

## Progress of Discovery 1824

*Historical sketch of the progress of discovery, navigation and commerce from The Earliest Records To The Beginning of The Nineteenth Century.*

William Stevenson, Esq

1824

THE curiosity of that man must be very feeble and sluggish, and his appetite for information very weak or depraved, who, when he compares the map of the world as it was known to the ancients, with the map of the world as it is at present known, does not feel himself powerfully excited to inquire into the causes which have progressively brought almost every speck of its surface completely within our knowledge and access. To develop and explain these causes is one of the objects of the present work ; but this object cannot be attained, without pointing out in what manner Geography was at first fixed on the basis of science, and has subsequently, at various periods been extended and improved, in proportion as those branches of physical knowledge which could lend it any assistance, have advanced towards perfection. We shall thus, we trust, be enabled to place before our readers a clear, but rapid view of the surface of the globe, gradually exhibiting a larger portion of known regions, and explored seas, till at last we introduce them to the full knowledge of the nineteenth century. In the course of this part of our work, decisive and instructive illustrations will frequently occur of the truth of these most important facts,—that one branch of science can scarcely advance, without advancing some other branches, which in their turn, repay the assistance they have received ; and that, generally speaking, the progress of intellect and morals is powerfully impelled by every impulse given to physical science, and can go on steadily and with full and permanent effect, only by the intercourse of civilised nations with those that are ignorant and barbarous.

But our work embraces another topic ; the progress of commercial enterprise from the earliest period to the present time. That an extensive and interesting field is thus opened to us will be evident, when we contrast the state of the wants and habits of the people of Britain, as they are depicted by Cæsar, with the wants and habits even of our lowest and poorest classes. In Cæsar's time, a very few of the comforts of life,—scarcely one of its meanest luxuries,—derived from the neighbouring shore of Gaul, were occasionally enjoyed by British Princes : in our time, the daily meal of the pauper who obtains his precarious and scanty pittance by begging, is supplied by a navigation of some thousand miles, from countries in opposite parts of the globe ; of whose existence Cæsar had not even the remotest idea. In the time of Cæsar, there was perhaps no country, the commerce of which was so confined :—in our time, the commerce of Britain lays the whole world under contribution, and surpasses in extent and magnitude the commerce of any other nation.

The progress of discovery and of commercial intercourse are intimately and almost necessarily connected ; where commerce does not in the first instance prompt man to discover new countries, it is sure, if these countries are not totally worthless, to lead him thoroughly to explore them. The arrangement of this work, in carrying on, at the same time, a view of the progress of discovery, and of commercial enterprise, is, therefore, that very arrangement which the nature of the subject suggests. The most important and permanent effects of the progress of discovery and commerce, on the wealth, the power, the political relations, the manners and habits, and the general interests and character of nations, will either appear on the very surface of our work, or, where the facts themselves do not expose them to view, they will be distinctly noticed.

A larger proportion of the volume is devoted to the progress of discovery and enterprise among the ancients, than among the moderns ; or,—to express ourselves more accurately,—the period that terminates with the discovery of America, and especially that which comprehends the commerce of the Phœniceans, of the Egyptians under the Ptolemies, of the Greeks, and of the Romans, is illustrated with more ample and minute details, than the period which has elapsed since the new world was discovered. To most readers, the nations of antiquity are known by their wars alone ; we wished to exhibit them in their commercial character and relations. Besides, the materials for the history of discovery within the modern period are neither so scattered, nor so difficult of access, as those which relate to the first period. After the discovery of America, the grand outline of the terraqueous part of the globe may be said to have been traced ; subsequent discoveries only giving it more boldness or accuracy, or filling up the intervening parts. The same observation may in some degree be applied, to the corresponding periods of the history of commerce. Influenced by these considerations, we have therefore exhibited the infancy and youth of discovery and commerce, while they were struggling with their own ignorance and inexperience, in tire strongest and fullest light.

At the conclusion of the work is given a select Catalogue of Voyages and Travels, which it is hoped will be found generally useful, not only in direct reading and inquiry, but also, in the formation o library.

This Historical Sketch has been drawn up with reference to, and in order to complete Kerr's Collection of Voyages and Travels, and was undertaken by the present Editor in consequence of the death of Mr. Kerr. But though drawn up with this object, it is strictly and entirely an independent and separate work.

Kerr's Collection contains a great variety of very curious and interesting early Voyages and Travels, of rare occurrence, or only to be found in expensive and voluminous Collections ; and is, moreover, especially distinguished by a correct and full account of all Captain Cook's Voyages.

W. STEVENSON

March 30, 1824.

III. We come now to America ;—and though Africa is one of the most ancient seats of the human race, and of civilization and science, and America has been discovered only about 350 years, yet we know much more respecting the coasts and interior of the latter than of the former portion of the globe.

Although the Spaniards and Portuguese, who, till very lately, possessed nearly the whole of South America, guarded their possessions strictly from the curious intrusion of foreigners, and were themselves very sparing in giving to the world the information respecting them which they must have acquired,—yet, even during their power there, the geography of this part of America was gradually developed and extended ; the face of the country ; the great outline of those immense mountains, which, under the torrid zone, are visited by the cold of the Pole ; the nature of the vast plains which lie between the offsets of these mountains ; and the general direction of the rivers, not less remarkable for their size than the mountains and plains, were generally known. The geography of South America, however, taking the term in the most philosophical and comprehensive sense, has been principally enriched within these few years, by the labours of Humboldt and his fellow-traveller Bompland, of Depons, Koster, Prince Maximilian, Luccock, Henderson, and by those Englishmen who joined the Spanish Americans during their struggle with the mother country. From the observations, enquiries,

and researches of these travellers, our information respecting all those parts of South America which constituted the Spanish and Portuguese dominions there, especially of Mexico, Terra Firma, Brazil, and Buenos Ayres, and generally the eastern and middle portions, has been much extended, as well as rendered more accurate and particular. Humboldt, especially, has left little to be gleaned by any future traveller, from any of those countries which he has visited and described.

The rapid and wonderful increase in the territories and inhabitants of the United States, has necessarily laid open the greater part of North America to our acquaintance. The United States, limited in their wish and endeavours to extend themselves on the north by the British possessions there, and on the south by the Spanish territories, and moreover drawn towards the interior and the shores of the Pacific by the grand natural navigation which the Mississippi and its numerous streams afford for inland commerce, and by the commercial access to the wealth of the East which the possession of the shores of the Pacific would open to them, have pushed their territories towards the west. First, the Alleghany Mountains, a feeble barrier to an encreasing population, and a most enterprising as well as unsettled people, were passed ; then the Mississippi was reached and crossed ; and at present the government of the United States are preparing the way for extending their territories gradually to the Western Ocean itself, and for spreading their population, as they go westwards, to the north and the south, as far as their limits will admit.

All those countries, over which they have spread themselves, are of course now well known, principally from the accounts published by Europeans, and especially Englishmen, who have been tempted to explore them, or to settle there. The government of the United States itself has not been backward in setting on foot exploratory travels into the immense districts to the west of the Mississippi : to these enterprizes they seem to have been particularly directed and stimulated by the acquisition of Louisiana from France, a country “ rich and varied in its soil» almost inexhaustible in natural resources, and almost indefinite in extent.”

This acquisition was made in the year 1803, and within four years of this period, three exploratory expeditions were sent out by the United States. The principal object of the first, which was under the direction of Major Pike, was to trace the Mississippi to its source, and to ascertain the direction of the Arkansa and Red Rivers, further to the west. In the course of this journey, an immense chain of mountains, called the Rocky Mountains, was approached, which appeared to be a continuation of the Andes. The ulterior grand object, however, of this expedition was not obtained, in consequence of the Spaniards compelling Major Pike to desist and return. A second attempt was made by another party, but the Spaniards stopped them likewise, in the years 1804, 5, and 6, Captains Lewis and Clarke explored the Missouri to its source, crossed the Rocky Mountains, and proceeding towards the North Pacific Ocean, ascertained the origin and course of the River Columbia.

In the years 1819 and 1820, several persons, well qualified for the undertaking by their science, spirit, and enterprize, accompanied by riflemen, hunters, and assistants, were sent out by the government of the United States, for the purpose of gaining a more full and accurate knowledge of the chain of the Rocky Mountains, and of the rivers, which, rising there, flowed into the Mississippi. After passing through a great extent and variety of country, and gaining some curious information respecting various Indian tribes, especially of those who inhabit the upper course of the Missouri, they reached the Mountains : these and the adjacent districts they carefully examined. They next separated, one party going towards the Red River, and the other descending the Arkansa. The former party were misled and misinformed by the Indians, so that they mistook and followed the Canadian River, instead of the

Red River, till it joined the Arkansa. They were, however, too exhausted to remedy their error. The latter party were more successful.

The great outline of the coast, as well as of the greater portion of the vast continent of America, is now filled up. In the northernmost parts of North America, the efforts of the British government to find a north-west passage, the spreading of the population of Canada, and the increasing importance of the fur trade, bid fair to add the details of this portion ; the spread of the population of the United States towards the west, will as necessarily give the details of the middle portion; while, with respect to the most southern portions of North America, and the whole of South America, with the exception of the cold, bleak, and barren territory of Patagonia, the changes which have taken place, and are still in operation, in the political state of the Spanish and Portuguese provinces, must soon fill up the little that has been left unaccomplished by Humboldt, &c.

What portions, then, of Asia, America, and Africa, are still *unknown* ?—and what comparison, in point of extent and importance, do they bear to what was *known* to the ancients ? In Asia, the interior of the vast kingdom of China is very imperfectly known, as well as Daouria and other districts on the confines of the Chinese and Russian empires ; central Asia in general, and all that extensive, populous, and fertile region which extends from the southern part of Malaya, nearly under the equator, in a northerly direction, to the fortieth degree of latitude, are still not explored, or but very partially so, by European travellers. This region comprehends Aracan, Ava, Pegu, Siam, Tsiompa, and Cambodia. The south and east coasts of Arabia still require to be more minutely and accurately surveyed. In the eastern archipelago, Borneo, Celebes, and Papua, are scarcely known. Though all these bear but a small proportion to the vast extent of Asia, yet some of them, especially the country to the north of the Malay peninsula, and the islands in the eastern archipelago, may justly be regarded as not inferior, in that importance which natural riches bestows, to any part of this quarter of the globe.

Still, however, we possess some general notice, and some vague reports of all these countries ; but it is otherwise with respect to the unknown portions of Africa. The whole of this quarter of the world, from the Niger to the confines of the British settlement at the Cape of Good Hope, may, with little limitation, be considered as unknown. Travellers have indeed penetrated a short distance from the western coast into the interior, in some parts between the latitude of the Niger and the latitude of the extreme northern boundary of the Cape settlement : and a very little is known respecting some small portions of the districts closely adjoining to the eastern coast ; but the whole of central Africa is still unexplored, and presents difficulties and dangers which it is apprehended will not be speedily or easily overcome. To the north of the Niger lies the Sahara, or Great Desert ; of this, probably, sufficient is known to convince us that its extent is such, that no country that would repay a traveller for his fatigue and risk, is situated to the north of it. To the east of the Niger, however, or rather along its course, and to the north of its course, as it flows to the east, much remains to be explored ; many geographical details have been indeed gathered from the Mahomedan merchants of this part of Africa, but these cannot entirely be trusted. The course and termination of the Niger itself is still an unsolved problem.

Captain Scoresby, a most intelligent and active captain in the whale fishery trade, has very lately succeeded in reaching the eastern coasts of Greenland, and is disposed to think that the descendants of the Danish colonists, of whose existence nothing is known since this coast was blocked up by ice at the beginning of the fifteenth century, still inhabit it. The northern shores of Greenland, and its extent in this direction are still unknown.

Notwithstanding the zeal and success with which the government of the United States prosecute their discoveries to the west of the Mississippi, there is still much unexplored country between that river and the Pacific Ocean. It is possible that lands may lie within the antarctic circle, of which we have hitherto as little notion as we had of South Shetland ten years ago ; but if there are such, they must be most barren and inhospitable. It is possible also, that, notwithstanding the care and attention with which the great Pacific has been so repeatedly swept, there may yet be islands in it undiscovered ; but these, however fertile from soil and climate, must be mere specks in the ocean.

But though comparatively little of the surface of the globe is now utterly unknown, yet even of those countries with which we are best acquainted, much remains to be ascertained, before the geography of them can justly be regarded as complete. Perhaps we are much less deficient and inaccurate in our knowledge of the natural history of the globe, than in its geography, strictly so called ; that is, in the extent, direction, latitudes and longitudes, direction and elevation of mountains, rise, course, and termination of rivers, &c. How grossly erroneous geography was till very lately, in some even of its most elementary parts, and those, too, in relation to what ought to have been the most accurately known portion of Europe, may be judged from these two facts,—that till near the close of the last century, the distance from the South Foreland, in Kent, to the Land's End, was laid down in all the maps of England nearly half a degree greater than it actually is ; and that, as we have formerly noticed, “ the length of the Mediterranean was estimated by the longitudes of Ptolemy till the eighteenth century, and that it was curtailed of nearly twenty-five degrees by observation, no farther back than the reign of Louis XIV.”

To speak in a loose and general manner, the Romans, at the height of their conquests, power, and geographical knowledge, were probably acquainted with a part of the globe about equal in extent to that of which we are still ignorant ; but their empire embraced a fairer and more valuable portion than we can expect to find in those countries which remain to reward the enterprise of European travellers. The fertile regions and the beautiful climate of the south of Europe, of the north of Africa, and above all of Asia Minor, present a picture which we can hardly expect will be approached, certainly will not be surpassed, under the burning heats of central Africa, or even the more mitigated heats of the farther peninsula of India. The short and easy access of all portions of the Roman Empire to the ocean, gave them advantages which must be denied to the hitherto unexplored districts in the interior of Asia and Africa. The farther peninsula of India is infinitely better situated in this respect.

At that very remote period, when sacred and profane history first displays the situation, and narrates the transactions of the human race, the countries, few in number, and comparatively of small extent, that were washed by the waters of the Mediterranean, comprised the whole of the earth which was then known. Asia Minor, which possessed the advantage of lying not only on this sea, but also on the Euxine, and which is moreover level in its surface, and fertile in its soil, seems to have been the first additional portion of the earth that became thoroughly known. The commercial enterprise of the Phœnicians, and their colonists the Carthaginians,—the conquests of Alexander the Great, and of the Romans, gradually extended the knowledge of the earth in all directions, but principally in the middle regions of Europe, in the north of Africa and in Asia towards the Indus. At the period when the Roman empire was destroyed, little more was known ; and during the middle ages, geography was feebly assisted and extended by a desire to possess the luxuries of the East, (which seems to have been as powerful and general with the conquerors of the Romans as with the Romans themselves,) by the religious zeal of a few priests, and by the zeal for knowledge which actuated a still smaller number of travellers.

The desire of obtaining the luxuries of the East, however, was the predominating principle, and the efficient cause of the extension of geography. Actuated by it, the passage of the Cape of Good Hope was accomplished ; the eastern limits of Asia were reached ; America was discovered, and even the Frozen Seas were braved and carefully examined, in the hope that by them a speedier passage might be found to the countries which produced these luxuries. At length the love of conquest, of wealth, and of luxury, which alone are sufficiently gross and stimulating in their nature to act on men in their rudest and least intellectual state, and which do not loose their hold on the most civilized, enlightened, and virtuous people, was assisted by the love of science ; and though when this union took place, little of the globe was unknown, as respected its grand outline, and the general extent and relative situation of the seas and lands which compose its surface, yet much remained to be accomplished in determining the details of geography ; in fixing accurately and scientifically the situation of places ; in exhibiting the surface of the land, as it was distinguished by mountains, plains, lakes, rivers, &c. ; in gaining a full and accurate knowledge of the natural history of each country, and of the manners, customs, institutions, religion, manufactures and commerce of its inhabitants.

Before we give a sketch of the progress of commercial enterprize during the last hundred years, it will be proper to notice the advancement of geographical science during the same period, and the assistance which was thus afforded, as well as from other sources, to those who travelled both by sea and land, for the purpose of discovering or exploring foreign and distant countries. This part of our subject seems naturally to divide itself into three parts ;. via. the improvement of maps, which was equally advantageous to sea and land travellers ; those particulars which rendered navigation more safe, easy, and expeditious ; and those particulars which bestowed the same benefit on land travellers.

The science of geography dates its origin, as we have already mentioned, from Mercator, though he was unable to point out and explain the law, according to which the projection which bears his name might be laid down on fixed principles : this was effected by an Englishman of the name of Wright. Mathematical geography, strictly so called, seems to have owed its origin to the discussion respecting the flattening of the Poles, which took place, in the beginning of the eighteenth century, among Newton, Huygens, and Cassini, and which was afterwards continued by some of the most distinguished mathematicians and natural philosophers of France and England. Still, however, the construction of maps derived little advantage from the application of strict science to geography, till Delisle, in France, and Haase, in Germany, directed their attention and talents to this particular subject : their efforts were indeed great, but in some measure unavailing, in consequence of the want of sufficient materials. The same impediment lay in the way of Busching, notwithstanding he brought to the task the characteristic patience and research of a German. To him, however, and the more illustrious D'Anville, accurate delineations and descriptions of the countaies of the globe may first justly be ascribed.

D'Anville possessed excellent and ample materials, in authentic relations, and plans and delineations made on the spot : with these he advanced to the task, calling to his aid mathematical principles. He first exhibited in his maps the interior of Asia free from that confusion and error by which all former maps had obscured it ; and struck out from his map of Africa many imaginary kingdoms. Ancient geography, and the still more involved and dark geography of the middle ages, received from him the first illumination ; and if subsequent geographers have been able to add to and correct his labours. it has been chiefly owing to their possessing materials which did not exist in his time.

Busching confined himself entirely to modern geography ; and though his minuteness is generally tiresome and superfluous, yet we can pardon it, for the accuracy of his details : he was patronized and assisted in his labours by all the governments of the north, who gave him access to every document which could further his object.

Since the time of D'Anville and Busching, the description of countries, and the construction of maps, have proceeded with a rapidly encreasing degree of accuracy. In ancient geography, Gosselin, Rennell, Vincent, and Malte Brun, are among the most celebrated names. Two Germans, Voss and Munnert, have directed their labours to illustrate and explain the geographical details and hints of the Greek poets. It would be almost endless to enumerate those to whom modern geography, and the construction of modern maps are principally indebted. Gaspari and Zimmerman, among the Germans, have thrown into a philosophical and interesting form the labours and heavy details which were supplied them by less original but more plodding men. The English, though, as Maite Brun observes, they are still without a system of geography which deserves the name, are rich in excellent materials, which have been supplied by the extent of their dominions and their commerce in various parts of the globe ; by their laudable and happy union of conquest, commerce, and science ; and by the advantage which Dalrymple, Arrowsmith, and other geographers have derived from these circumstances. The French, Russians, Spaniards, Danes, and indeed most nations of Europe, sensible of the vast importance of accurate maps, especially such as relate to their respective territories, have contributed to render them much more accurate than they formerly were ; so that at present there is scarcely any part of the globe, which has been visited by sea or land, of which we do not possess accurate maps ; and no sooner has the labour of any traveller filled up a void, or corrected an error, than the map of the country which he has visited becomes more full and accurate. The most direct and perfect application of mathematical and astronomical science to the delineation of the surface of the globe, so as to ascertain its exact form, and the exact extent of degrees of latitude in different parts of it, has been made by the English and French ; and much to their honour, by them in conjunction. The first modern measurement of degrees of latitude was made by an Englishman of the name of Norwood : he ascertained the difference of latitude between London and York in 1635, and then measured their distance :. from these premises he calculated, that the length of a degree was 122,399 English yards. At this time there was no reason to suppose that the earth was flattened at the Poles. Shortly afterwards, it having been discovered that the weights of bodies were less at the equator than at Paris, Huygens and Cassini directed their attention, as we have already stated, to the subject of the figure of the earth. In 1670 Picard measured an arc of the meridian in France ; and in 1718, the whole area extending through France was measured by Cassini and other philosophers. The results of this measurement seemed to disprove Newton's theory, that the curvature of the earth diminished as we recede from the equator. To remove all doubts, an arc near the equator was measured in Peru, by some French and Spanish astronomers ; and an arc near the arctic circle by some French and Swedish astronomers ; the result was a confirmation of Newton's theory, and that the equatorial diameter exceeded the polar by about 1/204 part of the whole.

Since this period, arcs of the meridian have been measured in several countries. In 1787 it was determined by the British and French governments to connect the observatories of Greenwich and Paris by a series of triangles, and to compare the differences of latitudes and longitudes, ascertained by astronomical observations, with those ascertained by actual measurement. The measurement in England was extended to a survey of the whole kingdom ; and the accurate maps thus obtained have been since published. Arcs of the meridian have also been measured lately from Dunkirk to Barcelona,—in Lapland, by which an error in the former measurement there was corrected ;—and in India.

We have been thus particular in our notice of this subject, because it is evident that such measurements must lie at the foundation of all real improvements in the construction of maps.

Let us next turn our attention to the improvements in navigation which have taken place during the last and present centuries ; these seem to consist, principally, in those which are derived from physical science, and those which are derived from other sources.

The grand objects of a navigator are the accurate knowledge of where he exactly is, in any part of his course, and how he ought to steer, in order to reach his destination in the shortest time. The means of ascertaining his latitude and longitude, of calculating how far he has sailed, and at what rate he is sailing, and the direction of his course with reference to the port to which he is desirous to proceed, are what he principally requires. We do not intend, by any means, to enter at any length, or systematically, on these subject ; but a brief and popular notice of them seems proper in such a work as this.

Astronomy here comes essentially to the aid of navigation : we have already seen how, even in the rudest state of the latter, it derived its chief assistance from this sublime science, confined as it then was to a knowledge of the position of a few stars. Astronomy enables the navigator to ascertain his latitude and longitude, and to find the variation in the compass. The principal difficulty in ascertaining the latitude at sea arose from the unsteady motion of the ship ; to remedy this several instruments were invented. We have already alluded to the astrolabe ; but this as well as well as the others were imperfect and objectionable, till such time as Hadley's quadrant was invented, the principle and uses of which were first suggested by Newton.

To ascertain the longitude was a much more difficult task : there are evidently two methods of doing this,—by time-keepers or chronometers and by making the motions of the celestial bodies serve instead of time-keepers. About the middle of the seventeenth century, Huygens proposed the pendulum clock for finding the longitude at sea; but it was unfit for the purpose, for many and obvious reasons. Watches, even made with the utmost care, were found to be too irregular in their rate of going, to be depended upon for this purpose. In the reign of Queen Anne the celebrated act was passed, appropriating certain sums for encouraging attempts to ascertain the longitude. Stimulated by this, Mr. Harrison invented his time-keeper, which on trial was found to answer the purpose with such tolerable accuracy, that he was deemed worthy to receive the sum awarded by parliament : it went within the limit of an error of thirty miles of longitude, or two minutes of time, in a voyage to the West Indies. Since this period, chronometers have been much improved, and excellent ones are very generally used : perhaps the most trying circumstances in which any were ever placed, existed during the voyage for the discovery of a north-west passage by Captain Parry ; and then most of those he had with him were found to be extremely accurate.

It is evident, however, that chronometers are liable to a variety of accidents, and that in very long voyages the means of verifying their rate of going seldom occur. Hence the lunar method, or the method of ascertaining the longitude by means of the motions of the moon, is more useful and valuable. Here again, the profoundest researches of Clairaut, Euler, D'Alembert, and La Place, were brought practically to bear on navigation. Guided and aided by these, Tobias Mayer, of Gottingen, compiled a set of solar and lunar tables, which were sent to the lords of the admiralty, in the year 1755 : they gave the longitude of the moon within thirty seconds. They were afterwards improved by Dr. Maskelyne and Mr. Mason, and still more lately by Burg and Burckhardt ; the error of these last tables will seldom exceed fifteen seconds, or seven miles and a half. The computations, however, necessary in making



use of these tables, were found to be very laborious and inconvenient ; to obviate this difficulty, the nautical almanack, suggested by Dr. Maskelyne, was published, which is now annually continued. The longitude is thus ascertained to such a nicety, as to secure the navigator from any danger arising from the former imperfect modes of finding it : “ he is now enabled to make for his port without sailing into the parallel of latitude, and then, in the seaman’s phrase, running down the port, on the parallel, as was done before this method was practised. Fifty years ago, navigators did not attempt to find their longitude at sea, unless by their reckoning, which was hardly ever to be depended on.”

Not long after the mariner’s compass was employed, its variation was noticed : as it is obvious that, unless the degree and direction of this variation are accurately known, the compass would be of little service in navigation, the attention of navigators and philosophers was carefully directed to this point ; and it was ascertained that the quantity of this variation is subject to regular periodical changes. By means, therefore, of a table indicating those changes under different latitudes and longitudes, and of what are called variation charts, the uncertainty arising from them is in a great measure done away. Another source of error however existed, which does not seem to have been noticed till the period of Captain Cook’s voyages : it was then found, “ that the variation of the needle differed very sensibly on the same spot, with the different directions of the ship’s head.” Captain Flinders attributed this to the iron in the ship, and made a number of observations on the subject ; these have been subsequently added to and corrected, so that at present the quantity of variation from this cause can be ascertained, and of course a proper allowance made for it. It does not appear that any material improvement has been made in the construction and use of the log,—that useful and necessary appendage to the compass—since it was invented about the end of the sixteenth century.

These are the most important improvements in nautical knowledge and science, which renders navigation at present so much more safe and expeditious than it formerly was ; there are, however, other circumstances which tend to the same object ; the more full, accurate, and minute knowledge of the prevalent winds at different times of the year, and in various parts of the ocean ; the means of foretelling changes of weather ; and, principally, a knowledge of the direction and force of the currents must be regarded as of essential advantage to the seaman. When to these we add, the coppering of ships, which was first practised about the year 1761, and other improvements in their built and rigging, we have enumerated the chief causes which enable a vessel to reach the East Indies in two-thirds of the time which was occupied in such a voyage half a century ago.

Nor must we forget that the health of the seamen has, during the same period, been rendered infinitely more secure ; so that mortality and sickness, in the longest voyages, and under great and frequent changes of climate, and other circumstances usually affecting health, will not exceed what would have occurred on land during the same time.

The great advantages which the very improved state of all branches of physical science, and of natural history, bestow on travellers in modern times, are enjoyed, though not in an equal degree, by navigators and by those who journey on land. To the latter they are indeed most important, and will principally account for the superiority of modern travels over those which were published a century ago, or even fifty years since. It is plain that our knowledge of foreign countries relates either to animate or inanimate nature : to the soil and geology, the face of the surface, and what lies below it ; the rivers, lakes, mountains, climate, and the plants ; or to the natural history, strictly so called :—and to the manners, institutions, government, religion, and statistics of the inhabitants. Consequently, as the appropriate branches of knowledge relating to these objects are extended, travellers must be better able, as well as

more disposed, to investigate them; and the public at large require that some or all of them should at least be noticed in books of travels. The same science, and many of the same instruments, which enable the seaman to ascertain his latitude and longitude, and to lay down full and accurate charts of the shores which he visits, are also useful to the land-traveller ; they both draw assistance from the knowledge of meteorology which they may possess, to make observations on the climate, and from their acquaintance with botany and. natural history, to give an account of the plants and animals. But it is evident that so far as the latter are concerned, as well as so far as relates to the inhabitants, the land traveller has more opportunities than he who goes on a voyage.

But there are other advantages enjoyed by modern travellers besides those derived from superior science : foreign languages are at present better and more generally understood ; and it is unnecessary to point out how important such an acquisition is, or rather how indispensable it is to accurate information. The knowledge of the languages of the East which many of the gentlemen in the service of the East India Company, and the missionaries, possess, has been of infinite service in making us much better acquainted with the antiquities, history, and present state of those countries, than we could possibly have otherwise been. There is at present greater intercourse among even remote nations ; and prejudices, which formerly operated as an almost insurmountable barrier, are now either entirely destroyed, or greatly weakened : in proof of this, we need only refer to the numerous travellers who have lately visited Egypt—a country which it would have been extremely dangerous to visit half a century ago. At the same distance of time, natives of Asia or Africa, especially in their appropriate costume, were seldom or never seen in the streets of London, or, if seen, would have been insulted, or greatly incommoded by the troublesome curiosity of its inhabitants ; now there are many such, who walk the streets unmolested, and scarcely noticed.

Commerce, which has derived such advantages from the progress of geographical knowledge, has in some measure repaid the obligation, by creating a much greater, more intimate, and more frequent mutual intercourse among nations ; and by doing away with those prejudices and antipathies which formerly closed many countries effectually against Christian and European travellers : and to the zeal and perseverance of modern travellers, assisted as they are by commercial intercourse, we may reasonably hope that we shall, before long, be indebted for a knowledge of the interior of Africa. Those countries still imperfectly known in the south-east of Asia will, probably, from their vicinity to our possessions in Hindostan, be explored from that quarter. The increasing population of the United States, and the independence of South America, will necessarily bring us acquainted with such parts of the new world as are still unknown. But it is difficult to conjecture from what sources, and under what circumstances, the empires of China and Japan will be rendered more accessible to European travellers : these countries, and some parts of the interior of Asia, are cut off from our communication by causes which probably will not speedily cease to operate. The barriers which still enclose all other countries are gradually yielding to the causes we have mentioned ; and as, along with greater facilities for penetrating into and travelling within such countries, travellers now possess greater capabilities of making use of the opportunities thus enjoyed, we may hope that nearly the whole world will soon be visited and known, and known, too, in every thing that relates to inanimate and animate nature.

The progress of commerce during the last hundred years, the period of time to which we are at present to direct our attention, has been so rapid, its ramifications are so complicated, and the objects it embraces so various and numerous, that it will not be possible, within the limits to which we must confine ourselves, to enter on minute and full details respecting it; nor would these be consonant to the nature of our work, or generally interesting and instructive.

During the infancy of commerce, as well as of geographical science, we deemed it proper to be particular in every thing that indicated their growth; but the reasons which proved the necessity, or the advantage, of such a mode of treating these subjects in the former parts of this volume, no longer exist, but in fact give way to reasons of an opposite nature—reasons for exhibiting merely a general view of them. Actuated by these considerations, we have been less minute and particular in what relates to modern geography, than in what relates to ancient ; and we shall follow the same plan in relation to what remains to be said on the subject of commerce. So long as any of the causes which tended to advance geography and commerce acted obscurely and imperfectly—so long as they were in such a weak state that the continuance of their progress was doubtful, we entered pretty fully into their history ; but after a forward motion was communicated to them, such as must carry them towards perfection without the possibility of any great or permanent check, we have thought it proper to abstain from details, and to confine ourselves to more general views. Guided by this principle, which derives additional weight from the vastness to which commerce has reached within the last hundred years, we shall now proceed to a rapid and general sketch of its progress during that period, and of its present state.

From the first and feeble revival of commerce in the middle ages, till the discovery of the Cape of Good Hope, the Italian republics, and the Hanseatic League, nearly monopolized all the trade of Europe ; the former, from their situation, naturally confining themselves to the importation and circulation of the commodities supplied by the East, and by the European countries in the south of Europe, and the districts of Africa then known and accessible ; while the latter directed their attention and industry to those articles which the middle and north of Europe produced or manufactured.

The discovery of the Cape of Good Hope gave a different direction to the commerce of the East, while at the same time it very greatly extended it ; but as it is obvious that a greater quantity of the commodities supplied by this part of the world could not be purchased, except by an increase in the produce and manufactures of the purchasing nations, they also pushed forward in industry, experience, skill, and capital. The Portuguese and Spaniards first reaped the fruits of the discovery in the Cape of Good Hope ; subsequently the Dutch ; and at the period at which this part of our sketch of commerce commences, the English were beginning to assume that hold and superiority in the East, by which they are now so greatly distinguished. The industry of Europe, especially of the middle and northern states, was further stimulated by the discovery of America, and, indirectly, by all those causes which in the fifteenth and sixteenth centuries tended to increase information, and to secure the liberty of the mass of the people. The invention of printing ; the reformation ; the destruction of the feudal system, at least in its most objectionable, degrading, and paralyzing features ; the contentions between nobility and the sovereigns, and between the latter and the people ; gave a stimulus to the human mind and thus enlarged its capacities, desires, and views, in such a manner, that the character of the human race assumed a loftier port.

From all these causes commerce benefited, and, as was natural to expect, it benefited most in those countries where most of these causes operated, and where they operated most powerfully. In Holland we see a memorable and gratifying instance of this : a comparatively small population, inhabiting a narrow district, won and kept from the overwhelming of the ocean, by most arduous, incessant, and expensive labour,—and the territory thus acquired and preserved not naturally fertile, and where fertile only calculated to produce few articles,—a people thus disadvantageously situated, in respect to territory and soil, and moreover engaged in a most perilous, doubtful, and protracted contest for their religion and liberty, with by far the most potent monarch of Europe,—this people, blessed with knowledge and freedom, forced to become industrious and enterprising by the very adverse circumstances in which

they were placed, gradually wrested from their opponents the discoverers of the treasures of the East and of the new world, and who were moreover blessed with a fertile soil and a luxurious climate at home,—their possessions in Asia, and part of their possessions in America. Nor did the enterprising spirit of the Dutch confine itself to the obtaining of these sources of wealth : they became, as we have already seen, the carriers for nearly the whole of Europe ; by their means the productions of the East were distributed among the European nations, and the bulky and mostly raw produce of the shores of the Baltic was exchanged for the productions and manufactures of France, England, Germany, and the Italian states.

From the middle of the eighteenth century, the commerce of the Dutch began to decline ; partly in consequence of political disputes among themselves, but principally because other nations of Europe now put forth their industry with effect and perseverance. The English and the French, especially became their great rivals ; first, by conducting themselves each their own trade, which had been previously carried on by the Dutch, and, subsequently, by the possessions they acquired in the East. The American war, and soon afterwards the possession of Holland by the French during the revolutionary war, gave a fatal blow to the remnant of their commerce, from which it has not recovered, nor is likely at any time to recover, at least nearly to its former flourishing state. For, as we have remarked, the Dutch were flourishing and rich, principally because other nations were ignorant, enslaved, and destitute of industry, skill, and capital.

England took the place of the Dutch in the scale of commercial enterprize and success : the contest between them was long and arduous ; but at length England attained a decided and permanent superiority. She gradually extended her possessions in the East ; and after expelling the French from this part of the world, became in reality the only European sovereign power there.

The manufactures of England, those real and abundant causes and sources of her immense commerce, did not begin to assume that importance and extent to which they have at present reached, till the middle, or rather the latter part of the eighteenth century ; then her potteries, her hardware, her woollens, and above all her cotton goods, began to improve. Certainly the steam engine is the grand cause to which England's wealth and commerce may be attributed in a great degree ; but the perfection to which it has been brought, the multifarious uses to which it is applied, both presuppose skill, capital, and industry, without which the mere possession of such an engine would have been of little avail.

At the termination of the American war, England seemed completely exhausted : she had come out of a long and expensive contest, deprived of what many regarded as her most valuable possessions, and having contracted an enormous debt. Yet in a very few years, she not only revived, but flourished more than ever ; it is in vain to attribute this to any other causes but those alone which can produce either individual or national wealth, viz. industry, enterprize, knowledge, and economy, and capital acquired by means of them. But what has rendered Britain more industrious, intelligent, and skilful than other nations ?—for if we can answer this question, we can satisfactorily account for her acquisition of capital; and capital, industry, and skill existing, commerce and wealth must necessarily follow.

Britain enjoys greater political freedom, and greater security of property than any other European nation ; and without political freedom, the mass of the people never can be intelligent, or possess either comprehensive views or desires ; and where views and desires are limited, there can be no regular, general, and zealous industry. Unless, however, security of property is enjoyed, as well as political liberty, industry, even if it could spring up under such circumstances, must soon droop and decay. It is a contradiction in terms to suppose that com-

prehensive views and desires can exist and lead to action, when at the same time it is extremely doubtful whether the objects of them could be realized, or, if realized, whether they would not immediately be destroyed, or torn from those whose labour, and skill, and anxious thought had acquired them.

But there are other causes to which we must ascribe the extension of British manufactures and commerce ; of these we shall, only enumerate what we regard as the principal and the most powerful : the stimulus which any particular improvement in manufactures gives to future and additional improvements, or rather, perhaps, the necessity which it creates for such additional improvements ; the natural operation of enlarged capital; the equally natural operation of increased wealth among the various classes of the community ; the peculiar circumstances in which Britain has been placed since the termination of the war which deprived her of her American colonies ; and, lastly, her national debt. A short view of each of these particulars will, we believe, sufficiently account for the present unparalleled state of British manufactures and commerce.

The direct effect of improvement in the mode of manufacturing any article, by the introduction of a more powerful machinery, is to encrease the quantity, and to lower the price of that article. Hence it follows, that those who manufacture it on the old plan must be under-sold, unless they also adopt such machinery ; and as knowledge, both speculative and practical, has greater chance to improve in proportion as it is spread, from this cause, as well as from the more powerful cause of rival interests, wherever improvements in manufactures have begun and been extended, they are sure to advance.

That this is not theoretical doctrine requires only an appeal to what has been effected, and is yet effecting in Britain, to prove. A very curious, interesting, and instructive work might be written on the improvements in the cotton machinery alone, which have been made in this country during the last forty years : we mean interesting and instructive, not merely on account of the facts relative to mechanical ingenuity which it would unfold, but on account of the much higher history which it would give of the mechanism of the human mind, and of the connections and ramifications of the various branches of human knowledge. In what state would the commerce of Great Britain have been at this time, if the vast improvements in the machinery for spinning cotton had not been made and universally adopted ?—and how slowly and imperfectly would these improvements have taken place, had the sciences been unconnected, or greater improvements, which at first were unseen or deemed impracticable, not been gradually developed, as lesser improvements were made. The stimulus of interest, the mutual connection of various branches of science, and above all the unceasing onward movement of the human mind in knowledge, speculative as well as practical, must be regarded as the most powerful causes of the present wonderful state of our manufactures, and, consequently, of our commerce.

Historical sketch of the progress of discovery, navigation and commerce ... (1824)

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