

ship sailed along it one whole day, and remarked that it extended twenty-six leagues from east to west, and fourteen leagues from north to south. Although there has been no subsequent confirmation of the existence of this bank, it may, at all events, be prudent to entertain some apprehensions of it. I have passed to the north and to the south of it, but at such a distance, that I could not observe it. I remarked, however, as many other navigators have done, that in this part of our course the sea was agitated, and the waves very short.

“When you have got to 20° of latitude, as has already been observed, you must make good your course to the west, till you are in sight of the Isle of France.

“The variation of the compass will determine, in a great measure, if you are to the east or the west of the Island of Rodriguez. In the first case, you will find it from 9° to 10° , according to the distance; but if you observe it from 12° to 13° , you will then be between the two islands. In short, if the difference in the reckoning of the longitude should be on the east, and Rodriguez should be in sight, you must bear away to the southward of it.

“This island is situated in $19^{\circ} 40'$ of south latitude, and in $60^{\circ} 52'$ of east longitude,* according to the observations of M. Pingré, in 1761. Its length is about six leagues from east to west, and its greatest breadth about two leagues and an half from north to south. It is very visible at sea, at the distance of from ten to twelve leagues; and appears from the offing, with the exception of some small elevations, to possess a level surface. This island is bounded to the north, the south, and the west, with chains of rocks nearly even with the water's edge, on which there are scattered several rocky islets. This bank extends a league and an half from the coast; and the north-east side is the least dangerous, as the reef recedes sufficiently from the bank to admit of ranging along the isle on that side. The most commodious part of its coast for landing, is to the north, opposite the settlement. There is also a channel between the reefs on the south side, but it is so winding, that it requires considerable practice to navigate it with safety.

“A guard house, with a few blacks, is maintained here to collect turtle, which are daily observed to diminish; indeed it is to be apprehended, that the rats and wild cats, who multiply considerably there, will soon destroy the species of this wholesome and nutritious animal.

“The vessels which wish to touch there, whether to obtain a provision of turtles,

* From Paris.

or to carry intelligence, will approach the island on the north-east side, at the distance of half a league; then ranging along the reefs, till the northern point of the isle appears to the south-west, you may either lay to, or make short boards, to wait for the chaloupe, which must be sent off in time, that it may not be exposed to fall to the leeward of the settlement.

“Those who would wish to anchor in the cove which is formed by the reefs, will range along the northern point, at the distance of a musket shot; and when the flag belonging to the settlement shall appear in a direct line with the south-west point of the compass, you must haul on the larboard tack, steering to south-west a quarter south, in order to pass to the leeward of several rocks which line the reef, and where there is anchorage in nine fathom, with a sandy bottom, at a pistol shot from it. From this position, the point of the reef which forms the cove on the eastern side, will be about the third of a league to the north-east: the flagstaff of the settlement, half a league south-west and by south; and the Isle of Diamonds, which is the nearest to the principal island, a league west by south, 5° south: the *Islet au Foux*, which is the most distant, is west by north, 5° north; and the point of the breakers on the starboard, is north-west by west, five quarters of a league.

“To the north, 5° west of this place, at the distance of half a league, there are three or four small ledges of rocks, whose extent is about a quarter of a league from east to west, and the eighth part of a league from north to south. There is about eight or ten feet water in the shallowest parts.

“In setting sail from this anchorage, provided the vessel has not driven much in getting under way, it will be sufficient to stand on your course to the north, in order to pass the eastern extremity of these ledges, in ten or twelve fathom water, where the bottom may be clearly distinguished; but if you steer to the north-north-east, or north by north-east, you must hold the middle of the channel, between the rocks and the reefs.

“You may also pass it to the leeward; that is, between the rocks and the western reef, by steering immediately north-west by north, 3° west, and then to the north; and when you are between them, you will pass about half a league over a bottom of rocks, which are very distinctly seen beneath at least eight fathoms water.

“It is reckoned that the Isle of Rodriguez is one hundred leagues from the Isle of France: when you have not seen the former, and the distance from the other is uncertain, you must attend to your course towards the latter, with continual precaution,

lest you should come upon it suddenly during the night. The reefs which surround the east part of it, and advance almost into the offing, would render an unexpected arrival off it very dangerous.

"This island is seen at sea at the distance of fifteen or sixteen leagues, in fine weather; though the clouds and fogs will sometimes prevent its being discovered at this distance. Its surface has a very irregular appearance, from the mountains of different heights and forms, which rise from it. When you make the island in 20° of latitude, on the southern part of it is seen a groupe of mountains, which are called the mountains of Bamboo, rising above the south-east port; and on the northern side four islets are discovered, which are to the north-east of the northern point of the Isle of France. It is between these islands, that the common passage is made to the north-west port, which is the principal place in the Isle of France.*

"The *Isle Ronde*, which is the most advanced in the sea, is also the most remarkable on arriving from the east. It is visible at the distance of ten or twelve leagues. This islet, which does not exceed the third of a league in length, is in the shape of an hay-cock. On approaching it, another, but much smaller islet or barren rock appears, which is called the *Isle au Serpent*, which is to the north-north-east 5° east of the *Isle Ronde*, and is not more than a quarter of a league distant from it.

"The *Isle Ronde* is situated in $19^{\circ} 50'$ latitude; and when the Isle of France is made by this height, that island is more perceivable than the great isle, particularly when the sky is somewhat cloudy, and there is a misty horizon. On arriving from the south, the *Isle Ronde* appears less, though its whole extent is discovered. But whether you arrive from this side, or from that of the east, it is necessary to steer,

*"In the year 1751, I determined, by several different observations, the latitude and longitude of the north-west port, or Port Louis in the Isle of France, and the result was, that I found its situation to be in $20^{\circ} 9' 43''$ of south latitude, and of $3^h 40' 30''$ more eastward than the Royal Observatory of Paris, which answers to $55^{\circ} 7' 30''$ west longitude. Another person (l'Abbé de la Caille) having occasion to make the same observations in 1753, with larger instruments than those with which I was provided, has formed the same calculation within two seconds, that is, $20^{\circ} 9' 45''$ south latitude; and $3^h 40' 32''$ meridional difference.

"I had also determined in 1740, and verified in 1751, the situation of the Isle of Bourbon, and I found the latitude of the town of St. Denis, to be $20^{\circ} 51' 44''$, and its longitude $53^{\circ} 10'$. I also found the latitude of the town of St. Paul, in the same isle, to be $20^{\circ} 59' 44''$. The detail of these observations will be found in the memoirs presented to the Academy, Vol. IV."

so as to pass to the south of it, at half, or three quarters of a league distance; from thence you must direct your course to another islet, called the *Coin de Mire*, which is distant from it three leagues and two thirds south-west by west, $30^{\circ} 30'$ west. As this islet is in the form of a wedge, it derived its name from such an appearance.

"About a league to the north-east of the *Coin de Mire*, and two leagues and an half to the south-west of the *Isle Ronde*, is the *Isle Longue*, or *Plate*, so called because the greater part of it is low ground. It is divided into two parts by a small arm of the sea, which affords a passage to the canoes. To the north is seen a large rock, which in its form resembles a tower: it appears to be separated from the *Isle Longue*, though it is in fact joined to it by a chain of rocks that just appear above the water. The north-west end of the *Isle Longue* is high and steep towards the sea. The common passage for ships is between this islet and the *Coin de Mire*. Thus having doubled the *Isle Ronde* on the south side, you must steer towards the *Coin de Mire*, leaving it nevertheless a little to the larboard, in order to escape the rocks which are both above and below the water, and line its north side; the most advanced of which are not more than a musket shot from the shore.

"As soon as you have doubled the westernmost rock, you will approach the *Coin de Mire*, whose western part is the most elevated, and very perpendicular towards the sea. From this place you must direct your course so as to range along the *Pointe des Canoniers*, which is directly to the south-west, 2° west of the most elevated part of the *Coin de Mire*, and giving at the same time a point to the breakers, which advance half a cannon shot into the sea.

"The currents or tides, whose high water is one hour, is generally very violent between these islands; and it has been observed that they run about a league an hour. The flood tide runs to the north-east, and sometimes to the east, and the ebb tide takes the contrary direction: it is necessary, therefore, to pay particular attention to these circumstances, and to take a little more of one side or the other, according as the particular situation of the ship may require.

"The *Isle Longue* forms a sandy cove opposite the *Coin de Mire*. At its south-east point there is a chain of rocks, which advance about a cannon shot into the sea. As this reef is dangerous, it is necessary to range nearer the *Coin de Mire*, or about mid-channel.

"The interval between the *Coin de Mire*, and the north part of the Isle of

France, is full of shoal waters; it would therefore be very dangerous to attempt the passage, without being well acquainted with every circumstance of it.

" If a calm should come on when you are between these islands, the best mode of proceeding would be to moor with the ebb anchor, in fifteen or twenty fathom, the common bottom being gravel or coral; by which precaution you will avoid being thrown by the current on the reef which is joined to the *Isle Longue*, or carried away between it and the *Isle Ronde*, where there is a great deal of shoal water, as well as a chain of rocks, extending from the *Isle Ronde* near a league to the west-north-west. It never breaks, however, but when the sea is agitated; so that this channel is both narrow and dangerous. I have passed it, and could plainly distinguish the bottom at the point of the reef: but though I met with no accident, it appears to me to be a preferable course, when one is to the leeward of the *Isle Ronde*, to pass on the outside of the *Isle Longue*, to range along it at the distance of half a league, and to steer towards the *Pointe des Canoniers*.

" Having doubled the latter, you will continue your course in making free with the land, so as to range as near as possible to the point of the arm of the sea, which is about a league from it: you must then stretch out to the distance of a quarter of a league from the reefs which line the shore, taking care of those at the entrance of the *Bay des Tortues*, and before that of *Tombeau*, which advance the furthest into the sea. To avoid them, you must manœuvre so as to keep yourself in from thirteen to fourteen fathom water during the day, and in twenty fathom during the night.

" From the reef *du Tombeau*, the course must be taken a little more to the south; and you must keep on to the south-south-west, till you have got in the same line with the starboard point of the Great River, the mountain of the Guard-house, and a small hill. From this position, you will proceed to the south-west towards two buoys which are at the entrance of the port, at the end of the reef of the *Isle aux Tonneliers*, on which there are two small flags to serve as marks. You will continue this course till you open the most advanced point of the *Isle aux Tonneliers*, by the small mountain in the bottom of the bay; you will then anchor in fourteen or fifteen fathom, at the distance of a cable's length from the two small flags which have been already mentioned.

" If the winds blow from the north or north-west, as it sometimes happens, it

would be useless to anchor without, when you can enter readily into the port. The channel is marked out with buoys, which carry also small flags. You steer south-east, and south-east by south, towards two points of the mountains, which are called *Pieterbot*, leaving them a little to the starboard. You will then get within the first point of the *Isle of Tonneliers*.

“When the *Isle Ronde* begins only to be visible in the evening, and the *Coin de Mire* cannot be doubled before night, as it is very dangerous to venture between the isles when the surrounding objects are but dimly seen, it would be much better to make small tacks off the *Isle Ronde*, but to take care not to get more than two leagues from it, by stretching towards the Isle of France, on account of the reefs that surround it : because this being a very low coast, a vessel might find itself on the rocks before it saw land. It would be very injudicious in this sea to heave to, or to drive under a main sail, on account of the tides.

“After having doubled the *Isle Ronde*, if the *Coin de Mire* and the *Isle Longue* are visible, which may happen in a moonlight night and fine weather, you may continue your course and pass between them. It will be sufficient to attend to the chain of rocks off the *Isle Longue*, as well as that off the *Coin de Mire*, which have been already mentioned ; and when you have passed the last, and shall have got a league and an half farther to the west, you must steer to the west-south-west of the compass, to range along the reef of the *Pointe des Canoniers*. A fire is generally lighted on this point as soon as any vessels are discovered. When this fire is south-east about the distance of a league, you will have doubled the reef, and must continue to stretch along the coast, with the precaution of not quitting fifteen fathom water.

“Nevertheless, as it is difficult to reconnoitre the entrance of the port during the night, and as you may be easily deceived by the different fires on the mountains, it would be preferable, after having doubled the *Pointe des Canoniers*, to anchor in eighteen or twenty fathom water, and to wait till it is daylight, in order to come to moorings before the port.

“It would be dangerous, with a feeble wind or in a calm, either by day or night, to draw near the *Pointe des Canoniers*, on account of the eddies of the tides, which are very rapid there.”

The Winds which prevail in the Eastern Seas.

"In all the extent of sea between the Cape of Good Hope and the coast of New Holland, to the south of the parallel of 28° of latitude, the winds are variable throughout the year. It is true that the west, north-west, and north winds, frequently prevail there, and that they sometimes pass to the north-east; but it may be said, in general, that the winds are never constant in this part of the Eastern Seas.

"From the parallel of 28° latitude, in proceeding towards the north, at the east of Madagascar, the winds blow from south-east to east throughout the year: they are called *general winds*, not only because they prevail in the Eastern Ocean, but also in all the South Seas; with this exception, however, that in the latter, their region extends to about the Equinoctial line; whereas in the Eastern Ocean, it appears to be confined to between the parallel of 28° , and that of 8° to 9° in some places, and of 11° to 12° in others; particularly to the south of Java, and other islands to the east.

"This regulation of the winds, though tolerably constant, is nevertheless subject to variations, when the sun is in its southern district; that is, in the months of October, November, December, January, to the 15th of April, when it may be said, in some degree, to change the state of the atmosphere. The winds then blow from the north-west, and sometimes from the west by south, particularly towards the change of the moon.*

"This disposition of the winds is principally known between the Island of Madagascar, and the Isles of Bourbon, France, and Rodriguez. It serves for vessels to go up from one island to another, in much less time than in the other months of the year. It is in this season also that hurricanes and tempests prevail in the region subject to the general winds.

"It is observed, that in the Indies there are four monsoons or seasons, during which the winds commonly blow six months one way and six the other.

"The south-west monsoon reigns to the north of the Equinoctial line, while that

* "Though I represent here, as well as throughout this memoir, the quarters, the full, and the springs of the moon, as producing the change in the winds, it must not be inferred from thence, that it is my opinion that they immediately depend on these phases, exclusively of every other concurrent circumstance. This expression is merely employed to conform to the general practice of seamen; being well aware that the observations on this point are neither sufficiently numerous or conclusive to decide the question."

of the south-east blows on the southern side; and when the north-east monsoon succeeds that of the south-west, to the north of the line, a monsoon is observed to reign in the southern quarter, where the winds blow north-west by west, and in some places from south-west.

“ The south-west monsoon lasts from the 15th of April to the 15th of October, in all the extent of the seas comprehended between the coasts of Africa, Arabia, and Japan.

“ The north-east monsoon reigns in the same seas from the 15th of October to the 15th of April, with the exception of the Red Sea and the Gulf of Persia, which have their own particular winds.

“ The Straits of Malacca might also be added, where the winds are almost always inconstant and variable; and where the monsoons are of short duration. Nevertheless, while the south-west and north-east winds are most violent without the Straits, it blows moderately from the same quarter within this of Malacca; that is, from the east in December and January, and the west quarter in June and July.

“ The change of these monsoons is always gradual. The variable winds prevail in the interval between them; but these revolutions are generally followed and sometimes preceded by tempests and hurricanes, particularly when the north-east monsoon succeeds to that of the south-west; that is, in the months of October and November: those which happen in April are less frequent and impetuous.

“ The south-east and north-west monsoons, which blow to the south of the Equator, are confined to less extensive limits; since they are not perceived in the South Sea but from the Equinoctial line, to the 8th or 9th degree of latitude, and the 12th or 13th degree towards the Isles of Sunda, Timor, &c. &c. As to their western and eastern limits, it is observed that they do not blow but from the meridian, which passes near the north point of Madagascar, to the Molucca Islands.

“ The winds during these two monsoons have, at the same time, a very different direction from those which prevail to the north of the Equator; for while they come on that side from the south-west, they blow on the opposite side from the south-east. When the monsoon of the north-west, which seldom begins till November on the south of the line, prevails from that part, the north-east winds blow from the northern side.

“ As to their change, it is not accompanied with hurricane or tempest, as it happens with those that take place on the northern side; and though the weather

may be bad, and the land and sea breezes more or less violent, the winds are never impetuous.

"Some authors, whose opinions appear to have been adopted without examination, confine the south-east and north-west monsoons to 2° of south latitude: but notwithstanding all the researches which I have made on this subject, I could only discover, between the monsoons to the south and north of the line, a few variations, which were insufficient to determine the limits.

"In the space of sea which is situate to the south of the Equator, between the coast of Africa and the meridian that passes by the north-east point of Madagascar, the south-south-west winds are found to blow from April to October; but they incline more to the west on proceeding to the northward to get to the south-west monsoons, which blow to the north of the line.

"From the months of October or November to that of April, in the same space, the winds blow from north-north-east to the east; and near the coast they often come from the east-south-east to the south-east, to re-establish, probably, the equilibrium of the air rarified on the land by the great heats of the season."

On the Archipelago of Isles, and the Dangers which attend the Navigation to the North and North-east of Madagascar.

"Previous to the instructions which I shall offer to the navigator, relative to the different courses he may take to get to the East Indies; whether he goes from the Cape of Good Hope, or from the Isles of France and Bourbon, it is necessary to inform him of the isles and dangers which he may encounter, in order that he may be enabled to avoid them, and arrive in safety at the place of his destination.

"The Archipelago of the north-east of Madagascar, which contains a great number of isles, banks, and shoals, has been so imperfectly traced on the old charts, that it will be sufficient to compare them with that which I have formed, from a more recent and correct knowledge, to possess a very different idea of the situations and circumstances which have hitherto been so imperfectly described.

"When we consider the position of the Isles of France and Bourbon, the winds which prevail in this part of the Eastern Sea, as far as the Equinoctial line, and the different tracks which may be pursued to arrive in India, it may be presumed, that the knowledge of this Archipelago should be one of the first objects to be obtained by the commanding officers of the Company in these isles: but whether it was from

too great a confidence in the authority of the old charts, or a want of precision in the orders given them, this undertaking was not commenced till a long time after our establishment. M. Mahé de la Bourdonnais, Governor of these isles, was the first projector of it, and in 1742 employed two small vessels in carrying it into execution. The war of 1744 occupied the Governor in a very different manner, and his recall to France put an end to the useful expeditions which he meditated.

“ The track which Admiral Boscawen pursued, in 1748, with a fleet of twenty-six ships, on leaving the Isle of France, which he was disposed to attack, to go to the Indies, and where he arrived in a very short time, by traversing this Archipelago, plainly proves that this course is preferable to the common one, that makes a northern part of Madagascar, as it shortens the passage upwards of three hundred leagues.

“ I held, in a great measure, the same course as Admiral Boscawen, in a ship called the *Monteran*, in 1754, without encountering either island or shoal. The *snow Rubis*, which also sailed through the Archipelago in 1758, perceived the island *Agalega*, and continued her passage to *Negapatam*, where she was taken by the English.

“ Though the success of this attempt is, in some degree, a sufficient authority to engage navigators to abandon their ancient route, and to adopt one which is equally safe and much shorter, and particularly in circumstances requiring dispatch, our ships have not deviated from the track which they have pursued since the year 1722. It may be necessary, therefore, in order to tranquillize the generality of navigators on the dangers which they have supposed in this passage, to enter into a connected examination of it.

“ In 1767, the Chevalier Grenier was appointed to command a corvette, called *L'Heure du Berger*, in the King's service, destined for the Isles of France and Bourbon. He formed the project to make such discoveries as would be of the greatest importance to the navigation of these seas; and he accordingly associated with him the Abbé Rochon, of the Marine Academy, for the astronomical department.

“ The minister favoured his views, and, in consequence of his protection, he was assisted by the Chevalier Desroches, Commandant of the Isles of France and Bourbon, and M. Poivre, Commissary-general, who, to the corvette *L'Heure du Berger*, joined the corvette *Le Verd Galant*, commanded by M. la Fontaine. His voyage to the Indies, as well as his return, was accompanied with many useful discoveries, which I shall relate in this memoir. With respect to the means which he proposed

to shorten the passage from the Isles of France and Bourbon to India, they are similar to my own, and I shall hereafter give them a particular consideration.

“ M. de Roslan, seconded by the Chevalier D’Hercé, continued the progress of discovery after the Chevalier Grenier, and has fulfilled that object with equal care and correctness. His observations and remarks will be explained hereafter. I shall therefore pass at once to the discoveries successively made in this Archipelago.

“ The *Isle de Sable*,^{*} situate to the north of the Isle of Bourbon, in the latitude of $15^{\circ} 52'$, was discovered by the vessel called the *Diana*, in 1722. The store-ship the *Utile* was wrecked there the 31st of July, 1761, from having neglected to refer to its situation as laid down in my chart of 1753, and having preferred another chart, which places it $25'$ more to the south. This island is a flat bank of sand, of about seven hundred fathom in length, running north-north-west and south-south-east, and of three hundred and fifty in breadth, with a ridge of sand stretching six hundred fathom to the south-south-east. The crew saved themselves in a kind of flat-bottomed boat, made out of the wreck, and landed at Foule Point on the 27th of September.

“ The bank of *Corgados Garayos* was, in 1742, the first object of the researches made by the boat named the *Charles*, and the tartan the *Elizabeth*, dispatched from the Isle of France by order of M. Mahé de la Bourdonnais, at that time Governor of it. These two vessels having made it on the 27th of August, anchored there, and traced a plan of it, by which it is represented in the form of an horse-shoe, and of six leagues in extent, running north-north-east and south-west. These two boats not having been on the north side, and, consequently, not having perceived the isles which lay off it, its small extent, and the affinity of its latitude and longitude with that of *Saint Brandon*, on which an English vessel, called the *Hawk*, (*le Faucon*) was stranded on her return from Surat to Europe, induced me to consider it as one and the same shoal.

“ It was perceived in 1682, by the ship *La Royale*, in its passage from Surat to the Isle of Bourbon; and her course, till she came in sight of the Isle of France, then called Mauritius, was south-west by south, 4° west.

“ From the tracks of the two boats, I was induced to give it $58^{\circ} 7'$ of longitude: nevertheless, as the course of M. le Chevalier Grenier is more direct, having taken a mean proportion between his own course, and that of the *La Royale* and the two boats, I have replaced it in $57^{\circ} 37'$, that is $30'$ more to the west.

“ By the plan which the Chevalier Grenier has given of the islets extending to the north-north-east, it appears that this shoal is *Corgados Garayos*, and not the *Saint Brandon*, where the Hawke ran on shore, and which I have placed in $65^{\circ} 10'$ longitude; that is, $9^{\circ} 30'$ west of the meridian of Surat, and in $16^{\circ} 38'$, according to the track of the Hawke, as laid down in the charts of the Isle of France, to be found in the English Pilot.

“ As to the two banks of *Nazareth*, they must be found between the track of the pink *la Digue* and *Corgados Garayos*; as there is no reason to imagine, from the tracks of other vessels, that they are more to the west.

“ The course of the boats the Charles and Elizabeth, from *Corgados Garayos* to Madagascar, make it apparent, that these two banks do not extend so much to the south as the old charts represent them. After having traversed the course of these two vessels, I made a proportionate correction of their extent towards the south.

“ These boats, on leaving Madagascar, proceeded on the 14th of October to make further discoveries: on the 27th, at nine, being in 10° of latitude, and, according to estimation, in $50^{\circ} 30'$ of longitude, they perceived a small triangular island, which they supposed to be *Agalega*, or the *Isle Astove*, and they ranged close along it, but without landing. This isle is probably that of the *Assumption*.

“ On the 29th, in the morning, they discovered two islands, which were divided by a large bay, the opening of which lay east and west: but these appeared, nevertheless, to be closely joined together by several intervening islets.

“ According to the track of the boats, these two islands, which they supposed to be those of *Jean de Nove*, were seventeen leagues to the north-west of the triangular island which they had perceived on the 27th.

“ The boats came to an anchor to the north-west of the northernmost island, and having sent a party to examine it, they found it very flat and marshy, and covered with small trees. They saw there a great number of land turtles, much larger than those of Rodriguez, and abundance of game. As the anchorage where they were was not good, they quitted it on the 1st of November, after having made a draught of the islands. It was in consequence of this discovery that I placed them upon my chart, as well as the little triangular isle, under the name of the *Isle Astove*.

“ The two boats continued their course towards the east and the north east till the 19th, and being, according to their reckoning, in $60^{\circ} 30'$ longitude, and $5^{\circ} 15'$ latitude, they perceived an island with very high land, which appeared to be six

or seven leagues in length from north to south. Having neared it, they anchored in a cove on the south-south-west side, which they examined; but as the season required their return to the Isle of France, they contented themselves with this imperfect knowledge of it.

"They renewed their course on the 27th, and sailed along the island on the east, when they perceived the isles which are to the north-east, and contented themselves with having seen them.

"It may be observed, that the two navigators charged with this expedition had not, by any means, the knowledge or experience necessary for such an important object; and though the difference they observed in the variation on this island, of $11^{\circ} 30'$, and that which they found after, ought to have convinced them that there was a considerable error between them to the west, they counted upon their own reckoning of the longitude, and as it appeared on the chart of Pietergoos, and that of the *Depôt de la Marine* (edit. 1740), near the place which is distinguished by three small islets, called the *Trois Freres*; they therefore imagined that the island which they had approached, as well as all those which they had discovered, were these *Trois Freres*; and they accordingly took their departure, without any change in their opinion. They were, on their return, more fortunate than wise; for traversing this Archipelago, they made, on the 4th of January, the island of Madagascar, when, according to their reckoning, they were thirty leagues to the east of the Isle of Rodriguez; so that the total error of their navigation was about three hundred leagues to the west. They at length arrived in the Isle of France, on the 28th of January, 1743.

"The report which they made of their discovery to M. de la Bourdonnais, determined that Governor (who judged that the supposed *Trois Freres* were rather some islands in the vicinity of the *Amirantes*, than those three islets), to send out again in the course of the same year, one of the two navigators, named Lazarus Picault, in the tartan Elizabeth; and he ordered a person to embark with him who was qualified to lay down a chart. M. Picault accordingly received instructions, on setting sail from the Isle of France, to take his course to the Malabar coast, in order to ascertain with precision the exact position of that isle.

"The journal of M. Picault having been communicated to me, as well as the draught which I now have in my possession, I had, from the knowledge which I acquired from the tracks of these navigators, placed that island in $52^{\circ} 30'$ longitude from the meridian of Paris, and consequently $45'$ more to the west than it is in fact,

from the observation of the Abbé Rochon. I have, however, according to the latter, placed it in $53^{\circ} 15'$.

" M. Picault having taken possession of these isles in the name of the King, denominated them the *Isles de la Bourdonnais*, and to the principal of them gave the appellation of *Mabé*, which I have preserved.

" In the year 1756, M. Magon, then Governor of the Isles of France and Bourbon, having been informed of the advantages which might be derived from the *Isles de Mabé*, sent thither the *Cerf* frigate, under the command of M. Morphey, a very intelligent officer, who joined to the necessary qualities of a navigator, all the knowledge which would enable him to acquit himself with honour in this important mission. To this frigate was added the *Saint Benôit* schooner, commanded by M. Préjan, to second the objects of this expedition.

" As M. Morphey was determined, at the same time, to reconnoitre the Isles which the Charles and Elizabeth had discovered, he took his course, on quitting Bourbon, the 31st of July, to fall in with the *Isles Astove* and *Jean de Nove*, according to the situation which I had given them on my chart.

" On the 9th of August he discovered a reef, on which there were two small sandy islets, whose latitude by observation was $9^{\circ} 36'$, and whose longitude, according to the dead reckoning, was $50^{\circ} 15'$. Though they stood on their course to approach these islets, they soon lost sight of them from a violent current, which bore them away to the south-west; and notwithstanding every effort was made during the night to stand in for them, on the following morning they perceived a different island to the north, to which they bore up, and ranged along it at the distance of six hundred fathoms. Its latitude was determined by a correct observation to be in $9^{\circ} 22'$, and M. Morphey sent a party to examine it.

" This island is no more than a bank of chalky rocks and white coral, which is about three leagues in circumference, and may be seen at the distance of five or six leagues. The small quantity of earth which is found there, appears to be nothing more than a mixture of decayed wood and leaves, and the loftiest trees are not more than ten feet high. There are water-fowl in great abundance, with many other birds, and a large kind of crab. The shore is very steep, and at half a cable's length from it no bottom is found at less than twenty fathom. M. Morphey not finding this isle marked on any chart, named it the *Isle des Cerfs*, though, according to all appearance, it was the *Isle de St. Pierre*, seen by many of our vessels in their passage to

India. Hence it is, that I have marked it on my chart in $49^{\circ} 30'$ longitude, relatively to the track of those who have fallen in with it on quitting Madagascar.

" On losing sight of this island, M. Morphey continued his course to the westward, and three days after, on the 13th of August, they perceived several islets on a large reef, which they approached very fast, in consequence of a violent current, which was observed to run to the west. These isles consist of a kind of chalk stone covered with shrub-wood, and, according to the plan which I had traced from the rough draught and remarks of M. Morphey, it appears that these are the islands known on the ancient charts under the name of *Cosmoledo*, situate to the north-north-west of *Cape d' Ambre*.

" On the following day, being the 14th of August, they saw a small triangular island, and on the 16th, in the morning, they anchored there, and named it *L' Isle de l' Assumption*. According to an observation, the middle of the island is in $9^{\circ} 47'$ latitude. They landed on it, but found nothing worthy of remark: it is one chalky rock, full of caverns, with some sandy spots covered with shrubs. The access to this island is very difficult.

" On the 17th, in the evening, the vessels having driven, they set sail. It appears that this island is the same which the boats, the Charles and the Elizabeth, saw on the 27th of October, and which they took for *Agalega*, or the *Isle Astove*; although it appears that their observed latitude is $18'$ more south. This difference is the less surprising, as the navigators on board those vessels,—1st, Made use of an arrow; * 2d, They did not correct the declination; and 3d, The sun was very near their zenith.

" On the 18th of August, M. Morphey discovered another island, or rather two islands, joined together on the western side by intervening islets, and ranged along them close in shore. He determined their latitude between $9^{\circ} 24'$ and $9^{\circ} 35'$, and considered them to be the same which the boats, the Charles and Elizabeth, had visited, and named *Jean de Nove*. I have supported the same opinion; but in what degree of longitude am I to place them? According to the navigators in the boats, they should be in $49^{\circ} 30'$; and according to M. Morphey, in 47° ; and the result of this determination would be, that the islets of the *Assumption* and *Cosmoledo* would lay in the track of all our vessels going to the Indies, although they have never fallen in with them.

* *Une flèche*, a sort of instrument, sometimes used for observation, called also *un baton de Jacob*.

“ To resolve a problem of this nature, I had recourse to the variations, of which there is a sensible progression in these seas, in steering from east to west: with this view I traced all the courses of the vessels, whose error, between their points of departure, which were correctly known, such as the Isles of France and Bourbon, and the land-fall on the coast of *Mulabar*, were of little consequence. I took care to mark the variations which had been observed, and having drawn the lines of a considerable quantity of them, I discovered that these lines cut the meridians in an angle of from 31° to 32° from north to west.

“ As I could rely on the exactness of the observations made by M. Morphey, I referred to them for the intersection of the variations which he had observed, with the parallel of latitude of those isles, and I found that the two last were in $49^{\circ} 30'$, and answered, on the old charts, to *Aldabra*; the isle of the *Assumption* in $44^{\circ} 55'$ longitude, and the middle of *Cormoledo* in 46° . I consequently traced them on my chart.

“ The correctness of this operation was confirmed to me about four months after, and before my chart could possibly have reached the isles, by a letter from M. Grandmaison, who had fallen in with the isle *Aldabra*, three days after his departure from the Isle of *Anjouan*. The position, according to his reckoning, is precisely the same as that which I had given to it.

“ This method of determining the situation of the isles, and dangers of this Archipelago, by the variation, in default of astronomical observations, has appeared to me to be preferable to that of the track of vessels in this sea, where the currents are continually changing their direction.

“ The Isle *Natal*, which is seen to the north of *Aldabra*, was observed by M. Barri, who commanded a ketch, in his passage to India, after having seen the Cape *d'Ambre*. The latitude is the same as is given in the Portuguese charts.

“ The English ship the *Atham*, in 1758, discovered a sandy island, with several breakers, in $6^{\circ} 57'$ south latitude, and thirteen leagues east from the Isle of *Zanzibar*. The ship ranged along the sandy island to the westward at the distance of a league.

“ The bank of *Patram* was seen in 1758 by the ship *Pitt*; when it was found to be in $4^{\circ} 30'$ south latitude, and $50'$ to the east of the meridian of the Isle of *Commora*.

“ It is supposed also that there is a sand bank in $3^{\circ} 57'$ of south latitude, and $2^{\circ} 5'$

east of the meridian of St. Augustine's bay. This bank has been seen by two vessels, and may be a continuation of the preceding one, since it cannot be more than twenty leagues distant from it, to the north-east.

"The Panther man of war, commanded by Captain Affleck, in his passage from the island of *Anjouan* to India, made an observation on the 17th of May 1760 at noon, when he was in 9' of south latitude, and according to reckoning, 5° 49' to the east of the meridian of *Anjouan*, and at 2 P. M. saw the bank *d'Ambre*, which was to the east of him, 5° or 6° south, at the distance of about seven or eight miles; when he sounded without finding a bottom, with a thirty-five fathom line. At four P. M. he surveyed the extremities of the shoal, and found no bottom with an hundred fathom line. The variation was 12° 20' A. M. and 12° 21' P. M.

"In the year 1730 the ship *Le Lys*, commanded by M. le Chevalier Pontevéz, in its passage from the Isle of Bourbon to India, took the common course in order to make Madagascar: but not having seen that island, on the 25th of June, at six P. M. he made good his course to the north-north-east, 3° 30' east, forty-five leagues and one-third, till the 26th at noon; and afterwards to the north-north-east, 2° 30' north, till two P. M. of the same day, when he perceived land north-west by west, from four to five leagues. He observed that it consisted of two islands, which were separated by a small channel; and according to the latitude which he had observed, always allowing for the error of his flèche, the middle of this isle would be in 10° 17' latitude. As to its longitude, although I had determined it on my chart to be 49°, after having traced the courses of several ships which sailed from Madagascar, and had not seen this island in this longitude, and even more to the eastward, I thought it right to place it in 50° 35'.

"The *Lys*, on losing sight of this island, made good her course north-north-east, when she perceived another island, that was named the *Alphonse*, which, according to the track of this ship, since she saw *Jean de Nove*, should be sixty-nine leagues to the north-north-east of it, and consequently in 7° of latitude, and 52° 20' of longitude.

"Eighteen leagues and an half to the north of the island *Alphonse*, or rather to north by north-west, according to a more correct reduction of the courses of this ship, the Chevalier Pontevéz saw another small island, to which he gave the name of *Saint François*.

"This island was seen on the 21st of September, 1744, by a small vessel on its passage to *Mabé*. She ranged along the western coast of it, at the distance of a

quarter of a league, where she was in eight fathom water, with a bottom of coral. She afterwards made a similar island, about three or four leagues east-north-east of the former: in the channel between them, there were thirty-five fathoms water, with a sandy bottom. The same day at noon, having made six leagues north-east by north, and being from an observation, in $5^{\circ} 59'$ of latitude, a third isle was seen at a league to the west, when they had from thirty to thirty-five fathoms water.

"The frigate *La Gloire*, in 1756, fell in with the *Isle St. François* in its passage to *Pate*.

M. du Roslan, who was dispatched in December, 1770, from the Isle of France, with the King's corvettes, *L'Heure du Berger*, and *L'Etoile du Matin*, to make discoveries in this Archipelago, made an island which he named the *Isle Plate*, whose latitude is $5^{\circ} 45'$, and longitude $53^{\circ} 11'$. It appeared to him to be about a league in circumference. There was a reef extending about a quarter of a league to the westward of it.

"Steering from the *Isle Plate* to the north-west, he saw a second island north-west by west, and he neared it without finding any bottom, till he got within half a cannon shot of the shore. He sent an officer to find a convenient anchoring place, and the following day he himself landed to examine the island, which he named the *Isle du Berger*. It is more elevated on the side of the north than that of the south: in the middle there is a cut or separation, which, at some distance, gives it the appearance of two islands. This cut is a bank of hard coral, covered with a thin coat of white sand, which the sea always overflows at high water; but, at low water, it is altogether dry, so as to form a passage from one part of the island to the other. It is about two leagues in circumference: the soil consists of a very hard coral, covered with sand; the trees are lofty, but their wood is of a spongy texture; there are also some small cocoa trees; and the whole island is surrounded with a reef at the distance of about a quarter of a league. There were a great variety of birds, and plenty of fish.

"This isle is in $5^{\circ} 45'$ latitude, and $52^{\circ} 48'$ longitude. In coasting it, an opening was observed in the reef, where boats might enter to get to the island by a kind of causeway, formed by the contrivance of nature: the reef abounds in turtle, sharks, and many other kinds of fish. It appeared to possess no insect but a small red ant, some spiders, and numbers of *Nerites*: the sailors say they saw there Caymans and blue fowls.

“ On leaving this island, and steering west by south-west, M. du Roslan perceived a third island, which he named the *Isle de l'Etoile*; he coasted along it at the distance of a league. In the bottom, between the *Isle du Berger* and this, there are very perceptible inequalities. The *Isle de l'Etoile* is nothing more than a sand-bank, covered with brush-wood, and may be half a league in length; the reef which surrounds it extends on the southern side to about a quarter of a league.

“ At six P. M. a fourth island was discovered, which was called *Marie Louise*. It appeared to be well wooded, was encircled with a reef, and of the same dimensions as the *Isle Plate*. Its latitude is in $6^{\circ} 12'$, and its longitude $52^{\circ} 19'$.

“ On the 14th of December, M. du Roslan saw a fifth island, two leagues to the west-south-west of *Marie Louise*, which he named the *Isle des Nœufs*. At the distance of a league from it he found himself in nine fathom water, with a rocky bottom. It appeared to him to be smaller than the others, but equally woody. Its latitude is $6^{\circ} 15'$, and its longitude $52^{\circ} 12'$; the depth of water between these isles is from twenty-five to thirty fathoms; but on standing away in the least degree to the south, the bottom is instantly lost.

On the same day at noon a sixth island was discovered, distant about three leagues and one-third west by north-west of the *Isle des Nœufs*. It received the name of the *Isle de la Boudeuse*: it is a bank of sand, covered with brush-wood, like the *Isle de l'Etoile*.

“ According to every appearance, these isles are those which are marked on the old maps under the name of the *Amirantes*, although their latitude is not so much to the south by 2° . M. du Roslan made a very exact survey of them, and in his passage from these to the *Isle Mabé* determined the longitude relatively to that of the latter; nor is there any reason to suppose his position to be erroneous.

“ It appears, that the *Isle des Nœufs* is that which was seen by M. de Pontevéz, who commanded the *Lys*, in 1730, and was denominated by him the *Isle Saint François*, which the ship *la Gloire* perceived in 1756; and that it was among those isles that the little vessel, which I have already mentioned, passed in its course to Pondicherry.

“ To the north of these isles, and to the west-south-west, 5° south of the *Isle Mabé*, it is said that there are three or four similar islands. They have been seen by a small vessel on its passage to Bengal, which went to the *Isles Praslins*; it

was commanded by M. du Chemin ; but I have never been able to obtain any particular account of them.

“The Twelve Islands were seen the 6th of June, 1732, by M. du Chemin, commanding the ship *Saint Pierre*, two days after he had lost sight of the north-east part of Madagascar ; and as he perceived on the morning of the following day, another small island, to which he gave the name of his ship, the position of the one and the other is determined by his course, and the distance he was from them to the north-north-west.

The frigate *Elizabeth*, in its passage to Surat, after having made Madagascar, found itself on the 16th of August, 1744, at break of day, about a quarter of a league from the breakers that surround the Twelve Islands, which remained from north-west to north-east. At the same time there appeared from the north-west by north, to the north-north-west, three round islets, but little elevated above the sea ; and to the north-east, a kind of flat island, which seemed to terminate the reef on that point. The winds blowing a stiff breeze from the south-south-east, and the agitated state of the sea, obliged the navigators to hold as close as possible to the wind to double this shoal, and, on approaching it, they perceived that it was formed of several others, all of which were mere banks of sand, covered with shrub-wood. At ten A. M. they surveyed the more northern islet to the west-south-west, four or five leagues ; and, at noon, reckoning that they were seven or eight leagues to the north-north-east of the northernmost isle, as, from an observation they were in $9^{\circ} 42'$ latitude, it was inferred that this mass of islands was in ten degrees.

“It is proper to observe, that when M. Morphey discovered the shoal *Saint Laurent*, he passed at such a distance to the north of the Twelve Isles, as not to be in a situation to perceive them.

“This same navigator had passed also to the south of the bank which extends to the south of the small *Isle de la Providence*, on which the crew of the *Hereuse* frigate, Captain M. Campis, was preserved. This frigate having sailed from the Isle of France on the 30th of August, 1769, to go to Bengal, made the isle *Jean de Nove* on the 5th of September, at from five to six leagues to the west. The following night she was wrecked on the south part of the reef, and the crew saved themselves upon a dry bank of sand about a league within the reef, from whence they got to a small island at the distance of about seven leagues to the north, to which the reef is contiguous ; and they named it the *Isle de la Providence*.

" This island is a league in length from north to south, and about three hundred fathom broad towards the middle. The soil is a mixture of sand and white coral. The reef, with which it is surrounded, begins at its north point, and then runs off towards the south, so that the southern point of the isle is about half a league distant from it. The reef continues from six to seven leagues to the south, and its greatest breadth, which is near the middle of it, is about two leagues. The whole space which it contains is filled with banks of sand and coral, some of which are above the water ; so that at low water a canoe could scarce navigate there ; and even at high water there is considerable danger, which must be watched with great attention.

" The *Isle de la Providence* is covered with cocoa trees on the southern side, and to the north with a tree that resembles the fig-tree of Europe, and is of a very spongy texture. These trees are strait, and rise to about forty or fifty feet, having knots like the bamboo, at a regular distance of six feet. The fruit resembles small mangoes.* There is also a creeping kind of wood of a red colour, and very hard. It is a very singular circumstance, that the ashes of wood that has been burned here, having been wetted by rain, hardens in such a manner, that it is necessary to employ an hammer to break the petrification : the inside is shining like the shells of a fish.

" There is great plenty of turtle, and a species of land crab, which is very large, and good to eat : some of them weighed six pounds. There are also great numbers of rats, which make their nests in the cocoa trees.

" The latitude of the island, according to four observations, two of which were made when the sun was on the north side of the island, and two when it was on the south side, was determined to be $9^{\circ} 7'$; the variation according to observation, was $11^{\circ} 45'$ north-west.

" After having exerted themselves during two months on the island, in endeavouring to lengthen their canoe six feet, and to refit it for sea, the shipwrecked crew embarked in her, to the number of thirty-five men, on the 8th of November, and fortunately meeting with a north-east wind, they in four days after landed at Madagascar, at eight leagues south of *Cape d'Ambre* ; from whence they proceeded to reach *Foul Pointe*, where they arrived in about a month. They continued their course in the canoe, and in their passage, between *Cape d'Ambre* and the Bay of *Vohemare*, they crossed three fine harbours, which appeared to them well worthy of attention.

* Cereiba, Mahot, Cereibuna.

"The island *Galega* was seen on the 7th of July, 1758, by the Ruby snow, in its passage from the Isle of France to India. As the course of this vessel appears to me nearly direct, I have placed this island in $54^{\circ} 55'$ longitude, and in $10^{\circ} 30'$ latitude.

"The frigate *Le Choiseul* commanded by M. le Flock de la Carriere, in its passage from the *Isle de Bourbon* to Pondicherry, perceived this island on the 17th of August, 1768; and although this navigator then reckoned that he was but five leagues more to the west, the soundings that he afterwards took, on the south-east part of the bank which surrounds the *Isle Mabé*, and others which are to the east of it, made him suspect that the *Isle Galega* is fifteen or twenty leagues more to the west than I had marked it. But as M. de la Carriere had no knowledge of the *Isle Mabé*, and that he was equally ignorant where the bank was situated which he had sounded, I have not thought proper to place it more than $35'$ more to the west than my first determination, and in more than $10^{\circ} 27'$ latitude.

"The Portuguese charts, on the faith of Alexo da Mota, places this isle in $9^{\circ} 30'$, which is $57'$ more to the north than its real position. Such are the errors of the old voyagers.

"During the night from the 18th to the 19th September, 1771, M. de Kerguelen, who commanded the store ships, *la Fortune* and *le Gros Ventre*, found himself over a bank in thirty fathom water, with a rocky bottom; in the succeeding moment he found but twenty fathom, and the bottom continuing to diminish, he anchored in sixteen fathom. On the return of light he saw no land; and having got under way, driving to the north-west, he found from thirteen to twenty-eight fathom; but after having made two leagues, he on a sudden got out of soundings. While he was at anchor, he remarked that the sea broke very much at the distance of a league to east-north-east; but such was the state of the weather, and the agitation of the sea, that he did not venture to send his canoe to take soundings. He reckons that this bank, which he named the bank *de la Fortune*, extended three leagues from south-east to north-west; and, according to his observation, it was situate in $7^{\circ} 30'$ latitude, and in $54^{\circ} 58'$ longitude.

"I have placed the bank of Saint Michel in $8^{\circ} 55'$ latitude, according to the observation of the *la Digue* store-ship in 1768, and in $57^{\circ} 30'$ longitude, according to the reduction which I have made of her track in going from the Isle of France to the *Isle Mabé*.

"The south part of *Saya de Malba*, is traced according to the navigation and

observations of M. le Chevalier Grenier. As to the north side of the same bank, I have conformed myself to the following extract from a journal inserted in the English Pilot.

‘ The northernmost part of *Saya de Malba* is in $9^{\circ} 55'$ south latitude, and in $11^{\circ} 40'$ to the west of the meridian of Bombay. I fell in with the western part of the northern point, where I found, on the first sounding, fifteen fathom water, with a bottom of coral, and on the second, no more than eight; which made me stand to the north, 3° west; and though the breeze was light, every time I threw out the line the soundings increased from twelve to fifteen, twenty-two, twenty-five, thirty-two, sixty, and eighty-five fathoms, and then I lost soundings. I returned to the charge, and found as at first, fifteen fathom with a coral bottom, afterwards twelve, then ten; but apprehensive that I should run aground, I stood to the north-north-east, where I had eleven, twelve, thirteen, fourteen, seventeen, and twenty-two fathom; and after having sailed about a mile and a half, I lost all sounding. It is said that on the south part of this shoal there are several banks, which in some places are dry and visible. The variation was $16^{\circ} 40'$ north-west.’

“ I have found no other memoir on the Island *Roquepiz* to the south, but the Journal of Lancaster, who saw it in 1602, and speaks highly of its appearance, without mentioning its longitude: it states merely that this Admiral having quitted the Bay of *Antongil* on the 6th of March, found himself in sight of *Roquepiz* on the 16th of the same month, towards $10^{\circ} 30'$ south. I have placed it in this latitude, and in 62° longitude, according to which position it could not have been seen either by the Cerf frigate, the gouelette the St. Benôit, or the Digue store-ship.

“ In the memoirs which have been sent me from England, about five or six years ago, I have an extract from the journal of the two following ships, the *Mary*, Captain Mitcham, and the *Prince George*, Captain Lewis; who left the point of *Galles*, in the island of Ceylon, on the 15th of June, 1755, to proceed on their voyage to Bombay, and saw, on the 2d of August, an island in $7^{\circ} 7'$ south latitude, which they imagined to be that of *Gratia*, and reckoned to be $16^{\circ} 56'$ to the west of the meridian of the point of *Galles*, answering to $60^{\circ} 49'$ of our longitude; but according to a note inserted at the bottom of a small plan of it, which has been sent to me, it should be $20^{\circ} 47'$ west of *Galles*, and in $56^{\circ} 58'$ of our longitude.

“ On the following day, having made an hundred and three miles to the north-west by north, these two ships struck on a reef, running off about five leagues to the south-

west of a small island, which they saw in the morning, in 6° of latitude, and which I should suppose was the north side of the Isle of *Roquepiz*, if the Portuguese Maritime Directory had not stated, that, to the south-west of it, and at the distance of six leagues, there were three small flat islets, with a few trees on them, and laying from east to west, which these ships had not seen. As they observed the variation in the environs, the uncertainty of their longitude engaged me to have recourse to it: and following the course of the lines of variation which I have already mentioned, the island which they imagined to be *Gratia*, and I had named the *Isle St. George*, (as *Gratia*, or *Garcia*, is more to the east,) should be in $58^{\circ} 35'$, and *Roquepiz* in $57^{\circ} 35'$ longitude.

"There remains in this sea, the Isle of *Sept Freres*, on which I have seen no other memorial than that which is found in the Portuguese Maritime Directory, where it is mentioned as being in 4° of south latitude.

"With respect to the islands that are to the eastward of this, they appear to me too well known, from having been so often seen by our own ships and those of the English, to require a particular description in this place.

"The island *Diego Garcia*, was seen on the 24th of September, 1769, by M. le Chevalier Grenier, who commanded the King's corvettes *L'Heure du Berger* and *Le Verd Galant*. M. l'Abbé Rochon determined its longitude to be in $68^{\circ} 20'$. M. la Fontaine, who commanded the *Verd Galant*, returned in the month of November, 1770, to examine and take a plan of the very spacious bay, which this island, whose form resembles that of a serpent bent double, contains, as it were, within itself. A great number of vessels might anchor there in safety; but the principal object is wanting: for though it is covered with wood, it is not provided with fresh water. Its length is four leagues from north to south, and its greatest breadth is two leagues.

"This same island was perceived by an English ship, who, from sight of it, steering to the north, made two other islands and three islets, with a reef, distant about five leagues to the east-north-east. He passed between the reef and the islands, whose latitude he determined to be between $5^{\circ} 12'$ and $5^{\circ} 23'$. To the north-north-east of these islands, between 5° and $4^{\circ} 35'$, he found an unequal bottom of twenty-six, seven, twenty-three, twenty-eight, nine, and twenty-three fathom.

"The island *Diego Garcia* was also made in January, 1745, by an English vessel called the *Pelham*, in its passage from the Cape of Good Hope to Bombay.

He remarked its bay, as well as the islets which are at the entrance of it. This ship steered to the north-east and east-north-east, and afterwards to north-north-east, to the Equinoctial line, which it crossed in $73^{\circ} 20'$ of our longitude: from thence taking a north-west course, on the 31st of January, at ten A. M. and being, according to reckoning, in $1^{\circ} 55'$ north latitude, and $71^{\circ} 48'$ longitude, he saw the Maldiv Islands north-north-west by west. He passed between them and arrived at Bombay.

“ On leaving the *Isle Praslin*, which is to the north-east of the *Isle Mabé*, M. Roslan being anxious to know, on this side, the extent of the bank on which these isles are situated, found that it continued ten leagues to the north-east: from this position he steered to the east, running the parallel of 4° : on which the old charts mark the island of *Sept Freres*, and that of *Trois Freres*. Notwithstanding the difference caused by the accidental currents, which run sometimes towards the south, and at other times towards the north, the two corvettes maintained the supposed latitude of these islands, sufficiently to be assured that they are not on the parallel of 66° of longitude. The course of M. Picault, on his passage to the *Isle Mabé*, in 1744, confirms this truth: if, on the other hand, it is considered that the *Amirantes* are placed on the old charts about 2° more north than those which have been seen by M. du Roslan, it may be presumed that there is a similar difference respecting the *Sept Freres* and the *Trois Freres*.

“ As his orders pressed his return to the Isle of France, he could not run the same latitude more to the east, and accordingly took his course south-east by south, and south-south-east, in order to make *Diego Garcia*. On the 2d of March, he saw land at eleven P. M. at the distance of a league and an half; but without being able to find any soundings. Having manœuvred during the whole night to keep the land in sight, they neared it at break of day, and perceived three islands, each of them encompassed with a chain of rocks, which extend about a quarter of a league off the coast. They are very low, but covered with very lofty cocoa-trees, and other wood of inferior height. The two first are about a league and one-third in circumference. The third, which appeared to consist of several islets separated from each other, but connected, as it were, by breakers, was supposed to be about two leagues in length; nor is there any reason to conjecture that the channels of these isles admit of a passage.

“ As the sun was very near the zenith, M. du Roslan observed the meridian

altitude of several stars, and from the result of his observations he concluded, that the latitude of the northernmost isle was $5^{\circ} 59'$. The second, which is four leagues to the south-south-west of the first, is in $6^{\circ} 10'$; and the third, being about three leagues south by south-west of the second, is in $6^{\circ} 20'$. Two days after, having made *Diego Garcia*, whose longitude has been determined from the observations of M. l'Abbé Rochon, he inferred from thence that the longitude of these islands was $67^{\circ} 34'$. The number of them induced me to suspect that they are those which former navigators named the *Trois Freres*.

"To the north-north-east, 5° north of the island of *Diego Garcia*, and twelve leagues east-south-east of the islets discovered by the English vessel, which have been already mentioned, are the islets which M. Picault fell in with on the 16th of April, 1744, in his passage from the island *Rodriguez* to the *Isle Mabé*. The direction of his course leads to them; nor is it to be presumed that there has been any essential difference in this passage. On the preceding evening he found himself off a bank in $5^{\circ} 55'$ latitude, where the depth was unequal, from forty-five to eleven, nine, twenty-five, and forty fathom. From thence having taken his course to the north, he found himself in the midst of twenty-two islets, and passed through them in $5^{\circ} 30'$ latitude, to proceed to the west. From the examination that was made of the islets, they were found covered with cocoa-trees, and their elevation was from twelve to fifteen feet above the level of the sea. The largest of them was about half a league in length: some of them were very small, and entirely surrounded with reefs. All the charts, in their representation of this little Archipelago, coincide with the plan given of them by M. Picault, under the name of *Peros Banbos*; but it is placed there a degree too much to the south.

"The island of *Cbagas*, as well as the shoal waters which are in its environs, was seen in the year 1763, by the ship *Pitt*, in $7^{\circ} 15'$ latitude, and its longitude determined by an observation made by Mr. Stevens, of the mean distance of the sun and moon, in 71° of our longitude, or $73^{\circ} 25'$ east of Greenwich. He discovered also, eighteen leagues to the north-west of this island, in $6^{\circ} 40'$ latitude, five or six little islets, which had been seen in the latter end of December, 1756, by M. de Surville, who commanded the ship the *Duc d'Orleans*; and about twenty leagues to the east, he found himself on shoal water, such as the ship *Pitt* had seen, according to a draught of it which has been communicated to me, in seven fathom, and three leagues to the south-south-east in ten fathom.

"At forty-five leagues north by north-west of the island of *Chagas*, between $4^{\circ} 39'$ and 5° latitude, there is a bank that was discovered by the English ship the *Speaker*, of which a draught has been sent to me. The depths were there found to be very unequal, from twenty-two, to twenty, five, six, and eight fathom. This vessel having anchored to the south, the longitude was calculated by observation of the mean distance of the sun and moon, and found to be $73^{\circ} 2'$ east of Greenwich, which answers to $70^{\circ} 37'$ east of Paris.

"As to the *Isles Adu*, the most recent information with respect to them proceeds from M. Moreau, who fell in with them in the boat the *Favori*, in 1757. According to the latitude which he observed, these isles should be in 5° , but having remarked on his journal, by comparing the observations that he had made of the latitude of places well known, that the instrument which he employed gave them from $18'$ to $20'$ too much to the north; it would follow these isles must, in the same proportion, be too much to the south. And hence it is that M. le Chevalier Grenier, who followed in the King's corvettes the *L'Heure du Berger* and the *Verd Galant*, the parallel of 5° , did not perceive these isles, which are not discoverable but when you are close upon them. As to their longitude, I believe that it must be placed in $75^{\circ} 30'$, and not in 73° , according to the reckoning of M. Grenier; as in pricking the course of M. Moreau, he should have passed in sight of the island of *Chagar*, or over the shallows near it, though at the same time he had not seen it.

"The same day on which M. Moreau saw the *Isles Adu*, he discovered others to the south-south-east; which appear to be those that the ship *London* fell in with, in $5^{\circ} 39'$ latitude, and $5^{\circ} 20'$ to the west of the east part of the Isle of Ceylon, in $6^{\circ} 39'$ latitude. A draught of them has been transmitted to me, as well as of the bank which extends to the south of these isles, which I believe to be those of *Candu*.

"M. Moreau was anxious to make himself acquainted with the *Adu* isles, and accordingly sent a canoe, with an officer and eight men, to examine them; but he was compelled by the winds and currents to abandon his canoe and people, and pursue his course to India.

"In this situation, the officer and his men, after much difficulty and danger, landed on these islands on the 29th of March, 1757. They are about twelve in number, and surrounded with reefs. The deserted seamen, however, found where-withal to sustain them, by cocoa-nuts, which were in great abundance, and birds which they contrived to kill. They continued wandering about from one island to

the other, in search of food, and in a state of uncommon misery and distress ; nay, they were even on the point of losing their canoe, which was become their only resource.

“ After having sojourned on these islands till the winds set in which would take them to India, and having constructed a catamaran, to carry the provision of cocoas requisite for their sustenance, as well as made the necessary cordage from the filaments of the cocoa, they departed from the isles on the 22d of June, and took their course towards the coast of Malabar, without any guide but the sun and the stars, and their own maritime experience ; as during their abode on the islands they had lost their compass.

“ On the 24th, their catamaran overset, and they saw themselves reduced to the small provision of cocoa-nuts in the canoe, which lasted only till the 10th of July, when they were actually without food. From that period they every day suffered from the weakness incident to their situation, and the painful consequences of hunger and thirst. At length, however, a period was put to their sufferings, and they landed at *Cananore* ; from thence they proceeded to *Mabé*, and so on to Pondicherry.”

CHAPTER XIV.

The Course by the East of Madagascar, during the Period that the South-west Monsoon prevails in India, extracted from M. d'Après.

“If you should not choose to go to India by the channel of *Mozambique*, you may equally make your passage by the east of Madagascar. This track is better suited to ships which cannot reach the channel before the 15th of August, on account of the feeble winds, calms, and variable weather which prevail there in that season, instead of the fresh winds that never fail to blow to the eastward. In case you should want to put into any port for water and refreshments, which long voyages render sometimes indispensable, they may be easily procured at *Fort Dauphin*, at *Foul Pointe*, and other places on the east coast of Madagascar.

“To make this passage, after having doubled the Cape of Good Hope, and being secure of your point from the view of the cape, or the soundings of the bank *des Aiguilles*, you will continue to get to the east, on the parallel which I have mentioned, as far as 44° or 45° of longitude. From thence steering to the north-east, and afterwards to the north-north-east, (an allowance being made for the variation and the drift) you will proceed to join the parallel from 26° to 25° of latitude by 50° of longitude; and this precaution appears to me to be sufficient to prevent the errors of ordinary navigation.*

* “It were to be wished that those who have the command of vessels, or at least those who may contribute to the right direction of them, by their opinions, were qualified to determine the longitude at sea, by the distance of the moon from the sun or stars, which gives a sufficient approximation to perceive and avoid the errors of reckoning. The English Nautical Almanac, whose Ephemeris has given, since the year 1774, an extract of every thing that is most essential for these observations, abridges, in a great degree, the labour of calculation, as well as many other books, which have been published in England on this subject, and render this method intelligible to well informed pilots. A considerable part of the English navigators, as well as many in France, use them at this time with success; and nothing can contribute more to the safety of navigation, particularly when the place of destination is already determined with exactness. The course, then, that I

" In this state of uncertainty, you must take care not to reach, during the night, the latitude of $25^{\circ} 45'$, which is that of the south part of Madagascar : however that coast has no soundings off shore, but to the west of Cape Saint Mary.

" When it is designed to touch at Fort Dauphin, situated in $25^{\circ} 5'$ latitude, it will be proper to near the land in 24° , or at least in $24^{\circ} 30'$, in order not to miss it from the rapidity of the currents, which run towards the south, as much as $48'$, or sixteen leagues in twenty-four hours. To avoid therefore the effects of it, during the night, on approaching Fort Dauphin, if the weather should be sufficiently favourable, and there should be a sandy bottom, the best way would be to cast anchor ; but if the breeze is too strong, the ship must remain under sail.

" When you make the land in 24° , you will perceive a chain of very high mountains ; and in $24^{\circ} 15'$ to $18'$, you will see a mountain in the form of a sugar-loaf, blended with lesser ones on the sea side. Then sailing along the shore at the distance of a league and an half, you will perceive, across the isles *Saint Luce*, some small rocky banks off the shore, situate between $24^{\circ} 35'$ and $24^{\circ} 45'$; and continuing to range along the coast at the same distance, you will perceive a point to the south-west by west, which will appear at first to be insulated, and represents two mountains more flat than round. Several navigators have erroneously taken it for the point *d'Itapere* ; that which succeeds, with summits also more flat than round, is not that object, but the third that is afterwards seen, whose pointed summits serve as distinctive landmarks, is the point *d'Itapere*.

" On approaching the second point, and sailing along the coast at the distance of a league, I perceived some shoals, the most distant of which appeared to me to be three quarters of a league from the shore ; and to avoid them, it is necessary to keep at the distance of a league and an half.

" The rock *d'Itapere*, which is very discoverable by its breakers, is the most give, will be susceptible of modification, since it will be sufficient to keep yourself from twenty to twenty-five leagues to windward of the places where you may wish to land, to prevent the greatest error of that approximation, and not eighty leagues, as I propose in this example.

" The success of marine clocks, or time pieces, which on the frigate *la Flore*, commanded by M. de Verdun de la Crenne, Lieutenant in the Royal Navy, have never failed to give the longitude with a precision altogether astonishing, encourages the expectation that the longitude will at length be discovered, by this method, which is the most expeditious, since the error has never exceeded $20'$ in six weeks."

certain mark to distinguish the point, from which it is distant about a third part of a league to the south : there is no passage between them.

“ Two leagues to the west-south-west of this rock, is Fort Dauphin. The coast between the point *d'Itapere*, and that where the fort was placed, forms a cove, called *Tolongbare* by the natives, and Dauphin Cove by the French, who were formerly established there. The remains of their fort are still visible. It is in the small bay formed by the point, where the ships generally go.

“ After having ranged for a quarter of a league along the rock *d'Itapere*, you must steer towards the point of Fort Dauphin. This point is surrounded with a reef at a cable's length, and within it is the best anchorage. The point *d'Itapere* should remain to the east, 5° or 6° south of the compass ; the rock at east by south-east, and the extremity of the breakers, the nearest to the anchorage, south-east by east. The larboard anchor should be in the north-east in seven fathom, with a sandy bottom ; that of the starboard at east-south-east in six fathom, having from twenty, to twenty-eight feet water under the ship. Another anchor should be carried astern, to the north-west.

“ If there is not sufficient day-light to get into the road, you must first double the rock *d'Itapere*, and then anchor in the cove, if the weather will permit ; at the same time paying the necessary attention to the nature of the bottom, which is not every where the same.

“ Water may be found on the shore of the cove, by digging in the sand, which will be very good for cattle and culinary purposes ; but to obtain better, it must be fetched by the blacks in barrels, from more distant springs.

“ This country is under the government of several chiefs, of whom it is prudent to be aware ; it is necessary therefore to be vigilant, and to maintain good order. This precaution is not only necessary at Fort Dauphin, but also in every other place in Madagascar, where the voyager puts in for refreshment.

“ *Foul Pointe* being frequently preferred to Fort Dauphin, as it is more easy of approach, affords a better anchorage, and is inhabited by a better kind of people, it will be right, after having reached the parallel of 25° of latitude, without seeing land, or any of those indications which announce a proximity to it, to steer to the northward during the day, and north-north-east during the night, to $18^{\circ} 10'$ latitude, when it will be necessary to make the land, in order to reconnoitre the *Isle aux Prunes*. It is a small islet, situate in $18^{\circ} 7'$ of latitude, two leagues to the

north-north-east of *Tamatave*, and about two thirds of a league from the nearest part of the Madagascar shore. The trees with which it is covered are visible at the distance of five leagues.

“ Three leagues to the north-north-east of the *Isle aux Prunes*, breakers are visible which are occasioned by a bank of rocks. A league and an half further on the same line, there is a shoal, with three fathom water; and another at a league to the north-north-east of the latter, in four fathom water, on which I have struck. These dangers are but a league from the coast.

“ The land of Madagascar, from the *Isle aux Prunes* to *Foul Pointe*, is of a moderate height, very unequal, and covered with wood; it afterwards rises by small degrees, and in the interior part, double and triple high mountains are visible. The shore, which is of white sand, is bordered with a breaker at the distance of three cable's length. When the *Isle aux Prunes* is on the north-west point of the compass, at the distance of about two leagues, a small mountain is seen to the north, which approaches nearer than any other to the sea-shore, and forms two paps, which are called the Paps, or *Mamelles de Natte*, from a village of that name, where the natives sometimes hoist a white flag. Many vessels have taken this place for *Foul Pointe*, which is distant from it three leagues to the north. It is very easy, however, to avoid that error, on observing that, from the village of *Natte*, the *Isle aux Prunes* is always visible, whereas it ceases to be seen on approaching *Foul Pointe*.

“ When you lose sight of the *Isle aux Prunes*, and that it rests upon the compass at 30° south-west, then *Foul Pointe* is 15° to the north-east.

“ The cove of *Foul Pointe*, where the vessels anchor, is formed by a large reef, which begins at the third of a league below the village, and extends afterwards three quarters of a league to the north-north-east. You must approach it within a quarter of a league, and range along it, so as to double its northern point at a good cable's length. The breakers are very visible there, but they appear less at high water, and with a light breeze. From thence, keeping the wind, you will come to an anchor under shelter of the reef in six fathom, with a sandy bottom, mixed with mud. The northern point of the reef will remain to the east by north, and east-north-east; the southern point of the cove south by west, 5° west; the village to the south-west the third of a league.* The northernmost land towards

“ * By a course of observations of the sun and stars, I determined the latitude of the village of *Foul Pointe* to be in $17^{\circ} 41' 26''$. I also observed during the night from the 30th to the 31st

Manivoul to the north by north-east, at the distance of six or seven leagues. Ships moor there east-north-east, and west south-west; when it is necessary to remain there some time, it will be proper to heave out a third anchor, on the north-west side.

“ Within the reef of *Foul Pointe* there is a small cove, in which large ships may enter, the bottom being from six to seven fathom. The only difficulty is to stretch the cables in such a manner as not to rub against the rocks: to be there in perfect safety, iron chains are absolutely necessary, and the vessel must be secured with four hold-fasts, to prevent her from swinging.

“ It is an easy matter to traffic for all the necessities that may be wanting; at the same time the inhabitants are to be mistrusted. As the port is filled with banks, before you send the boat, it is proper to wait till high water. At all events, *Foul Pointe* should not be frequented but in the finer season of the year, as the reef is capable only of affording shelter in moderate weather. I pass on now to the description of the Island of *Sainte Marie* and *Antongil Bay*, where ships may also approach.

“ Thirteen leagues and an half to the north-north-east, 5° east of *Foul Pointe* road, is the south point of the isle of *Sainte Marie*, situate in $17^{\circ} 5'$ latitude. This island, which the natives of the country call *Nossi Hibrabim*, or *Isle d'Abraham*, extends north-east by north to $16^{\circ} 33'$, which is the situation of its northern point. The channel that divides it from Madagascar is a very fine one, and ships of any size may pass through it. Its narrowest part, which is about the middle of the island, is a league and two thirds from the point *de l'Arée* in Madagascar, and the southern point of the cove of *Lokinsin* on the isle *Sainte Marie*. From the point *de l'Arée*, there extends a bank to the east-north-east, about the third of a league in length, in from two to three fathom water. The point of *Lokinsin* is also surrounded by a reef, but in the midst of a channel, whose depth is from forty to forty-five fathom.

“ The southern point of *Sainte Marie* is formed by a flat islet, which is separated by a channel, about a stone's throw in breadth. This islet is surrounded by a reef, which extends near half a league to the south; and all the eastern part of *Sainte Marie* of July, 1757, an eclipse of the moon, which was equally observed at *Marseilles*, *Toulouse*, *Rouen*, and *Béziers*, of which I have received the correspondent observations; from whence I concluded that *Foul Pointe* was $3^h 9' 5''$ more to the east than Paris, and consequently in $47^{\circ} 16' 15''$ east longitude.”

Marie is equally inclosed in breakers. In many places off the southern coast, there is eighteen or twenty fathom water.

“ On the west side, at about two leagues from the southern point, there is a large cove, about a league in breadth, north-east and south-west, and at the extremity of it a small islet, named the *Isle aux Cailles*, under whose land small vessels may find shelter. We had formed a settlement there in 1750, which the character of the inhabitants, joined to the unwholesomeness of the climate, compelled us to abandon. In order to anchor in the cove, you must range along the southern side of *Sainte Marie*, in from eighteen to twenty fathom; and after having doubled a large rock which is at the south-west point, you will cast anchor to the north of the *Isle aux Cailles*, in from eighteen to twenty fathom water. In this position the *Pointe de l'Arée* appears to the north, at the distance of four leagues.

“ The Bay of *Antongil*, called by the natives *Mangbabei*, derives its former name from *Antonio Gillo*, a Portuguese Captain, who made the first discovery of it. It is thirteen or fourteen leagues in length, from north to south, and from seven to eight leagues in breadth, north-east by east 5° north, and south-west by west 5° south, between Cape *Bellonnes* and the Point *Baldriche*. In order to enter it, you may range along either side, according to the direction of the breeze. The depth of the water, as well as the quality of the bottom, are the same in three parts of the bay, when the depth diminishes to thirty, twenty-five, twenty, and fifteen fathom.

“ At the extremity of the bay there are several islets, the principal of which is called *Maros*, or *Marotte*, whose extent is not more than eight or nine hundred fathom, from north-east to south-west, and about a third of a league from the nearest part of the coast. It is in $15^{\circ} 25'$ latitude.

“ To the south of it are four others of smaller dimensions, the most distant of which is not more than two leagues from it. The common anchoring place is to the north of the islet *Maros*, at the distance of a gun-shot, and opposite two small coves formed by the sands, in from eleven to twelve fathom.

“ Water and wood are obtained with great ease, and the tents are certainly more secure there than on the main land, where the traffic is carried on for provisions. The river is to the north-north-west of the islet *Maros*. Large boats may enter there, and the sea rises five feet at the new and full moon.

“ In order to get to the north, on leaving the Bay of *Antongil*, you must range

along the eastern side, availing yourself at the same time of the breezes and ebb tides, and steering towards the Point *Baldriche*. To the south of that point there is a small islet named *Bebenter*, to the south of which those vessels come to an anchor which carry on the traffic of this place. The coast which extends two leagues to the east, is lined by a reef about two-thirds of a league from it, to another islet called *Mopatte*, from whence the coast runs four leagues to the north-east by north, and afterwards north-north-east from 3° to 4° north, as far as the East Cape, which is situate in $15^{\circ} 15'$ latitude. As it is also lined with reefs which advance, in many places, two-thirds of a league into the sea, it is necessary to keep at the distance of a league from it, in order to avoid all possible danger.

“ From the East Cape, the coast takes a western direction, and runs only to the north by north-west 3° west, to the Bay of *Vobemare*, situate in $13^{\circ} 26'$ latitude; from whence it continues to extend, in the same line, to Cape *d'Ambre*, which is the northernmost point of Madagascar, and is in $12^{\circ} 5'$ latitude.

“ The Bay of *Vobemare*, or *Boemaro*, so called from the Portuguese Captain who made the discovery of it, is nothing more than a cove, lined by a reef on which there are several islets. It is supposed that between this bay and the Cape *d'Ambre* there are other bays, but I have never been able to procure any description of them.

“ I must also observe, respecting the eastern coast of Madagascar, that Fort Dauphin is generally healthy, in all seasons; that from *Foul Pointe*, which is only so in the bad season, the country is unwholesome in proportion as it advances to the north; and to preserve the crew from the diseases which prevail there in the sickly season, after the end of November, care must be taken not to permit any one to sleep on shore, and that every one should return on board at the approach of night.

“ When ships going to India do not put into Madagascar, and only pass to the east, it is necessary to take a view of it to rectify their course. Thus, after having reached, as I have already said, the parallel of 25° of latitude, if, by making good the course to the north during the day, and the north-north-east during the night, you should get to 15° of latitude, without seeing Madagascar, which would be the effect of a difference to the east,* then you must steer to the west-north-west,

“ * I am sensible that these differences are rare, and that they are oftener found to the westward than the eastward. The example of the ship *La Paix*, in 1749, which made the land to the south

till you get a sight of it; and having neared the land at the distance of four leagues, you must stretch on till you see Cape *d'Ambre*.

“The currents at the opening of the cape, take their course with great rapidity towards the west, so that the ships which are bound to *Querimbe* or *Mozambique*, in passing to the north of Madagascar, must reckon on a difference towards the west, proportioned to the time employed in the passage. Many voyagers have found it twenty leagues in twenty-four hours. An inattention to this circumstance has indeed proved fatal to several vessels, who have run upon the coast of Africa during the night, when it was supposed that they were at a considerable distance from it.

“As to the vessels which proceed to India, after having made Cape *d'Ambre*, they must make good their course due north, and continue it till within 5° of latitude: they must afterwards proceed to the north-east, as far as the Equinoctial line, when the course must be regulated according to the principles laid down in the beginning of this instruction.”

of *Mozambique*, to the islet *Mafemale*, situate in $16^{\circ} 18'$ latitude, and $37^{\circ} 30'$ longitude, while its reckoning was in $46^{\circ} 30'$ longitude, is singular in its kind; and whatever might be the cause of such an error; when, by an examination, in the journal of this ship, of the variations which were daily observed, even at the land-fall, it must appear very extraordinary, that it had not been discovered long before, that it had not got sufficiently to the eastward; and that it was in the *Mozambique* channel, rather than to the east of Madagascar.”

CHAPTER XV.

The Course, on leaving the Isles of France and Bourbon to proceed to India, during the South-west Monsoon.—The Course, from the Cape of Good Hope to India, during the South-west Monsoon, passing to the East, and in Sight of the Island Rodriguez.—Voyage to India during the North-east Monsoon.

“AT the commencement of our navigation to India, the ships bound thither from the Isle of Bourbon, generally held the great course which passes to the east of the Isles, and avoided the dangers which are known to prevail in the Archipelago to the north-east of Madagascar. For that purpose it is necessary to leave the region of the general winds, in order to attain that of the variable ones, and to get afterwards to the east, so as to be able, with the general winds from the south-east to the east, to make the land of the Island of Ceylon. This course employs a very considerable portion of time, and generally occupies two months: some ships have indeed, though very seldom, made it in a shorter period.*

* “In the year 1719, the new East India Company having entrusted to my father, M. d'Après de Blangy, the command of the first ships which it sent to the Indies, with the title of Counsellor in the Superior Council, he fitted out at Havre the ship *le Solide*, on board of which I made my first voyage, in the quality of Honorary Ensign.

“We departed from the road of Havre on the 14th of December, and after having been obliged to put into Falmouth, on the English coast, from contrary winds, we continued our course. We crossed the Equinoctial line on the 18th of February, 1720, 19° to the west of the meridian of Paris; we doubled the Cape of Good Hope on the 17th of April, and on the 8th of May we arrived at the Isle of Bourbon. We remained there till the 29th of the same month, when we sailed from the road of St. Paul, with such a favourable wind, that on the following day we passed six leagues to the south of the Isle of France, which was then known by the name of Mauritius. From thence, having during several days fresh gales from the north-west, to the west and south, which, as is well known, are very uncommon in that season, we got, without passing the tropic, sufficiently to the east, to get up afterwards to the northward; so that in the morning of the 27th of June, we neared the south part of the Island of Ceylon, six or seven leagues to the west of the great shoal. On the 1st of July, in the evening, we moored opposite *Gondelour*, and on the following day in the road of Pondicherry, after a passage of thirty days from the Isle of Bourbon. I do not know any example of so short a passage by the general course.”

" The ships the *Lys* and the *Union*, commanded by M. M. de Boisriou and Baudran, in 1723, were the first who attempted a new course, on the report of some pirates who, having fled to, and being established under a general pardon at the Isle of Bourbon, offered to conduct them. One of them, whose name was Walkin, was chosen on this occasion.

" These two ships set sail from St. Paul, in the Isle of Bourbon, on the 22d of August, and at six P. M. were from fourteen to fifteen leagues to the south-east by south of the middle of the island. On the 27th they made Madagascar, in 13° of latitude, and discovered that the north part of that island was marked on the chart of *Pietergoos* sixty leagues too much to the east. From this view, they first made good their course to the north, and afterwards to the north-north-east. They passed the Equinoctial line on the 4th of September, in 49° of east longitude, without seeing *Jean de Nove*, or any of the *Amirantes*, which they ought to have fallen in with, according to the ancient charts. On the 20th of the same month they made the coast of Malabar. At length, on the 6th of October, these ships arrived at Pondicherry.

" From that time this track has been followed by all our ships. It is nevertheless to be remarked, that those, who have taken their point of departure too much to the south, where the coast of Madagascar projects towards the east, as well as those who took their course north by east, have either fallen in with the Twelve Islands, or the *Isle Saint Pierre*. It appears therefore that the northern track is indispensable.

" Although this track has always succeeded, as it requires a circuit of 8° west longitude on quitting the Isle of France to go to Madagascar, and of 8° to the east to regain the meridian of the place of departure, a more direct track would be preferable; and it would accordingly be better to cross this Archipelago from north to south, as it can be done without augmenting the risk of the passage. This was proposed by M. le Chevalier Grenier, who himself found it successful, as well as many other ships: and if to this course is added that of Admiral Boscawen, as well as that which I held on board the ship the *Montaran*, which take much more towards the east, it will appear, that this Archipelago is by no means such as it has been represented on the old charts. If there are the same number of islands, and the dangers are equal, their position, as well as their dimensions are very different. The very correct accounts which have, within these few years, been communicated by the voyages of M. le Chevalier Grenier, of M. du Roslan, and M. de Kerguelen, who were expressly

employed to verify the possibility of this course, have afforded sufficient directions to navigate it in future with a greater degree of security. *

" It might be added, that on leaving the Isle of France, you will pass to the west of the Banks of Nazareth, if you make good a north course, without getting to the east, till within $10^{\circ} 30'$ latitude, when you will make the Isle *Agalega*. On taking a departure from the Isle of Bourbon, you should make good your course north by north-east.

" The Isle, or rather the Isles *Agalega*, as there are two, south-east and north-west from each other, and joined by a bank of sand or a reef, are situate in $10^{\circ} 25'$, or $10^{\circ} 30'$ latitude, and in $54^{\circ} 15'$ longitude. They are low, but covered with wood; so that they may be easily distinguished at the distance of five leagues. The northernmost, which is the largest, may be about a league and an half in length from north to south, and its shore appears to be sand. The ancient charts, which mark these isles a degree of latitude too far north, represent them as being placed on a reef; but our ships not having approached them but at the distance of three leagues on the west side, the extent of the reef could not be determined, nor whether the islands are accessible.

" After making the heights of the Isles of *Agalega*, the course must be made good to the north by north-east till within 5° of latitude. In proceeding to the north, there are tide-ways which run with great violence, and apparently towards the west-north-west. It may be conjectured that they are the waters which pass off from between the Banks of Nazareth and that of *Saya de Maiba*, which set to the westward; differences also are sometimes found on that side.

" The Choiseul frigate, commanded by M. le Floch de la Carriere, on losing sight of *Agalega*, having made good her course north by north-east 2° east, struck soundings on the south-east side of the Isles of *Mabé*, in $5^{\circ} 49'$ latitude: but as this bank does not contain any shoal in this part, if a bottom should be found there, it would be sufficient to steer east-north-east, in order to quit it. The only danger that may be encountered, on taking the course to the north-north-east, is the Bank *de la Fortune*, on which M. de Kerguelen moored, and where he thought he

* To these authorities should be added that of M. de Coetivy, Ensign in the King's fleet, and Commander of the ship the *Isle de France*, who was supported in a superior manner by M. d'Hercé, in his passage from the *Isle de France* to the *Manillas*; since, though he left the *Isle de France* in the month of June (1771), he stood almost due north to the heights of the *Isle of Mabé*.

saw the sea break; but though its extent is not clearly determined, as its latitude on the southernmost side is known to be $7^{\circ} 30''$, it will be proper, in order to avoid all danger, to pass it only in the day.

“When you have gained 5° of latitude, you will take your course to the north-east, towards the Equinoctial line; and afterwards to the points of the wind, which will suit the place of your destination.

Course from the Cape of Good Hope to India, &c.

“In the instructions how to proceed from the Cape of Good Hope, or from the soundings of the Bank *des Aiguilles*, to the Isle of France, I have advised to get to the eastward on the parallel between 33° and 36° of latitude, till by 55° of longitude, and not to gain the latitude of 27° , but under the meridian of the Isle *Rodriguez*, in order to prevent any great errors in the reckoning: but as in the present case the object is to make the latter, it is necessary to take precautions relative to its situation, in getting more to the east, and proceeding afterwards so as to get, according to the reckoning, eighty leagues to windward of that island.

“As a sight of *Rodriguez* is essential to the course that is here proposed, when you are at its height, and certain, from the variation, that you are to the east of it, you will steer to the west, in order to make it.

“On being five or six leagues to the east of this island, you will make good your course north by north-east, in order to pass to the east of *Corgados Garayos*, the shoal *Saint Brandon*, and the Bank of *Saya de Malba*. This course may then be continued to the Equinoctial line, and from thence, ordered in such a manner as the final destination of the voyage may require.

“In making this course, it is necessary to attend with great vigilance to the approach of the latitude of the islands, and the dangers that may be encountered, as, during the season of the south-east winds to the south of the line, the currents run towards the west, and frequently to the north-west. The island known in these seas is that of *Roquepiz*, situate in $10^{\circ} 30'$ latitude; and the only memoir respecting it, is the account which John Davis has given of it, in the journal of James Lancaster, who commanded four English ships, in 1601. He says, that having left the Bay of *Autongil*, on the 6th of March, and traversing this Archipelago, he found himself on the 16th, in sight of the island of *Roquepiz*, of whose beauty and appearance he gives an animated description. The boats which were sent to discover an anchorage

near this island, found the depths so great, that the ships did not attempt to come to an anchor off it.

“ The Portuguese charts of Aleixo da Mota, mention another island of the same name, situate in 6° of latitude. He says that he saw it : that it is small, low, and covered with wood ; and that six leagues to the south-west there are three little islets, very flat, with a few trees on them, which lay from east to west. If the error in the latitude of these islets is the same as in those which we have seen, they would be 1° more southward. It is necessary, therefore, that those who may pass these seas, should take care not to fall in with them during the night.

“ I shall observe in general, that in traversing this Archipelago, particular attention should be given, both in the morning and evening, to the flight of certain birds, which roost on the land, and who seldom fly far from it ; as the *goillettes grises* and *blanches*, the *poules mauves*, the *foux*, and the *paille en cul*, which are found there in great numbers. They are seen in the morning coming from the land, and in the evening returning to it : so that the direction of their flight indicates, in a great measure, its situation.

“ The Portuguese have always paid great attention, as well to the flight of birds, as their kind, and even to the quality of the sea-weed, in order to determine the seas where they happened to be. Their charts are full of dissertations and remarks on those particulars ; which, however, have not appeared sufficiently important to enter into a detail of them.

“ The course which I have just considered and explained, appears to me to be preferable to the general track ; because, in the first place, it does not require the ships to get two hundred and thirty leagues more to the east, in seas where the violence and variety of the winds, and the agitation of the waters, expose them to frequent accidents ; and secondly, by getting up to the northward, the land-fall of the Isle of *Rodriguez* is a point of comparison correctly determined, which regulates the remaining part of the passage : whereas in the general track, there is no point to which the navigator can refer, and in which it has happened to many ships in this season to get among the Maldivé Islands, or to the west of Ceylon, while they ought, on the contrary, to make the southern part of that island, when the south-west monsoon prevails in the Indian seas.

Voyage to India during the North-east Monsoon.

“ Having considered the different courses that may be taken, while the south-west monsoon prevails in the Indian sea, it remains for me to point out those which should be preferred, when the north-east monsoon has succeeded to it, to get either to the Malabar coast, or that of Coromandel.

“ On leaving the Cape of Good Hope, the general course, which I have described in the preceding article, must be kept as far as the tropic of Capricorn, from whence the course must be made good, north by north-east, in order to pass the Equinoctial line in 85° longitude. From this position, if the winds should be north-east, you will be sufficiently to the windward to make the Isle of Ceylon; and stretching along this island towards the west, you will arrive at the place of your destination, whether it be to the coast of Malabar, Goa, Bombay, or Surat; according to the instruction which will be found in my Charts of India.

“ If the season should be more advanced, so that the west winds blow to the south of the Equinoctial line about two hundred leagues to the east of *Rodriguez*, it will be sufficient to steer north-east by north; so that with the westerly winds, which always blow in 8° or 9° of latitude, the course may be so held as to cross the line as much to the east as may be necessary.

“ Ships bound to the coast of Coromandel, which may be neared after the 25th of December, must pass the line in 90° or 92° of longitude, to be able afterwards, with the north-east winds which prevail on the northern coast, to hold a course, so as to fall in with the wind of the place to which they are destined.

“ When ships leave the Isles of France and Bourbon, to proceed to the Indies in the latter season, that is, from the month of November to that of April, they generally take the common course; and for that purpose stretch away, with the assistance of the general winds, to the south, in order to gain the variable winds, with which they get sufficiently to the east; so as by getting up towards the north, to pass the Equinoctial enough to the east to reach the places of their destination.

“ Such is the course which voyagers have hitherto pursued, without reflecting, probably, that the west winds which blow in the same season to the south of the Equator, would procure the means of shortening it from at least seven to eight hundred leagues. Perhaps, the sight of the isles, which the old charts suppose to be to the south of the Maldivé Islands, might induce navigators to apprehend they should

meet with difficulties and dangers in crossing them; but whatever their reasons may have been, though a regular examination would have been sufficient to overturn them, they did not prevent M. le Chevalier Grenier from rendering this important service to navigation. He proposed this course, and executed it with success, in the King's frigate la Belle Poule. Having got into 89° of longitude, he passed the line on the twenty-eighth day of his departure.

"The ship le Castries, commanded by M. de Winslow, which left the Isle of France in December, did not occupy more than twenty-seven days in getting within sight of Ceylon. The ship the Bien-venu, Captain M. Violette, followed the same track, while another vessel, which took the general course, in the shortest way, employed two months in going to Pondicherry. These examples evidently prove that the new track ought to be preferred.

"For this purpose it is necessary, on taking departure from the Isle of France in the months of November, December, January, February, and even in the beginning of March, to follow the track which I have marked out for the south-west monsoon, as far as 5° of latitude; to follow towards the east, the parallel between 4° and $4^{\circ} 40'$ latitude; and to get up sufficiently to the east, in order to cross the Equinoctial line, conformably to the final object of the voyage.

"The same course may be adopted in going from the Cape of Good Hope, when the season does not allow of reaching India but during the north-east monsoon, when you must make the Isle *Rodriguez*; from whence you will steer your course north by north-east, as far as the parallel between 4° and $4^{\circ} 40'$, which must be continued to the east, as I have already observed.

"Though I am persuaded that there is no danger between the parallel of 4° and that of 3° , nevertheless, till my opinion is confirmed by actual experience, I shall not be peremptory in recommending voyagers to frequent it. Whenever an island is perceived, it should not be considered as attended with danger, if the latitude of its situation is known; and if the longitude of it be determined, it becomes even a necessary point of direction.

"I believe that it would be well, in following this course, not to approach the line in less than 2° of latitude, to avoid the changes, storms, and calms, which must be occasioned by the different directions of the winds."

CHAPTER XVI.

Extract from the Registers of the Royal Academy of Marine, March 9, 1775.—On the Archipelago to the North and North-east of Madagascar.—Observations on the Chart of the Isles and the Dangers connected with them, to the North-east of Madagascar, between the fourth and eighth Degree of South Latitude, and the sixty-eighth and seventy-fifth of East Longitude. The two last Articles extracted from the Supplement of M. d'Après.

“M. D'APRÈS has divided his work into several Sections: the treatise on the Currents accompanies that of the Winds. After having acknowledged that the direction of the currents depends, in some measure, on the impulse of the winds, and consequently changes with the monsoon, M. d'Après remarks that their force is more perceivable in the vicinity of land, and that their direction is almost always subordinate to the position of the coasts, capes, and islands which they encounter. Hence he is led to describe what is most deserving of notice on this subject; and speaks of the monsoons and currents on the coast of Africa, Arabia, Persia, Hindostan, the Laquedive Isles, the Gulf of Manar, and the Island of Ceylon. He remarks, that the currents set into the Red Sea whenever they run out of the Gulf of Persia; and that, on the contrary, they set into the Gulf of Persia whenever they run out of the Red Sea.

“M. d'Après enters into a still more particular detail of what relates to the coast of Coromandel, and other places in the Gulf of Bengal; and has written some remarks on the navigation of this gulf, which are well worthy of attention: from thence he passes to the Gulf of Siam, the seas and coasts of China, and the Bornean, Phillipine, and Molucca Islands; when he points out the currents, monsoons, and some phenomena connected with them.

“This treatise on the winds which prevail in the Eastern Seas, is terminated by the signs of sea and land breezes, that are generally found near the coasts of which he has spoken, when the monsoon is towards its conclusion; and continue till the opposite monsoon succeeds, and has acquired sufficient strength to overcome them, and maintain its regular point.

“ There is also a memoir on the Archipelago of Isles, and their concomitant dangers, which extend along the north and north-east side of Madagascar. The remarks of M. d'Après on the position of the Isles of France and Bourbon, with respect to India, and the frequent necessity of dispatch in the communication between them, seemed to determine the advantage that would be derived from a knowledge of this Archipelago; nevertheless, no attempt was made to obtain it till the year 1742, by M. Mahé de la Bourdonnais, Governor of the Isles of France and Bourbon; but he was interrupted in his scheme by the war of 1744, and his recall to France put an end to every thing which he had projected to forward that useful and important object.

“ The danger of passing through this Archipelago to get to India was so generally believed, that the apprehensions of ordinary navigators on that subject were not removed even by the example which Admiral Boscawen gave in 1748, when he got, by this course, in a very short time from the heights of the Isle of France to India, with a fleet of twenty-six ships. M. d'Après, however, renewed the track of the British commander in 1754, on board the *Montaran*; and in 1758, the snow *Rubis* also crossed this Archipelago, and followed the new course, which shortened the voyage upwards of three hundred leagues.

“ The success of these attempts, which was surely a sufficient authority for adopting them, did not produce any immediate change in the general voyage to India; and the ships from Europe continued the same course as had been followed since the year 1722.

“ At length, in the year 1767, the Chevalier Grenier, who commanded the corvette *l'Heure du Berger*, being protected by the Minister, and assisted by the Chevalier des Roches, formed the project of making such discoveries in these seas, as to render them better known for the several purposes of navigation.

“ The Chevalier Grenier associated with him the Abbé Rochon, to superintend the astronomical observations; and his voyage, which was crowned with success, has supplied a great deal of useful intelligence, which forms a part of the memoir of M. d'Après. After him M. du Roslan continued these discoveries, and fulfilled his object with great attention and correctness. His observations and remarks are also inserted in the same memoir; and his information respecting the Archipelago of Madagascar is so well established, as to leave no doubt of the advantage of that course to India.

“ M. d'Après proceeds to describe the course from the Isles of France and Bourbon

to India, during the south-west monsoon. He mentions, that at the commencement of the trade between France and the East Indies, the ships employed in it always took what has since been called the grand track : by which is understood, that they began to stand to the south, to get from the region of the general winds, into that of the variable ones, with which they would get sufficiently to the east, so as to be able, by stretching to the north, and re-entering the region of the general winds at south-east by east, to make the land of the Island of Ceylon.

" It was in 1723, that the ships the *Lys* and the *Union* attempted a new course, on the report of certain freebooters, who, having received a pardon, were established in the Isle of Bourbon. These two ships left St. Paul on the 22d of August ; on the 27th made Madagascar, in 13° of latitude ; crossed the line on the 4th of September, in 49° of longitude ; fell in with the coast of Malabar on the 20th of the same month ; and, on the 6th of October, arrived at Pondicherry. This was no inconsiderable advantage, since the passage by the great track generally occupied two months. This course, therefore, has since been generally followed.

" M. d'Après, nevertheless, remarks, that this new course requires a circuit of 8° of longitude towards the west, in order to near the Isle of Madagascar, and consequently eight other degrees towards the east, to regain the meridian of the place of departure. It would therefore be much more advantageous to follow the more direct course, which has been already mentioned, by passing the Archipelago of Madagascar. It is the same which M. le Chevalier Grenier, Lieutenant in the Royal Navy, had proposed ; and M. d'Après does not hesitate to declare, that the correct accounts which have, during some years past, been obtained by the voyages of M. Grenier, as well as of M. M. du Roslan and de Kerguelen, who were also officers of marine, and expressly sent to verify the possibility of this course, form a body of instructions for the secure navigation of it.

" It is from their observations, that he has marked out the course which vessels may follow, in setting sail from the Isles of France or Bourbon, they must pass, first to the west of the Banks of Nazareth, and afterwards make the Isle of *Agalega* ; from thence they should steer north by north-east, as far as 5° of south latitude, and afterwards stretch to the north-east, in order to cross the line, and then choose the course which suits the final object of the voyage.

" M. d'Après does not forget to mention a bank discovered by M. de Kerguelen, which may be encountered in this track ; nor ought we to withhold our applause

for his suggestions respecting the necessity of avoiding this bank, and the precaution he recommends of not getting into its latitude during the night, at least till its extent is known, and its position more correctly determined.

“ In the last place, M. d'Après speaks of the voyage to India during the north-east monsoon; and this important article merits the utmost attention of navigators; particularly respecting a course which he explains, and by which seven or eight hundred leagues will be saved. For this abbreviated course, navigation is indebted to M. Grenier, who proposed and executed it in the King's frigate, *la Belle Poule*. Having got up to the east, as far as the eighty-ninth degree of longitude, he crossed the line the twenty-eighth day after his departure from the Isle of France. The ship the *Castries*, commanded by M. Winslow, which quitted the Isle of France in December, got in sight of Ceylon on the twenty-seventh day from its departure; and the ship the *Bien-venu*, commanded by M. Violette, followed the same track.

“ M. d'Après, who suffered no opportunity to pass of adding to the utility of his work, has concluded his instructions, of which we have given some account, with the translation of a memoir of Mr. Dalrymple, upon a Chart of the Chinese seas, which makes a part of the *Oriental Neptune*. The perusal of this memoir will inspire a confidence in the Chart. And we take this opportunity of observing, that all those who form charts, or correct them, will deceive themselves if they suppose, that judicious and experienced voyagers will have any confidence in them, if they are not supported, justified, and confirmed by concomitant memoirs.

On the Archipelago to the North, and North-east of Madagascar.

“ I have suppressed in the corrected Chart, the two banks of Nazareth, which do not exist, according to the tracks of several ships who have endeavoured to discover them. The only bank they met with, is that which runs along to the north of the Isles of *Corgados Garayos*, and extends to the north, without presenting any danger, to $13^{\circ} 38'$ latitude. According to the journal of M. Daniel Savari, second in command of the private ship the *Esperance*, in returning from the Isle *Zanzibar* to the Isle of France, in 1775, they sounded the bank of *Saya de Malba*, in the latitude of $9^{\circ} 26'$, and passed along it going to the southward till they arrived in $11^{\circ} 34'$ latitude, where no bottom could be found; and, continuing the same course, they did not come to soundings on the bank, which runs along to the north of *Corgados Garayos*, till they got into $13^{\circ} 38'$.

" M. Renault, captain of the *Etoile*, also fell in with this same bank of *Saya de Malba*, in 1775, and, after having lost its soundings, made the Isles of *Corgados Garayos*. These authorities seemed to justify me in marking on my chart the soundings of these banks, of whose form I am altogether ignorant, as well as their extent from east to west, which I have given conformably to the old charts.

" I have traced the Isle of *Jean de Nove*, according to the plan which has been laid down by M. Margaro, who commanded the brig the *Etoile*, in 1776. This navigator, on leaving *Jean de Nove*, fell in with the Isle *de la Providence*; and on losing sight of that island, he fell in with the Isle *Alphonso*, to the south-west of which, at the distance of five leagues, there are two islets, surrounded with a reef, stretching from east to west.

" M. Chotard, an officer on board the ship *Pondicherry*, says in his journal, that, in his voyage to India, they fell in with a small island, which he believes to be the Isle *Sainte Pierre*, in $9^{\circ} 25'$ latitude; and about eight leagues to the east-north-east, they saw another island. He passed along the middle of the channel between these two islands, without finding any bottom.

On the Chart of the Islands and Dangers situate to the North-east of Madagascar, between the fourth and eighth Degrees of South Latitude, and the sixty-eighth and seventy-fifth of East Longitude.

" From the examination which I have made of the course of several ships, and the journals that have been sent to me, since I have published my *Neptune*, I have discovered that the Islands of *Chagas*, and *Diego Garcia* are one and the same, and that the error proceeded from the observation which had been made there in 1769, compared with that which had been made on board the ship the *Pitt*, in 1763, I have thought it necessary, therefore, to lay down a new chart of the islands, and dangers, which make a part of the Archipelago to the north-east of Madagascar.

" For the construction of this Chart, I have availed myself of the position of six islands, whose longitude has been determined by the eclipse of the moon, which was observed on board the ship *Egmont*, the 22d of November, 1760, being about ten leagues to the west of the meridian of these isles: a correspondent observation was made at Paris; according to which, these isles are in $69^{\circ} 7' 30''$ east longitude. Their latitude is in $6^{\circ} 34'$ south. On board the same vessel, several other isles

were seen at sunset, to the north-east, which other vessels have fallen in with, and in this chart are named the *Trois Freres*.

“ In 1771, the corvettes, l'Heure du Berger and l'Etoile du Matin, fell in with six isles, as well as a part of the *Trois Freres*: the course that was taken when they lost sight of them, to the Isle of *Diego Garcia*, determines the position of the latter, which is confirmed by the almost direct track of the Bouffonne, in 1777. This corvette being off the southern point of the southernmost of the *Trois Freres*, the latitude was observed to be in $6^{\circ} 19'$ south. Having continued its course to the south-south-east five leagues and an half, it neared the Six Islands in the latitude of $6^{\circ} 34'$ south, and proceeding in the same track till $7^{\circ} 20'$ south latitude, it stood to the east six or seven leagues. Land was then visible at about seven leagues distance; and at noon they surveyed the southern point of *Diego Garcia* to the east, and the point to the north-north-east by north, 3° east, at the distance of about five leagues. They then steered to the north, and north by north-east, to get to the north of the Isle, and to enter the bay where they came to an anchor.

“ In 1775, the ship the Calcutta, after having found a bottom, fell in with the *Trois Freres*, in the same latitude as the preceding ships. The longitude, on getting sight of these islands, by an observation made from the distance of the sun and moon, differs $33'$ to the west, from that determined by the eclipse of the moon on the 22d of November, 1760.

“ In 1747, the ship the Kerkuyk saw the same islands.

“ It appears by the latitude that was observed on board the Grantham, in 1728, that the islands which were surveyed to the west, and south-west, are the *Trois Freres*, and that standing to the north, they fell in with shoal water, in $5^{\circ} 48'$ south.

“ The Six Islands were also seen by the ships l'Aigle and Duc d'Orleans, in 1757. By the description given in the journal of the last ship, it cannot be doubted that they are the same which were fallen in with by the ships l'Egmont, l'Heure du Berger, l'Etoile du Matin, and la Bouffonne.

“ In 1763, the ship Pitt fell in with the Six Islands, and *Diego Garcia*, or *Cbagas*. Though the longitude of this island on the chart, is not the same as that which is given to it by the observation made of the distance of the sun and moon on board this ship, the difference is no more than $46'$ west. The difference which results from the observation made in 1769 by l'Heure du Berger, is more considerable, being

1° 50' east. The longitude which has been assigned in this chart to *Diego Garcia*, appears to be the most probable. For, first, it has been determined by an almost direct course of two ships, from the Six Islands, to this island. Secondly, in 1749, the ship the Griffin, having fallen in with *Diego Garcia*, steered to the north; when several islands, which will be described hereafter, were seen to the west, in the latitude of 5° 15' south; and continuing its course to the northward, soundings were struck on the bank called the *Speaker*. Now, according to the construction of this chart, the *Speaker* bank was found in 70° 25' longitude south of Paris; and the observation of the distance of the sun and moon, made on board this ship, places the *Speaker* bank in 70° 37' longitude, in the same meridian. The difference of 12', which results from this construction, is too inconsiderable to leave any doubt as to the position that has been given, as well to the Six Islands, and *Diego Garcia*, as to the *Speaker* bank.

"In 1775, the schooner the Cheval Marin, after having taken soundings on the *Speaker* bank, fell in with the same islands which the ship the Griffin found to the south-west of the *Speaker* bank. Its course was continued to the south, with the hope of falling in with *Chagas*, but without success. It is to be presumed, therefore, that when they were in its latitude, they had got more to the west than they had reckoned, which accounts for their not having seen it. They then steered their course to the west, in order to find *Diego Garcia*; and they run eighty leagues on this parallel without falling in with any land; which evidently proves that *Diego Garcia*, and *Chagas*, are but one and the same island. Having missed *Chagas*, they would have found *Diego Garcia*, if there had been two islands on this parallel.

"In 1776, the ship Salomon, steering to the east in 5° 6' south latitude, fell in with the Isles *Bourde* and *Salomon*, so called from the names of the ship, and the Captain, who took the bearings of it. Having made twelve leagues to the east-north-east, from the point where the bearings were taken, he found himself on the southern edge of the *Speaker* bank, in 4° 55' south latitude, from whence he continued his course to the east, without seeing any land. These islands, which the ship Salomon found in 5° 6' latitude, are the same which were seen to the south-west of the *Speaker* bank, by the Griffin, and the Cheval Marin.

"The *Peros Banbos* Islands are placed in this chart conformably to the track of the Elizabeth, in 1744, and in the longitude that was taken on getting sight of

these islands, which may be a continuation of the little Archipelago of the Islands *Bourde* and *Salomon*.

"The latitude observed on descrying these islands, which the ship the Admiral Pocock fell in with in these seas in 1763, and the details found in its journals, induce us to presume that they are the *Peros Banbos* Isles, which had been already seen.

"The same opinion may be entertained respecting the island which was perceived by the ship Cornish, in 1762, and was probably the southernmost of these islands.

"The corvettes l'Heure du Berger and the Verd Galant, in 1769, and the ship Pelham, in 1745, fell in also with *Diego Garcia*; but their tracks do not in any degree determine the position of that Island.

"In 1757, the bott* le Favori saw the *Adu* islands to the north-north-west, and soon after the *Candu* Isles, to the south-south-east. The Captain being desirous of examining the former, dispatched a canoe, with an officer and eight men for that purpose; but the winds and currents compelled him to abandon them, and to continue his course to India.

"The officer and his party landed on the islands, and remained there three months, during which time they were occupied in contriving the means of extricating themselves from their distressed situation. In the account which he gives of his abode on these islands, he observes that they are twelve in number, enclosed with reefs, and about six or seven leagues in circumference; and that in the middle of them there is a bank of a square form, whose circuit is about half a league.

"The ship the London, in the year 1741, fell in also with the *Candu* islands, in $74^{\circ} 10'$ longitude east of Paris. It is in this longitude that they are placed on this Chart. They may be more to the east, but they certainly cannot be more to the west; for if that were so, the Favori would have fallen in either with the Six Islands, the shoal of *Cbagas*, or *Diego Garcia*.

"The tracks of the ships the Stringers, in 1712, and the Terrible, afford but very uncertain conjectures."

* A Dutch-built vessel so called.

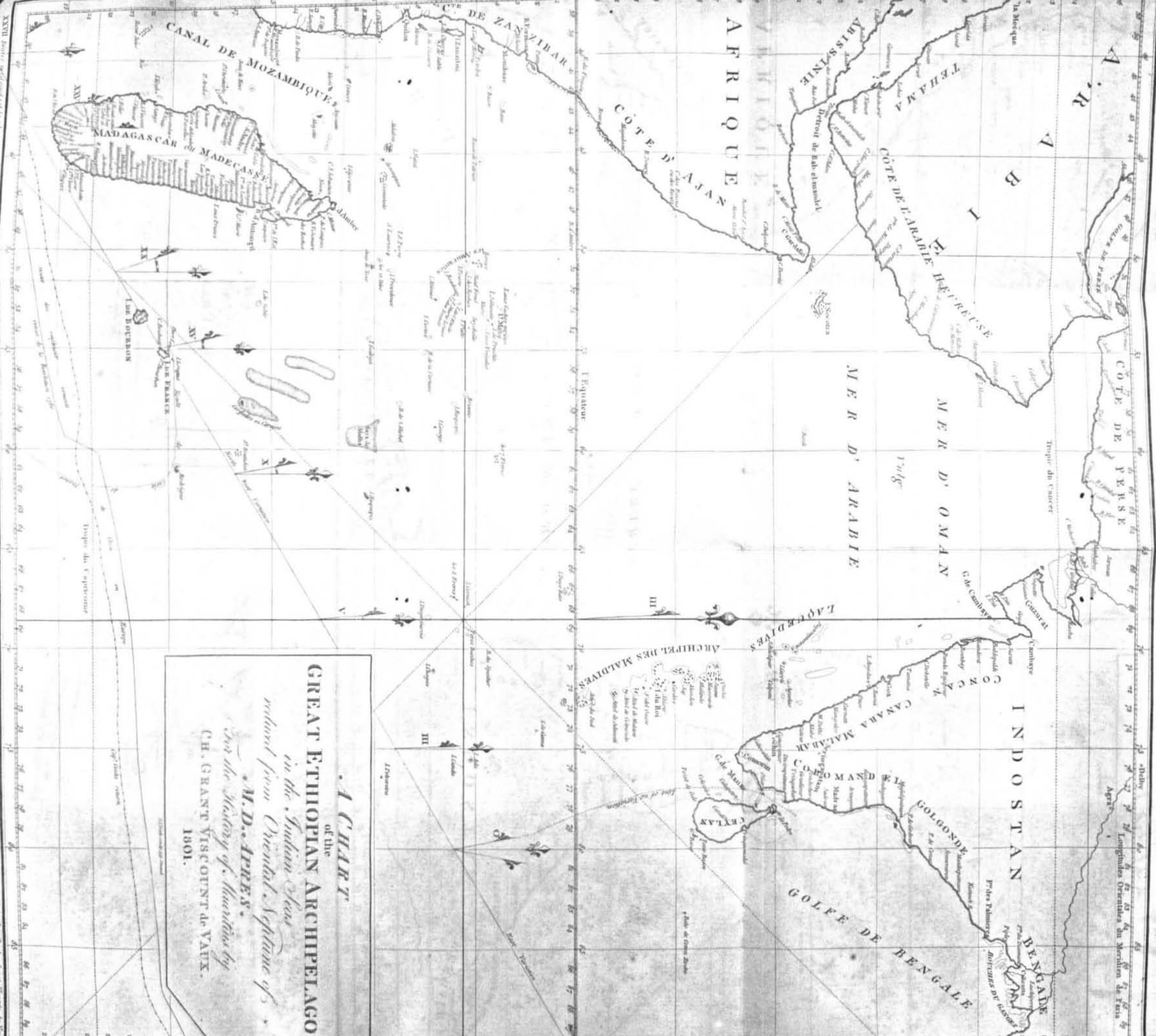


CHART
of the
GREAT ETHIOPIAN ARCHIPELAGO
in the Indian Ocean
reduced from *Ordnance Survey*
M.D. APPES.
for the *History of Mauritius* by
CH. GRANT VISCOUNT DE VAUX.
1801.

Published according to an Act of Parliament, January 27, 1801, by Charles Grant, Secretary to the Admiralty.

INTRODUCTION

To the following Chart of the Ethiopian Sea.

As it is necessary, for the better understanding of the extracts I have given, to annex a Chart of that part of the Indian Ocean, which it has been my object to illustrate, I have selected, by preference, that of M. d'Après, on whose information I have principally depended for the Maritime part of this Work, and the Charts of the Isle of France. The Astronomical and Maritime Observations of the two celebrated French Academicians, M. l'Abbé de la Caille, and M. Le Gentil, which I add, with those of the Abbé Rochon, will still further illustrate those of M. d'Après, if recourse is also had to the learned Memoirs and Charts of Mr. Dalrymple, and Major Rennell.

As I am not a navigator, and as my work is not designed particularly to be a guide to pilots, history being its principal object, I do not consider myself as answerable for any errors that may be found in the Memoirs of the great men I have cited; if we can call *error*, what is merely want of more information, or of a complete knowledge of all the points and rocks dispersed on the surface of the universe. Such advantages can only be obtained by length of time, and by the indefatigable and successive exertions of such men, encouraged by their governments.

The following paragraph, taken from the introduction to the memoirs of Mr. Dalrymple, will, I hope, enforce and explain this observation.

"I find many people, from inaccuracy of expression, too frequently call the charts and plans published by me, MY CHARTS:—to prevent the injustice which would arise from such a conclusion, upon a comparison of the various plates where the names of latitudes are discordant, it cannot be too strongly enforced, that such latitudes and names, are *not* what I have assigned, or supposed the *true*; but what are in the *originals*, for which I am in no degree responsible, and they must entirely rest on the authority of the author."

It will be perceived, among other corrections, that the Isle of *Roquepic*, mentioned in this Chart, as being situate in 10° 30' latitude, &c. according to the account of Davis, in Lancaster's Journal, is totally effaced from the modern charts; and

that the Isle of *Cbagas*, represented as being in $7^{\circ} 15'$ latitude, is now considered as one and the same with that of *Diego Garcia*, &c. &c.

It is very much to be wished that Mr. Dalrymple would give his latest Charts to the world. In the mean time, however, we learn with pleasure, that Mr. Arrowsmith is about to publish, upon a large scale, a general Chart of the Indian Ocean, according to the recent discoveries, and corrections, of the most distinguished navigators.

VAUX.

CHAPTER XVII.

Life of M. d'Après de Mannevillette, Knight of the Order of the King, Correspondent of the Royal Academy of Sciences, and Associate of the Royal Marine Academy.

“JOHN Baptiste Nicolas Denis d'Après de Mannevillette, was born at Havre de Grace, on the 11th of February, 1707: his father was John Baptiste Claude d'Après, Esquire and Lord of the Manor of Blangy, Captain of a ship in the service of the East India Company: his mother was Mademoiselle Francoise Marion.

“M. d'Après de Blangy did not confide to a stranger, the important care of forming the mind of his son to science, and his heart to virtue: he was himself the preceptor of his child; and he fulfilled that office which affords the most sensible delight to a parent, as it is the most sacred of his duties.

“The young d'Après manifested, in his earliest years, a decided preference for the profession of his father, and his education was anxiously directed to that object. Nor was the parental care disappointed; for he was far advanced in the study of the mathematics, at an age when the generality of children can scarce stammer forth a dead language, which is of less utility to the marine, than any other profession. In short, never did sentiments of enthusiasm for a maritime life appear at an earlier hour, and with a more decided energy, than in the character of M. d'Après de Mannevillette.

“In 1719, M. d'Après de Blangy was appointed to the command of the *Solide*, which the India Company had destined for Bengal. The early age of his son had determined him to leave the boy at Havre; but his earnest entreaties prevailed, and he was permitted at length to accompany his father; while an honorary commission of Ensign on board the ship was obtained for him.

“The *Solide* touched at the Isle of Bourbon for refreshment, and then proceeded to Pondicherry, where it arrived after a passage of twenty-seven days, having pursued the general track, and with a degree of celerity of which there is no other example.

" M. d'Après de Mannevillette employed every moment of his voyage in making practical applications of the knowledge he had already acquired. A new career of study presented itself to his genius, and new difficulties offered themselves to be surmounted by him. The theory of the young sailor was confirmed by, as it was consolidated with, progressive experience.

" On his return to France in 1721, he hastened to Paris, in order to perfect himself in astronomy and geometry: his masters were M. M. De Lisle and Desplaces; and the rapid progress which he made in both those sciences, did equal honour to the dispositions of the scholar and the talents of his instructors. After having drawn from the works of the most eminent geometricians, and the society of learned men, all the knowledge necessary to a navigator, he departed in 1726, with the rank of fourth officer on board the ship the *Marechal d'Estrées*, which the India Company had ordered to Senegal and the American islands.

" This voyage was not fortunate; the earthquake which alarmed those islands on the 20th of September, 1727, was accompanied with a dreadful hurricane, which either sunk or greatly injured all the vessels in those seas. The *Marechal d'Estrées*, on setting sail from the *Caye St. Louis*, was attacked by the tempest: in a short time the rigging was rendered useless, and the masts gave way to the violence of the wind. It was perceived, at the same time, that the ship leaked; and while one part of the crew was employed at the pumps, the other was occupied in attempting to tow her to Cape François; where, after much fatigue and danger, she at length arrived. In this port every exertion was made to repair the damages she had sustained in the tempest; and she was no sooner refitted for sea, than the unlimited confidence of the Captain in the capacity of the pilot became more fatal than the storm. The ship had scarce cleared the port, than she was embarrassed by the rocks of *la Caye*. The young d'Après had foreseen and foretold the danger into which the Captain had brought himself, and pointed out, with modest confidence, the means of being extricated from it; but the advice of a young man of twenty years of age was rejected with disdain and reproach, for attempting to direct those who had grown old on the seas. The opinions of the latter were followed; and the ship having struck upon a rock, there was no resource for the crew to save themselves from instant death, but to cling to the upper part of the masts, as the ship itself had already sunk. Fortunately they had succeeded in getting out the long-boat and the barge,

by which the greater part landed on the Great *Caique*, while the Captain and sixteen men pushed forward to gain the *Port de Paix*.

"M. d'Après de Manneville remained with those on the *Caique*, without shelter of any kind, and in danger of dying with hunger, as there was nothing to sustain him and his companions, but a small portion of provisions which the sailors had preserved from the fury of the waves. At length a boat arrived to save him and his associates in misfortune from the fate that threatened them.

"He now returned to France, and three years passed away without being able to obtain any employment from the Directors of the India Company; but as he was not formed for inactivity and repose, he, during that time, made two voyages to America on board mercantile vessels.

"In 1730, he was appointed by the Company, second in command of the brig le *Fier*. The voyage he made on this vessel gave him an opportunity of observing the coast of Africa, from Cape Blanc to Bisseau. The remarks which he made in the course of it, formed the superstructure of that celebrated work with which he has enriched his country.

"On his return to France in 1732, M. d'Après remained some time at L'Orient, where he married Mademoiselle de Binard; but Love and Hymen did not quench his predominant passion, and he soon quitted the arms of his wife to follow M. de Tredillac to Cadiz, and from thence to the Madeiras: nor did he return to his country but to leave it again. M. Pocreau, Captain of the *Galatée*, had received orders from the India Company to set sail for Pondicherry, and in his way thither to pass through the Mozambique Straits. Such a voyage was precisely calculated to inflame the desires of M. d'Après; he accordingly solicited a situation on the *Galatée*, and obtained it.

"He returned in 1735, and departed again in 1736, on board the *Prince de Conti*, in the service of the India Company, of which he was appointed Second Lieutenant.

"In this voyage he employed Hadley's quadrant, which had hitherto been exclusively used by the English navigators; and on his return to France, his first care was to state, in a public print, his high estimation of that curious machine; and by thus procuring a reputation to this foreign invention in his country, he may be said to have added to its most valuable acquisitions.

"The trial that he made in 1740, in another voyage to India, of a machine pre-

sented to the Academy of Sciences, by M. Pitot, one of its members, was not so satisfactory. The object of this invention was to measure the track of ships; but it did not answer the end proposed by it, and gave only a favourable idea of the talents of the inventor.

"In all his voyages M. d'Après was unceasingly employed on the important design which he had conceived of correcting the charts of the Indian Ocean, and of the eastern coasts of Africa and Asia.

'We may be assured,' says Fontenelle, 'that the charts of three quarters of the globe are but rough and imperfect sketches; and that even the charts of Europe, though so much labour has been employed on them, are far from being correct resemblances of the original.' "If, therefore, the charts of Europe received such an opinion of their inaccuracy from such a man, how much more subject to critical objection must be those of India? It was to remedy so many errors, and which have been so fatal to navigators, that M. d'Après, with an indefatigable zeal, collected all the memoirs, charts, draughts, and journals, which he could obtain in the various countries where he had been; and, by comparing them with his own observations, he at length produced the *Neptune Oriental*, which holds the highest rank among the works that have been published on the important subject of maritime geography, and deserves the gratitude of every commercial nation.

"M. d'Après, who was as eager in the attainment of knowledge, as he was negligent in the acquisition of riches, had made his voyages rather as a philosopher than a merchant: his fortune therefore was not sufficient to bear the expences which the publication of his work required. He accordingly applied to the East India Company, who were ultimately to reap the fruit of his labour, for support and assistance. They, however, required the previous approbation of the Academy of Sciences, which being readily granted, the *Neptune Oriental* was engraved and printed at the expence of the Company. It appeared in the month of November, 1745, and the King permitted the Author to present the first copy to him.

"The eulogiums which this work received were not confined to France: all the navigators and learned men of other countries gave the Author the most flattering testimonies of their regard. But M. d'Après appeared to be more anxious to merit applause by a continuance of his exertions, than to sit down in the quiet enjoyment of it; he therefore received, in 1749, from the East India Company, the command of the ship the *Chevalier Marin*, bound to Senegal. This expedition gave him an

opportunity of pursuing fresh researches; and now it was that he first attempted to determine the longitude at sea, by the distance of the moon from the stars and sun; a very bold attempt, which, from a want of proper instruments, was not so successful as it has since been. It appears that Appian was the first who conceived the idea of making the observations of the moon subservient to the determination of the longitude at sea. Gemma Frisicus, and Kepler, adopted his views: but it was reserved for the age in which we live to realize, by practice, the theories of these astronomers.

" M. Halley, convinced, from his own experience, of the insufficiency of the common methods employed by seamen to find the longitude, proposed to determine it by the motions of the moon, and the occultation of the stars occasioned by that planet: but the honour of having first employed this method belongs solely to M. D'Après de Mannevillette.

" On the 21st of October, 1750, he departed again for India, on board the ship *le Glorieux*, to the command of which he had been appointed by the Company; by whom he was instructed to determine, in a more exact manner than had hitherto been done, the position of the Cape of Good Hope, and the Isles of France and Bourbon. He was also ordered to examine the eastern coast of Africa, from Laurent Bay to the Cape of Good Hope. He received on board his ship the celebrated Abbé de la Caille, whom the government sent to the Cape of Good Hope, to make observations of great importance to the improvement of astronomy, and to measure a degree of the meridian.

" M. d'Après put into Rio de Janeiro on the 25th of January, 1751, and arrived at the Cape on the 30th of March following; from whence he proceeded to fulfil the object of his mission, and accordingly steered towards the Isles of France and Bourbon. He determined, with the utmost precision, the position and form of those islands; and he detected an error of about nine leagues in the extent of the Isle of France from north to south, which he fixed at eleven leagues two-thirds, while the old surveys had given it twenty-one.

" Two years after, the Abbé de la Caille received the orders of government to visit both these islands, and to repeat the same operations; and the calculations of the geometrician were in exact conformity to those of the navigator. M. d'Après, on examining in his turn the survey which the Abbé de la Caille had made of the

Cape of Good Hope, discovered that he had not placed Cape False enough to the south.

" M. d'Après having executed his commission respecting the Isles of France and Bourbon, set sail in the ship the *Treize Cantons*, the *Glorieux* having been detained by the Governor of the Isle of France for the service of the colonies, to take a survey of Madagascar and the coast of Africa.

" In the year 1754, M. d'Après rendered a signal service to navigation. Till that period the French, in their passage from the Isles of France and Bourbon to India, had conceived an insuperable dread of the Archipelago which extends from the north to the north-east of Madagascar; nor had any of them attempted to pass it, though it would have shortened the voyage upwards of three hundred leagues. M. de la Bourdonnais had indeed, in the year 1742, made some attempt to determine the possibility of this passage; but the war which took place soon after, obliged him to occupy himself with other objects.

" Admiral Boscawen, in 1748, had the courage to attempt this passage with a fleet of twenty-six ships; but the French seamen were contented to admire his spirit, without following his example. M. d'Après was the first Frenchman who ventured to pursue the same course as the English Admiral. He also dissipated the apprehensions of navigators, by giving a description of the islands and dangers which are met with in that Archipelago.

" His health being exhausted by so many voyages, and such a succession of laborious occupations, he stood in need of repose, and his sole occupation was in giving his work every improvement which subsequent experience and reflection enabled him to do. The instructions which he published in 1766, by order of the Minister of Marine, for ships bound from Europe to the East Indies, was rewarded by the favour of the Court, and the riband of the Order of the King. In 1775, a new edition of the *Neptune Oriental* appeared under the auspices of his Majesty, who was pleased to permit it to be dedicated to him.

We shall content ourselves with transcribing what was written on the death of M. d'Après, by Mr. Dalrymple, so well known in this country, in Europe, and in India, for his superior knowledge of maritime geography.

" M. d'Après was not one of those men which are seen every day. Very few indeed have advanced so far in that branch of science to which he devoted his

'life. No maritime geographer, of any age or country, can be compared to him.
'His equal has never existed.'

"This illustrious navigator was employed in arranging materials which were to form a supplement to the second edition of the *Neptune Oriental*, when death deprived the world of this great man, on the 1st of March, 1780; but M. d'Après de Blangy thought it a duty incumbent on him, for the public good, and for the honour of his brother, to publish this Supplement."

CHAPTER XVIII.

Letter of Baron Grant.—Journal of M. l'Abbé de la Caille, during his Voyage from the Cape of Good Hope to the Isle of France; and his Operations there.

LETTER XII.

Isle of France, 15th August, 1753.

OUR Governor, M. David, left us, and we greatly regret him: he is succeeded by his brother-in-law, M. Bouvet. I have given up my plantation in the Plains of Willems to M. de Ruviere, and am now in the quarter of Pamplemousses. The plantation which M. David procured for me is called *L'Epreuve*. I have there the best house in the island, and the only one built of hewn stone,* except the magazines, and the Governor's residence at the port. It is not, however, stone that is wanting here; on the contrary, there is a superabundance of it; but we have few workmen, and no masons. Besides, the wood, which is very common, is more readily worked.

Heretofore I procured my provision of coffee from the Isle of Bourbon, at fifteen livres the bale;† at present it is worth thirty-two livres at the warehouse; but if I could obtain permission to embark a bale for France, I should not regard the price. We receive raw sugar from India, which costs us about six sous the pound; we think it very good here, but I believe you would not prefer the coffee which is sweetened with it: I use sugar-candy when I can procure it. The Dutch sometimes bring it at nine sous the pound; but with as much thread as sugar.

M. M. Vigoureux de St. Malo have established an handsome sugar work, but it is so ill conducted, that the sugar has the appearance of Norman honey: it costs two sous the pound, and is quite disgusting; but we entertain the hope that the manufacture will improve. This sugar is employed to cover houses in the Italian manner, and being incorporated with chalk, forms a kind of mastich; and, being spread on fine planks, becomes hard as a pavement. The Indians alone know how to make this composition.

* Since that time many other houses have been built of stone. † An hundred pounds weight.

Last year the Isle of Bourbon was in a state of absolute desolation. A small insect infested the coffee trees, destroyed the bud, and even some of the trees; at the same time the Company declared its intention to diminish the price that it had been accustomed to pay, which is five sous the pound. The inhabitants, however, have taken courage this year, and it is said that they have gathered two millions five hundred thousand pounds weight.

I informed you about two years ago, that we possessed M. d'Après in this island. He is this year returned to us, and has brought on board his ship the celebrated Abbé de la Caille, who is arrived from the Cape of Good Hope, where he has greatly enlarged the knowledge of astronomy towards the South Pole. He has already made some geometrical observations on our island, as M. d'Après had done before him. He possesses an indefatigable mind, and his labours will be of great importance to government, to these islands, and particularly to the voyagers who are obliged to visit them.

GRANT.

Journal of the Voyage of Abbé de la Caille, from the Cape of Good Hope to the Isle of France, and his Operations there.

" March 4, 1753. The French ship the Duc de Parme, commanded by M. de la Crochay, came to her moorings at the Cape, and brought me a letter from M. Trudaine, dated the 18th of March, 1752, and two others from M. Dubamel and M. d'Après. That from M. Trudaine contains a permission from the Garde des Sceaux, to indulge in any expence that I may consider as necessary to the advancement of the sciences.

" 8. At six in the morning I left the Cape, in the boat of M. de Ruyter, to embark on board the ship the Puissieux, for the Isles of France and Bourbon. At noon, the castle, batteries, and ships in the road, discharged a salute in honour of the birth-day of the Stadtholder. Soon after we got under way.

" April 5. Squalls and gales of wind in the morning, with an high sea. In the afternoon we saw a great number of birds, which flew round our ship, and having lighted on the ropes and rigging, suffered themselves to be taken by the hand. These birds are called *Goillettes*.* In the evening they were all gone.

* Or *Querets*, (Gulls) *Larus*, Brisson.

" April 16. In the morning we discovered the Isle *Rodriguez*.

" 18. In the morning we discovered the Isle *Ronde*, and afterwards the Isle of *France*: at four P. M. we anchored at the entrance of the port.

" 19. At half past eight I landed, and waited upon M. Bouvet, the Governor, who ordered me an apartment in the government house, and gave orders to prepare a place where I might fix my instruments.

" July 13. We set out to commence our operations. We were accompanied with a detachment of five soldiers, two corporals, and nine blacks, five from the coast of Malabar, and four from Guinea. We had a tent, and a pirogue to carry our effects, as well as to cross the arms of the sea, or the deep bays which are very common in these islands. We slept this night at the house of M. de Rostaing.

" 19. We employed the whole of this day in going to encamp at a place called *la Poudre d'Or*. The road is very difficult, and crossed by three arms of the sea. We passed one in the pirogue, and waded through the two others, the water being up to our middle, during the space of half a quarter of a league.

" 22. We went in the pirogue to the post of *Fayette*, where I made an observation. We afterwards encamped half a league further on. In the afternoon the pirogue was dragged on shore, to get it over land, within the reefs that line the coasts, for the space of half a league.

" 23. An heavy rain in the morning, which pierced through the tent. In the afternoon we launched the pirogue.

" 24. We went in the pirogue to observe the point of *Flacq*; and from thence to the *Puits des Hollandois*, where we encamped.

" 25. We went to make an observation at the *Baraque a Farine*, and from thence to the point of *Quatre Cocos*, where we encamped.

" 26. We left our camp at *Quatre Cocos*, and went in the pirogue to the principal port, to examine the mountains which are in its vicinity. We arrived there at half past eleven in the morning.

" 27. We passed in a canoe to the Isle of *Egrettes* to take a view of the mountains, and left a signal there.

" 28. M. Desny went to clear the summit of the mountain of *Creoles*, and to leave a signal on it. M. Godin and myself went to the Isle *Marianne*, and to the point *du Diable*: we sent for our people from *Quatre Cocos*.

" 30. We left the principal port in a large canoe, and disembarked a little beyond

the two Isles *des Cocos*. I made an observation at the point *des Vaques*,* and we afterwards encamped beyond the arm of the sea called *du Bouchon*.

" July 31. We encamped at the *Baraque du Gouverneur*. I went to make an observation at the point *du Suffleur*.

" August 1. We encamped between the river of the post, and the brook which is beyond it. In the afternoon we examined the savannah, in order to find a base.

" 2. We encamped on the river *Dragan*. We examined the remaining part of the savannah to find a base.

" 3. I placed two signals to connect the operations with the base which we were to measure.

" 4. We encamped on the rivulet called *le Bain des Negresses*. M. Desny, who found himself indisposed, returned to the great port. In the afternoon we endeavoured to find a square for the base.

" 5. We squared the base; but finding it too short, we deferred to the following day the finding another line.

" 6. We changed the line in the morning, and in the afternoon measured six hundred and seventy fathom of ground of unequal surface.

" 7. We measured about twelve hundred and fifty fathom of ground of an unequal surface, which was divided by an arm of the sea of two hundred and fifty fathom in breadth.

" 8. We completed the measurement. M. Desny returned from the great port.

" 9. We went to erect a signal, and to make an observation on the mountain of the savannah. We arrived there after a walk of six hours and twenty minutes, through thick woods, and along the upper part of the lower mountains, which forms an uninterrupted chain. We were obliged to make a large fall of wood to form a signal, which was not finished till ten o'clock the following morning. It rained during the night and in the morning, so that it was with some difficulty that we were able to make a fire, from the humidity of the ground and the wood.

" 10. We made an observation at noon, and in about five hours returned to the *Bain des Negresses*.

" 11. The rain continued throughout the day, so that we could not quit the tent.

" 12. We set out to return to the great port: we endeavoured in vain to make

* Point Vacoas.