April the 6th, they met another vessel, laden with linen cloths, silks, fine white China dishes, and other commodities. Of these they took such things as suited them, among which was a falcon of gold, handsomely wrought, with a large emerald set in the breast*. They took likewise a negro out of this vessel, and one of her seamen to pilot them to some place where fresh water might be obtained; after which, they dismissed her, and in her, the Spanish seamen who had been taken out of the former prize. CHAP. 19. 1579. April.

On the 15th, they anchored at *Guatulco*, which town they plundered. They released here all their Spanish prisoners. Nuno da Silva, the master of the Portuguese ship taken near the island *St. Jago*, and who had been brought thus far with the English, was likewise dismissed. An hour or two before they sailed, he was put on board a Spanish ship that lay in the harbour. GUATULCO

This dismission has been represented as an act of cruelty, as if Nuno da Silva had been left among his enemies. Spain and Portugal, however, were not at war with each other, either when Drake sailed from England, or at the time Da Silva was discharged; neither does it appear to have been done contrary to his inclinations. In a short time after, Spain and Portugal became subject to the same monarch. According to Hakluyt, Nuno da Silva wrote his *Relation of a Voyage*, giving an account of the proceedings of the English during the time he was their prisoner, for the Viceroy of *Mexico*, and it was afterwards sent to the Portuguese viceroy in India. How Hakluyt obtained his copy, he has not mentioned. Da Silva's relation is plain,

* In *Camden*'s Life and Reign of Queen ELIZABETH, it is said, that a negress was taken out of this vessel, who became pregnant in *Drake*'s ship, and was afterwards put on shore at some island (in the East Indies). No such circumstance is met with in the other relations of the voyage.

concise,

CHAP. 19. concise, and not tinctured with prejudice or resentment against the English. It differs little in material points from the English accounts.

1579. April.

Drake sails from New Spain.

April the 16th, they left *Guatulco*, steering 'directly off to 'sea, and (the accounts say) they sailed 500 leagues in longitude to get a wind *:' (meaning a favourable one) from which it is to be supposed that they went so far with Northerly winds.

June.

On June the 3d, they had sailed in different directions, since leaving *Guatalco*, 1400 leagues without seeing any land, and had arrived in 42° North latitude †. The night of the 4th, a great alteration was experienced in the temperature of the air. The cold was so piercing that the people, being recently come from a climate exceedingly warm, were quite benumbed with the sudden change: and it increased 'to that extremity in sailing two degrees farther North, that meat, as soon as it was 'removed from the fire, would presently be frozen, and the ropes 'and tackling of the ship were quite stiffened ‡.'

Makes the coast of America to the North

The 5th day of June, they were forced by contrary winds to run in with the land, which was then first descried §, and unexpectedly, as they had not imagined the land of America, in that latitude, to extend so far to the West. They stood towards the shore, and anchored in an open ill-sheltered bay. The wind was strong and in gusts; upon any intermission, there came a thick, stinking fog, in which they were enveloped, till it was dispersed by the renewed strength of the wind.

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* *World Encompassed*, p. 62. *The Famous Voyage* says, 600 leagues, but it muſt be observed of that account in general, that it is evidently the work of a person very little acquainted with the circumstances of the voyage; and who seems, on some occasions, purposely to have introduced confusion as a veil to ignorance. The description of *Drake*'s Navigation on the coast of *New Albion*, in *Hakluyt*, Vol. III. p. 440, is an extract from the *Famous Voyage*.

† *World Encompassed*, p. 62 ‡ *Ibid.* p. 63. § *Ibid.*

They

1579. June. On the Western coast of North America.

They could not remain here, and the direction of the wind, with the severity of the cold, not only discouraged them from persisting in the attempt to go farther North, but 'commanded 'them to the Southward whether they would or no.'

From the latitude of 48 degrees, to which they had advanced, to 38 degrees, the land along the coast appeared to them to be of moderate height*; but every hill (many were seen, and none very high) was covered with snow, and this in the month of June.

In 38° 30′ North, they found 'a convenient and fit harbour,' where they anchored on June the 17th.

The foregoing is the account of Drake's discovery of the land to the North of *California*, as given in the *World Encompassed*.

The Famous Voyage, &c. has omitted to notice the first anchoring near the coast. It is there said, 'The 5th day of June being 'in 43 degrees North, we found the air so cold, that our men 'complained; and the further we went the more the cold in-'creased upon us; wherefore we thought it best for that time 'to seek the land, and did so, finding it not mountainous till 'we came within 38 degrees towards the line.' In this relation, it appears that they went to the North of 43 degrees, but not how far beyond.

The following paragraph, however, in *The World Encompassed*, is explicit on the subject. 'Though we searched the coast di-'ligently, even unto the 48th degree, yet found we not the land 'to trend so much as one point in any place towards the East.' Sir William Monson, likewise, commends the resolution of Drake for having 'after almost two years spent in unpractised 'seas, left his known course, and ventured upon an unknown 'sea in 48°, to which latitude he arrived, thinking to find a 'passage into our seas†.'

* *World Encompassed*, p. 64. † Sir *W. Monson's Naval Tracts*, Book IV.

A portion

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1579. June. Western coast of North America.

A portion of the range of coast seen by Drake is described in the voyage of Juan Rodriguez Cabrillo, to be high and mountainous, which agrees with the descriptions of modern navigators. When Cabrillo was there, the sky was remarked for its clearness during the continuance of North West winds. Drake sailed along the same coast at a different season of the year, when the atmosphere was foggy, and the inland mountains consequently obscured; and by the remark that every hill was covered with snow in the month of June, it may be supposed that the land, at least the mountainous part, was higher than to the English it appeared.

The land at which Drake now arrived, was inhabited, and as the ship sailed into the harbour, houses of the natives were seen close to the water's side.

The day after they anchored, a number of the natives showed themselves on the shore, and a single man in a canoe was sent off to the ship. Immediately upon leaving the shore, though at a considerable distance from the ship, he began to speak, and continued so to do, as he rowed or paddled on, addressing his discourse to those on board. When he was within a moderate distance of the ship, he stopped, and made a long and more formal oration, which was accompanied with much action; and when he had finished his harangue, with great show of reverence he retired to the shore. Soon after, he came a second time in the same manner; and again a third time, bringing then a bunch of feathers, and a small basket made of rushes. The feathers were much like those of a black crow, and were neatly fastened together, clean, and handsomely cut. The basket was filled with an herb which they called *tabah*. These things he tied to a short rod or stick, and cast them into the ship's boat. The General would have made him some return; but he would receive nothing except a hat, which being thrown from the ship into the water, he took up; refusing to meddle with other things

things which were put on a plank in the water, and pushed towards him. CHAP. 19.

1579. June. Western Coast of North America

It is not related that any farther intercourse immediately took place in consequence of the advances thus made by the natives: but when any boat afterwards went from the ship, they would follow, and regard every thing the people in her did, with curiosity and admiration.

It is remarked, that the complaints made by Drake's people of the cold were not to be attributed to the tenderness of their bodies, coming so lately from a warm climate, but to the severity of the season itself: 'for the inhabitants of the place,' who had never been acquainted with warmer climates, in whom custom of cold was as it were a second nature, used to come shivering in their warm furs, crowding close together, body to body, to receive heat one from another, and to shelter themselves under lee banks; and afterwards (when they became more familiar with the English) they endeavoured, as often as they could, to shroud themselves for warmth under the garments of the Englishmen.' This extreme cold, it is more reasonable to ascribe to a season unusually severe, than to the general temperature of the climate at so advanced a season of the year, in a country situated under the same parallel of latitude as the Southern parts of Europe.

The ship had sprung a leak at sea, and to lighten her to come at the leak, it was found necessary to land the stores and goods. On the 21st, the ship was for that purpose brought to anchor close to the shore, and the General landed his men, with tents, and such things as were necessary for building a fort for the defence of themselves and their effects. When the people of the country observed that the strangers were thus establishing themselves on the land, they began to collect towards the spot with their arms, and in large companies: yet, when they drew near, they stood with an appearance of great respect and awe, attentively observing what was doing, and manifesting no symptom

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1579. June. Western Coast of North America.

of hostile intentions. Signs were made to them to lay aside their bows and arrows, which they did immediately on being so desired. The General, wishing to obtain their good will, distributed presents among them, and they in return presented the General with feathers, network, and some gave their garments, which were skins of beasts. In the evening, they retired from the tents, apparently well satisfied. But when they returned to their houses, they began to make loud lamentations, crying for a length of time together, so that the Engliſh, from whom their dwellings were not less than three quarters of a mile distant, heard them very distinctly, especially the women, who, raising their voices, shrieked in a most miserable and doleful manner.

These expressions of grief might have proceeded from some cause entirely resting among themselves, and with which the strangers had no connection; but the circumstances certainly countenanced the probability that they were occasioned by an apprehension that the errand of the new comers was to dispute with them the possession of their country. Not trusting therefore to their present peaceable and humble demeanor, the General fortified the tents by building round them a stone wall, that the business of repairing might be carried on with security.

For two days after the night of lamentation, no native came near the tents. At the end of that period, a more numerous assemblage than had before been seen, appeared on the top of the hill which was nearest to the English fort. From this station, one of their orators delivered a loud and long speech, in doing which he made such violent exertions, and 'his words fell so 'thick one on the neck of the other, that he could hardly fetch 'his breath again.' When he concluded, all the natives present, bowing their heads in token of reverence, spoke together aloud, or rather chanted in a solemn and lengthened tone the monosyllable *Oh!* which was supposed by the English to express their assent

assent to all that their orator had uttered. After this prelude, the men, leaving their bows on the ground, descended the hill, and with bunches of feathers and baskets of the herb tabah* came to the fort to offer these gifts to the General, which he accepted, and made them presents in return. CHAP. 19. 1579. June. Western Coast of North America.

In the mean time, the women, who remained on the hill, as if from apprehension for the safety of their husbands and relations, began with shrieks and lamentations to tear their cheeks and bosoms with their nails; and putting off their upper garments, they dashed themselves repeatedly against the ground till they were almost covered with blood, holding their hands over their heads that the violence of the falls might not be broken.

The General, struck with sorrow at this miserable spectacle, ordered all his people to prayers. During the performance of divine service, the natives sat looking on with silent attention, except that at every pause, they chanted their *oh* of assent. With the singing of the Psalms they were most delighted, and afterwards they frequently requested the English to sing, which they called '*gnaah.*'

The author of *Noticia de las Exped. Mqgal.* says, that Drake, to acquire the friendship of the natives, read to them various chapters in the Bible, though by no method whatever they could make themselves understood. Such a comment on this occasion is not doing justice to the motives of Drake. He hoped that the solemnity of the ceremony would have the effect of putting a stop to the barbarous rites they were performing; and instances are afterwards related of the same means being repeated for that purpose with success.

When the service was ended, the natives rose to depart; but, before they went, they restored the presents which had been

* It is said in the *Famous Voyage* that the natives brought bags of tobacco.

CHAP. 19. made them; and no one could be prevailed on to carry with him a single article of the things he had received.

1579. June. Western Coast of North America.

The English relations report, not very wisely, that the natives regarded Drake and his people as gods; and 'they returned the 'presents,' says the *World Encompassed*, 'because they thought 'themselves sufficiently enriched and happy, that they had 'found so free access to see us.' This construction of the behaviour of the natives prepared the way for another, which was made in the sequel, with no better foundation.

From the facts related, which are here collected without variation, it appears more credible, that the natives were in doubt respecting the intentions of the strangers, whether their visit was merely of a temporary sojourn, or that the purpose of their coming was to establish themselves in the country. Their refusal of presents might be either in compliance with some accustomed ceremonial on similar occasions, or, which is a reason of a more substantial nature, because they judged it dangerous under such circumstances to retain the gifts of strangers, whom they could not understand well enough to comprehend, whether their offerings were intended gratuitously, or made with some condition annexed.

The news of the ship being on the coast spreading into the country, the number of the natives at the port where she lay increased, and among others whom it attracted, was the chief or king. On the 26th, two men in quality of ambassadors, or rather heralds, arrived at the fort with a message to the General. One spoke aloud what the other softly prompted, and the delivery occupied half an hour. By their speech, and by signs, the purport of their errand was comprehended to be, that their *Hioh* or King intended to visit the fort, and that he desired some token of peace and friendship should be first sent to him. This ceremony the natives had observed towards the English at their arrival, and the demand was willingly complied with; what

what was thought proper for the occasion being delivered to the messengers. CHAP. 19.

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The Hioh was soon after seen approaching with a numerous train. In the front, came a man 'of a large body and goodly 'aspect,' bearing a staff or club of dark coloured wood, about a yard and a half in length, to which were fastened two pieces of net-work. The staff, with the pieces of net-work, the relations have dignified with the appellations of the sceptre or royal mace, and two crowns. There were likewise attached to the staff, a bag of the tabah, and three chains of great length made of a bony substance, 'every part thereof being very little, thin, 'finely burnished, with a hole pierced through the middle: 'the number of links making one chain, being in a manner 'infinite.' It seemed to be the privilege only of the superiors among the natives to possess chains of this kind, and the number of them which any person wore, marked his quality or importance.

Next to the mace-bearer came the *Hioh*, who was a handsome man, and of good stature. His dress was a caul of net-work upon his head, similar to those just described, and on his shoulders he had a garment made of the skins of rabbits. He was attended by a guard of about 100 'tall and warlike men,' who had each a coat shaped like the one worn by the Hioh, but made of different skins. Some of them wore feathered cauls, and the heads of others were covered with a very fine down which grows in that country upon a herb much like our lettuce. The face of every one was painted, but not alike, and each man brought something in his hand for a present. Next came a number of the common people, who had feathers in their hair, which they gathered up in a bunch behind. The rear of the train was composed of women and children. The women likewise brought each a round basket or two, with bags of tabah, broiled

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broiled fish, and a root they called *petah*, of which was made a kind of meal to be either baked or eaten raw.

1579. June. Western coast of North America.

The General perceiving the number of his visitors, ordered all his people under arms, to be prepared for defence if any mischief should be attempted. When the Hioh drew near, a general silence was observed, and the mace-bearer, with the assistance of a prompter, pronounced, in an audible voice, an oration, which, at its conclusion, received the general assent of all the natives present. The men and women then advanced; but the children remained behind. Being arrived at the foot of the hill, the mace-bearer, with composed countenance, and stately carriage, began a song, and approached with a measured step, in a kind of dance; the chief and all his men joining in both the song and the dance; but the women preserved the same measure in silence. The harmless manner of their approach, took from the General all doubts: directions were given for their being admitted without interruption, and they entered the fort singing and dancing in the manner described.

When their dance was finished, they, by signs, desired the General to be seated. The Hioh and others of the natives made speeches, after which, the singing was renewed; and whilst they all joined in full chorus, the Hioh placed one of the feathered caps of net-work on the General's head, the chains about his neck, and saluted him by the name of Hioh.

These honours paid to a stranger, have more than a shade of resemblance to the custom which has been found among so many Indian nations, of exchanging names with those whose alliance or friendship they desire. The General, to have manifested an equal return of consideration, might have decorated his visitor with some ornament, and have saluted him by the name of Drake. But the compliments and ceremonials of the native chief were differently understood; and it was imagined

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that he had invested Drake with the *insignia* of royalty, and that the natives, with '*true meaning and intent*,' had resigned to him their right and title in the whole land, and made themselves and their posterity his vassals.

The invariable custom adopted by Europeans, of claiming and taking formal possession of every new land they meet with, whether it is inhabited or uninhabited, never entering into the consideration, no doubt disposed Drake to credit (if it is true that he did credit it) that these people simply and for no cause, value received, or other consideration, made a voluntary gift of themselves and their country to him, a perfect stranger.

Such, however, is stated to have been the fact: and as against allegations of fact, incredulity is no proof, that the reader may examine the evidence, and judge for himself, an extract from the original relation of the circumstance, which, as well in the manner as in the matter contained, is such as seems to require little comment, is given in a note underneath*.

These things which were understood to be so freely given, the accounts say, were accepted by the General, in the name and to the use of her Majesty.

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* —— They made signs to our General to have him sit down, unto whom, 'both 'the king and divers others made several orations, or rather indeed, if we had 'understood them, supplications that he would take the province and kingdom into 'his hand, and become their king and patron; making signs that they would re-'sign unto him their right and title in the whole land, and become his vassals in 'themselves and his [their] posterities: which that they might make us indeed be-'lieve that it was their true meaning and intent, the king himself, with all the rest 'with one consent, and with a great reverence, joyfully singing a song, set the 'crown upon his head, enriched his neck with all their chains, and offering unto 'him many other things, honoured him by the name of *Hyoh*. Adding thereunto '(as it might seem) a song and a dance of triumph; because they were not only vi-'sited of gods (for so they still judged us to be) but the great and chief god was 'now become their god, their king, and patron, and themselves were become the 'only happy and blessed people in all the world.' *World Encompassed*, p. 76.

After

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1579. June. Western coast of North America.

After the performance of the ceremonies which have been described, the Indians mixed familiarly with the English, and the Hioh remained with the General, without attendants, and with perfect confidence.

Some of the natives appeared to conceive a strong degree of attachment for individuals among the English, and the youngest were most generally the objects of this regard. To express their feelings, they would begin to cry, and tear their flesh; nor was this practice abandoned till after repeated experiment of the displeasure it produced.

This kind of behaviour, extraordinary as it may appear, is not to be considered as a peculiar characteristic of the people of this country. Among many unlettered nations, the expressions of strong emotions are not so much dictated by nature, as taught, and in some instances prescribed, by custom; so that in this respect, they are much farther removed from a state of nature than the inhabitants of civilized countries. The English were certainly regarded by the natives here with an uncommon degree of favour, for which two very natural reasons may be assigned. This part of the American continent had been visited by Juan Rodriguez Cabrillo, and by no other European. His intercourse with the natives was of the most friendly kind. No intervening circumstance could have occurred to change the nature of the impressions left by Cabrillo; and this disposition, so favourable to Europeans, the conduct of Drake, friendly and humane towards them, confirmed.

The houses of these people were dug in the earth, and of a circular form. From the edge of the excavation, pieces of timber extended towards the center, forming a roof; and near the center, an opening was left which resembled the scuttle of a ship, and served the double purpose of door and chimney. The rest of the roof was covered with earth, so as to keep out both cold and wet. Their beds were rushes strewed on the ground

ground near the sides of the house, the fire-place being in the middle. CHAP. 19.

1579. June. Western coast of North America.

The greater part of the men went nearly naked. Their character is thus given in one of the accounts: 'They are a people 'of a tractable, free, and loving nature, without guile or 'treachery. Their bows and arrows would do no great harm, 'being weak, and fitter for children than for men; and yet 'the men were so strong of body, that what two or three of 'our people could scarcely bear, one of them would take upon 'his back, and without grudging, carry it up hill and down 'hill, an English mile together.'

The dress of the women was a loose kind of garment, tied round the waist, made of bulrushes combed in the manner of hemp; and about their shoulders they wore deer-skins. It was remarked that the women were 'very obedient, and serviceable 'to their husbands.'

When the repairs of the ship were finished, and she was nearly ready for sailing, the General, with others of his company, made an excursion into the country; in doing which, there was the less reason to apprehend danger, as the natives must have discovered, long before this time, that the visit of the English to their country was only casual and temporary. The soil was remarked for its fertility. Near the villages of the natives were seen large herds of fat deer, a thousand in a company: and in every part of the country, there were great numbers of a species of rabbit, 'about the size of a Barbary rat; their 'heads and bodies like other conies, but smaller; their tails 'like that of a rat, and their feet like the paws of a mole. 'Under their chins on each side they have a bag into which 'they gather their meat when their bellies are full, to feed 'their young, or serve themselves another time.' Their flesh was good eating; and their skins were much esteemed by July.

CHAP. 19. 1579. determined to quit the American coast, and to steer for the *Molucca Islands*.

The part of the American coast discovered by Drake, is to be reckoned as beginning immediately to the North of *Cape Mendocino*, and extending to 48° North latitude. Whether or not Juan Rodriguez Cabrillo anchored in *Port San Francisco* is uncertain; but to him, and to Francisco de Ulloa, is to be attributed the discovery of all the coast South from *Cape Mendocino* (including that Cape) to the Southern extremity of *California*.

The track in which Drake ran to the Westward, is not told, nor otherwise noticed in any account of the voyage, than that he sailed 68 days without seeing land.

September. On September the 30th, he fell in with some islands in 8° North, which were inhabited. The natives, as soon as the ship was perceived, came off in their canoes, bringing cocoa-nuts, fruits, and fish. The first that came, trafficked peaceably, and made signs of invitation for the ship to go nearer the land; but others that arrived, did not act so honestly; they received, but would make no return, neither would they restore any thing that once came into their hands. The English, to show their resentment, refused to deal any more with them; and they, to manifest theirs, began to attack the ship with stones; for which purpose it appeared that they had come well provided. A great gun was fired over their heads, the noise of which frightened them away; but in a short time others came, who behaved still more rapaciously. The General was probably here provoked out of his usual forbearance; for it is said, 'they could not 'be got rid of, till they were made to feel smart as well as 'terror.'

These people had 'the lower part of their ears cut round, hanging down on their cheeks; the nails on some of their fingers were an inch long, and their teeth were rendered black by eating an herb with a kind of powder, which they always carry

carry about them.' The cuſtoms of these islanders indicate their neighbourhood to the *Philippine Islands*. Their canoes were made of a single tree hollowed, and were high at each end, so as to be of a semicircular form; they had outriggers, and were ornamented with the shining parts of shells. Some of them carried 15 men. CHAP. 19. 1579. October.

The English called these islands *The Islands of Thieves*. They could not get clear of them till October the 3d, probably having light winds. The ship then continued her course to the westward without seeing any more land till the 16th, when they made the *Philippine Islands* in 7° 05′ N. Though no distances are given, the circumstances above related, if it were allowable to entertain so unfavourable an opinion of the dispositions of the *Pelew* islanders, would have encouraged the belief, if not authorized the assertion, that Drake's *Islands of Thieves* are the same which in the present charts are named the *Pelew Islands*, discovered first by Da Rocha, and by him named the *Islands de Sequeira*. Islands of Thieves.

The sailing from the *Islands of Thieves* and the arrival at the *Philippine Islands* is thus mentioned—'Till the 3d of October 'we could not get clear of these consorts, but from thence we 'continued our course without sight of land till the 16th of the 'same month, when we fell in with four islands standing in '7° 5′ to the north of the line. We coasted them till the '21st day, and then anchored and watered at the biggest of 'them, called *Mindanao**.' From this passage it is to be inferred, that islands of considerable magnitude were seen near the eastern side of *Mindanao*.

The 22d, they sailed to the south, 'and passed between two islands about 6 or 8 leagues south of *Mindanao*†'.

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* *The World Encompassed*, p. 84.

† *Ibid.* These islands must have been *Sarangan* and *Candigat*, between which, it is not generally known that there is a navigable passage.

November

CHAP. 19. 1579. November. MOLUCCA Islands.

November 3d, they had sight of the *Moluccas*, and steered for *Tidore*, having purposed to anchor there: but being near the island *Motir*, a boat came from thence to the ship, by which they were informed that the Portuguese had been driven out of *Terrenate*, and had taken up their quarters at *Tidore*. When the natives, who came from *Motir*, which island was subject to the king of *Terrenate*, found that Drake was not a friend to the Portuguese, they entreated him to change his destination, and to go to *Terrenate*. They had no difficulty in prevailing: the course was immediately bent thither, and the General sent a messenger with a velvet cloke to the king of *Terrenate*, accompanying his present with a request to be furnished with provisions, and to be allowed to trade for spices.

TERRENATE.

Before the ship anchored, the King himself came off. He was preceded by three large and magnificent canoes, each of which had 80 rowers, who rowed or paddled to the sound of brass instruments, which were struck one against the other. Along the sides of these vessels stood a row of soldiers, every one armed with a sword, dagger, and target; and in each was a small piece of artillery mounted upon a stock.

When the king arrived, he was received with a salute of great guns, with trumpets sounding, and other displays of state. For such occasions Drake was well provided, having brought from England what was thought necessary both for commerce and for show; and his stock of such things had been increased by his captures.

The king of *Terrenate* was tall, corpulent, and had a good countenance, his attendants showed him great respect, and no one, during his visit, spoke to him in any but a kneeling posture. As soon as the ship anchored, the king took leave, promising to visit the General again the next day, and that the ship should be supplied with provisions. The latter part of the promise

was immediately made good; rice, poultry, and fruits, being procured from the shore, and likewise a few cloves. CHAP. 19. 1579. November. TERRENATE.

The next day, when the king was expected, his brother came with an excuse and an invitation to the General to land. The behaviour of this prince created suspicions, and as the king had failed in his engagement, the ship's company objected to trusting their commander on shore. Some of the officers, however, were sent to wait on the king, and his brother was detained as a pledge for their safety.

The king's house stood near the castle formerly built by the Portuguese, in which were at this time only two cannon, both of them unserviceable. The king received Drake's officers with much parade, being covered with ornaments of gold and jewels. After a short visit, and delivering a complimentary message, they returned to the ship.

It does not appear that the General went on shore at *Terrenate*. He received many offers of friendship from the King, and proposals, that if the English would enter into engagements of amity and commerce with *Terrenate*, the trade of that island should be reserved exclusively for them. It was by this king, that the Portuguese had been dispossessed of the dominion they had so long enjoyed at *Terrenate*.

The following story, which has too much the air of romance, as well as of imitation, to obtain easy credit, is related *. Whilst the ship lay at *Terrenate*, many natives visited her from motives of curiosity. Among these, one came on board, who was not a native of the *Moluccas*, 'a goodly gentleman,' accompanied by an interpreter. His dress was neat, and something after the European fashion. His carriage was respectful, and his behaviour discreet. He told the General, that he was a native of China, and was related to the family of the reigning Em-

* *The World Encompassed*, p. 93.

peror:

CHAP. 19. 1579. November.

peror; that having been unjustly accused of a capital crime, and afraid that he should not be able to make his innocence appear, he had made suit, before trial, to the Emperor for permission to travel, which he obtained, on the condition that if he could bring home any important knowledge or intelligence, he should again be allowed to live in his native country; otherwise, that he was to remain for ever an exile. The narrator continues, 'he accounted himself a happy man that he had 'seen and spoken with us; the relation of which might perhaps 'recover him favour in his country. He endeavoured to prevail 'with our General himself to go thither, not doubting but it 'would be a means to obtain him advancement and honour with 'his king'. The General resisted the persuasions of the discreet stranger, 'and he departed sorry*.'

Drake

* *Chaucer's Wife of Bath's Tale* is not very unlike the above. Among stories on the same model, one of the most curious, and possibly the most true, is the following, related by *Herodotus*, the circumstances of which are said to have happened 140 years after the vessels sent by *Necho*, king of *Egypt*, had sailed round Africa. *Sataspes*, the son of *Teaspis* a man of the Achæmenides (the royal family of *Persia*), 'did not sail round *Lybia* (Africa) though he was sent on purpose to do it: but being terrified at the length of the voyage, and the desert (appearance of the country) he turned back——' He had committed violence on a virgin daughter of *Zopyrus*, the son of *Megabyzus*. He was to have been crucified for this crime; but his mother (a sister of *Darius*) obtained from *Xerxes* a remission of the punishment, by promising that he should sail round *Lybia*, 'until, having sailed round it, 'he should return to the *Arabian* gulf.'

Xerxes, having assented to these proposals, *Sataspes* went to *Egypt*, and took vessels and mariners, and sailed to the *Pillars of Hercules*. When he had sailed through them, winding round the promontory of *Lybia*, which is called *Soloes*, he sailed towards the South; and, having passed over much sea in many months, when still more was wanted he sailed back to *Egypt*. After this, returning to King *Xerxes*, he said, that in the most remote part of his voyage, he came among little men, who wore garments made of the palm tree. [Three different significations have been assigned to the word φοινικῆν, used in the original; *i. e.* made of palm tree, of a reddish colour, and Phœnician. It is possible, that the vessels of *Necho* touching there, the memory of the Phœnicians might still have been preserved, and their dress be imitated. Arguments indeed may easily be found for any one of the three meanings: made of the palm tree, seems to be the most natural.] When the Egyptian vessels were brought to the shore, the inhabitants deserted their villages and

Drake furnished his ship at *Terrenate* with provisions, and procured as large a quantity of cloves as was desired; and, on November the 9th, sailed from the *Moluccas*. CHAP. 19. 1579. November.

The 14th, they anchored at a small island, in 1° 40′ South, near the Eastern part of *Celebes*. This island being uninhabited, was deemed a secure and good place for repairing the ship; and here they remained four weeks undisturbed, with tents erected, and a forge set up on shore; taking the precaution to intrench round the tents, that they might be prepared against unwelcome visitors, if any such should arrive Near Celebes.

The island was one continued wood; most of the trees were large, lofty, and straight, without branching out till near the top Among the trees were bats innumerable, 'equalling, if not exceeding, a good hen in bigness.' There were likewise in the woods, great numbers of land crabs. In *The World Encompassed*, they are described to be 'a kind of cray fish, of such a 'size, that one was sufficient to satisfy four hungry men, and 'were very good meat. They are, as far as we could perceive, 'utter strangers to the sea, living always on the land, where 'they work themselves earths, or rather they dig huge caves 'under the roots of the largest trees, where they lodge by companies together. Sometimes, when we came to take them, 'for want of other refuge, they would climb into the trees to 'hide themselves, where we were enforced to follow them.' The English, on account of the number of these animals, named this spot *Crab Island*. Crab Island.

No fresh water was found on *Crab Island*, but a supply of

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and fled to the mountains; but no injury was committed, and nothing disturbed, except that they took some sheep. He said, the cause of his not sailing entirely round *Lybia* was, that the ship could not be made to advance any farther, but was kept back. But *Xerxes*, not allowing that he spoke true, crucified him for his former crime, as not having performed the task enjoined him.

CHAP. 19. 1579. December. that necessary article was obtained from another island which lay a small distance to the South.

December 12th, they sailed towards the West, by which course they got entangled with a number of islands and shoals near the coast of *Celebes*. With the intention of getting clear of them, they steered towards the South. On January the 9th, 1580, they thought themselves in a clear sea; but early in the first watch*, that same night, as the ship was running under full sail, with the wind large†, and blowing moderately fresh, she came all at once upon a rocky shoal, and stuck fast. Boats were got out to examine if an anchor could be placed in any direction by which they might endeavour to draw the ship off into deep water; but at the distance only of a boat's length without them, no bottom could be found with all their lines.

The ship had not become leaky in consequence of the shock, but she remained all night fixed, without their being able to invent any means by which they could attempt to extricate her from her situation. When day-light appeared, another examination was made for ground to lay out an anchor; but this was fruitless as the former. In this state of distress, every one was summoned to prayers; and when that duty was performed, that no means which they could think of should remain untried, it was determined to lighten the ship of part of her lading. This was quickly executed. Three tons of cloves, eight of the guns, and a quantity of meal and beans, were thrown into the sea; but without producing any visible benefit‡.

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* The time between eight in the evening and midnight is so called at sea.

† When the direction of the wind is favourable to the course a ship is steering.

‡ It does not appear that during their apprehension of danger, the idea was once entertained of lightening the ship at the expense of any part of the treasure on board, which was the heaviest part of the cargo.

The

The ship had grounded on a shelving rock, and where she lay, there was, on one side, only six feet depth at low water, and it required 13 feet depth to float her. The wind blowing fresh directly against the other side, had kept the ship upright during the time she was left by the tide; but in the afternoon, when the tide was nearly at the lowest, the wind slackened, and the ship losing this prop, suddenly fell towards the deep water: with the shake, her keel was freed from the rocks, and not less to the surprise than to the great joy of every one on board, she was once more afloat. Thus were they unexpectedly delivered, at the very time of the tide which appeared least favourable to their hopes, and when effort was deemed most useless. CHAP. 19. 1579 December

This shoal is three or four leagues in length; its latitude 1° 56′ South*, and is not far distant from the coast of *Celebes*, which they did not get clear of till many days afterwards, 'insomuch,' say the accounts, 'that we were utterly weary of 'this coast of *Sillebis*.' 1580.

The Southernmost part of *Celebes*, according to their reckoning, was in 5 degrees South. They stopped at different islands for provisions and water, and passed between four or five large islands in 9° 40′ South.

On March 12th, they anchored at a port on the South side of the island *Java*, where they remained till the 26th, and procured every necessary supply. The whole of this time was passed in feasting and jollity, the greatest familiarity subsisting between the General and the native chiefs of the part of the island where the ship lay. March JAVA

From *Java* they steered for the *Cape of Good Hope*, close by which Cape they passed June the 15th. The 22d of July, they put into *Sierra Leone* on the coast of Africa, where they SIERRA LEONE.

* *World Encompassed*, p. 103.

CHAP. 19. stopped two days to take in water; and obtained there oysters and fruit.

1580. Arrival at Plymouth Sept. 26th. The 24th, they again put to sea, and on the 26th of September, they anchored safe at *Plymouth*, after an absence of two years, and almost ten months. By the account of time in the ship, the day of their arrival was Sunday; with the people on shore it was Monday.

How many men returned from this voyage is not told in the relations; but when the ship was on the rocks near the coast of *Celebes*, it is said, 'that the number of persons then on board was 58*; after which, we read not of any sickness or accident.'

Drake immediately repaired to court, and was graciously received by the Queen; but she, nevertheless, commanded that the treasure he had brought home should be put under sequestration, that if any demands were made by the Spaniards, which it should be judged necessary to comply with, the means might be at hand to satisfy them. When Don Bernardine de Mendoça, the Spanish ambassador in *London*, demanded restitution of the property, and made complaints against the English for sailing in the *South Sea*, the Queen answered, that satisfaction should be made for the injuries committed; but with respect to the second complaint, 'she denied that by the Bishop of *Rome*'s donation, or in virtue of any other claim, the Spaniards had a just title to debar the subjects of other princes from the Indies; the donation of that which is another man's, being of no validity in law. That their touching here and there upon a coast, and naming a river or a cape, could not entitle them to the propriety, nor hinder any other prince from trading into

* *World Encompassed*, p. 100.

those

those countries, or transporting colonies into those parts which CHAP. 19.
the Spaniards did not inhabit*.'

A considerable sum of the money brought by Drake's ship, was afterwards paid to one Pedro Lebura, a Spaniard, who made application in the character of agent for the Spanish claims: but this was afterwards discovered to be a false pretence, and connived at by the Spanish government, as the money, instead of being restored to the rightful claimants, was employed to pay the Spanish soldiers then serving in the Netherlands. The remaining part of the riches, it may be supposed, was divided among the captors.

Her Majesty, who appears to have had much regard for Drake, to show her approbation of his enterprise, dined on board his ship at *Deptford*, and conferred upon him the honour of knighthood. The ship was preserved at *Deptford* many years, and when at length she was quite decayed and broken up, a chair was made of one of her planks, which was presented to the university of *Oxford* †.

The conduct of Drake in this expedition is, in many particulars, highly to be extolled. Among the commendations which are due to him, the humanity with which he treated the natives of uncivilized countries is not the least. To strangers in general his behaviour was affable and hospitable: towards the Indians,

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* Camden's *Life and Reign of Queen Elizabeth*, Book II.

† *Cowley* made this chair the subject of an epigram, which is printed in his works. Some verses upon the voyage are likewise preserved in the *Biographia Britannica*; among which performances, the following lines seem to be the best:

'*Si taceant homines, facient te sidera notum:*
'*Sol nescit comitis non memor esse sui.*'

Which, in the same work, are thus translated into English:

'The Stars above will make thee known,
'If men were silent here:
'The Sun himself cannot forget
'His fellow traveller.'

his

CHAP. 19.

his forbearance, and the various instances of his kindness, were the spontaneous effects of genuine good will. He has been censured for ignorance as a navigator; but there is no evidence to establish such a charge, and much to refute it. A Spanish writer says, that his ignorance is fully manifested in the scarcity of information which appears in his journal*. This can only have been said from misapprehension, in attributing to him the defects of others. The accounts published of his voyage, it is true, are as erroneous and defective in the geographical particulars, as those of any of the early navigations: but none of these accounts were written by Drake. The purposes of Discovery, or the advancement of Science, were not among the motives of his voyage. Whatever journal or account he kept himself, the doubtful complexion of his undertaking would render him more solicitous to conceal than to make public. In the attachment of his people towards him, is evinced the full confidence they placed in his abilities: and among those who most censured his expedition, he is praised 'for conducting it 'so discreetly, patiently, and resolutely†:' and certainly, whatsoever may be said of his undertaking, the character of his abilities may be pronounced superior to attack. It is said of Drake, that he was a willing hearer of every man's opinion, but commonly a follower of his own. If he had not been a well qualified navigator, as well as an expert mariner, it is not to be imagined that he would have projected, and, being under no controul of orders from any superior, would have attempted the execution of so arduous a plan as the seeking for a passage from the *Pacific Ocean* to the *Atlantic Ocean*, by the North of America: upon which attempt, it is justly observed in the

* *En las ningunas noticias que se dan en su Diario. Noticia de las Exp. Magal.*

† Sir *William Monson's Naval Tracts*, Book IV.

Biographia

Biographia Britannica, that 'his coasting *North America* to the 'height of 48 degrees, and endeavouring on that side to find a 'passage back into our sea, is the strongest proof of his con- 'summate skill and invincible courage.' CHAP. 19.

Before closing the narrative of this voyage, it is proper to give an account of what is known concerning those who embarked in it from England, and were afterwards separated from their commander.

It has been related that the ship, the Elizabeth, after her separation, re-entered the *Strait of Magalhanes* from the *South Sea*, October 8th, and that Mr. John Winter, her Captain, despairing of meeting, or not wishing to meet, the Admiral again, determined to sail homewards, though his men were desirous of persevering in their enterprise. He sailed through the Strait Eastward, and went to the river *De la Plata*; at an island near the entrance of which river, he set up a pinnace. On the 20th of January 1579, he anchored at an island on the coast of *Brasil*, near the town of *St. Vincent*, where, by bad weather, the pinnace and eight men were lost. The ship escaped with the loss of an anchor. She stopped at another part of the coast of *Brasil*, and with difficulty obtained a scanty supply of provisions from the Portuguese. On June 2d, 1579, she arrived in England *. The Elizabeth, Captain J. Winter.

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* *Relation of Edward Cliffe*, Mariner. *Hakluyt*, Vol. III. p. 753. *Winter* is said to be the first who returned Eastward through the *Strait of Magalhanes* to Europe. The circumstances of his return are not to his credit: and the possibility of passing the Strait from the *South Sea* to the *Atlantic*, had already been proved by *Ladrilleros*, who, in 1558, sailed from *Chili* to the Eastern entrance.

The

CHAP. 19.

1580. The shallop, or longboat of Drake's ship.

The shallop belonging to the General's ship, which separated from him near the South West part of *Tierra del Fuego*, (*vide* page 327) having taken shelter in the Strait, and no prospect remaining to her crew of being able to rejoin the ship, they salted and dried penguins for their future provision. From the Strait they went to Port *San Julian*, and from thence to *Rio de la Plata*, where they put into a small river on the North side. Six men went into the woods to seek for food, whilst two remained to take care of the boat. The party in the woods met with a large body of Indians, who shot at them with arrows, by which they were all wounded, and four were taken prisoners. The other two reached the boat, and they put off from the shore. The Indians followed them to the sea side; and those who had staid by the boat were, with the rest, wounded with arrows. They then went to an island three leagues distant from the main land, where two of the four died of their wounds; and the shallop was beaten to pieces against the rocks.

Peter Carder and William Pitcher, the remaining two, staid on this island, which was only a league in compass, two months. They found for their subsistence, small crabs, eels, and a fruit like an orange; but no fresh water.

'We were driven,' says Carder, 'to drink our own urine, 'which we set out all night to cool, to drink in the morning; 'and being often drank and often voided, became exceeding 'red.' At length, they found a large plank 10 feet long, on which, providing themselves first with paddles, they embarked for the main land; but they were three days and two nights in reaching it. On coming to land, Carder relates, 'we found 'a rivulet of sweet water, where William Pitcher, my only 'comfort and companion, (although I endeavoured to dissuade 'him,) being before pinched with extreme thirst, overdrank

* 'himself,

'himself, and, to my unspeakable grief, died within half an 'hour, whom I buried as well as I could in the sand*. CHAP. 19. 1580.

The next day, Carder met with some of the natives, whom he did not endeavour to avoid; and they did him no injury. When he had lived with them some time, the Chief gave him leave to depart, and conducted him to the Portuguese settlements. After a variety of adventures, in an absence of nine years, he returned to his native country.

The fate of the Marigold is not mentioned in the accounts, and there is much reason to believe it was never known. The Marigold.

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* *Purchas*, who rejoiced in a conceit, and seldom permitted an opportunity to escape, whatsoever the occasion, in relating this catastrophe has remarked, by way of note in the margin, 'Pitcher breakes.'

Vol. IV. p. 1188. *Purchas, his Pilgrimes.*

CHAP. XX.

Some Account of the Charts to this Volume, with Miscellaneous Observations on the Geography of the 16th Century. Evidence in favour of the probability that the Country, since named New Holland, *was discovered by Europeans within that Period.*

CHAP. 20.

IN the interval between the voyage of Magalhanes and that of Drake, the art of navigation appears to have received very little improvement. About the latter period, the instrument called the log, for ascertaining the rate at which a ship is sailing, according to the mode at present practised, is supposed to have been invented. The errors of keeping a reckoning by the method of a plane chart, began to be generally acknowledged, but the remedy was understood by few. In the *Pacific Ocean*, the Spaniards had discovered, after a long train of unsuccessful experiments, the method of sailing from West to East: in general, however, voyages do not seem to have been performed with greater facility, nor were observations taken with greater correctness, in the time of Drake, than in the time of Magalhanes. Geography, however, had greatly advanced. The figure of the *New Continent* was nearly completed: many other countries had been discovered; and the Map of the World assumed an appearance very much resembling that which it at present bears. In local charts, inclinations were given to meridians, as well to those represented by straight lines, as to the circular meridians. But the parallels of latitude, even in hemispheres, were generally represented by straight lines; a practice which is not yet entirely discontinued.

Some readers may be of opinion, that a history of the early discoveries should properly have been accompanied, either with copies of the charts drawn by the discoverers themselves, or, where those could not be obtained, with the earliest that were published from the accounts. The charts of the original discoverers, even when known to be erroneous in the geography, are always curious, and may sometimes be valuable for information, both in that and in other respects, of which there may exist no other authentic document; and attention is to be paid to them accordingly. But it must be allowed, that when a correct chart can be obtained, the account of a discovery cannot by any other means receive such good illustration. This does not preclude the insertion of original charts, if recommended by any peculiar quality or circumstance. Nothing, however, that can be called original, worthy of notice, has been met with among the authorities examined for the voyages narrated in this volume.

Account of the charts.

In giving an account of the manner in which the general chart to this volume was composed, it is intended to comprehend those of smaller extent, and by that means to prevent the necessity of repetitions.

T. DEL FUEGO and Strait of MAGALHANES.

The part of the coast of *Tierra del Fuego*, without the *Strait of Magalhanes*, extending Eastward from *Landfall Island*, round *Cape Horn*, and to *Staten Land*, is copied from the chart of Captain Cook; except in a few places, where some additions have been made, principally from the Spanish chart of the Southern coast of America, published in 1798, which additions seem warranted by the nearness of the track to the coast, as drawn in that chart.

The *Strait of Magalhanes* is taken entirely from the Spanish chart constructed in 1788, as it is published in the *Relacion del Ultimo Viage al Estrecho*. The four fathoms bank is laid down from the chart of the Strait by Olmedilla, 1769.

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The coast on each side, to the North from the Strait, is taken from the Spanish chart of 1798.

The longitudes in such a mixture of authorities might naturally be supposed not exactly to coincide: but the differences are greater than could have been expected. The greatest disagreement is in the position assigned to *Cape Deseado*, which is laid down—

Cape DESEADO.

By Captain Cook in - -	74° 40′ West from *Greenwich.*
In the table of latitudes and longitudes, published with the requisite tables, by the Board of Longitude - -	74° 18′
By the chart in *Relacion del Ult. Viage* - - - - -	75° 13′
And by the Spanish chart of 1798 - - - - - -	74° 56′.

The difference between the English and the Spanish longitudes appears to have arisen principally from the Westernmost land seen by Captain Cook, being believed to be the *Cape Deseado.* The longitude, accordingly, between *Cape Deseado* and *Landfall Island*, in Captain Cook's chart, does not exceed ½ of a degree; and by the Spanish charts it is ¼ of a degree. It likewise appears from the latitudes, that the Westernmost land seen by Captain Cook was considerably to the South of *Cape Deseado.* By following the Spanish charts between *Landfall Island*, and the Western entrance into the Strait, and making a proportional distribution of the remaining differences, the authorities above cited have been connected, without materially affecting the relative position of any part of the coast.

The bay *De San Francisco*, near *Cape Horn*, is taken from the chart of Don Antonio de Ulloa.

The West coast of *South America*, from the *Strait of Magalhanes* towards the North, is taken from the Spanish survey, published

published in 1798, which extends as far as to the isthmus, and to Point *De Burica*, the South East point of *Golfo Dulce*.

From thence to *Acapulco*, has been supplied from the chart of D. Ant. de Ulloa.

From *Acapulco* to *Cape Corrientes*, the chart of Alzate y Ramirez, and a manuscript chart in the possession of Mr. Arrowsmith, have been consulted and occasionally followed; but that part of the coast is drawn chiefly from the descriptions of Dampier, and those in the account of Commodore Anson's Voyage. The descriptions by William Funnel are confused, and obviously too inaccurate to be trusted.

The situations of *Cape Corientes* and *Cape San Lucas*, having been settled by Captain Vancouver, serve for a base for the *Gulf of California*. For the Eastern side near the entrance of the gulf, and for the *Marias* Islands, the accounts of Dampier and of Captain Vancouver, furnish some good materials; to which may be added the French plan of the Bay *De Vanderas*.

For the gulf itself, the charts in the *Noticia de California*, the chart of Miguel Costanso, and the narrative of Francisco de Ulloa's voyage to the head of the gulf, have each contributed: what degree of credit has been given to each, has been noticed in the account of Ulloa's voyage.

To the materials which have been taken on the authorities here enumerated, it has been deemed necessary to make occasional additions on the authority of the original accounts. The instances are not numerous, and will appear in the perusal of the narratives.

The exterior part of *California*, and the continuation of the coast to the North, have been drawn from the charts and remarks of Captain Vancouver, and from the chart of Costanso.

The small portion of the coast of *China*, which appears in the chart, is laid down from Mr. Dalrymple's chart of the *China Sea*;

CHAP. 20.

Sea; and the *Corea* from M. D'Anville, with the corrections which the voyage of M. de la Perouse have furnished.

The situation of the *Japanese* Islands is marked, on the East side, from the observations made in the ship Resolution, in Captain Cook's last voyage: and the Island *Tsussima* has been taken for a governing point for marking the Western parts of *Japan*.

Of the situation of NANGASAKI.

The longitude of the town of *Nangasaki* has for a great length of time been set down in the best tables of latitudes and longitudes, as settled by astronomical observations, to be in longitude 128° 46′ 15″ East from the meridian of *Greenwich*. The observation which obtained this result, was of an eclipse of the moon in the year 1612; the following account of which is preserved in the *Memoires de l'Acadamie Royale des Sciences, depuis* 1666, *jusqu'à* 1699. tom. vii. partie ii. p. 706. Paris, Edit. 4to. 1729.

'In 1612, the fathers D'Aleni and Ureman observed an 'eclipse of the moon at *Macao*, the 8th of November; 'the beginning 8ʰ 30ᵐ, the end 11ʰ 45ᵐ.

'The father Charles Spinola, *qui eut le bonheur d'être brulé* 'à *petit feu*, who had the happiness to be burnt by a slow 'fire in *Japan*, for the Christian faith, which he went there 'to preach, observed at *Nangasaki* the beginning of this 'eclipse at 9ʰ 30ᵐ.'

One hour from *Macao*; which, according to the longitude at present assigned to that place, gives for the longitude of *Nangasaki* 128° 35′ 15″ from *Greenwich*.

The old charts (which, properly speaking, are the only charts that have been made of the Western parts of *Japan*), and modern observations, differ from the longitude of father Spinola: and it is reasonable, that the relative positions assigned for a length of time to places, should not be destroyed on the authority of a single observation, even of the most correct observer. The North

North end of *Tsussima*, is placed by the map of *Japan* to Kæmpfer's history, 0° 40′ to the West of *Nangasaki*; and by Valentyn's chart in the *Oud en nieuw Oost-Indien*, 0° 25′ to the West. M. D'Anville, likewise places *Tsussima* to the West of the meridian of *Nangasaki*. The North part of *Tsussima* was seen by M. de la Perouse, and its longitude determined to be (127° 17′ East from *Paris*) 129° 37′ East longitude from *Greenwich*; which is confirmed by Captain Broughton, in a more recent navigation, who observed the North end of *Tsussima* in 129° 30′ East.

The father Spinola observed only the commencement of the eclipse, a part in which different observers have been very apt to disagree; and the manner of computing the time may be supposed to have been less correct then, than it is at present. Trusting therefore to the long established positions combined with the later observations, 130° 06′ has been assumed for the longitude of *Nangasaki*.

PEKAN, or FORMOSA.

The island *Formosa* is entered in the general chart of the discoveries made by Europeans previous to 1579, and is found in the *Theatrum Orbis* of Ortelius, though nothing concerning it has been met with in the accounts of the antecedent navigations. Some accounts of *Formosa* pretend that it was not known to the Chinese till the year 1430; but when it is considered that *Formosa* is a mountainous country, above 60 leagues in extent, situated within 25 leagues of the coast of *China*, inhabited, with inhabited islands laying between, and that both in *China* and in *Formosa*, navigation is practised; it is not in the least credible that the people of two countries so circumstanced, should have remained in mutual ignorance of the existence of each other to so late a period*. Its first appearance in the history of the

* In the second voyage of Captain *Pring* to the *East Indies*, A. D. 1616, is the following remark: 'At noon, this day, we had sight of *Formosa*, above the clouds, 'the highest part bearing South East by East, about 18 leagues; the coast of *China* 'being at the same time North West from us seven leagues.' *Purchas*, Vol. I.

Chinese

CHAP. 20. Chinese might possibly have been in the year 1430. The name *Formosa* or *Hormosa* was given to the island by the Portuguese, on account of the beauty of its appearance. The native name is *Pekan*.

PHILIPPINE and MOLUCCA Islands. In placing the *Philippine Islands*, the longitudes given in Captain Robertson's chart of the Eastern Islands, have been followed in those parts which are approached by any good track there laid down. The longitudes of the Eastern and South East part of *Mindanao* are laid down to accord with the remarks and observations of Captain Hunter in 1791.

The chart designed for showing the track of the ship of Magalhanes among the *Philippine* and *Molucca Islands*, is formed by connecting and adapting to the limits prescribed by the longitudes just mentioned, the following materials:

The surveys of Mr. Dalrymple. The plans of Captain Forrest. The remarks of Captain Carteret and of Captain Hunter. The parts of Captain Robertson's chart which are sanctioned by the tracks he has laid down. To these have been applied many of the plans of ports and of particular portions of coast which have been published by Mr. Dalrymple. What remained to be filled up has been furnished from the chart of Pedro Murillo Velarde, and from a chart published in Madrid, date 1699.

THE LADRONES. The position of the *Ladrones* has been regulated by the longitude observed of *Tinian* in the voyage of Captain Wallis, and by that of the Northern Islands seen by M. de la Perouse.

The other islands in the Pacific Ocean, are laid down upon *data* which will be found explained at length in the accounts of the several discoveries.

PAPUA. The knowledge that had been gained, within the time to which the general chart is limited, of the North coast of *Papua* or *New Guinea*, does not seem to have comprehended more than its general situation and direction. The sketch given is answerable

answerable to this idea. Very little more is at present known with precision; and what has been seen by different navigators, has been too negligently described to admit, that, with the most careful examination, their discoveries can be satisfactorily connected. The general chart having been designed for the purpose only of exhibiting discovery at a particular point of its progress, to construct it on a scale of the same magnitude as would have been requisite for a more complete chart, did not appear necessary.

Inquiry concerning the earliest discovery of NEW HOLLAND.

The country at present called *New Holland* is entirely omitted; and this is a subject which demands explanation.

The first discovery of that land by Europeans, has been attributed to the Hollanders, who sailed along part of the West coast in 1616. Evidences however exist, which leave very little reason to doubt that it was known at no late period of the 16th century.

Of the Sieur de Gonneville's discovery.

The earliest claim to the original discovery is made by M. de Brosses, in favour of the Sieur de Gonneville, upon the evidence of an account given in a work, entitled, *Memoires touchant l'établissement d'une mission chrétienne dans le troisième Monde, ou Terre Australe*, printed at Paris, 1663.

M. de Brosses has inserted this account in his *Navigations aux Terres Australes* *. It states, that some French merchants, being tempted by the success of the Portuguese under Vasquez de Gama, determined upon sending a ship to the Indies by the same route which he had sailed. The ship was equipped at *Honfleur*. ‘ *Le Sieur de Gonneville, qui en étoit le commandant,* ‘ *leva l'ancre au mois du Juin, 1503, et doubla le Cap de Bonne* ‘ *Espérance, où il fut assailli d'une furieuse tourmente, qui lui fit*

* Tom. I. p. 106.

 ‘ *perdre*

CHAP. 20. ‘ *perdre sa route et l'abandonna au calme ennuyeux d'une mer in-*
‘ *connue.*’ i. e. ‘ The Sieur de Gonneville, who commanded
‘ her, weighed anchor in the month of June, 1503, and doubled
‘ the Cape of Good Hope, where he was assailed by a furious
‘ tempest, which made him lose his route, and abandoned him
‘ to the wearisome calm of an unknown sea.’ ‘ Not knowing
‘ what course to steer, the sight of some birds coming from the
‘ South, determined them to sail in that direction in the hope
‘ of finding land. They found what they desired, that is to say,
‘ a great country, which, in their relations, was named the
‘ Southern India, according to the custom of that time, of ap-
‘ plying indifferently the name of the Indies to every country
‘ newly discovered.’ They remained six months at this land; after which, the crew of the ship refused to proceed farther, and Gonneville was obliged to return to France. When near home, he was attacked by an English corsair, and plundered of every thing, so that his journals and descriptions were entirely lost. On arriving in port, he made a declaration of all that had happened in the voyage, to the Admiralty, which declaration was dated July the 19th, 1505, and was signed by the principal officers of the ship.

In one part of the relation, this great Southern land is said to be not far out of the direct route to the East Indies, ‘ *non loin*
‘ *de la droite navigation des Indes Orientales**.’ The land of Gonneville has been supposed to be in a high Southern latitude, and nearly on the meridian of the *Cape of Good Hope*; and Duval and Nolin placed it on their charts to the South West from the Cape, in 48° South. M. de Brosses conjectured that it was South from the *Moluccas*, and that it was

* *Navig. aux Terres Australes*, Tom. I. p. 105.

in

in fact the first discovery of the *T. Australis*, since named *New Holland*.

Let the whole account be reconsidered without prepossession, and the idea that will immediately and most naturally occur, is, that the Southern India discovered by Gonneville was *Madagascar*. De Gonneville having doubled (passed round) the Cape, was by tempests driven into calm latitudes, and so near to this land, that he was *directed thither by the flight of birds*. The refusal of the crew to proceed to the Eastern India, would scarcely have happened, if they had been so far advanced to the East as *New Holland*.

There are, however, claims to the *Terra Australis* for the 16th century, which seem much better founded than the one made by M. de Brosses. There is, in the British Museum, a manuscript map of the World (as much of it as was known) without date. The character of the writing is of the 16th century: and instead of the islands of *Japan*, a large country, with the name *Zipangri*, is placed to the East of *China*, at the distance of more than 500 leagues. With these circumstances, the other parts correspond, and Mr. Dalrymple (who has inserted in his collection a *fac simile* of the Eastern part of this curious manuscript) inferred from thence, that it was made early in the 16th century. The explanations, and those names which custom has allowed to be convertible, are in the French language, and the arms of the Dauphin of France are in one corner. The projection is of the plane; and the scale 2¼ inches *(Eng.)* to every 10 degrees. From the *Strait of Magalhanes*, Eastward, to the Eastern part of *China*, is made 230 degrees. A representation of some of the instruments in use at the time, is affixed at one end, among which is the cross-staff with a single transverse piece.

Since Mr. Dalrymple published the *fac simile*, a discovery has

 been

CHAP. 20.

been made in the King's library in the British Museum, which ascertains the date. A set of charts drawn on vellum and bound together, are found to form a copy, perhaps the original, of the French chart. There is an exact agreement between the two in the most material particulars; but the names and explanations to the one in the Royal library, are in the English language, and it is dedicated to the King of England. At the beginning is written, 'This book of Idrography is made by me Johne Rotz, 'sarvant to the King's Most Excellent Majesty.' The date is 1542. The dedication is in the French language, of which country Rotz was probably a native. In it, he says, his chart was composed from his own experience and that of his friends and fellow navigators. The parts are extremely well filled; the general outlines of the sea coasts are drawn with more appearance of correctness, and the whole is executed with better judgment, than the credit which is given to that date for geographical knowledge afforded reason to expect.

The following are among the characteristic particulars which have relation to this work.

A clear passage is given to the sea round the North of *Terre du Laboureur. (Labrador.)* The *Tierra del Fuego* is drawn as part of *La Terre Australe*. On the coast of America in the South Sea, between the latitude of 25° South, and the Strait, no names appear; the establishment of the Spaniards in *Chili* being then too recent to have become generally known. South of *Borneo*, and the Eastern Archipelagos, in latitude about 8 degrees South, begins a large country, with the name of *Jave le Grand* (the *Great Java)*. From the North part, the coast one way, is drawn to the South West, and afterwards to the South, to the 28th degree of South latitude, where it is made to turn off towards the South East; and thus far names are given to many different capes and bays. The other direction of the coast from the

the North part, is to the South East, where there are few names; and this part seems to have been intended for *New Guinea*, (as that country is not otherwise laid down,) on the supposition that *New Guinea* was a portion of the same land. The coast here, however, has nearly the same direction with the corresponding part of *New Holland*, but is continued far to the South; and by a very extraordinary co-incidence, immediately beyond the latitude of 30 degrees, the country is named *Coste des Herbaiges*, answering in climate, and in name to *Botany Bay*. The many instances of similitude to the present charts, which are to be found in the general outline of this land, it is not easy to imagine were produced solely by chance.

Within the outlines of the different countries are coloured drawings of the natives and their dwellings, of various animals, and other productions. The whole is well worth description, as an excellent specimen of the geography of that early period.

The French Chart is in one entire roll, and it is probable was originally designed for HENRY, the son of FRANCIS I. of France. It became part of the collection of the Earl of *Oxford*, but at his death was taken away by one of his servants, and remained in concealment till it was discovered by the President of the Royal Society, Sir Joseph Banks, who purchased and restored it to the Harleian library.

The Book, which is in some respects less perfect than the roll, contains representations of two hemispheres, where the parallels are circular, and are described through equal divisions of the right circle, and of the primitive circle; a method of projection which, notwithstanding its advantages for purposes of geography, has since been so much out of use, that when M. De la Hire

CHAP. 20.

Hire revived it 150 years afterwards, he was supposed to be the original inventor.

It is particularly observable, that the great *Terra Australis* of the geographers of the 16th century, in all the charts, is brought farther to the North near the Eastern islands, than in any other part of its progress round the Antarctic Pole. That Rotz, or some of his intimates, visited the 'Great Java,' appears probable, from the coast being delineated in his chart, with greater resemblance to that of *New Holland*, than is to be found in the charts of many years later date. All these circumstances justify and support the opinion, that the Northern and Western coasts of *New Holland* were known, and were the *Great Java* of the 16th century. There are likewise reasons for supposing that the Eastern coast had been seen; but they are not sufficient to authorize the insertion of any part of it, in a chart of the discoveries made previous to 1579.

Uncertain indications in the Charts.

Besides the islands which are laid down in that chart, some islands appear in the early charts, of which no accounts have been found. In 16 degrees South, and 12 degrees West from the coast of *Peru*, are placed a group of islands, called *Insulæ Incognitæ*, the *Unknown Islands*. It is certain that if islands really existed near that situation, they would not have remained till this time unknown. In latitude 36° South, and much nearer the American coast, are islands *Vistas de lexos* (seen from afar). In the *Theat. Orb.* of Ortelius, Chart N° 3, between the latitudes of 17½° and 20° North, and 35 degrees East from the *Philippine Islands*, are a groupe of islands, with the names *La Vezina (The Neighbour)*, *La Desgraciada (The Unpleasant)*, and *Los Monjes (The Monks)* These last islands have the appearance of being founded upon some real discovery; but the uncertainty respecting them is increased, by islands with the same names, and

nearly in the same latitude, being found in the chart of the track of the Galeon, published with Commodore Anson's voyage, where they are placed within 25 degrees of longitude from the South Cape of *California*.

The chart and dedication of Rotz, as well as the account cited by M. de Brosses, are proofs that, at that early period, many voyages were undertaken; and, it may be concluded, many discoveries made, of which no account was ever published: that of some, every remembrance has died away: and the various indications that appear in the old charts, to which no clue can be found, may be the remains, and possibly the only remains, of others.

END OF PART I.

APPENDIX.


Longitude West from the Meridian of the Observatory at Greenwich
A CHART of the Coast of the Southern parts of AMERICA, from the Latitude of 49 Degrees South to CAPE HORN.
PATAGONIA
Geographical Leagues
C. Victoria
The Evangelists
Westminster Hall
The Apostles
C. Pilares
C. Deseado
Canal de San Geronimo
Landfall Isle
B. de Choiseul
C. Gloucester
Canal de Sta. Barbara
C. Noir
Bay of Sta. Barbara
Cape Desolation
Gilbert's Isle
York Minster
Christmas Sound
Is. de S. Ildefonso
Nassau Bay
False Cape
Cape Horn discovered by Francis Drake A.D. 1578
Barnevelt's Isles
Evouts I.
New Island
Is. de Diego Ramirez
Canal de S. Sebastian
B. de Valdes
C. Forward
Pto. del Hambre
Pta. Sta. Maria
Anson sin salida
C. S. Gregorio
C. Virgins
R. Gallego
C. Buen Tiempo
Angostura de N. Sra. de la Esperanza
TIERRA DEL FUEGO
ELIZABETHIDES
C. de Vicente
C. de S. Diego
Port Maurice
Valentine Bay
STRAIT LE MAIRE
Staten Land discovered A.D. 1616 by Francisco de Houte
C. St. John
New Year Harbour
From Staten Land to Cape Horn, was not discovered till after the voyage of Sir Francis Drake.
Engraved by P. Simpson
Published according to Act of Parliament by James Burney

A CHART

designed to show the Navigation of the Ships of Magalhanes among the Philippine and Molucca ISLANDS.

Longitude East from Greenwich

PART of LUCONIA

CAMARINES

MINDORO

TANDAYA

ABUYO or LEYTE

NEGROS

ZEBU

PANAY

PULUAS or PARAGUA

MINDANAO

BISAYA

Bongo Bay

Lake of Mindanao

Samal

Sarangani

Candigar

Meangis Islands

Talautse Islands

Sanguir

Morotai Is.

MOLUCCAS

PART of CELEBES

PART of BORNEO

Sooloo

Archipelago

Balambangan

Banguey

Borneo Town

Equinoctial Line

This Land was seen by Capt. Hunter in 1791. Some Charts place here an Island of the name of Surgano from 6 to 8 leagues in extent. Others an Island San Juan of much greater magnitude. Dampier describes the situation of San Juan to be E.S.E. and S.E.b.E. length 38 leagues running the East coast of Mindanao. He relates that he landed on the South part of San Juan and sailed a considerable distance to the North in the Channel between that Island and Mindanao. Vol. 1. p. 304.

Herrera has given to San Juan an extent of 20 Spanish leagues.

Dese. de las Ind. Occid. Cap. 16

Published according to Act of Parliament, by Laurie Whittle, May 25th 1799.

Engraved by E. Sanford

A CHART

designed to show the Navigation of the Ships of Magalhanes among the Philippine and Molucca ISLANDS.

Longitude East from Greenwich

PART of LUCONIA

CAMARINES

MINDORO

TANDAYA

ABUYO or LEYTE

NEGROS

ZEBU

PANAY

PULUAS or PARAGUA

MINDANAO

BISAYA

Bongo Bay

Lake of Mindanao

Samal

Sarangani

Candigar

Meangis Islands

Talautse Islands

Sanguir

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APPENDIX.

Remarks on the Projection of Charts, and particularly on the Degree of Curvature proper to be given to the Parallels of Latitude.

THE general Chart of the South Sea, or Pacific Ocean, at the beginning of this volume, is constructed on the principles of the method called the Globular Projection; *i. e.* of making equal divisions of the Right Circle, to correspond with equal divisions of the Primitive. This method appears, in many respects, better adapted than any other hitherto practised for geographical delineations; and chiefly because it preserves, to equal portions of *superficies* on the globe, more equality in the representations, and requires in measurement less variation of scale.

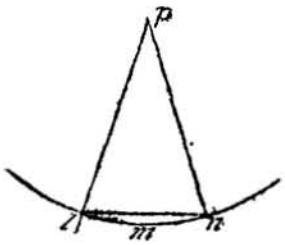
It may be noticed, that the measurement of distances by the arc of a great circle, is scarcely ever practised for purposes of geography. To describe an arc of an oblique great circle through two given points, is itself a process too tedious to be used in any common case, and where accuracy is required, it is obtained with equal facility, and with greater precision, by calculation.

The Chart of *California*, and its Gulf, is constructed, in its general principle, as part of a planisphere, whose centre is the pole; the meridians are represented by straight lines, and the parallels of latitude by circles nearly concentric.

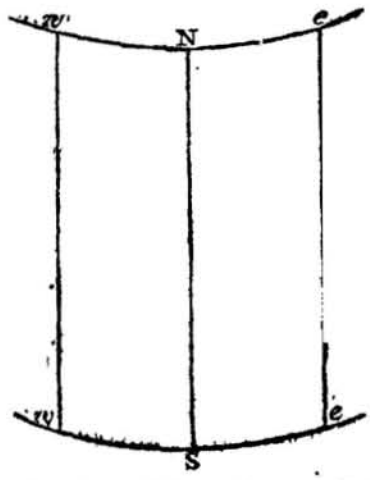
The greatest (but unavoidable) error in an hemisphere projected on the plane of the equator, is, that the degrees of longitude at and near the equator, considerably exceed in length the degrees of latitude. Indeed, in every projection of a hemisphere, whatever part falls near the primitive circle, will be represented in the same disproportionate manner; but many of the disadvantages which must be

submitted to in the representation of a whole hemisphere, are avoided, or in part remedied, in charts of more limited extent.

The intersections of meridians at the poles, form angles equal to the number of degrees of longitude comprehended between them; and when the meridians are represented by straight lines, any two drawn from the pole to the same parallel circle of latitude, will form an isosceles triangle with the chord of the intercepted arc of the parallel circle. The angles made by the chord with the two meridians, will each be equal to a right angle lessened by one half the degrees of longitude included. For let the arc *lmn*, represent a given quantity of longitude in any parallel of latitude. Draw the chord *ln*, and the meridians at *l* and at *n*, (the pole being supposed the center of projection) must each form with the chord, angles which will be less than 90° by one half the degrees of longitude they include. Upon this reasoning was determined the points through which the parallel circles of latitude were described.



For example, it was required to project lines for a chart extending 10 degrees in longitude, and from the 20th to the 35th degree of North latitude, within which limits *California* and its gulf are comprehended. The central meridian being first drawn, (which let N S represent, = 900 miles, N being at 35° North, and S at 20° North,) to place meridians at 5 degrees distance, lines were drawn from N and S, the two extreme latitudes, making angles with the central meridian on the side towards the elevated pole, = 87½ degrees (90° — 2° ½); and on each were measured as many miles in length as are equal to five degrees of longitude in their respective parallels. This gave the points *w*, *w*, *e*, *e*, for describing the parallel



arcs

arcs *w* N *e* and *w* S *e*. *w w*, and *e e*, were then joined by straight lines, which completed the outline of the chart. The three meridians were afterwards divided into as many equal parts as were thought necessary, and arcs described through the corresponding points for the parallels of latitude.

[N. B. Short arcs of extensive radii, can be drawn most readily, and with sufficient accuracy, with the instrument called the Shipwright's Bow.]

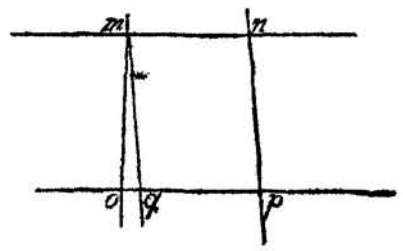
This method of projection, considering its facility, may be allowed to possess a great degree of comparative correctness.

Having said thus much of its merits, the defects require to be considered. One of the principal errors of measurement in this chart, is the want of extension at the intermediate parallels, of 25° and 30° latitude, where the degrees of longitude are too short about 0,4 of a geographical mile in each degree.

There is however another error of more material consequence. By making all the meridians right lines, they are supposed to have the same constant inclination towards each other in all their parts. The fact nevertheless is, that near the equator, the meridians being all nearly parallel to the polar axis, are in a very small degree inclined to each other. The inclination increases with every additional degree of latitude, till near the poles they point directly to a common center. It is to be noticed in the Chart of *California*, that by giving to the two extreme parallels their due proportion of length, the original hypothesis, of the inclination of the meridians being every where the same as near the poles, is departed from; and it is likewise rendered apparent, that the angles made by the chords of the parallel arches with the central meridian, are drawn too acute, and differ in quantity from the angles made by the same chords with the next meridian. This defect of symmetry increases with the distance from the central meridian, and is entirely attributable to an error in the curvature of the parallel circles.

The difference of the lengths of the chords of parallel arcs which are intercepted between the same meridians, shows the quantum of approach or of recession of those meridians in different parallels.

In arcs, not exceeding five degrees of a circle, the arch and the chord, not differing in length $\frac{1}{1000}$th part, may reciprocally be used for each other, without occasioning any perceptible variation; and it can seldom, if at all, be necessary, that the meridians, whose inclination to each other are to be determined, should be taken more apart than 5 degrees, or at most 10 degrees, of longitude at one time; and this limitation is advantageous in point of correctness, when the longitude is to be set off from a scale of equal parts upon the arcs of parallel circles. According to these premises, suppose it is required to find the inclination of two meridians between two given parallels, their difference in longitude being likewise given. *mo*, *np*, represent two meridians; *mn*, the given portion of longitude at the higher parallel, and *op* at the parallel nearest the equator. Draw *mq* parallel to *np*; there will be given in the triangle *moq*, the three sides; *oq* being the difference between *mn* and *op*; and *mq* not differing in a perceptible quantity from the meridians *mo*, *np*.



Then (*moq* being considered as an isosceles triangle) *mo* : radius :: $\frac{oq}{mo \times 2}$: sine of half the angle *omq*. And *oq* being the subtense of so small an angle, it may be said *mo* : radius :: *oq* to the sine of the angle *omq*; that is, radius is to the sine of the inclination of two meridians, as the distance between two parallels is to the difference in the lengths of the parallel arcs.

The length of all parallel arches, between the same meridians, having one and the same proportion to the co-sines of their latitudes, their differences will likewise be to the differences of the co-sines in the

the same proportion; *i. e.* as the distance of the meridians measured at the equator, is to radius.

Let A = the distance between two meridians at the equator; B = the distance between two parallels (their difference in latitude), and x = the difference of the co-sines of the two latitudes. $A \times \frac{x}{\text{radius}}$ will be the difference of the lengths of the parallel arcs, and B : $\frac{A\,x}{\text{radius}}$: : radius : $x \times \frac{A}{B}$.

From this (rather complicated) calculation, results the following easy method for finding the inclination of meridians between two given parallels of latitude. Multiply the difference of the co-sines of the parallels, by the number of the degrees of longitude to be included between the meridians; and the product divided by the number of the degrees of the meridian contained between the parallels, will give the sine of the inclination required.

N. B. The inclination thus found, will be that of the chords of the meridian arcs, which best answer the purposes of projection when the meridians are to be represented by straight lines.

Example. Required the inclination of meridians that are 5 degrees of longitude apart, between the parallels of 20° North, and 35° North

20° Nat. co-sine -	93969
35° - - - - - -	81915
	12054
	5
	15)60270

Inclination required 2° 18′ Nat. sine - ·4018

Consequently, it appears that in the Chart of *California*, the angles made by the central meridian with the chord of 5 degrees of the parallel arcs, instead of 87° 30′ should have been 88° 51′; and this angle would have preserved uniformity in the direction of the meridians

with the parallel arches. These considerations did not occur till after the Chart was engraved.

The principal use proposed in finding the inclination of the meridians to each other, is to determine the curvature of the parallels. The method which has been described, is proposed to answer that purpose, when the meridians are to be represented by straight lines.

When extension is to be given to the intermediate parallels, and the meridians are to be made circular, different degrees of curvature will be requisite for the different parallels.

Tangents applied to meridians at the same parallel of latitude, will meet at the line of the polar axis produced, in an angle equal to the inclination of the meridians. With two tangents so placed, the distance between the meridians at the proposed parallel, will form the base of an isosceles triangle. The length of any parallel arc (not exceeding the limits before specified) expressed by its equivalent in degrees and minutes of the great circle, may be admitted as the arc of a great circle; thus in latitude 30 degrees, a degree of longitude may be said to be 0° 51′ 58″ of a degree of the great circle; and 5 degrees in the latitude of 60, may be reckoned as 2° 30′ of the great circle. The length of the parallel thus reckoned, may be called the arc of longitude. And the co-tangent of the latitude : sine of radius : : the sine of half the arc of longitude : the sine of half the angle of inclination of the meridians.

To make a Chart of any considerable extent, when the curvature of the two extreme parallels and of the intermediate parallel are determined, and described through a right lined central meridian, the longitudes may be set off with their proper lengths, by as many measurements of 5 degrees on each side the central meridian as are required; and thus are marked the points for each of the other meridians. To enter into more minute explanations, would be lengthening this disquisition beyond reasonable bounds. Upon examination it will be found, that this mode of projection possesses many advantages, and is

GOVERNMENT OF INDIA HOME DEPT.

is susceptible of several auxiliary contrivances, by which accuracy and equality of proportion may be preserved.

The Chart of *Terra del Fuego* and the *Strait of Magalhanes*, might be offered as a specimen of projection upon this principle, if the space comprehended were not too small to afford opportunity for comparison between the advantages of different methods.

The Chart of the *Philippines* is drawn on the Mercator's projection, the defects of which are the less visible, for the space occupied being so near to the equator.

Of the Mercator's projection, it may be said in general, to be more recommended by its facility than by the consideration of any other advantages. In charts where the principal extent is in latitude, the Mercator's projection is peculiarly unfitted (unless for the use of the mariner, to whom it furnishes a ready method of estimating his longitude and the course he is to steer), and they must be tolerable good geographers to whom it does not convey false ideas of magnitudes and positions. This remark may be exemplified by two pieces of land of equal dimensions, one 60 degrees, the other 30 degrees from the equator, laid down in the same chart by Mercator's projection. The former will occupy in the chart just three times the quantity of space which is given to the latter. The degrees of latitude being lengthened as they are removed from the equator, and the degrees of longitude not being diminished, the proportions are increased equally in latitude and in longitude, which amounts in the area to a duplicate proportion; accordingly equal *superficies* of the earth at 60° latitude, and at the equator appear as four to one.

THE END.

Luke Hansard, Printer,
Great Turnstile, Lincoln's-Inn Fields.