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ADDRESS
TO THE
GEOGRAPHICAL SECTION
OF THE
BRITISH ASSOCIATION.

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BY

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I CANNOT help feeling that my claim to the title of a Geographer is much too slight to warrant my appearance here as President of the Geographical Section of the British Association. My misgiving as to the fitness of the choice would, indeed, have precluded my accepting the honour, had I not believed that the main object of this Association is to receive and give ventilation to any new ideas or scientific contributions, to secure the attention of a larger audience of scientific men than could otherwise be easily obtained for any special subject, and to promote the free interchange of opinions between persons of various pursuits and qualifications. For this end it is not necessary that the President should himself be competent to take a leading part in discussing the many interesting and scientific subjects which are likely to be brought forward. It is enough, I conceive, that he should appreciate at their just value the studies of those who are willing to communicate the results of their labours, and be ready to promote the candid and impartial consideration of any papers to be read and discussed. With this assurance I will throw myself upon your indulgence for any shortcomings, and proceed with the business before us.

The admirable review of geographical progress during the past year presented to the Society at its last Anniversary Meeting in May by Sir Henry Rawlinson must be too fresh in the memory of those of my hearers who are interested in geographical pursuits to require any attempt on my part to go over the same ground. It has been published in the volume of the Society's Transactions for the year, and it would be superfluous, if not presumptuous, on my part to occupy your time by any attempt at repetition on the present occasion.

If I venture at all upon this field of geographical achievements it will be rather with a view to draw attention to the wide scope and application of Geography as a science, and to the mode in which geographical explorations and discoveries lead to important results in various directions. Geography, in a popular sense, is apt to be too much associated with a mere description of the configuration of the earth, with its seas and continents illustrated by maps. But before

Geography could fulfil even this very narrow and restricted conception of its proper functions—before, indeed, it could exist in any but the rudest and most imperfect shape, such as we see in mediæval maps—great progress had to be made in astronomy and mathematics. Without these two sister sciences, cartography, or the process of depicting relative distances and places on the earth, either on maps or globes, could not be carried out with any approach to certainty or accuracy. Explorations with a compass and measure of distance, estimated by the number of days' journey, gave little more than such results as we find recorded in Ptolemy's works. The map of the world preserved in Hereford Cathedral is a curious sample. There the history of our race, as well as the distribution of countries, are given on purely theologic and historical or legendary data. Beginning at the top of the circle with Paradise, it presents nearly every thing in nature and fiction but Geography to the gaze of the curious. Until the discovery of the gnomon, and the means of fixing the latitude and longitude of any place by observations of the celestial bodies had been perfected, Geography could have no existence as a science. It owes much to its intimate connexion with various branches of knowledge and investigations into the nature and mutual relations of objects on the earth or forming a part of its crust, which seemingly had, at the time of their prosecution, no direct bearing on Geography or its objects. In modern times only it has been fully recognized that Descriptive Geography is of little value apart from Physical Geography; and these, again, lose much of their interest without their relation to Political and Historical events are traced.

Astronomy had, in effect, to supply the means of reducing to a systematic and available form the accumulated materials which must now constitute Geography, by first enabling geographers to determine with accuracy the relative position of places, with their distance from each other and their exact latitude and longitude. But this power once gained, the importance of Geography and its influence over the material interests of mankind soon became apparent, and its progress as a science has gone on increasing at a proportionately rapid rate. It was in vain that Marco Polo twice traversed Asia in its whole breadth, from the Mediterranean to the Great Wall of China, and lived to return and recount all the wonders he had seen to his countrymen within the prison walls of Genoa. It only earned for him the derisive *sobriquet* of Marco Millione, from the supposed fabulous nature of the statements he made; and although he contributed so vast an amount of new facts to the knowledge of the earth's surface, it does not appear, even when his book was printed a century and a half later, that it had any material effect upon the science of Geography, for want of the higher knowledge required to systematize and assimilate the whole.

Later (as Colonel Yule has well pointed out in his admirable edition of Marco Polo's book), when Vasco de Gama, doubling the Cape of Good Hope, reached the Malabar coast, and the great burst of discovery eastward and westward took place, the results of all attempts to combine the new knowledge with the old was most unhappy. The first and crudest forms of such combination attempted to realize the erroneous ideas of Columbus regarding the identity of his discoveries with the regions of the Great Khan's dominion. It was, in consequence, some time before America could vindicate its independent position on the surface of the globe, while Jerusalem long remained the central point of the map, because it was so described in the book of Ezekiel. Down nearly to the middle of the 15th century the map of the world was, in its outline, as it had been handed down by Bible and other traditions sanctioned by some Fathers of the Church, "sprinkled with a combination of classical and mediæval legends."

How important Geographical science has become since that date, and how each day brings fresh materials and illustrations of the importance, I need hardly point out. The discovery by the Portuguese of a sea-route to India entirely changed the whole course of commerce between Europe and Asia. A trade which had first enriched Tyre and the Phœnicians, and in Solomon's reign tempted the Jews to build fleets on the Red Sea, and, still increasing, made Alexandria the great emporium of Indian wares, while in more modern times it helped to create a city of merchant princes in Venice, abandoned from that date the caravan routes of Asia; the Adriatic ceased to bear rich gossies from the East, and Nuremberg, with other

free cities of Germany, equally lost a source of wealth in distributing Eastern merchandise.

This was the first and most pregnant of the great changes caused by the geographical discoveries of the 15th century. The planting of the European race in North and South America, and especially of our own stock in the North, was a second result, which promises to make English the predominating language of the world, and to spread British institutions and love of liberty over the four quarters of the globe. How it has affected the destiny of the Aborigines over the new world laid open by geographical discoveries is a less satisfactory subject of reflection; but whatever the estimate may be of relative good and evil following in the wake of such explorations, the influence exercised on the destinies of nations cannot be questioned; and amidst all the workers who contributed to these results, great and lasting as they have been, the Geographer may rightly claim a foremost place.

Few things in the retrospect of past intercourse and knowledge of each other among nations widely separated are more remarkable than the continuous communication across the whole breadth of Asia between the east and west, which seems always to have been maintained for purposes of traffic, from the earliest historic periods. No dangers of the way, no physical obstacles of mountain-ranges and great rivers or deserts, no length of time nor ignorance of the geographical bearings of any portion of this area of so many thousand miles, seemed to have acted as deterrents. Even the softly nurtured Venetian merchants were undismayed; and Marco Polo's book of his father's travels and his own abundantly proves that time must have borne a very different value in those days to that which prevails in this century. In the first journey to China we find they stayed one year at Sarai on the Volga and another at Bokhara. It is true they found it difficult to get either backward or forward, owing to the unsettled state of the country; but this did not in any way militate against their accepting an invitation, under a safe escort from the Envoys of Alan, the "Lord of the Levant," to proceed to the court of Kublár Khan, in China—a journey which occupied them a whole year. Whether the profits of any successful venture were so enormous as to afford adequate return for the time, or the merchants of those days were so fond of adventure and exploration that they were content with less profit than modern commerce expects, I am not prepared to say. But whatever may be the true explanation of this apparent diversity, we may congratulate ourselves that each year many geographical explorations, accompanied as these now are by careful and scientific observations, and the immediate registering of new facts in accurate collation with all previously acquired data, sensibly diminish the extent of unknown territory, and by so much not only facilitate the development of a constantly increasing commerce, but largely contribute to the diminution of causes of national contention in the application of treaties and the determination of boundaries.

We have had several very striking examples of this within the past year; and although this is not the place to enter into the merits of the disputed questions as to limits in any of the cases, I may be permitted to refer to them in general terms as illustrations of the important service which geographical science is enabled to render to Nations and to States in the higher field of political combinations and diplomatic negotiations. It has been well said that the Surveyor is likely to do more in future than soldiers to prevent war; and the more frequently the scientific geographer precedes negotiations, the less ground there will be for doubt or disputes about boundaries—a most fertile subject of quarrel in all ages. Is it not quite certain, for instance, that if accurate and complete surveys had been made of the Straits between Vancouver's Island and the American coast, and appended to the treaty of 1846, which was intended to settle the Oregon boundary, with a line drawn exactly where it was intended the delimitation should take place by the two negotiators, no dispute could have arisen? It may have seemed enough to define the north-west water boundary to be "a line drawn from the middle of the channel which separates the Continent from Vancouver's Island southerly through the middle of the said Channel and of the Fuca Strait to the ocean,"—more especially, perhaps, as the existence of the De Haro and Rosario channels, about which the dispute has arisen, was known to the negotiators. Yet how long and fierce the contention has been between two great powers! and,

though now peacefully decided, we all know that it has for more than 25 years been one of those questions which might at any time have been a cause of war between two kindred nations,—the greatest calamity that could well befall either the one or the other.

The result of Sir Frederick Goldsmid's geographical labours in the east of Persia during the past year has added another example of the inestimable political value of accurate geographical surveys. In Asia more than any other country perhaps is this necessity felt. Papers have been read at the Geographical Society describing the journey of the Arbitration Commission from Bunder Abbas, through Kerman to Seistan, and reporting fully on the districts which have been so long in dispute between the Persian and Afghan governments. The line of delimitation between the two countries has been decided by the labours of the Commission, and the last mail from India announces its acceptance by both parties. My chief object in referring to it is to show the great and important services which not only may be, but are actually rendered by geographical labours under able direction, and how much is to be gained, both in the interests of peace and of science, from the adoption of a practise of avoiding political complications by determining disputed lines of frontier through the agency of mixed commissions and professional engineers. That it should be generally adopted in the East must be the earnest desire alike of geographers and statesmen, and converts to the principle are rapidly increasing. The latest news from Constantinople brings the gratifying intelligence that the Sultan of Turkey and the Shah of Persia have mutually agreed to refer their contentions about the boundaries between the two States to a mixed Commission of this kind. The delimitation fixed by the British Government on the Upper Oxus by similar action is a pledge of peace with Russia. These are so many triumphs of an enlightened policy, by which disputed boundaries are settled, not by the sword, but by geographical observation, the accuracy of which cannot be contested. In this case it was rendered the more difficult, and all the more important politically, because, as Colonel Yule has recently demonstrated, the whole geography of the region of the Upper Oxus and surrounding country had been falsified by Klaproth. In all the pseudo-travels that he invented he had imposed alike upon the British and the Russian Governments; and the consequences of such falsification might have been most fatal, for it vitiated the maps of the Russian Government, and with it their diplomacy. Fortunately our own information of the geography of the trans-Himalayan regions had so much improved since Klaproth exercised his ingenuity, that it became possible not only to show where the falsification existed, but how one great source of error had arisen. Colonel Yule has proved, in a paper now published in the 'Transactions of the Geographical Society,' how, by a certain square of the Chinese Map constructed in 1759 (which was the groundwork of Klaproth's geographical knowledge) having been accidentally turned round through an angle of 90° , the mistake originated by which the district of Wakhân for instance, instead of being laid down in the same parallel as Badakhshan, was placed in the map 100 miles to the northward, and thus appeared to Prince Gortchakoff to be conterminous with *Kara-tegin*.

There is no nation, perhaps, which has so much reason to value geographical science and the art of map-making at a high rate as the Russians. In their rapid advance across the steppes and mountain-ranges of Northern Asia southward into the valley of the Amoor and Manchuria on the east, and to Khiva and Samarcand in the west, they have taken many courses; but in all they have had the immense advantage of not only knowing the territories they coveted, but being able to place them accurately on maps. The late Mr. Atkinson, a great traveller in Siberia and Central Asia, gives more than one graphic and, there is every reason to believe, perfectly veracious account of how negotiations for territory with Asiatics may be successfully and even peacefully conducted at a very small cost when thus aided and prepared. First an exploring party starts for some unknown region, ostensibly, it may be, for hunting, well armed and prepared to note accurately the physical features of any country they may traverse. The first exploration accomplished, a second follows, better provided for an actual survey and geological and mineralogical researches. These being completed, negotiations are then opened with the chief of the tribe to whom the territory in question belongs. One of these

transactions in 1848 ended in a considerable district in the Kirghis Steppe, lying between the Targ Abatai and the Irtisch, already ascertained to possess valuable silver- and lead-mines, being transferred from the Sultan and chiefs of the Great Horde of Kirghis to the Emperor of Russia (or, as he is better known to the Kirghis, the "Great White Khan") for a sum of 250 roubles, a gold medal, a sword of honour, and half a dozen handsome khalats or robes for the Sultan, Mulla, and the five or six head chiefs.

In these mysterious and hitherto inaccessible regions of Inner or Central Asia geographical knowledge is almost a necessary qualification in any Power which seeks further intercourse and access. To Russia, of course, it is matter of primary importance, situated as she is in direct contact along all her southern border with the nomade races which occupy the vast regions stretching across the continent between her and all the southern ports and seas; but scarcely more so, perhaps, than to Great Britain, as another great Asiatic Power,—the only one of equal pretensions, strength, and influence in the East, by its command of Western resources and Asiatic territory. A knowledge of the geography of the regions lying between the Caspian and the Amoor is, indeed, power of the most valuable kind. When the Russians secured possession of the upper portion of the Zarafshan valley about Saware, they commanded the waters on which Bokhara depends for its fertility and existence, and of course obtained a means of easy conquest. Thus, whether for conquest or for commerce, Geography is the best ally and a necessary pioneer. If we look again at the map, showing the complex systems of mountains separating the plains of India from Eastern Turkestan and the upper tablelands and valleys of Central Asia, we shall find that they are not simple ranges, like the Alps or the Pyrenees, which can be crossed by a single pass, as Mr. Shaw has so well shown, but are composed of many chains, enclosing considerable countries within their valleys. Thibet and Cashmere are examples of this. Eleven passes, we are told, have to be crossed in travelling from India to Turkestan; and of these, only two are lower than the summit of Mont Blanc. Yet, thanks to the labours of many geographic explorers, impassable as these mountain-barriers seem, we know now that they are penetrated in such a manner by rivers, and so accessible by comparatively easy routes, that they form no insurmountable obstacle to peaceful commerce, although capable of a complete defence against force. Take, again, that range of the Thian Shan to the north and the Himalayan system to the south, which converge together as they run westward, and unite in a vast boss supporting the high plateau of Panier, which the natives call the Bam-i-dunya, or "Upper floor of the World." Numerous valleys penetrate into it from east and from west, a peculiarity which makes it far easier to traverse from east to west than from north to south—a fact which you will see at once has a most important bearing on the trade-routes.

The latest advance in this direction of Russia is fixed at present at Kulja, where she has established an important trading centre. This has been obviously dictated by a knowledge of geographical features giving her access to Eastern Turkestan; for although Kulja appears to be separated by difficult snowy mountains, yet these are found to die away to the east, and from that point Mr. Shaw tells us Russia has it in her power to push her advance or her trade in two directions over level country, either eastward to China or westward to Turkestan.

Geography, it is clear, therefore, in these regions, is the right hand of rulers and of generals, and determines alike the march of armies and the advance of merchants. Nothing can be done by either without its aid. It is impossible, however, not to admire the energy and indomitable spirit with which Russia, claiming and freely using all the assistance scientific geography can give, utilizes the knowledge thus secured. Mr. Shaw relates how the Muzat Pass, leading between Aksu and Kulja, lies over a formidable glacier; and he was assured that forty men were kept at work in the summer roughing the ice for the passage of the caravans. With such a rival in the field it must be evident, if we are to compete in the same field with any success, that both Government and our merchants must put forth all their strength, and neither be scared by physical obstacles nor daunted by expense and risks; this seems to me the great lesson which all these accumulated facts convey;

geography has shown the way, it is for merchants to follow, and Government, if need be, to aid in removing obstacles not otherwise to be overcome.

The connexion between history and geography, and the important bearing of each upon the other, was scarcely recognized until the second half of the last century, when several historical travellers gave, with their researches into the ancient history of Greece and Western Asia, many details of physical geography, and showed how essential a knowledge of these were to any perfect understanding of the events taking place in the several localities. They must be studied together, as the nature of the ground on which a battle has been fought or a campaign conducted must be studied to understand the movements of the contending forces and the design of the leaders.

The late Dr. Arnold, in his lectures on History, insisted much upon the mutual relations of history and geography, and the important light which a study of physical geography throws upon the national conditions of life, social and political. "The whole character of a nation (he observes) may be influenced by its geology and physical geography." Again, geography holds out one hand to geology and physiology, while she holds out the other to history. Both geology and physiology are closely connected with history. The geological fact of England's superior richness in coal over every other country lay at the bottom of the corn-law question. The physiological fact that the tea-plant was uncultivated in any other climate or country than China gave a peculiar interest to our relations with it. And it would be easy to give many examples of this intimate connexion between geography and history, and the mutual aid they afford.

We have seen how possession of the head sources of the water supplies could determine the fate of a country like Bokhara. And the distribution of river-courses mainly determine the creation of great populations, and the development of trade and civilization by facilities of traffic and intercourse. Dr. Arnold, in the lectures already quoted, gives an admirable illustration in dealing with the map of Italy, which I cannot resist the opportunity of bringing under your notice.

The mere plan geography of Italy shows a semicircle of mountains round the northern boundary, and another long line stretching down the middle of the Apennines. But let us look a little further, and give life and meaning to these features, as Arnold delighted to do.

"Observe, in the first place, how the Apennine line, beginning from the southern extremity of the Alps, runs across Italy to the very edge of the Adriatic, and thus separates naturally the Italy proper of the Romans from Cisalpine Gaul. Observe again how the Alps, after running north and south, where they divide Italy from France, turn then away to the eastward, running almost parallel to the Apennines till they too touch the head of the Adriatic on the confines of Istria. Thus, between these two lines of mountains there is enclosed one great basin or plain, enclosed on three sides by mountains, opening to the east to the sea. One great river flows through it in its whole extent, and this is fed by streams almost unnumbered descending towards it on either side, from the Alps on the one side and from the Apennines on the other. Who can wonder that this large and rich and well-watered place should be filled with flourishing cities, or that it should have been contended for so often by more poor invaders? Then descending into Italy proper, we find the complexity of its geography quite in accordance with its manifold political divisions. It is not one central ridge of mountains, leaving a broad belt of level country on either side between it and the sea; nor yet is it a clear rising immediately from the sea on one side, like the Andes in South America, leaving room therefore on the other side for wide plains of tableland, and for rivers with a sufficient length of course to become at last great and navigable. It is a backbone thickly set with spines of unequal length, interlacing with each other in a maze almost inextricable. Speaking generally, then, Italy is made up of an infinite multitude of valleys pent in between high and steep hills, each forming a country to itself, and cut off by natural barriers from the others. Its several parts are isolated by nature, and no art of man can thoroughly unite them. Even the various provinces of the same kingdom are strangers to each other. The Abruzzi are like an unknown world to the inhabitant of Naples." This is what Dr. Arnold

meant by a real and lively knowledge of geography, which brings the whole character of a country before our eyes, and enables us to understand its influence upon the social and political condition of its inhabitants.

But such is the rapid progress of science and man's triumphs over nature, that the tunnel through Mont Cenis, or Fell's railroad over it, and the railroad which now pierces the Apennines and unites the eastern and western coasts of Italy, aided by telegraphic wires, falsifies already Arnold's conclusion that no art of man can thoroughly unite regions so separated. And the influence these achievements must have over the unification of Italy and the progress of civilization throughout the peninsula can hardly be exaggerated.

Persia at the present day offers another striking illustration of the influence of physical causes over the progress of civilization and the destiny of nations. Apart from the consequences of ages of misrule, the physical geography has exercised a very adverse influence upon the country. Persia suffers from a great deficiency of rainfall; and although an immense supply of water comes from the mountains by the rains and the melting of the snow, it is lost in the plains and wasted, if not before, at least as soon as it reaches the great salt desert about twenty miles from Teheran. With the prevailing insufficiency of the rainfall on the plains themselves the whole country is becoming sterile; but if the abundant supply from the mountains were intercepted before it reached the lower ground and collected into reservoirs, it might then be distributed by irrigation over the whole face of the land and play the same part as the Zarafshan or "Gold-scatterer" (so called for its fertilizing powers) in the rich cultivation of Bokhara. Perhaps this may not prove beyond the power of Baron Reuter to accomplish, aided by all the science and some of the capital of Europe. What further changes he may be enabled to effect by the introduction of railroads and telegraphic lines for facilitating trade and rapid communication, we may soon be in a position to speak from actual experience; for it is stated in the public prints that the proposed railway between Teheran and Resht is to be commenced at once, and that the plant has already left England. More extended operations are, it is understood, contemplated to the south of Teheran to Ispahan, and from thence to the Persian Gulf—perhaps also to the Turkish frontier. The former will open a direct line to India, and the latter to the Mediterranean, should the Turkish Government be willing to work in concert. Who can calculate the revolution in the whole aspect of the country and its life-sustaining powers if a whole series of such measures should be carried through at once?

But the part which Russia plays in the history of Europe and Asia, and the future which may yet be reserved for that Empire, is more a matter of Physical Geography than of politics or of policy, if we look to determining causes. What was Russia to do, frozen in between two seas and with closed ports for more than six months in each year, but, by an infallible instinct (in nations as individuals often exemplified), stretch out feelers towards the open waters and more genial climates? We have heard much of Russia's destiny driving her southwards to the Bosphorus and eastward in the same parallel over the rich valleys of central and Tropic Asia; but is it not a geographical necessity, far more than a political ambition, which has thus far driven her across the whole breadth of Asia until she gained the Chinese ports on the Pacific, and southwards towards the mouths of the Danube, the sunny ports of the Mediterranean, and the head of the Persian Gulf? Until unfrozen rivers and ports could be reached, how could her people make any progress or develop their resources? It not only was a natural tendency, but as natural as the descent of the glacier to the valleys, forging downwards by a slow but irresistible pressure, and as irresistible. Obstacles may retard the progress, but not arrest it; and Russia is but following the course of nature as well as history in pouring down nomade hordes and hardy Scythians on the more cultivated territories lying in a more genial climate. Railroads and telegraphic wires supply her with means of transport and quick transit over vast spaces never enjoyed by her great predecessors in this line of march: let us hope, too, that more civilizing influences will follow her track, through regions never highly favoured in this respect, than marked the passage of a Genghis Khan or a Timor. 'The Times' observed

recently that it was one of the happiest coincidences in history that, just at the time when the natural course of commercial and political development brings Central Asia into importance, there should still exist in the eastern border of Europe an empire retaining sufficiently the character of a military absolutism to render it especially adapted for the conquest and control of these semibarbarous communities. I am not altogether prepared to accept this high estimate of Russian ability and peculiar fitness for its self-imposed task without qualification. That Russia, Asiatic in origin and type, autocratic, and armed with all the power which military science and discipline give, has some special fitness for the mission it seems to accept as a destiny, I am not inclined to deny. But whatever may be the decision arrived at on this head, it seems quite certain that as her progress in arms gives her control over Central Asia, so will be the exclusion, by protective or prohibitive tariffs, of all commerce but her own. It is only necessary to follow on the map, and in the history of the successive advances southwards, the progress made and the trade-routes established or extended within the last twenty years, to be convinced that trade and exclusive rights of commerce are among the principal objects which dictate the present policy of the empire.

Whatever may be the designs of Russia in her advances on Central Asia, it must be clear by this time that it is with her, and not with the nominal rulers of the States her armies have overrun, that we must count in any steps we may meditate for the peaceful prosecution of commerce. Strange and unexpected as are the reverses of fortune which have befallen nations and empires in all ages, and great and complete as has been the fall of many, there are few more striking than the interchange of parts between the Muscovite and the Mongol dynasties. The time was, as Col. Yule remarks, when in Asia and Eastern Europe scarcely a dog might bark without Mongol leave from the borders of Poland and the coast of Cilicia to the Amoor and the Yellow Sea. As late as the 13th century the Moguls ravaged Hungary and conquered Russia, which they held in subjection for many generations. Sarai on the Volga was the scene of Chaucer's half-told tale of Cambuscan, when

"At Sarra in the Londe of Tartarie
There dwelt a King that werried Russie."

The times have changed indeed since then, and the successors and descendants of those same Moguls and Tartars have another tale to tell now at Khiva and Peking.

Before I pass from this part of my subject, I would draw your attention to the vast field which yet remains in Asia for geographical research and exploration. The intimate connexion between such labours and the development of our commerce in the trans-Himalayan countries must have been made abundantly evident; and I would fain hope there will never be any want of competent volunteers (who may rival Mr. Shaw and Mr. Ney Elias, both distinguished and adventurous pioneers taken from mercantile pursuits) to show the way for others. Notwithstanding all difficulties and opposing influences, physical and political, there appears to be a large field for our commerce, and one capable of almost infinite expansion, where enterprise, skill, and industry may securely count upon a good return.

As regards costly efforts in opening roads, it may seem doubtful to the Indian as to the Imperial Government how far they will be justified in any large outlay. Nothing, however, could be more regrettable than any doubt or hesitation, for the markets once monopolized by the Russians we may seek in vain to open them to general trade at any later period. It is difficult to calculate how much we should lose, for the distance from the Indus to Vernoje and Kopal, two of the most recent markets of Central Asia founded by the Russians, is about one third of that from these places to the great fair of the Volga. Commercially this is of great importance, as these towns will become the centres whence the Tartar merchants will send forth their agents to disperse their goods among all the Kirghis of the Steppes. From these points they will also go to the Mongolian tribes, on the north of the Gobi, and this region Mr. Atkinson assures us contains a vast population. He even anticipates that, should such a trade be established, the merchandise will find its way through the country of the Kalkas into Davuaria, and to the regions beyond

the Selenga and the sources of the Amoor, where it may advantageously compete with goods brought up the latter river; nor will the Siberians fail to avail themselves of its advantages. Whenever there shall be fairs on the Indus or beyond the passes of the Himalayas on the borders of Sikkim or Thibet, the Kirghis will send into India vast numbers of good horses annually. Silver and gold, the same traveller says, is plentiful in their country, and their other resources will in all probability be rapidly developed. The best mode of opening such a trade with Central Asia beyond question will be by fairs or great marts similar to Kiachta on the frontier between China and Russia, Irkutsk and Urga, and more recently at Irbit by the Russians. On this point we have also Mr. Atkinson's very decided opinion. He says, speaking of such fairs, "This I deem preferable to the English plan of consigning goods to agents either in Yarkand, Kokhan, or Tarshkend. Once these fairs are established, the Tartar and other merchants will attend and purchase the necessary articles for the people among whom they vend their wares. These men are thoroughly acquainted with the tribes and know all their wants; they are industrious and energetic in their calling, travelling over thousands of miles. They know every part of the country, and where to find the tribes in all seasons of the year; and it is by them that Russia distributes her merchandise over Central Asia. Wherever trade can be carried on at a profit, experience has shown that all natural obstacles have been surmounted by these hardy sons of the Steppe. It is well to have such commercial agents and distributors as allies and customers, whereas any attempt to locate English agents in their midst would create jealousy and excite fears lest they should lose their legitimate profits. Far greater dangers are encountered by caravans which travel from Kulja into the interior provinces of China than they will meet with between Yarkand, Kashgar, and the Indus. All that is required is to bring the goods from the plains of India through the passes to the border; and steps are being actively taken in more than one direction."

In 1850 Lord Dalhousie sanctioned the commencement of a road, which, leaving the plains in the neighbourhood of Kalka, 36 miles from Umballah, should ascend to Simla and thence towards Thibet, through the temperate valley of the Sutledge, to Shipki on the Thibetan border. In the next five years this Hindostan and Thibet road, which was to unite India with Central Asia, had made such progress, that 115 miles of six-feet road had been completed; and it was anticipated that by the following spring but 25 miles would remain of unfinished work between Simla and China, and 60 between Simla and the frontiers of China. I regret to state that later accounts show the work to have been stopped; and this seems to be matter for regret, both on account of the large unproductive expenditure for a work stopped short of completion, and for the urgent necessity there is for secure access to the trans-Himalayan regions, while there is yet room for competition with Russian trade and influence. One of the great questions of the hour is, how best and most expeditiously to open up practicable roads from the plains of India to Central Asia, on the west to Turkestan, and eastwards to the borders of Thibet or by British Burmah across the Shan states to the western provinces of China. But access to the markets of Central Asia is by far the most urgent and important; for, as I will presently show, the southern route through Burmah, were all difficulties overcome (and they are neither few nor slight), promises little in comparison with a more direct outlet for the Assam teas and an interchange of goods and produce with the populations of Thibet, Turkestan, and Central Asia generally. Across the Himalayan barrier it appears there is a choice of more than one or two practicable passes; that through Sikkim to the vicinity of Thibet offers the fewer difficulties, and in every respect promises the most speedy results with a moderate outlay. Other routes to the west, leading to Badakshan, and one by Ladak to Turkestan (where we have already an energetic and enterprising British representative in Mr. Shaw), and through the valley and passes of the Chitral are beset by many difficulties, physical and political, but not more than a powerful Government like India may surmount. It has been said that if the Russians had such a question to deal with, the solution would not be long delayed. And no doubt they have solved some more arduous problems in the present generation. The enterprise, vigour, and perseverance which mark all their proceedings where the extension of their commerce or their dominion and influ-

ence over Asia from Peking to Constantinople, and especially towards the Khanates of Central Asia, are concerned, may leave us far behind in the race, and render them formidable adversaries, notwithstanding their merchants are weighted with distances so vast, that the 700 miles from the Indus to the other side of the Himalayas sink into insignificance. But I am not inclined to join in any condemnation of our own Government without taking into consideration the inherent difficulties of the task, because they have not moved hitherto more rapidly in this direction. As regards access by Sikkim there ought to be both decision and prompt action. It is a protected state, and a late despatch of the Lieut.-Governor of Bengal to the Secretary to the Government of India expresses a hope to be able to connect the frontier mart at Dewangiri, once a very active trade-mart for the Tibetans and other adjoining districts, with the plains of India by a good road this next cold season. He considers it possible "to have a much easier, pleasanter, and more profitable communication with High Asia by this way than further west;" and speaks very decidedly as to the uselessness of any right of passage or trade through Nepal or Bhootan. There seems every hope, therefore, that within a few months something effective will be done to open a trade-route through Sikkim and make the passes practicable. All that seems to be required is a branch railroad from the other side of the Kooshteen, where the Eastern Bengal Railway touches the Ganges, on through fertile Rungpore to the foot of the hills, and a road through the pass to the border, where a fair could be established and a trading station.

Any direct access beyond the Thibetan border can only, in the present condition of affairs, be obtained by diplomatic action at Peking. The Chinese Government have hitherto created all the obstacles; and there is the greater reason for pressing a less restrictive policy upon the Chinese, that at the head of the Assam valley the Mishmi country communicates with Batang, a dependency of the Sechzuen Province of China; and access to this point through the border would be a much more effective mode of tapping the south-western provinces of China than any routes through Burmah or Yunnan. Now that the Emperor's minority is at an end, and the Regency with it, the time would seem favourable for a strong and decided effort at Peking to remove the obstructions created by the jealous and restrictive policy of the Chinese rulers. But while Chambers of Commerce and Merchants are urging Her Majesty's Government to incur both outlay of money and grave political responsibilities for the furtherance of trade and the opening of new markets for our manufactures, it is necessary that they should be prepared to do their own part, and push boldly forward with their goods, because any doubt on this head must necessarily tend to paralyze the efforts of any Government by the fear of working in vain. One cause of hesitation about the continuance of the magnificent work commenced by Lord Dalhousie in 1850, by which a great road was to be made from the plains to Shipki on the borders of Thibet, may have been certain doubts expressed by merchants as to any trade taking that route.

But I must not detain you longer. I will only glance at the projects for opening a trade by railway between Burmah and South-western China. The one route, so long advocated by Capt. Sprye, would cross over from Rangoon to Kianghung on the Meikong, and another, recommended by Col. Fytche when Chief Commissioner of British Burmah, extending from Rangoon to Prome, with a view to opening a trade *via* Bhamo.

Many memorials have been sent during past years to the Home Government to urge the undertaking of the first of these for the benefit of trade; but I am not aware that, important as the merchants have deemed it, the matter has ever been pressed on the Government by any Member of Parliament in the House of Commons, and I doubt very much such a line proving remunerative. Yunnan, so far from being, as described by some of the memorialists, both populous and productive, has been reduced to a waste by the civil war and the destruction of the Mahomedans, and for long years to come there can be little hope of commercial activity. It can scarcely be expected, therefore, that either the Imperial or the Indian Government will undertake to make such a railroad themselves, or to guarantee the interest for others. As regards the Government of India, it has

always held, I think, of late years that the Indian revenue could not be charged with the cost of an enterprise which, however successful, could only benefit English trade, and very indirectly or in slight degree Burmah. If any guarantee is necessary, therefore, it seems clear it must come from the Imperial and not from the Indian Government. There is one other consideration: recent news show that the French in Cochin China have by no means given up the hope of drawing any trade to be developed with the south-west of China by a much more direct and river-route to a port in the Gulf and for their own benefit. Although the French have not usually proved formidable rivals in Eastern trade, it is possible that, with such advantage of geographical situation, water-carriage, and proximity, they might seriously check any development of trade in a less favoured course.

Before concluding I must give you some information as to the papers which are likely to occupy your attention during this session.

Dr. J. McCosh will read a paper on an overland communication between India and China, a subject which he is qualified to pronounce an opinion upon, having made it his study for upwards of thirty years. As long ago as 1836, whilst serving in Assam, he furnished the Government with an official report, in which he pointed out the facility of connecting India and China by a grand trunk road; and he read a paper on the same subject before the Royal Geographical Society in 1860. He advocates the Munnipore route.

Mr. Ney Elias contributes a paper "On Trade-Routes through Mongolia and Zungaria." He gained the Royal Medal of this year from the Royal Geographical Society for his adventurous journey in 1872 as a private traveller over the countries described in his paper, and is well known as an accomplished traveller, taking observations for laying down his route with rare completeness. He states in his paper that the only trade-route now open between Central Asia and Western China is that through Mongolia.

J. Thomson will read a paper on the Yang-tsze as an artery of communication. Mr. Thomson has been long before the public as a successful traveller and accomplished photographer of the scenery of distant countries. Some years ago he visited the marvellous ruins of temples and cities in Cambodia, and published a magnificent work on the subject, illustrated by photographs. Since then he has visited China and Formosa, and is publishing in parts a work of a similar character to his former one on Cambodia.

I believe Mr. Thomson will bring a set of photographs for exhibition.

Baron Richthofen will read a paper "On the Distribution of Coal in China."

He will perhaps read a second paper on the general subject of his travels.

He is one of the most accomplished of Chinese travellers, and has traversed probably the largest extent of country. His published Report to the Committee of the Shanghai Chamber of Commerce on his Explorations in the Provinces of Chili, Shansi, Shensi, and Sz'chuen is full of the most interesting information regarding the physical geography, resources, and products of the interior of China.

He is present at the Meeting, one of the distinguished foreign *savans* invited by the town and the Association.

Capt. J. E. Davis will read a paper on the results so far of the voyage of the 'Challenger.' Capt. Davis was a member of Ross's great expedition towards the South Pole, and by his position in the Hydrographical or Scientific branch of the Admiralty is well qualified to deal with such a subject. The public have been informed from time to time of the results of the deep-sea soundings and dredgings of the 'Challenger,' but Capt. Davis will supply by far the completest information.

The Rev. W. Wyatt Gill will give us an account of "Three visits to New Guinea." Mr. Gill, after twenty-two years spent in missionary life in the South Pacific, spent a short time at the mission stations in Torres Straits, and visited the mainland of New Guinea.

Recent Arctic Explorations.—The Spitzbergen and the Smith Sound routes are the two great rival highways of exploration towards the arctic basin, and discovery has alternately pushed nearer the pole by the one and the other. Till recently the Spitzbergen route held the palm, for by it ships had reached to beyond the 81st parallel, whilst on the American side no ship had been able to force a passage

higher than the 79th degree of latitude; but in 1872 the American expedition, led by Capt. Hall, who has perished in the cause, making its way northward by Smith Sound, attained the highest point yet reached by ships, the latitude of $82^{\circ} 16' N.$, or to within 420 miles of the North Pole. Two expeditions, one from Austria the other from Sweden, are also in progress on the Spitzbergen side. The Austrian, under the leadership of Weybrecht and Payer, has passed beyond the limits of the remotest traffic into the unknown seas to the north of Siberia, and it is probable that no news of this voyage may reach civilized Europe for many months; the Swedish voyage had for its object to move northward by sledges from the Parry group of islands in the north of Spitzbergen, but has failed completely in this often-tried scheme, and spent the past winter at Morrel Bay, on the coast of the chief island of Spitzbergen. Early in the spring of this year another fruitless attempt was made to go north over the hummocked ice. Desisting unwillingly from these useless efforts, the sledge party turned along the coast of the north-east land of Spitzbergen to its extreme eastern point, and thence ascending the high inland ice made a difficult passage across to Hinloper Strait, from whence the winter-quarters of the ship were again reached.

With regard to British enterprise in the Arctic regions there is little to report. Since the termination of the long series of brilliant exploits in the Polar regions at the end of the search after Sir John Franklin, England seems to have abandoned the field to rival nations. A few private expeditions to the Spitzbergen seas, notably those of Mr. Leigh Smith, who has again visited those regions this summer, alone represent British activity in the Arctic seas. However, the Royal Geographical Society does not allow the matter to slumber. An endeavour was made last winter to induce the Government to send out another expedition; and at the present time a joint Committee of the Royal and the Royal Geographical Societies is at work formulating a plan of action with a view to representing to Government the urgency of despatching an expedition in 1874.

Africa.—Of Dr. Livingstone and Sir Samuel Baker, no fresh news has been received beyond what has been before the public. Two expeditions are now on their way to Central Africa in search of Livingstone and to cooperate with him. The Congo Expedition at last date (April 3) had reached Bembe, 130 miles from the coast, in admirable order. The East Coast Expedition had reached Rehenneko, 120 miles, but with the loss of one of the party, Mr. Moffat, who died near Simbo. Their plan was to reach Tanganyika, and finish the exploration of that lake, until Livingstone was met with. I had hoped to have seen Sir Samuel Baker here, that we might hear from his own lips and in fuller detail what he has accomplished. I do not quite despair yet; but up to the present hour I have had no communication from him since his arrival at Cairo on his homeward journey.

With the Authors Compl.

