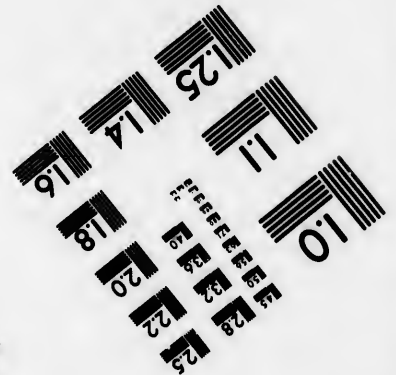
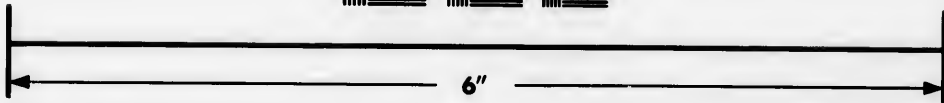
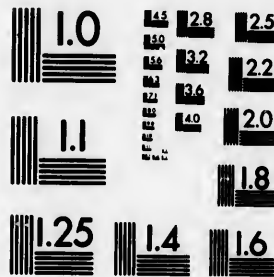


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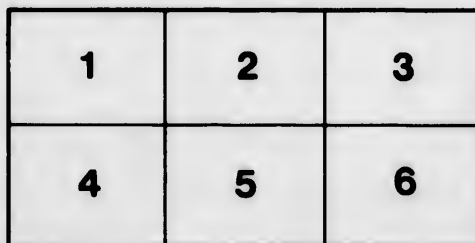
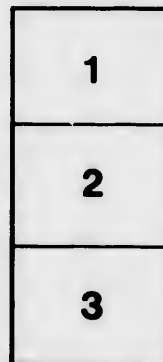
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"Mr. Green is now staying with us in camp, having returned from an expedition to the Great Lake with Messrs. Shelley and Bushe. He is just starting again with some of my brother officers to shoot lions. He proposes returning towards the lake in April. All travelling in that part of the country is just now stopped by a disease which attacks the horses; even here they are dying of it every day. It seems epidemic, and carries them off very quickly. An animal, quite well in the morning, is dead before night: sometimes an hour or two after taken with it. It has the appearance of inflammation of the lungs, and is dreaded by the Boers and farmers as one of the worst scourges they are subject to."

XIII.—*Proposal for a Rapid Communication with the Pacific and the East, viâ British North America.* By Capt. M. H. SYNGE, R.E., F.R.G.S.

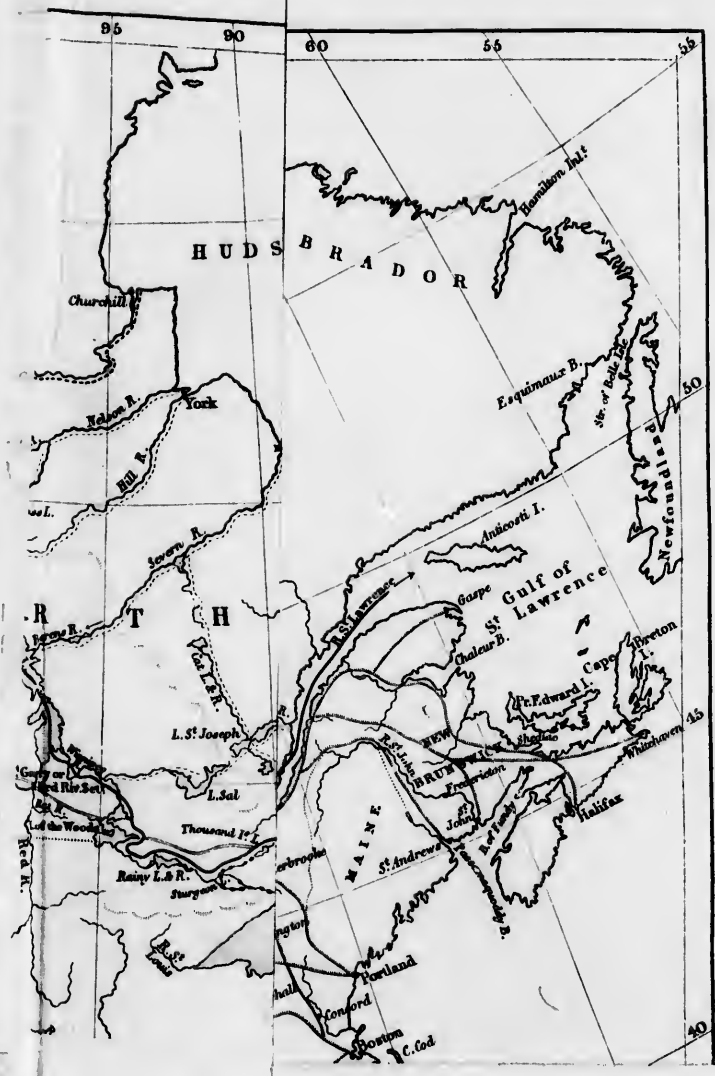
Read Jan. 12 and 26, 1852.

THE proposed communication consists of component parts, each of which is in itself complete and independent, opening a new and distinct feature of the country; and forming separately a profitable and reproductive work. Each part is characterised by these distinctive features, and by marks of superiority over competing routes, similar to those which distinguish the entire proposed inter-oceanic communication. Every part of the chain may, therefore, rely on its intrinsic merits, and is capable of separate execution. That execution would, however, be the most profitable, and for every reason the most desirable, which would most speedily open the country and effect the communication the whole way to the Pacific.

An examination of the globe shows that the entire route, as connecting Europe with the Pacific and the East, is shorter in proportion as it is *northerly*. Thus one through the United States is shorter than one through Central America; and one through British America, shorter than one through the United States. Equal facilities existing for crossing the respective transcontinental portions of these routes, it necessarily follows that the shortest can also be most quickly traversed. These and other important advantages belong equally to the several parts which form the route through British America. The comparison presents the same result through every link and feature; but the detailed examination of vast tracts of country which it would require, involves so many points of physical, special, and political geography, that to be at all adequately dealt with they must be treated as separate, though subordinate and related subjects.\*

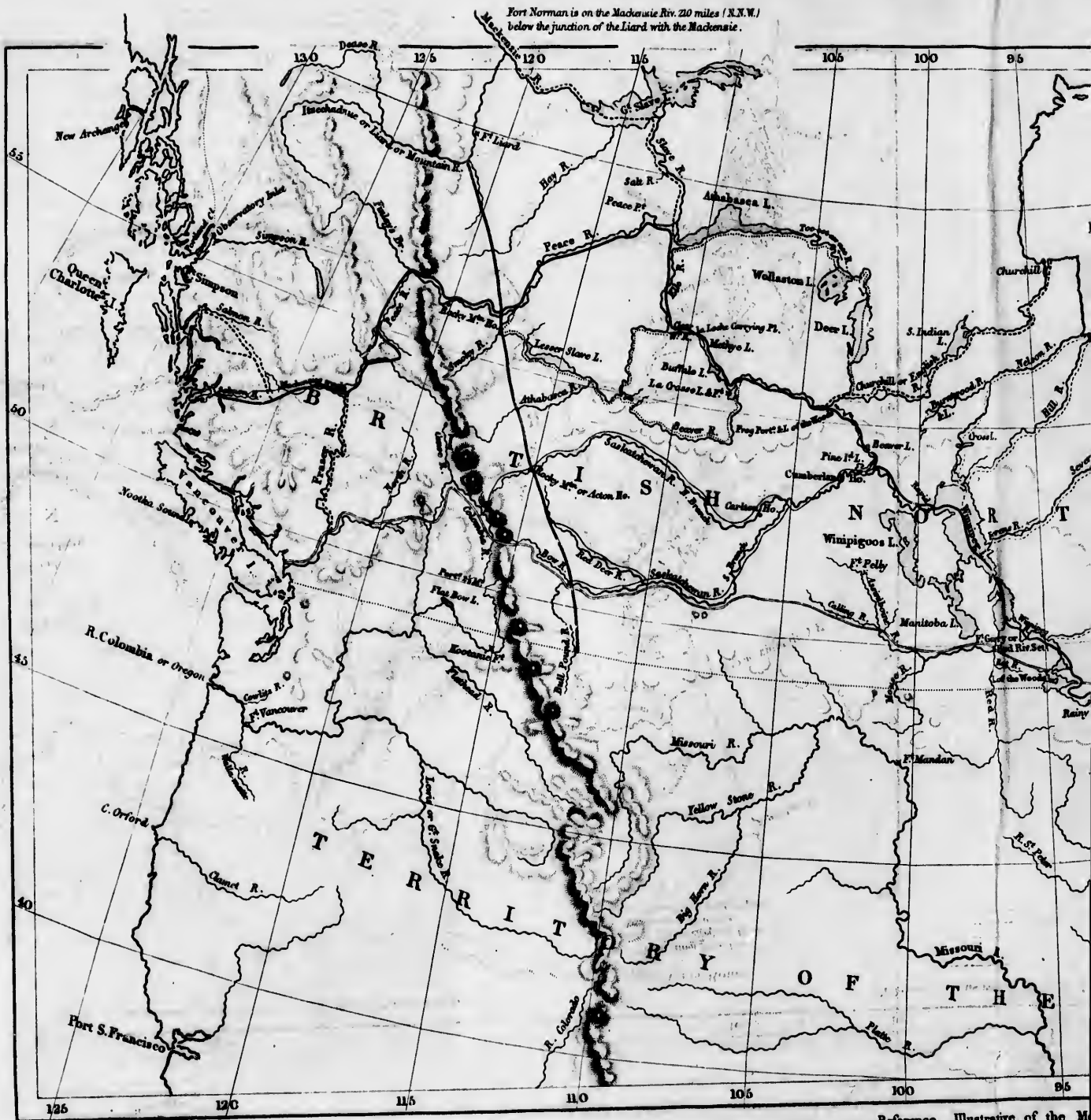
\* It must suffice briefly to remark that no route can be carried out within the United States by similar natural advantages. That which is universally allowed to be the best that could be formed there, is longer by the inferior position of the Atlantic seaboard within their territories, and extends to the same termination of

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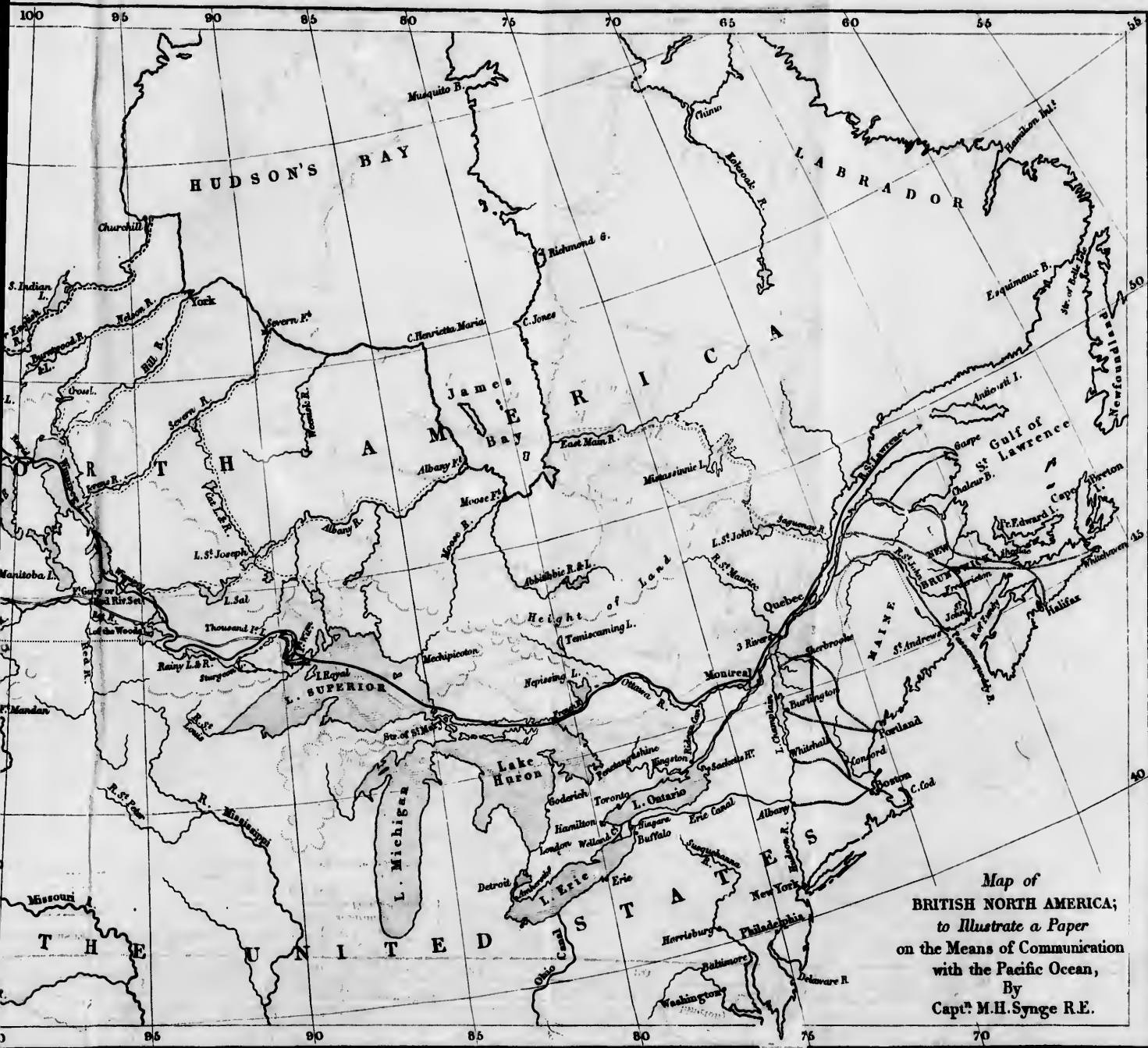
Fort Norman is on the Mackenzie Riv. 210 miles (N.N.W.) below the junction of the Liard with the Mackenzie.

Pub<sup>d</sup> for the Journal of the Roy<sup>l</sup> Geographical Soc<sup>y</sup> by J<sup>r</sup> Murray, Albemarle St. London, 1852.

**The Great Water Route**  
 Variations .....  
 Western Terminating Branches .....  
 Churchill & Mackenzie River Route .....  
 The Saskatchewan Branches .....  
 ! Natural Water Roads uninterrupted !

Reference Illustrative of the M





Map of  
**BRITISH NORTH AMERICA;**  
*to Illustrate a Paper*  
 on the Means of Communication  
 with the Pacific Ocean,  
 By  
 Capt. M.H. Sygne R.E.

John Arrowsmith.

Illustrative of the Means of Communication

- The Quickest Route** (separating from the Great Water Route at the Kamearistiquia)
- Eastern Terminating Rail Roads**
- Saguenay Route**
- Roads to Hudson's Bay & L. Superior from L. Winnipeg**
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With regard to the British route, beginning at the East, railroads throughout the provinces of Nova Scotia and New Brunswick, to connect the ports of the seaboard with the interior, are essential to the success of the new portion of the route: they would be the means of turning the tide of emigration, labour, and commerce, and would at once demonstrate the superior position of the British territory. The present high development of the Canadian frontier has already led to the planning or actual execution of a line of railroads extending from Amherstburgh to Quebec. Thus the whole country from Lake Huron to the ocean would possess both land and water routes.

The Welland and the St. Lawrence canals, and the Caughnawaga canal, constructing between Lake Champlain and the St. Lawrence, have decided advantages over their competitors in the United States both in speed and economy; and the opening of a communication by land, by water, or both, between Lake Huron and the St. Lawrence, *viâ* French River, Lake Nipissing, and the Ottawa, would effect a farther abbreviation of 400 miles over the Canadian frontier route.

The head of Lake Huron is the farthest point to which the unobstructed navigation at present extends, and to which railroads are immediately contemplated. It forms a splendid reach of 1510 miles from the ocean, and is the most magnificent inland navigation in the world.

This great chain of waters has formed the basis of the whole existing Canadian development, and has laid the foundation for yet more brilliant prosperity. Improved communications have followed, and railroads will speedily exist, all resulting from the industrial activity and wealth which this great trunk communication of Nature's grand designing has called into existence.

The physical characteristics of the central portion of the Continent being similar, the adoption of the same means may therefore be followed by the same results.

The great river system which falls into Lake Winnipeg, and has its outlet by Port Nelson River into Hudson Bay, rivals the St. Lawrence in grandeur and extent, and opens the country to the very foot of the Rocky Mountains.

A third system, with an almost equal extent of navigable water, penetrates nearly to the shores of the Pacific, and indicates the approximate position of the most favourable passes through the mountains. The width and elevation of the land of the dividing

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Puget Sound, on the Pacific. It is consequently more circuitous throughout, it has to encounter a greater amount of mountainous, and a large extent of barren territory. It does not consist of separate and complete links, and is assisted by no similar great waterpaths. If practicable it must be confined to a trunk railway, and would be neither aided nor accompanied by any main or tributary development irrespective of actual construction.

ridges are so slight, that in seasons of flood the waters of these different systems commingle at their sources.

The climate of the upper regions of Lake Superior, and of the country between it and Lake Winnipeg, is less genial, and the soil less productive than the balmy and fertile peninsula of South-Western Canada. It bears a nearer resemblance to the sterner and more rugged lower province; but the season of vegetation, though brief, is extremely rapid, and grain and fruits come to full maturity. Farther to the west, the mildness of the climate again increases, and the waters of the west central portion, in even the 58th parallel of latitude, are clear of ice, as early and as late, if not earlier and later, than those of Canada. In Vancouver Island the apple and pear trees bud in March, the wild gooseberry appears in full leaf, strawberries are in bloom, and the swallow and humming-bird return. Between these two the climate of the intermediate country varies, approaching, according to its situation, nearer to the one or to the other. The isothermal line, which traverses the centre of England, passes midway between the southern extremity of James' Bay and the northern point of Lake Superior, then rapidly rising towards the west, runs finally nearly parallel to the Russian boundary considerably within the British territory.

The more quickly the communication is carried out to the Pacific, the sooner will the results of that connection be added to those of the several independent component links, and the advantages of both be secured. A certain measure of inhabitation of the intervening country is, moreover, essential not only to the success, but to the very construction of the route. By making the utmost use of the natural facilities afforded by the great water-courses, minimum of construction will be accompanied by maximum of advance, and inhabitation carried out to the fullest practicable extent, both along the principal rivers and their numerous and noble tributaries.

1. Upon this principle of reaching the Pacific as speedily as possible, the first new link of construction would be at the Straits of St. Mary, between Lake Huron and Lake Superior. The removal of an obstacle of from only 18 to 22 feet, would add a length of 400 miles to the uninterrupted navigation. It would place this region of immense, if not unrivalled, mineral wealth in direct communication with the seaboard. Facilities of transport alone are required to lead to the highest development of the mines whence huge masses of pure copper are continually being extracted, and where mountains of iron-ore exist. The mines extend for a distance of 140 miles along the coast. It would also render the valley of the Kamenis Toquoh accessible, whence Sir George Simpson, the Governor-in-Chief of the Hudson's Bay

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Company's territories, states that the mining population could obtain their nearest and cheapest supplies.\*

2. The second link, from Lake Superior to Rainy Lake, opposes greater obstacles, but it would complete the opening of the country of the Kamemis Toquoh, and lead through the beautiful scenery of the Lake of the Thousand Islands to the chain of navigable waters, lovely scenery, and fertile land presented by Rainy Lake, Rainy River, and Lake of the Woods. The glowing and animated descriptions of Sir George Simpson have rendered it comparatively familiar. Successive travellers have left brilliant records of the impressions made upon them by the singular beauty of the scenes traversed upon the Kamemis Toquoh with the romantic falls of Kakkabekka, or the Cleft Rock, the Lake of the Thousand Islands, and the splendid navigable reaches of the Rainy Lake and River, and Lake of the Woods. The former is 50, the river 100, and the Lake of the Woods 75 miles long. Scientific explorers who have examined the country with a merely isolated object, and have looked upon the general character of the regions as far as Lake Winnipeg, as sterile and unattractive, have nevertheless regarded the valleys irrigated by these beautiful waters, as the proper abode of civilised man. The French, long before the period of the conquest of the country by Great Britain, had outposts of civilisation, many hundred miles beyond. Traces of implements, ruins, groves of oaks, shelving lawns, &c., attest the cultivation by the French, of posts long since again given over to neglect. Mackenzie longs for its inhabitation. Sir George Simpson briefly enumerates some of its more prominent products, among which may be numbered the plum, the cherry, and the vine; he speaks of the carrying places spangled with violets and roses, of the gentle slopes of greensward, crowned with a plentiful growth of birch, poplar, beech, elm, and oak. Wheat has been grown successfully wherever it has been tried. Potatoes arrive at great perfection; onions, maize, peas, beans, pumpkins, beet, carrots, turnips, and other vegetables, equally succeed; musk and water-melons, apples, pears, and berries of all kinds grow well and abundantly. Sir John Richardson mentions the luxuriant growth of the hop-plant, connecting the lower branches of the trees with elegant festoons of fragrant flowers. The abundance of wild rice, its uses, excellence, and the mode of gathering, have been dwelt

\* The opinion of Sir John Richardson of the general mineral resources of British America is of great value, and there is abundant evidence to show its correctness. "It would be true economy," he writes. "in the Imperial Government, or in the Hudson's Bay Company, who are the virtual sovereigns of the vast territory which spreads northward from Lake Superior, to ascertain without delay the mineral treasures it contains. I have little doubt of many of the accessible districts abounding in metallic wealth, of far greater value than all the returns which the fur trade can ever yield."

upon by successive travellers. He also mentions the various maples, oaks, sumachs, anemones, cornel bushes, &c.; and among flowers, asters, *helianthi*, *lophanthi*, *gentianæ*, *physostigie*, *irides*, &c. &c., and other gay blossoms adorning the banks of the rivers, and speaks of the woodland views as equal, if not superior, to the finest he had beheld on the American continent. The sentiments of Sir George Simpson do therefore deserve to be re-echoed, when he says, "One cannot pass through this fair valley without feeling that it is destined to become the happy home of civilised men, with their bleating flocks and their lowing herds, their schools, their churches, their full garners and their social hearths." It is also much to be wished that these waters, as favourable to navigation as the banks to cultivation, may speedily have his wishes realised upon them, and be crowded with steamboats plying between populous towns upon their borders. Lake Superior has been computed to be 641 feet, Lake Winnipeg 853 feet, and the highest water of the intervening dividing ridge 1458 feet above tide-water. These computations very much exceed those of Major Long of the Topographical Engineers of the United States, who gives 1200 feet as the maximum height above the sea. They give an altitude of from 600 to 800 feet to be crossed. In the short distance of 33 miles the Welland canal surmounts an altitude of 334 feet; and the Rideau of 80 feet, at a single station.

*A minute and accurate examination of the country is necessary, before it can be stated with preciseness what the intermediate altitude is that would have to be surmounted, either for a land or water route.* There is no branch of the organisation of a country, political, municipal, social, or constructive, to the success of which a good map is not essential. The most elaborate survey can be carried out, and the most finished maps produced, for a fraction of the expenditure which is otherwise wasted in failure or imperfection. With regard to land and water communications, a very slight divergence of direction may not only alter the altitudes and the first cost, but permanently affect the constant expenditure upon, and utility of the whole undertaking. Especially in the improvement of the natural channels of navigation, a proper adjustment of the line of levels is of the utmost importance. The number of stations, the lengths of unchecked waterway, the reclamation or destruction of land, the first cost, and the cost of maintenance, are all involved, and show the intimate relation between details of physical geography and the prosperity of a country.\*

\* The Lake of the Woods is famous as having been the spot whence a line due west to the Mississippi was to form the boundary between the British Colonies and

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Including the minor deviations there are almost countless methods of communicating between Lakes Superior and Winnipeg; and the reconnaissance and survey of the country for the selection of the best permanent chief means of intercourse, can be made most favourably, while temporary roads between Lake Superior and Rainy Lake, and between the Lake of the Woods and Lake Winnipeg, availing themselves of every natural facility, would open the boundless territory of the West without delay.

3. The third link, from the Lake of the Woods to Lake Winnipeg, is very similar in character to the second as to details of execution; but the Winnipeg River is more rugged, and the country less fertile, though even more romantically beautiful. The aggregate descent has been computed at 410 feet. The Rat and Red Rivers have been supposed to afford the means of opening a communication more easily, and to flow through a country more agriculturally productive. The Winnipeg River encloses a wide extent of land between its branches. The route by Covert and Sturgeon Dam Rivers is the more direct, but also the more difficult. The English River, which joins the Winnipeg about 60 miles below Lake of the Woods, affords a route by Lakes Sal and St. Joseph into Hudson Bay, and another by the Nipigon waters into Lake Superior. The Berens and Severn Rivers connect Lake Winnipeg and Hudson Bay.\*

The country of Lake Winnipeg, and of its numerous tributaries, is now attained and placed in connection with the Atlantic seaboard; the country of the Assiniboine, the Calling and Red Rivers, of Lakes Winnipegosis and Manitoba, opened to cultivation and commerce. The Red River is well known from the colony which, under the unfavourable circumstances of a difficult communication with England, or with any part of America, has

the United States. From the first junction of the boundary line and the St. Lawrence, the midchannel was adopted for its continuation. A line due west from the Lake of the Woods to the Mississippi was to have terminated it. Beyond the midchannel of the Mississippi the United States advanced no claim. But a line from the Lake of the Woods due west never can strike the Mississippi. The negotiators probably confounded the site of the Grand Portage, the chief westward route, with the head waters of the St. Lawrence. If so, the St. Louis was the intended boundary. Be this as it may, the spirit of the treaty, however ill defined, clearly was, that the shortest distance to the Mississippi should be the boundary. But because a line from Lake of the Woods due west necessarily failed to strike the Mississippi, the whole western territory to the Rocky Mountains was sacrificed. Thus ignorance of geographical feature led to the surrender of a territory larger than that lost through the War of Independence.

\* Mackenzie says, "There is not perhaps a finer country in the world for the residence of uncivilized man than that which occupies the space between the Winnipeg and Lake Superior. It abounds in everything necessary to the wants and comforts of such a people. Fish, venison and fowl, and wild rice are in great plenty." These things are not unpalatable to civilized man, and the vine, hazelnuts, plums, cherries, strawberries, &c., are no bad auguries of the possible results of agricultural labour.



nevertheless maintained a long-continued, and in some points a successful existence.

It would be out of place to enter upon any history of Lord Selkirk's settlement; but it is useful to have the practical proof of the adaptability of the country to agricultural purposes, wherever the trial has been made. The soil consists of a black alluvial mould of considerable depth, which when first tilled produces extraordinary crops, as much as forty returns of wheat; and even after twenty successive years of cultivation, without the relief of manure, of fallow, or of green crop, yields from 15 to 25 bushels an acre. The wheat is plump and heavy, and large quantities of grain of all kinds are grown. Beef, mutton, pork, cheese, and wool are in abundance.

Sir George Back, writing *before* the harvest season of the year 1833, says, "I learned from Mr. Berens that the colony at Red River was in a prosperous state; and that notwithstanding the failure of the crops *last* season, meat was from 1½*d.* to 2*d.* a pound, and eggs 3*d.* a dozen."

4. The Rapids of the Saskatchewan, near the mouth of the river, form the fourth link in the chain of westward communications. The removal of this small obstacle is all that remains to open the country to the very foot of the Rocky Mountains, and in effect to carry the Atlantic seaboard to their base. From Rocky Mountain House on the north, and from the confluence of the Bullpound River on the south branch, this river is navigable to its mouth, with the single exception named. The Assiniboine and Calling Rivers afford another means of penetrating through the country, and a considerable abbreviation of the route to the west may be effected by a road (railroad or otherwise) from the Calling River to the south branch of the Saskatchewan.

The improvement of the navigation of the rivers and lakes is not only called for in order to perfect the first great means of intercommunication, but would also prove of the utmost service in ameliorating the condition of the soil and of the country. The prairie country requires irrigation to render it of value, and to secure and regulate its natural productiveness; the summit levels are generally speaking swampy, and drainage is necessary to reclaim vast tracts of the best situated land, and to enable some of the most rich alluvia to be brought under cultivation. The detritus and driftwood have besides a continual tendency to block up the mouths of the rivers where they are deposited, and thus to render the stream at once more shallow and less useful, and to flood vast portions of the country when the waters rise. The continual tendency from these causes and from the action of blown or drift sand is to form fresh lakes, marshes, or alluvial flats; and whilst by due regulation these effects might be turned to

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great advantage, they threaten, if left entirely uncontrolled, to diminish, if not destroy, the eventual usefulness of the now giant and deep rivers, and thereby incalculably to retard the full inhabitation of the country, or at least materially to increase the difficulty with which it would be attended. Some idea may be formed of the extent to which these operations are carried on, by the calculation that has been made, that the Mississippi carries down with it in one year enough deposit to make a bed of earth 1 mile square and 76 feet in depth! A proper regulation would reclaim these alluvia into the most valuable portions of land, and preserve the depth and usefulness of the rivers unimpaired.

The immense extent of country which would be opened by this last link very strongly exhibits the advantages to be derived by advancing so far as speedily as possible, and adhering to the improvement of the natural paths.

The fertility of the country is on record from succeeding travellers. "In the river Saskatchewan," writes Sir George Back, "I was not more pleased than surprised to behold on the right bank, a large farmhouse, with barns and fenced enclosures, amid which eight or ten fine cows, and three or four horses, were grazing. It belonged to a freeman \* of the name of Turner."

Sir George Simpson's journey conducted him through scenery where "the rankness of the vegetation savoured of the torrid zone, with its perennial spring, rather than of northern wilds." At one time travelling through districts where his party brushed the luxuriant grass with their knees, they passed through others where the rose, hyacinth, and tiger lily, and a variety of other flowers, adorned the surface of the ground with their profusion. The sweetbriar and rose loaded the air with their delicious perfume. The hills are well wooded, the scene varied by a succession of lakes, some of which are salt; wild fowl abound upon them all. Wood and water diversify the scene. Meadows, several thousand acres in extent, forming a fine grazing country, are succeeded by extensive prairies, studded with clumps of trees. Some of the land on the margins of the tributary streams is low and swampy; the prairie, on the other hand, is parched in dry seasons. Regulated irrigation appears not only feasible, but to be the only requisite wanting to the highest degree of fertility. For a long time lightness was supposed necessarily to indicate poverty of soil, but trial has dissipated the illusion; and in the new Western States of the adjoining Republic, similar land, on which literally nothing is required except to plough, sow, and reap, has become proportionably popular. Towns, rapidly rivalling those

\* Persons who have emancipated themselves from the service of the Hudson's Bay Company, have obtained their discharge, and are living upon their own exertions, are termed *freemen*.

upon the Atlantic seaboard, both in wealth and population, spring up within the measure of a lifetime.

Within a day's march of Carlton House lofty hills and long valleys, full of sylvan lakes, add beauty to the fertile scene; and the rich bright green of the sward is almost hidden by the profusion of roses and blue-bells. "From the summit of one of these hills we saw," says Sir George Simpson, "one range of heights rising behind another, each becoming fainter as it receded from the eye, till the farthest was blended, in almost undistinguishable confusion, with the clouds, while the softest vales spread a panorama of hanging copses and glittering lakes at our feet." "Country resembling an English park," completes the distance to Carlton House. Beyond Carlton, and between Carlton and Edmonton Houses, the country is equally picturesque and fertile. A vetch, or wild pea, which grows in the richest and wildest profusion, is found to be nearly as nutritious as oats for horses and cattle. The vicinity of Edmonton House is rich in minerals, and a seam of coal, about 10 feet in thickness, can be traced for a very considerable distance along both sides of the river. The southern branch of the Saskatchewan is less known, but it is said to flow through an even more fertile country. Carlton House has been computed to be 1100 feet above the level of the sea, and 630 miles from the mouth of the river.

The next links of successive construction would be the passage of the Rocky Mountains, and the descent to the Pacific; but it will be more convenient to complete the brief geographical examination of the intermediate country before proceeding with their description.

The southern branch of the Churchill, or English river, which is called the Beaver river, has its sources close to the borders of the Saskatchewan: and the chain of lakes and rivers which flow into the Saskatchewan, near Cumberland House, again bring the waters of these rivers within a carrying place of 370 yards. The dividing ridge is but a few feet in height; and when the waters have been high, the rivers have actually joined. A fatal accident occurred on the carrying place itself, from the upsetting of a canoe against the submerged trunk of a tree. This series of waters, which consists of Pine Island lake, Sturgeon river, Beaver lake, Ridge river, Half-moon, Pelican, and Woody lakes, is interrupted by many carrying-places, but of inconsiderable aggregate altitude. The same character pervades them throughout. The expansions of the rivers are like the lakes, still water, and are connected by rapids or narrow channels, with a considerable current.

At the Frog carrying-place the waters of the Churchill river are reckoned to be about 900 feet above the sea. There are several onward routes from this carrying-place, indicated by the course of the

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waters. Lake Wollaston, a large circular lake about 50 miles in diameter, and situated nearly in the centre of the country, is a singular example of a lake of its size having outlets in opposite directions. A portion of its waters flows through Deer lake into Churchill river, and thence into Hudson bay; whilst another part flows through Too-oot-aw-nee river into Lake Athabasca, and by the Slave river and the Mackenzie into the Arctic ocean. *It is therefore a north-west passage!* This communication between the Mississippi, Churchill, or English river, and Lake Athabasca, has been little travelled, and the information concerning it is very imperfect. The geological formations of the Churchill river bear a general resemblance to those of the Winnipeg district, and those of the above-named lakes to those of the region of Lake Superior. The Churchill river itself is the ordinary route to the N.W. It consists of a succession of lakes or wide expansions to Lake Ile à la Crosse, which receives the waters of the Beaver river, the sources of which approach very near to the Athabasca and Saskatchewan rivers. The direct distance to the sea from Lake Ile à la Crosse is computed to be 525 miles. Mackenzie speaks of the productiveness of the country, especially of the Beaver river, and regrets that no part of it is cultivated "except a small garden, which well repaid the labour bestowed upon it." The river, which has a separate name for every expanse and every narrow channel, now assumes that of the Deep river, and conducts through Buffalo lake to Methye river. The celebrated carrying-place at this point is about  $10\frac{1}{2}$  statute miles in length. The Clear Water river, to which it leads, is computed to be only 910 feet above the level of the sea; but Methye lake is 590 feet higher. The valley of the Washa Cummow, or Clear Water, is celebrated for its exquisite beauty, said not to be excelled, if equalled, by anything in America. Sir George Back has rendered it familiar by his picturesque representation; travellers by their descriptions; and Mackenzie by his admiration. The heights around the carrying-place "command," he writes, "a most extensive, romantic, and ravishing prospect. The eye looks down upon the river beautifully meandering for upwards of 30 miles. The valley, which is at once refreshed and adorned by it, displays a most delightful intermixture of wood and lawn, stretching on till the blue mist obscures the prospect. Some parts of the inclining heights are covered with stately forests, relieved by promontories of the finest verdure, where the elk and buffalo find pasture." He calls it a "wonderful display of uncultivated nature;" and after exhausting language in endeavouring fully to represent the scene, he adds, "but I do not presume to give an adequate description of the scene which I enjoyed." The upper part of the Clear Water River is obstructed in several places;

but the lower portion and Elk river form a freely navigable course from the confluence of the Washa Cummow to Lake Athabasca, which is computed to be 600 feet above the sea. Indian hemp, from which the natives living on the coast of the Pacific form strong and durable fishing-nets, grows luxuriantly upon the banks of the Clear Water.

The range of mountains which has to be crossed at the Methye, or La Loche, carrying-place, diminishes towards the sources of the Beaver river, and almost disappears between the Saskatchewan and the Athabasca. The winter path from Ile à la Crosse to Carlton House ascends the river to its great bend, and "from Methye portage westward, the country, though deeply furrowed by river courses and ravines, and more or less thickly wooded, partakes so much of a prairie character that horsemen may travel over it to Lesser Slave Lake and the Saskatchewan." This lake, which communicates with the Athabasca river, is reckoned to be about 1800 feet above the level of the sea.

The Methye river, the Athabasca, Lesser Slave Lake, and the Unjugah, belong to the great river system which, after receiving many important tributaries, that join it farther N., flows into the Arctic Ocean by the noble stream which, below the Great Slave Lake, receives the name of the Mackenzie river. The bituminous and coal formation, that skirts the eastern base of the Rocky Mountains, shows in veins of coal, or bitumen, upon Smoking river, a tributary of the Peace river, upon the Peace river itself, upon the Saskatchewan at Edmonton, where it has been already mentioned; also upon its southern branch, upon the Elk and Peace rivers, and upon the Mackenzie river. Sulphur springs and mineral springs are found throughout the same district. Porcelain clay lies upon the coal-measures, and, where these have ignited, the clay has been baked and resembles a fine yellowish-coloured biscuit porcelain. Plumbago, iron, copper, precious stones, and other indications of great mineral wealth are found throughout the mountainous region in which these rivers have their rise.

The Athabasca is the most southern branch of the Mackenzie. It has its source near that of one of the feeders of the Columbia, so close to it, indeed, that the opposite streams flow very nearly from the same fountain head. Its course makes a considerable bend, but the distance in a direct line to the confluence of the Clear Water river is about 300 miles. The head of Lesser Slave Lake lies close to the sources of a tributary to the Smoking river, which falls into the Unjugah at the foot of the mountain chain.

The Unjugah, or Peace river, may be termed the Mackenzie Proper, since it is the largest of the streams which unite in the great trunk-stem which is so called. The sources of Finlay's branch are in about the same latitude as its confluence. The foun-

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tain head of the waters of that portion which retains the name of Peace river is within a carrying place of 317 yards of a branch of Frazer river, and forms part of the track followed by Mackenzie in his discovery of the Pacific seaboard, the far western shores of the continent. The whole region E. of the mountains, between the Saskatchewan and the Peace river, is remarkable for its regular and gradual ascent, and for preserving the characteristics of a plain country till within the actual mountain chain. The valleys which form the passes through the Rocky Mountains lie transversely to them, and the principal rivers, especially those which flow towards the E., have their sources beyond the axis of the range. The Peace river forms a reach of splendid navigation, being only interrupted by a single and that an inconsiderable fall in the whole distance (650 miles) from Rocky Mountain House to Lake Athabasca. The relative level of the waters of the Peace river at its mouth, and of Stony river, varies with the season. The soil supports extensive forests, and has well rewarded the slight agricultural efforts that have been made. Mackenzie speaks of the products raised at the old establishment upon the lake itself. "Upon the banks of the Elk river," he writes, "I saw as fine a kitchen garden as I ever beheld in Canada."

Describing the whole region of the Peace river, he speaks of the beautiful meadows with groves of trees irregularly scattered over them, of the extensive plains crowded with varieties of animals, with herds of buffalo and deer, so full, indeed, as to present in places the appearance of a stall-yard. The timber is of many different kinds.

The 6th of December and the 26th of April were the days of the close and the opening of the navigation, which is later and earlier than in Canada. On approaching the mountains, he says, "The W. side of the river displayed a succession of the most lovely scenery I had ever beheld. The ground rises at intervals to a considerable height, and stretching inwards to a great distance; at every interval or pause in the rise there is a very gently ascending space or lawn, which is alternate with abrupt precipices to the summit of the whole, at least as far as the eye could distinguish. This magnificent theatre of nature has all the decorations which the trees and animals of the country can afford it; groves of poplar in every shape vary the scene; and their intervals are enlivened with vast herds of elks and buffaloes, the former choosing the steeps and uplands, and the latter preferring the plains. The whole country displays an exuberant verdure; the trees that bear a blossom were fast advancing to that delightful appearance, and the velvet rind of their branches reflecting the oblique rays of a rising or setting sun, added a splendid gaiety to the scene, which no expressions of mine are qualified to describe."

The Mackenzie river forms too interesting a feature, and affords too much evidence with regard to the general resources, capabilities, and climate of the whole country to be neglected. Nearly the whole of the magnificent river system with which it is connected is navigable throughout. The Clear Water, Athabasca, and Methye river have been glanced at. With the exception of a few carrying places, close together, and situated about midway upon the Slave river, the navigation extends uninterruptedly the whole way to the Arctic Ocean. The navigable distance below the rapids is from 1200 to 1300 miles. The prairie country, which begins in New Mexico, extends to the forks of the Hay river which falls into Great Slave Lake. Below the forks the country is covered with forest, and is swampy in parts. The Salt river, which is a tributary of the Slave river, takes its name from salt-springs, from which large quantities of pure common salt are deposited. These have proved a most useful supply to travellers to the Arctic regions, to the servants of the Hudson's Bay Company, and attract herds of deer and bison. The waters of the whole system abound in varieties of choice fish. Gypsum, in a compact form, is found at Peace Point upon Peace river, and the limestone of the formation being Silurian, has led Sir John Richardson to class these salt-springs as belonging to the Onondago salt group of the New York Helderberg series.

The Itzechadzue, or River of the Mountains, joins the Mackenzie about 155 miles direct distance from the exit of the river from Great Slave Lake. Fort Simpson, which is situated at the junction, is in  $61^{\circ} 51' 25''$  N. latitude, and  $121^{\circ} 51' 15''$  W. longitude.

Fort Liard is situated a little S. of the 60th parallel of N. latitude, and about 150 feet higher in point of elevation. Wheat ripens well in good seasons, and the 60th parallel has been accordingly considered the northern limit of the economical culture of wheat. How completely, then, is the opinion of the Surveyor-General of Canada (Colonel Bouchette) borne out, when he states, with regard to the immense territory west of Canada, and which is now lying desolate, "A considerable portion of it must be more or less arable, and will be submitted to the plough!"

The 65th parallel of latitude is stated to be the northern limit of the Cerealia in the Mackenzie district. In Norway it reaches to the 70th, but in Asiatic Russia no higher than the 60th parallel of latitude. Barley and oats grow well at Fort Liard and yield good crops; oats do not thrive quite so well at Fort Simpson, but potatoes and other garden vegetables are raised with success at Fort Norman, but little S. of the confluence of the Great Bear Lake river. In favourable seasons barley gives a good return there. It is usually sown towards the end of May, and ripens

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in the latter part of August. Hay, for the winter provender of milch cows that are kept at Fort Simpson, is made upon meadows and marshes about the fort, and is rafted down in boats in September.

“ I was very agreeably surprised,” says a writer who was long in the service of the Company, and 25 years resident in the country, “ to find that the high latitude of this locality (61° N. latitude) did not prevent agricultural operations from being carried on with success. Although the season had been rather unfavourable, the farm yielded 400 bushels of potatoes and upwards of 100 bushels of barley. The barn-yard with its stacks of barley and hay, and the number of horned cattle around it, had quite the air of a farm standing in the ‘ old country.’ It is to be regretted that so little attention should have been paid to the cultivation of the soil in former times, as the produce would, ere now, not only have contributed to the support of the establishment, but have afforded assistance to the natives in years of scarcity.”

Mackenzie has left an amusing account of the fabulous horrors with which the natives endeavoured to deter him from prosecuting his noble voyages of discovery ; of their tales of many winters elapsing, and old age coming upon him, ere he could reach the sea ; of fearful torrents and impracticable falls ; of evil spirits and terrific monsters of demoniac shape.

Precisely similar idle tales were once rife about the Sagucnay, and indeed have lingered round every part of British territory in America. In truth, however, steamboats could ascend the Mackenzie as far as the carrying places upon Slave River ; and vessels of considerable burden freely navigate its waters. The channels formed by the large delta at the entrances and exits to and from the lakes require to be kept clear, and the driftwood prevented from obstructing the channels, as it has a tendency to do. Indeed, several of the minor rapids originate in this cause.

The river of the Mountains consists of two principal branches, flowing from the N. and S. respectively, and both rising beyond the highest peaks of the mountains through which they flow. The Dease river, a branch of the N.W. stream, is the channel by which boats pass through the mountains to the junction of the Pelly, Lewes, and Frances rivers, where the Company have a post, between 1300 and 1400 feet above the level of the sea. Two voyages are annually made between this station, called Pelly Banks, and Lynn Canal, an inlet N. of the island of Sitka, in lat. 59°, and to which steamers of the Hudson’s Bay Company ply. It was by this route that Sir John Richardson received the first intelligence of the general emigration to California, in consequence of the discovery of the gold mines, which almost emptied the thinly-peopled territories of the Hudson’s Bay Company. Although these rivers are



within British territory, the seaboard and Lynn Canal are within that of Russian America.

Sir John Richardson furnishes very interesting notes respecting the geology, forest growth, and botany, the quadrupeds, and birds and fish of the Mackenzie valley. After enumerating many species of each, he says:—"There is, in fact, notwithstanding the near neighbourhood of the Arctic Circle, no want of flowering plants to engage the attention; and many of the feathered inhabitants of the district recall pictures of southern domestic abodes. There is an intermingling of the flora of both coasts—the Atlantic and Pacific—as well as of the migratory feathered tribes, the Rocky Mountain range not proving a barrier to either."

The improvement of the navigation between the Methye Portage and Hudson's Bay, either by the Churchill River, to its mouth, or across the Burnt Wood carrying place down the Port Nelson River to Fort York, or from Lake Winnipeg, through the Hayes River, would effect an abbreviation of about 1500 miles on the routes to all parts farther W. That this immense abbreviation is practicable, and would prove very advantageous, notwithstanding the comparatively short period of the year during which Hudson's Bay forms a serviceable communication, is abundantly proved by the fact that it is the channel selected by the Company for carrying on the trade of the whole vast interior. It would be eagerly used as the most speedy and economical route to the Pacific during the period of the available season. By whichever of the directions between Ile à la Crosse Lake and the Rocky Mountains the first westward communication might be perfected, there would still only remain the few comparatively trifling and conveniently-situated carrying places, that have been pointed out to be improved, before the length of the Mackenzie would be added to the wonderful facilities that would exist for traversing the continent in every direction. The north-west passage, which for ages has been vainly sought for, though formed in a very different direction, and which by Lake Wollaston is a geographical fact, would then be a navigable reality. The objects for which it has been sought would, indeed, be accomplished by a different, and a more generally useful channel, through those links between the foot of the Rocky Mountains and the Pacific that yet remain to be considered; but independently of the varied resources of the Mackenzie River and valley and of the adjoining waters in fish, game, and fowl; in herds of deer and wild cattle; in metals, minerals, and coal,—the navigation of the river offers great advantages, compared with the trifling impediments opposed to it. Experience has shown the superiority of inland expeditions for purposes of exploration and of search. These would be immeasurably increased when the parties *could start with the first*

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opening of the season from the immediate vicinity of the object of their pursuit. Although nearly all the overland voyages of discovery have resulted from the different Arctic sailing expeditions, yet the greater part of the information has been collected by the land-journeys of each. Of the expeditions of 1826, Sir John Richardson alone succeeded in navigating the Arctic regions up to the meridians required by the Parliamentary stipulations to earn the promised reward.\*

It is now believed that, on a nearer approach to the North Pole, a milder climate and an open sea will be reached; and it is evident that under any circumstances the whale and fishery trades might be pursued with greatly increased advantages, if the whole season could be occupied in their actual prosecution without the loss of time in reaching and in returning from the scenes of their labours. In practice and in effect new seas would be added to their domain.

The opening of the Mackenzie River would also render the Coppermine region accessible. The approach, as might prove most convenient, might be made either by the Slave Lake and its northern tributaries, or by the Great Bear Lake, more probably by the latter. The great metallic wealth of this district is well known. The frequent theme of Indian converse at the settlements of the first traders, the asserted existence of these great mines in some part of the continent, has been one of the earliest and chief stimulants to discovery. The reality of their existence, corroborated by Hearne, has been fully established by Sir John Franklin. Of sufficient magnitude and importance to arrest the attention of the Indian, to arouse and keep alive the spirit of enterprise for several centuries, and, upon discovery, to give their name to a range of mountains, a river, a region, and a tribe of Indians, the difficulty of reaching them with sufficient transport has been supposed to render them for ever practically worthless. The opening of the Mackenzie would completely obviate this difficulty, and the Great Bear Lake itself, as well as the Mackenzie, supply, by their coal measures, an abundance of fuel.

The Hare Indians, who take their name from the animal, which abounds in incredible numbers upon the Mackenzie, and forms a principal part of their subsistence, inhabit a tract of country below the confluence of the Bear Lake River. The country is well wooded, but intersected by lakes and marshes, and numerous minor rivers.

Wild-flax grows in luxuriant abundance, the old plants lying on the ground while the new ones are rising up among them. On approaching the numerous channels by which the Mackenzie flows

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\* It was not granted, having been construed to apply exclusively to ships, and not to boats.

into the sea, the banks become low alluvium. The islands extend for some distance into the sea, and are covered with wood or grass, and a variety of plants and herbs and berries of different kinds.

5. The direct course of westward advance may now be resumed. The progress that may be effected by the aid of the great river systems of the interior reaches to the very base of the mountains; and the eligibility of the whole breadth of country from the frontier to at least the Itzechadzue renders it very desirable to connect the advance so far made by a line of road (railroad) from the Bullpound River to the bend of the River of the Mountains. It would give it solidity and compactness, and afford a favourable base of operations for selecting the best passes through the mountains, and render the first, that might be improved, available for all parts of the country eastward.

From the S. to within a comparatively short distance of the present British frontier the Rocky Mountains present an almost impenetrable barrier between the eastern and western shores of the continent. The N. pass by the N.W. branch of the River of the Mountains to Lynn Canal has been mentioned already. The altitude to be surmounted is not very great, but the route is circuitous, far to the N., and partly through the Russian territory. The close approximation, if not identity, of the sources of the rivers Columbia and Athabasca, has also been pointed out. There are three passes on the direct line of route, concerning which some information has been collected.

The route of Sir Alexander Mackenzie adheres to the course of the Peace and Frazer River until the confluence of the river Western Road is arrived at. The wonderful, unequalled facilities which conduct up to Rocky Mountain House on the Peace River are there exchanged for comparative impediments; but the inducements multiply more than correspondingly. A great river is still in front—the streams that flow into the Pacific almost in sight—the goal nearly attained; and who can fail to participate in the sentiments of Mackenzie, that fired his determination, and crowned his efforts with success?

After leaving Rocky Mountain House, the westward progress by water is, for a time, so frequently interrupted as to be scarcely available as a natural watercourse. The waters flow with great rapidity between steep, narrow, and often precipitous banks; after a while, however, continual reaches of navigable, almost still, water, from 25 to 30 miles in length, re-occur, and beautiful and extensive sheets of water burst suddenly upon the view. The summit level, far from being crowned with never-melting snow, consists of two tranquil lakes, the borders of which are clothed with wood, and the whole scene is enlivened by humming and

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other bright-coloured birds, the inhabitants of a southern clime. The practicability of the pass can scarcely, perhaps, be placed in a stronger light than by the fact that it was discovered and crossed by the energy of one man, leading a small band of alarmed and discontented followers through an unknown country, beset with hostile Indians; the whole party being ignorant not only of the paths they were travelling, but of their distance from the Pacific, or of the fate that might there await them. Under such circumstances Mackenzie performed the passage now traced, with a canoe which, from successive repairs, had become so heavy that two men could not carry her more than a hundred yards, and so crazy that it became absolutely necessary to construct another. The table-land of the summit-level is flanked by mountains on either side, about a quarter of a mile apart. Two streams fall from the rocks into the one first approached; two others, descending from the opposite heights, glide into the second lake. The scenery of the ascent reveals a succession of picturesque beauty, and the forests, islands, meadows, and table-lands show a continuation of the same general characteristics of the country of the Saskatchewan and Peace rivers. The timber is specified as of large dimensions, the poplars as the largest Mackenzie had ever beheld; he names the spruce, red pine, cypress, white birch, poplar, willow, alder, arrow-wood, redwood, liard, service-tree, bois piquant, &c., and, among shrubs, the gooseberry, currant, and various kinds of briars.

The characteristics of the southern passes are similar; that between latitude  $53^{\circ}$  and  $54^{\circ}$  is more gradually approached, the valleys are wider, and the character of the scenery less precipitous.

During the freshets in the spring, on the sudden melting of the snow and breaking up of the ice, the narrow valleys of the northern and southern passes are sometimes completely choked by natural dams, formed by timber and fragments of rock carried down by the impetuous torrent. When the accumulated waters have acquired sufficient weight or force, these temporary obstacles are borne away before them, and the rivers and streams gradually retire within their ordinary channels. This operation of nature is indicative of a mode by which a great transit of traffic may be effected across the mountains; the narrow valleys are the river-beds, the rocky banks and bottoms the abutments and chambers of the masonry, the temporary dams only require to be made permanent, and navigable rivers—steps of still water—replace the furious and impracticable mountain torrent. The largest bodies of water admit of being regulated without danger, by providing outlets increasing in size in full proportion to the accumulated quantities of successive descents.

The central pass being less precipitous and wider in character, and having a more gradual approach, would appear the most suited to land communications. If necessary or advantageous, the principle of steps and the elevation of freighted carriages might be applied, and, with the farther aid of tunnels, the land transit of the Rocky Mountains does not seem to be attended with the difficulties—far less with the impossibilities—with which it has hitherto been invested.

The fullest examination of the chain has often been advocated on geological grounds alone, on account of their probable immense mineral wealth; such a survey, and the settlement of the eastern slope from the shores of the Atlantic to their base, could not fail to throw much additional light on the various depressions of the range.

It is worthy of remark that the Governor-in-chief of the Hudson's Bay Company's territories overtook a party of poor unaided emigrants on the plains of the central region; but although he had all the resources of the country at his disposal, they had arrived on the western slopes of the mountains, with their waggons and families, before the party travelling by the route through which the Governor conducted his guests and companions. In estimating the practicability of the passage of the mountains, it is important, moreover, to remember that they have been thus traversed whilst entirely without roads. It is only necessary to think what the Simplon would be without a road.

6. The descent to the Pacific would be accomplished by similar means. Every avenue of approach would be soon called into requisition when the great tide of development of colonization and commerce had once reached from shore to shore. Western terminations would possess the same interest that now belongs to those of the East. The similarity of these two grand terminal countries in many respects is very remarkable; the positions, harbours, mineral, forest, and agricultural resources bear a striking resemblance to each other; the seaboard of the Pacific and the whole western side of the mountains is, however, favoured with a far more mild and genial climate. It is true neither Royal standard nor British flag float any longer over the exquisite valleys of the Cowlitz and the Wallamette, of the Kootoonay or the Columbia, but the remnant left of Oregon is still intrinsically agriculturally attractive, independently of the indirect value which it derives from the circumstances of the route, and to which its position within the Empire of Great Britain is essential. This fact is too well known to require to be now dwelt upon; the richness of the soil and the unequalled girth of the forest trees have attested the fertility of the country from its very earliest discovery; and Mackenzie, who was never S. of Point Menzies,

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which is more than a degree N. of the most northern extremity of Vancouver's Island, speaks of its great fertility and longs for its cultivation.

Simpson River and Observatory Inlet, the northern Salmon River, Mackenzie's route and Frazer River, all point out indications for communications between the seaboard and the passes of the mountains. The advantages of Vancouver's Island have been shown in connection with those of the entire route; its resources, as well as those of Queen Charlotte's Island, are ascertained sufficiently to establish their great value and importance.

The mode of communicating between Europe and that portion of the earth of which the shores are washed by the Pacific, that has now been briefly examined as a whole, and in its principal component parts, is the most eligible, especially for the interests and requirements of the British empire, and also for a large proportion of the commerce of the world. It must not, however, be inferred that other communications on the earth's surface are superfluous or unprofitable because they may unite the same extremities in a less advantageous manner. The proper use and relative bearing of the various routes that have supplied the data for the comparisons that have been made would furnish an interesting and useful subject for consideration. That which has been examined exhibits in every respect so complete an adaptation of means to the end proposed, as to give redoubled force to every argument that can be adduced; the opportunity of carrying it out has been long possessed by England, and for seventy-five years its advantages have been laid before her. It is the route of Sir Alexander Mackenzie, whose vigorous mind descried the distant shores of the Pacific from the opposite coasts of the Atlantic, and who grappled successfully with all the difficulties that beset his path, when crossing the wide expanse of the then unknown continent. His courage and perseverance enabled him to discover both the far western and the northern oceanic boundaries of the continent, and his genius and wisdom did not fail to point out its supreme national, and its great universal, importance.

The Report of the Lord High Commissioner of Canada, dwelling upon the condition and brilliant resources of the British provinces, could but dilate upon a portion of the results which he had briefly but graphically sketched, when he suggested to his country the colonization of the continent, the development of the fisheries, and *the trade of the Pacific*.

Notwithstanding the lapse of years, the same opportunities remain, and have become not only more important and more urgent, but also, through the advance of science, much more easy of execution.



APPENDIX.

The several features or points of superiority in the proposed route, via the British Colonies of North America, will be best shown by a comparison between it and the several routes to the Pacific, which have hitherto been proposed in competition.

The latter, taken in the order in which they are treated in the Report of the Select Committee of the House of Commons on Steam Communications with India, &c., are—

- A. By Central America.
- B. By the Cape of Good Hope.
- C. By the Indian Route.

A.—The several routes that were under consideration for communication with Sydney by Panama were—

	Miles, Nautical.	Speed in Knots.	Days.
1.—Southampton to Chagres . . . . .	4,622	11	18
Crossing to Isthmus of Panama . . . . .	90	..	2
Tahiti . . . . .	4,500	8½	22
New Zealand . . . . .	2,205	8½	11
Sydney . . . . .	1,155	8½	6
Stoppages . . . . .	..	..	5
<b>Total . . . . .</b>	<b>12,572</b>		<b>64</b>

	Nautical Miles.
2.—Southampton to Panama (as above) . . . . .	4,652
Panama to Huahine . . . . .	4,562
Huahine to Sydney . . . . .	3,277
<b>Total . . . . .</b>	<b>12,491</b>

3.—Southampton to Huahine (as above) . . . . .	9,214	} 11,534
Huahine to Wellington . . . . .	2,320	
Wellington to Sydney (through Cook's Straits) . . . . .	1,246	
<b>Total . . . . .</b>	<b>12,780</b>	

4.—Falmouth to Panama (by the route of the West India Steamers) . . . . .	5,710
Panama to Sydney by Auckland . . . . .	8,210
<b>Total . . . . .</b>	<b>13,920</b>

B.—By the proposed Cape routes, the distances were as follows:—

(Speed, 8 Knots.)

	Nautical Miles.	
1.—Plymouth to St. Vincent . . . . .	2,260	} Stoppages 3 days.
Sierra Leone . . . . .	906	
Cape of Good Hope . . . . .	3,582	
Wilson's Promontory . . . . .	5,971	
Sydney . . . . .	443	
<b>Total . . . . .</b>	<b>13,162</b>	<b>Time, (total) 71 days.</b>

2.—Plymouth to Swam, Adela, Port Sydney

3.—Southampton to Bona, Cape To S

4.—Falmouth to Madeira, Santa, Porto, Asce, St. H, Cape, Mau, Swan, Tort, Adel, Port, Hob, Syd

C.—The Indian

1.—Southampton to Mal, Alex, Isth, Ade, Poin, Sing, Bata, Tim, Cap, Syd

2.—Southampton to Cap, Syd



*via British North America.*

(Speed, 8 Knots.)

	Nautical Miles.	
2.—Plymouth to Cape of Good Hope (as above)	6,748	
Swan River . . . . .	4,672	
Adelaide . . . . .	1,345	
Port Philip . . . . .	505	
Sydney . . . . .	602	
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	13,872	Time, 80 days.

3.—Southampton to Bonavista . . . . .	2,374
Bonavista to Cape of Good Hope . . . . .	3,846
Cape to Wilson's Promontory . . . . .	5,971
To Sydney . . . . .	443
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	12,634

4.—Falmouth to Lisbon . . . . .	730	} 14,025 to Hobart Town, Tasmania.
Madeira . . . . .	450	
Santa Cruz, Teneriffe . . . . .	250	
Porto Praya, Cape Verdes . . . . .	910	
Ascension . . . . .	1,530	
St. Helena . . . . .	655	
Cape of Good Hope . . . . .	1,720	
Mauritius, by Algoa Bay, &c. . . . .	2,280	
Swan River . . . . .	3,150	
Torbay and Hamilton . . . . .	325	
Adelaide . . . . .	1,050	
Port Philip . . . . .	490	
Hobart Town . . . . .	485	
Sydney . . . . .	630	
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	14,655	Time, 70 days.
	<hr/>	Speed, 9 to 10 knots.

C.—The various postal routes to Sydney that were proposed in prolongation of the Indian or Suez route, were—

By Torres Straits.

	Nautical Miles.	
1.—Southampton to Gibraltar . . . . .	1,172	} Speed, 10 knots.
Malta . . . . .	988	
Alexandria . . . . .	815	
Isthmus of Suez (crossing the) . . . . .	207	
Aden . . . . .	1,310	
Point de Galle . . . . .	2,121	
Singapore . . . . .	1,497	} Speed, 8 knots. } 5 days stoppages.
Batavia . . . . .	520	
Timor . . . . .	1,240	
Cape York . . . . .	935	
Sydney . . . . .	1,905	
	<hr/>	
	12,710	Total time, 66 days.

2.—Southampton to Point de Galle (as above) . . . . .	6,613	Speed, 10 knots.
Cape Lewin (stoppages, 5 days) . . . . .	3,129	} Speed, 8 knots.
Sydney . . . . .	1,985	
	<hr/>	
	11,727	Time, 60 days.

	Nautical Miles.	
3.—Southampton to Point de Galle. . . . .	6,613	} Conditions the same.
Swan River . . . . .	3,060	
Adelaide . . . . .	1,345	
Port Philip . . . . .	505	
Sydney . . . . .	602	
	<u>12,125</u>	Time, 62 days.
4.—Southampton to Batavia (as in No. 1) . . . . .	8,630	
Swan River, through Sunda Straits . . . . .	1,767	
Adelaide . . . . .	1,345	
Port Philip . . . . .	505	
Sydney . . . . .	602	
	<u>12,849</u>	
5.—Southampton to Point de Galle. . . . .	6,613	
Singapore . . . . .	1,497	
Sourabaya . . . . .	760	
Swan River (through Samboh Straits) . . . . .	1,663	
Adelaide, Port Philip, Sydney . . . . .	2,452	
	<u>12,985</u>	
6.—Variation on No. 1.		
Variation between Dover and Alexandria by Marseilles.		
Dover to Calais . . . . .	22	
Calais to Marseilles, by Paris, Dijon, Châlons, and Lyons . . . . .	777	
Marseilles to Malta . . . . .	650	
Malta to Alexandria . . . . .	815	
Alexandria to Suez . . . . .	207	
Suez to Aden . . . . .	1,310	
Aden to Point de Galle . . . . .	2,121	
Point de Galle to Singapore . . . . .	1,497	
Singapore to Batavia . . . . .	520	
Batavia to Timor (North Point) . . . . .	1,240	
Timor to Cape York . . . . .	935	
Cape York to Sydney, by Rainè Island Passage	1,905	
	<u>12,005</u>	
7.—Similar variation, by Trieste.		
Dover to Ostend . . . . .	62	} By rail, through Brussels, Hanover, and Vienna.
Ostend to Trieste . . . . .	1,414	
Trieste to Alexandria . . . . .	1,211	
Alexandria to Sydney . . . . .	9,730	
	<u>12,421</u>	
8.—Falmouth to Aden . . . . .	4,495	
Mauritius (including Isle de Bourbon) . . . . .	2,800	
Swan River . . . . .	3,150	
Adelaide, &c., Sydney . . . . .	2,980	
	<u>13,425</u>	

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Thus the distances to Sydney by these respective lines are:—

	Miles.
A. By Central America . . .	from 12,491 to 13,920
B. By the Cape of Good Hope . . .	,, 12,634 to 14,655
C. By the Indian Route . . .	,, 11,727 to 13,425

It is scarcely necessary to observe that, where two figures are given by one route, the longer possesses advantages over the shorter one in many material respects, or that, on the other hand, there are serious drawbacks to the adoption of the lines of shorter geographical distance; so that these latter difficulties might very probably lead to the selection of one of the longer lines for that of steam communication with Sydney. This point is important in the comparison of distances. The preference is awarded by the Committee of the House of Commons to the route by the Cape of Good Hope, by which the distance varies from 12,634 miles to 14,655 miles.

By the route proposed through British America, the distance to Sydney would be 11,600 miles. The capital of Australia is, however, the most favourable point in the Pacific for the first three lines, and that which places the distance superiority of the British American route in the least advantageous view.

To *New Zealand* the distances are respectively:—

	Miles.
By Central America . . .	from 11,336 to 12,765
By the Cape of Good Hope . . .	,, 13,789 to 15,810
By the Indian Route . . .	,, 12,882 to 14,580
By the proposed route through British America	11,058

To *Hong-Kong* the respective distances are—

By Central America . . .	from 13,720 to 15,760
By the Cape of Good Hope . . .	,, 13,330 to 14,530
By the Indian Route . . .	15,590
By the proposed route through British America	10,490

To *Shanghai* and to *Japan* the comparison is yet more in favour of the route through British America by 400 and 1400 miles respectively.

The comparison may be carried through for every port on the Pacific, but the difference is sufficiently apparent from the more important examples given.

The times to Sydney, named in the tenders, are—

By Central America . . .	from 63 to 65 days.
By Cape of Good Hope . . .	,, 70 to 80 ,,
By the Indian Route . . .	,, 62 to 66 ,,

By the proposed route through British America the time would be 44 days, at the rates of 10½ knots by water, and 40 miles the hour by land—or, 52 days at the rates of 8½ knots by water, and 20 miles the hour by land.

These rates, chosen in order to embrace both the paddle-wheel and screw-steamers, are below that of steamers actually plying to North America. The rates per railway are less than those of express and ordinary railway travelling respectively. In both cases two days are allowed for coaling in the Pacific.

Of course the saving of time to *New Zealand*, *China*, *Hong-Kong*, or *Shanghai*, and to *Japan*, &c., would be greater in the same proportion in which it has been shown that the proposed communication through British America affords a shorter route to those places.

The third point is the superior position of the British American route, with regard to the trade winds and great circle sailing.

The Indian route, being exclusively a line for the carriage of the mails, and for a limited number of wealthy passengers, does not enter into competition under this head.

The Central American routes, too, whether by *Panama*, *Nicaragua*, or *Tehuantepec*, are anything but favourably situated with regard to winds or currents. The following expressive language has been applied to them:—

“There could be little difference between them: it is a long, bad sea-voyage from them to anywhere, and a still longer one from anywhere to them.”

Though strictly applicable with reference to the intercourse between Europe and the Pacific, this overlooks those portions of both North and South Western America to which these routes are unquestionably useful communications.

The direct distance to Sydney, as appears from the tables already given, is about 12,491 miles, or about 200 miles shorter than by the Cape of Good Hope, or by Cape Horn.

The actual course of a sailing vessel is, however, given as follows:—

“ Sydney to 120° W. long. between 33° and 36° S. lat.; passing north of New Zealand to the parallel of Coquimbo, to Callao, and Panama to Chagres and England . . . . . 15,848 miles.”

Whereas by “ Cape Horn to the Straits of Le Maire, passing south of New Zealand, thence to 40° S. lat., to Cape Frio, to the Equator, and to England . . . . . 13,380 miles.”

A difference of 2,018 miles against Panama.

Again, to China,—the course of a sailing vessel would be:—

“ To 28° N. lat. and 30° W. long.; thence to the Straits between San Lucia and St. Vincent, to Chagres, Panama, south of the Sandwich Islands (by reason of the trades), to the Ladrões, then North or South, because of the Monsoons, then to Canton . . . . . 15,760 miles.”

The return voyage must either be made against 8000 miles of strong head winds from the Ladrões to China, or the Coast of Japan must be followed, the ocean be crossed to Oregon, the Coast then followed to Panama, thence from Chagres to Havana, and again following the coast and keeping the Gulf stream past Halifax to England.

By the Cape of Good Hope routes have been suggested which a screw vessel may follow to avail herself of the S.E. trade, to Sydney.

1. Touching at the Cape of Good Hope:—

	Nautical Miles.
Southampton to Panama . . . . .	2,374
Bonavista to Equator, 18° W. . . . .	1,012
Equator, 18° W. to 28° 0' S., 26° 15' W. . . . .	1,746
28° 0' S., 26° 15' W. to Cape (Gr. C.) . . . . .	2,304
Cape to Wilson's Promontory (Gr. C.), Composite route, maximum lat. 47½° S. . . . .	5,687
Wilson's Promontory to Sydney . . . . .	443
	13,566

2. Without touching at the Cape:—

Southampton to 28° 0' S., 26° 15' W. . . . .	5,132
28° 0' S., 26° 15' W., to Wilson's Promontory . . . . .	7,705
Wilson's Promontory to Sydney . . . . .	443
	13,250

This would also be the course of a sailing vessel to Sydney, and shows about the same superiority as the route by Cape Horn over that by Panama in point of distance. It has the advantage of better weather.

	Miles.
To China the distance would be about . . . . .	14,530
And the return voyage . . . . .	13,330

The voyages have, however, averaged an equal length of about 120 days, out and home. The shortest voyage was made in 1842, by a man-of-war outward bound, which reached China in 85 days.

By British America:—The effect of the trade winds is to add very considerably to the distances by Panama; but they do not increase those by British America. To or from Vancouver's Island, either way the wind is either fair or favourable,

or the trade advantages of the additional consequence to have been stated, it has of the position to the trades supersede the ing that this of the auxili liberately en riority of a effects in tin Vanconver's harbours, an Every circu spheres mus The prop salubrit, bo Of the thr it; but is in Panama season is cor that during calms altern destroyed al climates. This latte apply also products. The prop munication. By the e ance, virtu 8600, 8058, The futu of this mig to Behring ing of the rican route Or the sam Asia to B within a co indicate th This woul The sho It is als all produc every kin It may b freight, an understand the Unite be an affa Circum adjustmen freight th is loungin It mig time is co just as co

or the trade can be crossed on a wind. The British American route retains all the advantages of its shorter direct geographical distances, and in this comparison has the additional superiority of the increase of the distances by the other routes in consequence of the trade winds. By an estimate of the future, which may prove to have been correct, but which for immediate practical purposes has been overstated, it has been said, that not much stress ought to be laid upon the advantage of the position of Vancouver's Island, or of the British American route, with regard to the trades or currents, because the auxiliary screw-steamer vessel is destined to supersede the ordinary sailing vessel for the purposes of oceanic navigation. Granting that this surmise were perfectly correct, it is obvious that the whole principle of the auxiliary screw is set aside, if 3000 miles of very strong head-winds be deliberately encountered. Whatever be the vessel employed, the points of superiority of a less distance and a more favourable wind are clear. Their actual effects in time may be diminished; but their relative results cannot be altered. Vancouver's Island must ever retain the advantages resulting from its numerous harbours, and its position with regard to great circle sailing and the trade winds. Every circumstance which tends to increase the intercourse between the hemispheres must lend an additional value to these advantages.

The proposed route through British America is without a rival in respect of salubrity, both as to man himself and the products conveyed by it.

Of the three older routes, that by the Cape of Good Hope most nearly approaches it; but is inferior, owing to the length of the voyage and the latitudes traversed.

Panama is as notoriously sickly as tempestuous, so much so, that the healthy season is confined to three months of the year (December, January, February), and that during which it is considered safe to approach the coast—to five. Storms and calms alternate during the remainder of the year. Many products are inevitably destroyed and others materially injured by a lengthened voyage through tropical climates.

This latter objection, and the numerous transshipments that would be required, apply also to the Indian route, and render it unavailable for the conveyance of products.

The proposed route through British America alone includes every kind of communication.

By the electric telegraph, it annihilates in effect 3000 miles of the whole distance, virtually bringing Sydney, New Zealand, China, and Japan, &c., within 8600, 8058, 7490, and 6090 miles respectively.

The future will resolve, and that perhaps speedily, what the further application of this mighty messenger may effect. The extension of a line from St. Petersburg to Behring Strait depends only on the provision of funds; from thence the crossing of the Strait and a junction with the Western terminus of the British American route, would complete the electric communications round the habitable earth. Or the same result might be obtained by following the South and Eastern shores of Asia to Behring Strait. Again, the extension of the bank of Newfoundland to within a comparatively short distance of the coast of Ireland, has been supposed to indicate the possibility of stretching an electric connection across the Atlantic. This would literally form a girdle of telegraph extending round the globe.

The shortest and quickest is obviously the best *postal* route.

It is also evident, from what has already appeared, that it is the best route for all produce likely to be injured by a lengthened voyage and tropical heats, and for every kind of merchandise in the conveyance of which speed is at all desirable. It may be added, that both with regard to economy of time in the carriage of freight, and even of the use of the electric telegraph in communications, we do not understand or at least avail ourselves of their full value. In British America and the United States the telegraph is in continual use on all occasions, while it must be an affair of no ordinary importance to which it is applied in England.

Circumstances necessarily render it more costly in Great Britain; but the proper adjustment of price and use has hardly yet been found. Again, in the carriage of freight the vessel that performs its lading, voyage, and discharge, while another is lounging at the wharf, must carry off the prize.

It might be thought that in the carriage of the heaviest merchandise, and when time is comparatively of little importance (if such a case there be)—that crews are just as costly, though not so profitable, whether they convey fifty or but one cargo;

in such a case, it might be thought that the Cape route without transshipment must prove superior.

Even this, however, would not be the case; an examination of the details of the route and of its several component parts, would show the various circumstances that unite to favour its construction, and to render it economical. The calculations by which this point would be established cannot be entered upon here. It may suffice to state at present, that it has been shown, with reference to a route proposed by Mr. Asa Whitney \* through the United States with a view to connecting the same extremities, that, assuming a high basis of computation, freight could be carried from Canton to New York for less than two-thirds of the cost via the Cape.

Its national independence is perfect. An *approximation* to this condition is considered so essential, that it was one of the four primary points required by the Select Committee of the House of Commons, "That the line or lines selected should be as free as possible from those political objections which necessarily attach to a line dependent on other countries for its communications."

The proposed route through British America would render the communications of Great Britain independent of the world; and India, if menaced, could be supported from the W., as well as from the E.

The completion of this great highway, so useful to the universe, though emphatically national, would tend greatly to the continued duration of peace.

The proposed route by British America would establish direct and mutual intercourse between—

1. Europe, Asia, and America,
2. England and all her Colonies,
3. And between the several Colonies.

The importance of connection has been so highly esteemed, as to have been pressed as deserving consideration even before a certain measure of time, speed, and distance, in the selection of the first Australian route to be established.

It only requires to look at the globe, and a very little reflection, to perceive how incomparable the British route is in carrying out this condition. It would essentially foster inter-communication between the several parts of the empire, and call into existence an illimitable commerce and intercourse with British America. Both by direction and rapidity it would bring the most densely populated regions of Asia, those at present most excluded from the world, into close and practical contact with Europe. The activity thrown into the Pacific would reach India, China and Japan, Borneo, the Burmese and Siamese Empires, and Polynesia.

These advantages are yet enhanced by contrast. The Central American Routes unite, as far as British interests are concerned, nothing but the extremities. If successful, they would seriously endanger the carrying trade and commercial power of England, as the United States Committee on naval affairs has elaborately proved.

If unsuccessful as a route, they would prove a waste of energy and capital, damaging the prospects of truly eligible modes by which to join the oceans.

The Cape route unites but little that absolutely depends on its adoption for intercourse.

The Indian route forms indeed a part (though but a small one) of the same connection, but is only applicable to postal purposes, or little more.

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\* See Volume XXI. of the Journal of the Royal Geographical Society.—Ed.

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