land, I speak without exaggeration, (since the coast is so flat between the *north cape* and *Cayenne*, that the helm continually touched, or, rather, did not cease to drag in the mud, there not being, sometimes, a foot of water, at half a league's distance from shore,) I arrived, on *February* 26th, 1744, from *Para*, at *Cayenne*.

Every one knows, it was in this island, that *M. Richer*, of this academy, discovered the Inequality of Gravity, or weight, under different parallels, in 1672; and that his experiments, upon this head, were the first foundation of the theories of *Sir Isaac Newton*, and *M. Huygens*, concerning the Figure of the Earth. One of the reasons, which had determined me to go to *Cayenne*, was the great usefulness of repeating the same experiments, whereto we had been very much accustomed, and which are now made with far greater exactness than heretofore. I have brought with me a steel rule, which, according to my observations, is the exact measure, of the absolute length of the simple pendulum at *Cayenne*; but I expect a much greater exactness, from a comparison, of the number of vibrations, made by my pendulum, when fixed at *Cayenne*, in twenty-four hours, with the number of its vibrations in equal time at *Paris*, as soon as I can try it. This comparison, will give very
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exactly, the excess of the pendulum of seconds at *Cayenne*, above the pendulum of seconds at *Paris*; whose absolute length, determined by M. *Mairan*, who has surpassed all those, that went before him, in this enquiry, may justly be deemed the true standard. One may also take for a fixed rule, the length of the pendulum observed at *Quito*, by various methods, and with diverse instruments, about which Messieurs *Godin*, *Bouguer*, and myself, are agreed, almost to the hundredth part of a line. From whatever place one sets out, the difference of the number of vibrations, of the same pendulum, in twenty-four hours, at *Quito*, *Para*, and *Paris*, taken from a long series of experiments in each city, will give the absolute length of the equinoctial pendulum, on the same level with the sea, the most proper of all others, to become, by common consent, an *universal measure*. How much were it to be wished, there were one, generally received as such, at least, amongst the mathematicians! In effect, does not the difference of tongues, an inconvenience, which will still continue many ages, sufficiently obstruct the progress of the arts and sciences of itself, by the want of a sufficient mutual and settled correspondence between the learned of the several nations, without adding other obstacles thereto, designedly, if we may so say, by affecting to make use of different weights and measures, in every country and place; when nature offers us, in the length of the pendulum of seconds, under the equator, an invariable standard, admirably calculated, to ascertain the size of weights and measures, in every place, and which courts all philosophers to make use thereof?

My first care, in arriving at *Cayenne*, was to distribute amongst diverse persons some seeds of *Quinquina*, which had been gathered then but
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eight months. Thereby I hoped to repair the loss, of the young plants of the same tree, the last whereof, which my singular precaution had preserved till then, from the heats, and other accidents of my voyage, had been carried away just before, by a gust of wind, which was very near sinking my canoe, near *Cape Orange*. The seeds, however, would not grow at *Cayenne*, neither, indeed, durst I flatter myself with the expectation, considering their tenderness, and that they had been exposed to great heats. I have not yet had any account of those, which I had transmitted to the *Jesuit* missionaries, towards the head of the *Oyapoc*; whose mountainous soil, and less sultry climate, much more resembles that of *Loxa*, where I had gathered them.

I observed, at *Cayenne*, the same latitude as *M. Richer*, of about five degrees fifty-six minutes north; and I was, at first, surprized to find, by four observations, of the first of *Jupiter's Satellites*, which agreed with each other, that the difference of the meridians, between *Cayenne* and *Paris*, was about a degree less than it was set down, in the book of *The Knowledge of the Times*. But I have since been informed, that *M. Richer* did not make any observation, of the *Satellites* of *Jupiter*, at *Cayenne*; and that the longitude of that place, had only been deduced from his other observations, by a very indirect method, and that much subject to error. A more particular account thereof, is only proper for our private assemblies; no more than that of my observations of the tides, and of the declination and inclination of the needle, made on the same spot.

Having observed that, from *Cayenne*, one might very plainly discern the mountains of *Courou*, reckoned to be ten leagues distant from thence, I
judged

judged that place, from which one might see the fire, and hear the report, of the cannon of the fort at *Cayenne*, would be very proper, to measure the velocity of sound, in a climate so different from that of *Quito*, where we had often tried the same experiment. Hereupon, M. *D'Orvilliers*, commandant of the fort, was not only willing to give the necessary orders, but took a pleasure in sharing the trouble with me. M. *Fresneau* also, engineer to the king, undertook to make the necessary signals of advice, as likewise to measure the velocity of the wind, on his side, with many other particulars. Of five experiments, made two different days, four whereof agree within half a second, in an interval of an hundred and ten seconds of time, the distance was geometrically concluded, to be 20230 fathoms, by a chain of triangles, joined to a basis of 1900 fathoms, actually twice measured, on a level ground: and the mean result, (after a deduction made of the velocity of the wind,) gave me, for the velocity of sound, 183 fathoms and a half each second, instead of 175, which we had observed at *Quito*. The piece of cannon, that served for these experiments, was a twelve-pounder.

I took advantage here, of the angles I had already measured, and of known distances, to determine geometrically, the situation of thirty or forty points, both in the island of *Cayenne*, and on the main land, and the coasts; amongst the rest, of some rocks, especially of that called the *Constable*, which serves as a directory, or guide, for vessels: I took also the angles of elevation, of the most remarkable capes and mountains. Their height, once well known, would afford the pilots, a much more certain way, than that of reckoning by the log, to know by the sight of land, without calculation, and by the help of a plain table, how far they are
distant

distant from the coasts. It is well known, of how much importance it is, to be apprized of this exactly, in approaching land. This is not the only assistance geometry offers to mariners, whereof they have hitherto neglected to make use of.

In another trip I took, with M. *D'Orvilliers*, out of the island, on going up some rivers of the continent, we measured their windings, by courses and distances; besides which, I observed some latitudes; these are so many materials, which, with the principal points, that I had already determined, might serve to make an exact map of this colony, whereof we have not, as yet, any one, which deserves that name.

During my stay at *Cayenne*, I had the curiosity, to try if the venom of the poisoned arrows, which I had already kept above a year, would retain its strength; as also, whether sugar was actually as effectual an antidote for it, as I had been assured. Both these experiments, were made in the presence of the commandant of the colony, with diverse officers of the garrison, and the king's physician. A fowl, slightly wounded, by an arrow blown out of a trunk, whose point had been dipt in the poison, at least thirteen months, lived half a quarter of an hour; another, being pricked in the wing, by one of these same arrows, newly dipt in the poison, diluted with water, and instantly drawn out of the wound, seemed to grow heavy within a minute, soon after convulsions followed, and though sugar was given it, it died; a third, being pricked with the same arrow, dipt afresh in the poison, having been instantly relieved with the same remedy, did not shew any sign of being out of order. I likewise repeated the same experiments at *Leyden*, in the presence of many
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celebrated professors of that university *, *January* 23d, 1745; and the poison, whose strength must have been abated, by the length of time, and the cold, did not produce its effect, till after five or six minutes, but the sugar was given without any success; the fowl, that took it, seeming only to live a little longer than the other: The experiment, however, was not tried any more. This poison is an extract, made, by the means of fire, from the juices of various plants; and especially of some particular *Lianes*. 'Tis affirmed, there are the juices of above thirty several sorts of herbs, or roots, in the poison made by the *Ticunas*; which was what I used, and which is the most valued, of the various sorts known, on the sides of the *Amazon*. The *Indians* always compound it after the same manner; and follow, with the utmost exactness, the direction received from their ancestors, (as scrupulously as is done by the chymists, or apothecaries with us, in the preparation of the *Tberiaca Andromachi*, or *Venice Treacle*,) without omitting the least ingredient prescribed; though, probably, this great multiplicity may be no more necessary, in the *Indian* poison, than in the *European* antidote.

Mankind will, undoubtedly, be surprized, that, amongst a people, who have at their disposal an instrument so certain, and so ready, to satiate their hatred, jealousy, or revenge, this subtle and deadly poison, should only be fatal to monkeys, and wild fowl. It is yet more astonishing, that a missionary, always feared, and sometimes hated, by his *New Converts*, to whom, his function does not allow him to be as complaisant, as they could wish, or might expect, lives amongst them without fear

* Messieurs *Mussenbrock*, *Van Wieten*, and *Albinus*.

or mistrust. Nor is this all; these men, so little to be dreaded, are savages, and generally without any idea of religion.

Having heard at *Cayenne*, the wonderful, and ever new *Phænomenon*, of the multiplication of that species of fish called *Polypus*, discovered by M. *Tremblay*, and since confirmed, by the experiments of Messieurs *de Reaumur*, *de Justice*, and a great number of natural philosophers, I made some experiments upon some large ones, very common upon this coast; but my first trials did not succeed; and my sickness prevented my repeating them.

Almost five months waiting at *Cayenne*, without seeing the man of war, that was expected, and without hearing any thing from *France*, from which I had been deprived five years, made a deeper impression upon me, than nine years travels and fatigues. Accordingly, I was seized with a languishing distemper, and the jaundice, for which, the most effectual remedy I could find, was the exceeding polite answer, I received from M. *Mauricius*, governor of the *Dutch* colony at *Surinam*, wherein he offered me his house there, with the choice of a vessel for *Holland*, and even a pass, in case of a rupture between *France* and the *States General*. I did not lose a moment; but, after a stay of six months at *Cayenne*, I set out from thence, upon the mending hand, *August* 22, 1744, in the king's canoe, which M. *D'Orvilliers* was pleased to assign me, to carry me to that colony, with a serjeant of the garrison for a guide, who was only to command the rowers. Accordingly, this voyage was shorter than that from *Para* to *Cayenne*; I only stopt, by the way, to compleat the number of the *Indians*, who were to row; and the reverend father missionary of *Senamary* procured me

me the most of them, notwithstanding the panic fear, of an imaginary contagion, at *Surinam*, the false report whereof had reached them. In effect, after deducting the time of my stops, voluntary, and forced, I ran, in sixty odd hours, from *Cayenne* to *Surinam* river, which I entered the 27th.

On the 28th, I went up the river five leagues; and arrived at *Paramaribo*, the capital of the *Dutch* colony at *Surinam*, the governor whereof was even much more obliging in reality, than he had given me reason to expect, by his offers. I observed the latitude, in that place, to be five degrees forty-nine minutes *north*, and made some other remarks, during the five days of my stay there; after which, I embarked, *September* 3d, in a merchantman, that was going for *Amsterdam*.

On the 29th, I was prevented, by bad weather, from shewing my pass to an *English* privateer, who, probably, would not much have regarded it; since, at first sight, he fired a whole broadside at us, (though we had put our *Dutch* colours out,) to make us send our boat aboard.

On the 6th of *November*, and in as bad weather, a privateer of *St. Malo* came up with us likewise, in search of booty, but accosted us somewhat more politely; for having approached within hearing, he was satisfied, at last, with the assurance I gave him, (after making myself known) that he would but lose his time with us. On the 16th, we took in a coasting pilot, at the mouth of the *Texel*, to carry us into port; but, being obliged to avoid the land, whereof we were in search, we wandered up and down, during fifteen days, the shortest in the year, and in continual fogs, with the plummet always in hand, in a sea full of shoals and sands. We beheld one night, the lights of *Scheveling*, which are seldom to be seen without danger; and at last
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discovered the coast of *Vlielandt*, whilst our pilots judged themselves, by their reckoning, to be within sight of the *Texel*. On *November 30th*, in the evening, I landed at *Amsterdam*; where, and at the *Hague*, I staid above two months, till I could get the passports, that were necessary, for my travelling safely through the *Low Countries*. For those of *England*, I was obliged to the civility of Mr. *Trevor*, who granted them, without any difficulty, to M. *L'Abbé de la Ville*, minister of *France*; and I owed those of the *Queen of Hungary's* minister, to the officious goodness of M. *le Count de Bentinck*; so that, at last, I arrived at *Paris*, on *February 23, 1745*, almost ten years after my departure from thence.

F I N I S.

