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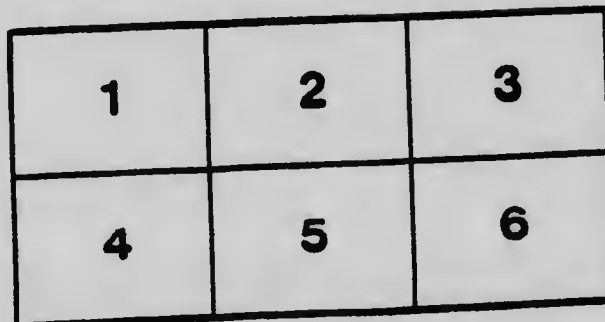
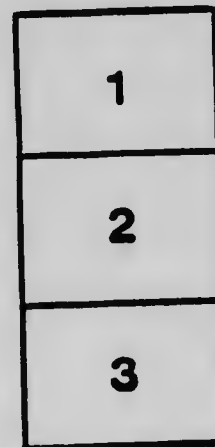
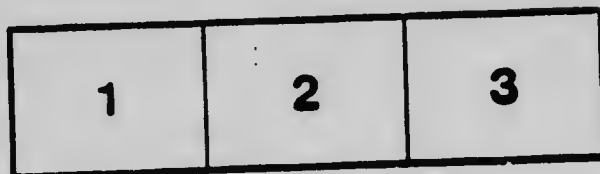
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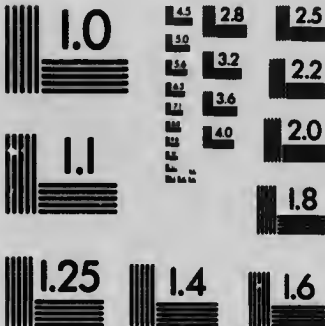
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**HOW CANADA IS SOLVING HER TRANSPORTATION
PROBLEM**

**BY LAWRENCE J. BURPEE,
OTTAWA, CANADA.**

[Reprinted from THE POPULAR SCIENCE MONTHLY, September, 1905]

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HOW CANADA IS SOLVING HER TRANSPORTATION PROBLEM.

BY LAWRENCE J. BURPEE.

OTTAWA, CANADA.

IN Canada the main lines of transportation run east and west, much more decidedly than they do in the United States. The Dominion is, roughly speaking, a vast parallelogram, three thousand five hundred miles long by perhaps a thousand miles deep. Climatic conditions have in the past confined, and probably will continue to confine, the bulk of the population to the lower or more southerly half of the parallelogram. The problem confronting the people of Canada is, therefore, how best to provide adequate transportation facilities for a population scattered over a relatively narrow belt of country three thousand five hundred miles long. That they have already to a considerable extent solved the problem, the remarkable prosperity of the Dominion at the present time clearly shows; for transportation facilities are an essential of national prosperity in any country, and especially so in one of such formidable distances as Canada.

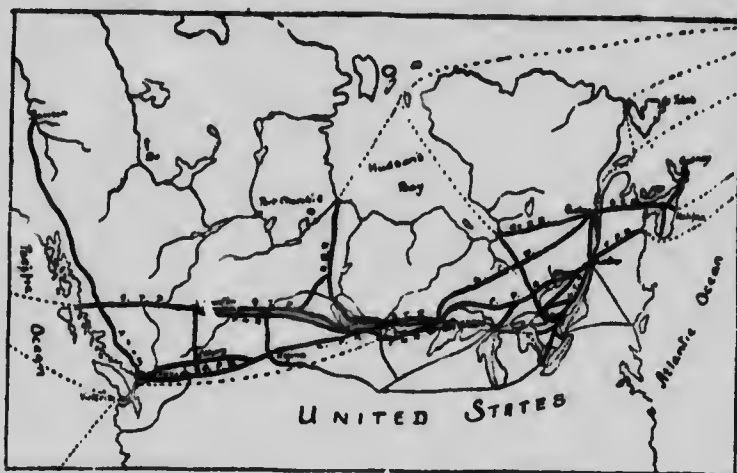
But these facilities must keep pace with the industrial development of the country, and the industrial development of Canada is rapidly outdistancing its means of transport. To bring these two great factors of national prosperity into line, and keep them there, is the question of the hour in Canada, and the statesmen of the country are devoting themselves to its solution with a largeness of view and far-sightedness which augurs well for the future of the young Dominion.

A glance at the map will show that in the facilities afforded for transportation, nature has been on the whole very kind to the people of Canada. She has provided, in the first place, an unrivaled system of water transportation extending from the Atlantic to the head of Lake Superior—almost half way across the continent; and, as if this were not enough, an alternative and shorter route is furnished from Lake Huron to the St. Lawrence, *via* French River, Lake Nipissing and the Ottawa. West of Lake Superior we find a system of lakes and rivers extending, with inconsiderable breaks, from the head of the Great Lakes to the foothills of the Rockies, to Hudson's Bay and to the mouth of the Mackenzie River on the extreme northern boundary of the Dominion.

While nature placed formidable obstacles in the way of Canada's first transcontinental railroad—the Canadian Pacific—both along the north shore of Lake Superior and in the Kicking Horse Pass through

the Rocky Mountains, she has provided for the country's second trans-continental route, farther north, remarkable for its exceptionally low gradients, and including the easiest pass to be found in the whole length of the Rockies.

The natural waterways of the Dominion have been developed and improved systematically for many years past, until this great work has come to be regarded as a fixed national policy, which no government, even though it were so inclined, would have the hardihood to abandon. Up to the present time Canada has spent upon her canals over one hundred and seven millions of dollars, and is likely to expend many



TRANSPORTATION LINES OF CANADA.

times that amount in the years to come. The history of Canadian canals goes back even to the French *régime*, when small canals and locks were built to overcome the Lachine and other rapids on the St. Lawrence. These were but canals in miniature—ditches, 6 or 7 feet wide by perhaps 2½ feet deep, designed to meet the needs of the fur traders' canoes. A similar canal was constructed by the Northwest Fur Company, at Sault Ste. Marie, in the eighteenth century—the earliest progenitor of the gigantic twin canals, American and Canadian, of the present day, through which passes annually a much greater tonnage than that of the Suez canal. The 2½-foot Lachine canal of two hundred years ago has grown to a depth of 18 feet on the sill, 45 feet wide and 270 feet long, in each of five locks, the entire length of the canal with the approaches being eight and a half miles.

From the earliest history of the country the east and west trend of transportation has been marked. The first railways of the country were built to connect a handful of small towns, villages and settlements,

strung like beads on a wire along the north shore of Lake Ontario. Gradually the rails were pushed east and west; east to Montreal and the French-Canadian towns on the lower St. Lawrence, and west to the Niagara peninsula and along the north shore of Lake Erie to the international boundary at Detroit. Then, when the scattered colonies of British North America were at last confederated in the Dominion of Canada, the Intercolonial—Canada's national railroad—was built from Halifax, on the Atlantic seaboard, to Levis, opposite the city of Quebec; subsequently being extended to Montreal.

Finally, with a courage and faith in the country's future which the succeeding years have fully justified, the Canadian Pacific railway was built (subsidized with twenty-five million dollars out of the treasury of the young Dominion, and twenty-five million acres of land), and Canada at last had a railway from ocean to ocean, throughout her entire length, making accessible the vast fertile plains of the northwest, with their incalculable agricultural wealth, and providing transportation facilities between eastern Canada and the new province of British Columbia. Up to the present time Canada has expended on her railways in the form of cash subsidies, irrespective of the value of land grants, and irrespective also of the cost of the Intercolonial (\$77,000,000, including rolling stock) an aggregate—enormous in view of the comparatively small population of the country—of two hundred and forty million dollars.

When the first Canadian Pacific train crossed the prairies of western Canada, not quite nineteen years ago, that land of promise held only a handful of white settlers. To-day there are six hundred thousand, and new settlers are coming in increasing numbers every year. A few years ago men would have laughed to scorn the idea that western Canada might some day become the granary of the British empire. To-day it is accepted as a self-evident proposition, to be realized within a very few years. In 1904 this western country yielded, in spite of adverse conditions, 60,000,000 bushels of wheat valued at \$40,000,000 besides other grains worth another \$10,000,000. This year it is estimated that the wheat crop will pass the hundred million mark; and hard-headed business men, not given to idle boasting, confidently predict that within the next quarter of a century western Canada will produce half a billion bushels of wheat annually. The acreage this year under wheat will exceed four millions; but this constitutes but a fraction of the acreage actually available in Manitoba and the territories for profitable wheat raising. With an available acreage estimated at over one hundred millions, and a rapidly increasing population, he would be a bold pessimist who would deny the coming greatness of the Canadian west as a dominant factor in the world's wheat markets. Under such conditions, it is well that the government of

the Dominion rests in the hands of a strong administration, led by a statesman of commanding ability and exceptional breadth of view. Courage and wisdom to build not merely for the present were never more vitally necessary to the well-being of Canada. The government in its transportation policy is showing the same broad faith in the destiny of the country revealed by its predecessors in connection with the building of the Canadian Pacific.

The rapid development of the west, and the increasing difficulty experienced in handling the grain crops of Manitoba and the territories, made it apparent two or three years ago that provision must be made—and made at the earliest possible moment—for additional transportation facilities between eastern and western Canada. The situation was partially relieved by the construction, through the enterprise of a couple of energetic Canadians, of the Canadian Northern Railway, which provides an additional outlet from the western wheat-fields to the head of navigation at Fort William, where connection is made with the steamers running to Owen Sound, Collingwood and other ports on Lake Huron. Even this rapidly growing system has, however, only partially met the situation. The real solution of the problem is being found in the great project for building another transcontinental road across Canada from ocean to ocean.

The Grand Trunk Pacific is the fruit of the brains of two very remarkable men, Sir Wilfrid Laurier and Mr. Charles M. Hays, general manager of the Grand Trunk railway. One saw the project from the point of view of national statesmanship; the other developed it as a practical business proposition. Briefly, the agreement between the Canadian government and the Grand Trunk Pacific is this: The new transcontinental is divided into two sections. The eastern section, from Moncton, New Brunswick, to Winnipeg, *via* Quebec, is being built by the government at the public expense, and upon completion will be leased to the Grand Trunk Pacific for fifty years, with the privilege of renewing the lease for a further period of fifty years. The western section, from Winnipeg, *via* Edmonton and the Peace River Pass to Port Simpson on the Pacific, is being constructed directly by the Grand Trunk Pacific Railway Company, the Dominion government guaranteeing the bonds of the company to an amount equal to seventy-five per cent. of the cost of construction. When the entire road is completed, from Moncton, N. B., to Port Simpson, it will be operated by the Grand Trunk Pacific from ocean to ocean, and the railway will be supplemented, as in the case of the Canadian Pacific,* by lines of

* It may be noted here that the Canadian Pacific has arranged for the construction of several new vessels for their Atlantic service which are to have a guaranteed speed of twenty knots an hour and are expected to reduce the time from Montreal to Rimouski to five days and four hours.

steamers plying from Quebec or Halifax on the Atlantic to Liverpool, and from Port Simpson to Japan, China and perhaps Australia. At Moncton the Grand Trunk Pacific will make connection with the Intercolonial, over which it will have running rights to Halifax and St. John.

No more forcible evidence could be presented of the keen interest now taken by Canada and the Canadian government in the adequate development of the transportation facilities of the country, than the fact that within the last year or two no less than three official commissions have been created to deal with different phases of the same wide subject. These are, the commission on transportation, the board of railway commissioners and the national transcontinental railway commission. The members of each commission are men of the highest standing, chosen because of their special knowledge and experience in regard to transportation.

The first of these commissions is charged with the duty of investigating every branch of the transportation problem in Canada. The commissioners are to study the best available rail and water routes; the improvement of lake, river and ocean ports; the improvement of the St. Lawrence route; the adjustment of freight rates; foreign competition in transportation; and other questions of a like nature. The commissioners have already accumulated a mass of invaluable data, gathered by personal examination, and supplemented by the views of practical railway and shipping men and others connected in one way or another with the transportation interests of the country. When these facts and figures have been digested, the result will be submitted to the government, with recommendations from the commission covering a broad and comprehensive plan of transportation development by rail and water, designed to meet the large needs of a rapidly growing country.

The board of railway commissioners is a permanent department of the federal government, with offices at Ottawa. The commissioners are, however, continually moving about the country, from Cape Breton to Vancouver Island, hearing and adjusting disputes of all kinds—as to freight rates, station accommodation, the distribution of rolling stock, and a host of other questions at issue between municipalities or individuals and the various railway corporations. The board is vested with very large powers, and their decisions have so far been characterized by a spirit of conciliation and common sense, which have commended them to not only the people at large, but also to the special interests affected. The decisions of the board may be overruled by the privy council, but in practice the commissioners have fortunately a free hand, and the results so far have been of immense benefit to the country. Much of the initial success of the board in the settlement of disputes between the people and the railways was due to the wide familiarity with

the questions involved, the shrewd common sense and the recognized impartiality of the first chairman of the board, Hon. A. G. Blair, formerly minister of railways and canals in the Dominion cabinet. Under his control the board was instrumental in settling, by a policy of conciliation and mutual concession, and with reasonable satisfaction to all parties, a multitude of disputes which had been sources of bitterness and irritation in the districts affected. Mr. Blair's resignation, shortly before the last Canadian elections, was felt at the time to be an irreparable loss, as his was by all odds the master mind of the commission. Fortunately the government has secured, in Mr. Justice Killam, of the Supreme Court of Canada, a successor who possesses much of Mr. Blair's shrewdness and tact, as well as the alert mind and legal knowledge of an eminent jurist.

The third of this remarkable triumvirate of transportation commissions is charged with the location and construction of the eastern half of the new Transcontinental railway.

There are to-day in Canada some 170 railways, twenty-five of which are amalgamated in the grand Trunk system and thirty in the Canadian Pacific. The rest, with the exception of the Intercolonial and the Canadian Northern, are comparatively short, local roads. The total railway mileage of the country is now about twenty thousand, of which the Canadian Pacific accounts for nearly one half, and the Grand Trunk, some 3,200 miles. Of the existing roads, the Canadian Northern is growing with the greatest rapidity. It is expected that by the coming autumn the rails will be laid as far as Edmonton—making a second through line from Fort William almost to the foothills of the Rockies. But the men who are behind the Canadian Northern are by no means satisfied with this program. They look forward to a much wider development for their road, and confidently expect to make it the third Canadian transcontinental. At present the main line extends from Fort William to the neighborhood of Battleford. Then in the east the Canadian Northern interests control the Great Northern, from the city of Quebec to Hawkesbury, on the lower Ottawa; and they are now applying to parliament for authority to construct the intervening link between Hawkesbury and Fort William, *via* Ottawa and north of the Great Lakes. When this link is completed, and the western end of the railway carried to Edmonton and the Rockies, and thence to the Pacific coast, the Canadian Northern will have a through line from Quebec to the Pacific.

With the completion of the Grand Trunk Pacific, and the Canadian Northern, Canada will have three distinct transcontinental railways, and eventually these will in all probability be increased by one and perhaps two others. One at least of these will run through the

far north, probably as far north of the Grand Trunk Pacific as that is beyond the Canadian Pacific. The continuation of such a road has already been seriously considered in Canada, a group of Canadian, American and English capitalists having projected several years ago what was to be known as the Trans-Canada railway. This line was to run from Chicoutimi on the Saguenay River, or the city of Quebec, in a practically air line through northern Ontario and Quebec, north of Lake Winnipeg, and through the upper parts of the territories of Saskatchewan, Alberta and Athabaska* to the Rockies, and thence to the Pacific. The company had even made some little headway with surveys of the proposed route—which was to include a branch to James Bay, and another from Edmonton to Dawson—and was negotiating with the federal government as to a subsidy, when the floating of the Grand Trunk Pacific project, backed by the powerful Grand Trunk interests, and with the certainty of early construction, knocked the Trans-Canada scheme on the head, for the time being. There is small doubt, however, that this line, or one following the same general route, must eventually be built to meet the needs of the country, as the tide of settlement pushes gradually to the northward.

The importance of the Canadian transcontinental routes is not confined to Canada or Canadian interests. These routes are of course designed primarily to build up the Dominion, and facilitate inter-provincial as well as international commerce. Incidentally they become a factor of increasing importance in the opening up of new markets for Canadian products beyond the eastern and western seas. But there is a further and wider field in which they are a feature, the significance of which is seldom recognized. As a link in the chain of transportation between the heart of the British Empire and its outermost boundaries, especially for the carriage of troops and war materials, it would be impossible to overestimate the value of the present and prospective transcontinental lines across Canada.

In eastern Canada, the Canadian Pacific and the Grand Trunk are, and have been for many years past, great rivals. In the west the Canadian Pacific had until lately a monopoly of the traffic, but the advent and rapid development of the Canadian Northern has put quite a new face upon the western situation, and has resulted, for one thing, in a lowering of freight rates from all points in the Canadian wheat belt to Lake Superior ports, which has been of very decided advantage to the farmers of Manitoba and the northwest. One still hears an occasional grumble from the western Canadian farmer on this score, but as a matter of fact freight rates on both the Canadian Pacific and

* Now the Provinces of Alberta and Saskatchewan.

Canadian Northern are now considerably lower than obtain on the Great Northern and Northern Pacific for the same distances.

It seems at first sight rather hard lines that the Canadian Pacific, after fighting alone through the long lean years of western traffic—when the pessimistic prediction that the Canadian Pacific railway would never earn enough to pay for its axle-grease seemed about to be verified—should now, on the threshold of the fat years of western growth and prosperity, be faced with the competition not merely of one, but of two great rivals in the west. As a matter of fact, however, the Canadian Pacific has suffered very little loss of traffic from the competition of the Canadian Northern, and is not likely to suffer eventually from the competition of the Grand Trunk Pacific. Western Canada is growing faster than the railways; the two existing roads in the west have already pretty well all the traffic they can conveniently handle, especially during the harvest, and by the time the Grand Trunk Pacific is completed there will probably be more than enough for all three.

The completion of the Grand Trunk Pacific, and the impetus that will thereby be given to settlement in the northern half of the great Canadian wheat belt, must inevitably lead to a demand for another transcontinental still farther north. It is a curious but indisputable fact that as wheat cultivation is extended north, the limits of the wheat zone are pushed forward,* and the total acreage available for cultivation increases from year to year. There will be ample room for another railway, and perhaps two, north of the route of the Grand Trunk Pacific, and still well within the wheat belt. When grain or other shipments reach Fort William from the west, they have the choice of either a rail or a water route. At present the Canadian Pacific offers the only rail route, but within a few years the Grand Trunk Pacific and the Canadian Northern will both have through lines from Fort William east.

The water routes east of Fort William are practically identical until Lake Huron is reached. There they branch out to a number of Canadian and American lake ports, where connection is made with the Grand Trunk, the eastern lines of the Canadian Pacific, and other roads leading east or south. Another route traverses Lakes Erie and Ontario, *viâ* the Welland and St. Lawrence canals, to Montreal. In time two alternative and shorter water routes will be available from Lake Huron to Montreal; the first, *viâ* the Trent Valley canal, now in course of construction, and on which the government has built an enormous hydraulic lift lock, the only one in America; and the other by way of the Georgian Bay canal. This latter project has been

* It is estimated that the hard wheat belt is receding northward at the rate of fifteen miles every year.

under discussion in Canada for a number of years. It was first proposed to build the canal as a private undertaking, a strong company of Canadian and English capitalists having been formed for the purpose. The company asked the federal government to guarantee their bonds; but after some hesitation it was decided that if the work were to be done it would be preferable to do it at the public expense, and make it part of the great canal system of the country.

Last session the Canadian parliament voted a generous sum to provide for a thorough survey of the whole route, and most of this preliminary work has already been completed. The original project only contemplated an 8 or 10 foot channel; but as the discussion dragged on from year to year, the rapid increase in draft of lake shipping made it apparent that such a canal would be next to useless. The proposed depth was accordingly increased to 12, and then to 15 feet. Finally the projectors came out boldly for a 20-foot ship channel, sufficient to accommodate all lake shipping, and making possible the ambitious dream of shipping men for a route which would enable ocean-going vessels to load their cargoes at Fort William, Duluth or Chicago, and proceed to Liverpool without breaking bulk. The estimated cost of such a channel runs all the way from \$75,000,000 to \$100,000,000; but it is now realized that no smaller project would meet the needs of the country, and it is understood that the Dominion government intends eventually to build the canal with a 20-foot channel.

One other Canadian water route must inevitably be opened up in the next few years—that is the Hudson's Bay route. Several exploration parties have at different times been sent out from Ottawa by the government to examine into the possibilities and advantages of this route, and especially the period of navigability of Hudson's straits. The reports received have been rather conflicting, and as a matter of fact none of the vessels have remained long enough in and around the straits to finally decide the question. Mr. A. P. Low, on the *Neptune* expedition of 1903-4, went fully into this matter, and although his official report has not yet been made public, it is understood to be very favorable. An examination of the earlier reports, taken in connection with the favorable opinions of such authoritative men as Dr. Robert Bell, director of the Geological Survey, and Mr. A. P. Low, leads one to the opinion that the straits are safely navigable for such a period each year as would be quite sufficient to make the Hudson's Bay route commercially successful.

That the people of Manitoba have every confidence in the vast possibilities of this route is proved by the significant fact that the Manitoba government is now agitating for the extension of the provincial boundaries to the shores of Hudson's Bay, the intention being, when this has been accomplished, to build a railway, out of the pro-

vincial revenues, or with a heavy provincial subsidy, from Winnipeg to Fort Churchill.

When this railway has been completed, and a line of steamers placed upon the route from Fort Churchill to Liverpool, it is not difficult to foresee that within a comparatively short time a very large proportion of the wheat of the Canadian northwest available for export will gravitate toward this route; and it would not even be too much to predict that a considerable portion of wheat from Minnesota and the Dakotas would also find its way to Europe *via* Hudson's Bay. A very small difference in cost of transportation is sufficient to swing wheat from one route to another; the difference depending partly upon distances, and partly upon rail or water routes, water transportation being of course cheaper than rail. The following table will show at a glance the advantages of the Hudson's Bay route over existing routes to the Atlantic seaboard, so far as distances are concerned:

Winnipeg <i>via</i> Hudson's Bay to Liverpool.....	3,026 miles.
Winnipeg <i>via</i> Montreal to Liverpool.....	4,228 miles.
Duluth <i>via</i> Hudson's Bay to Liverpool.....	3,728 miles.
Duluth <i>via</i> New York to Liverpool....	4,201 miles.
St. Paul <i>via</i> Hudson's Bay to Liverpool.....	4,006 miles.
St. Paul <i>via</i> New York to Liverpool.....	4,240 miles.

It will be seen that the advantage in favor of the Hudson's Bay route amounts to 600 miles in the case of Winnipeg, nearly 500 miles in the case of Duluth; and 150 miles in the case of St. Paul. When you add to this the fact that the Hudson's Bay route involves only a comparatively short haul by rail, as compared with the existing routes, it will be seen that the advantage is overwhelmingly in favor of the former.

Reverting to the proposition first laid down—that the main Canadian rail and water routes run east and west, it will be seen that this is substantially correct. The only exceptions of any importance are likely to be more in the nature of subsidiary lines than main arteries of transportation. The proposed line from Winnipeg to Fort Churchill is a case in point; another is the suggested branch from Edmonton north and northwest to Dawson. Probably the most important of all will be a line from Vancouver, the western terminus of the Canadian Pacific, *via* Port Simpson, the western terminus of the Grand Trunk Pacific, to Dawson and the Yukon. One other possibility of the future is a railway from the city of Quebec, along the north shore of the St. Lawrence, to the strait of Belle Isle; thence across the strait to Newfoundland, where connection would be made with the existing Newfoundland railway to St. Johns. This would give the shortest possible ocean voyage for Canadian and American passengers to England and Europe, and would be of immense advantage for the transport of the mails and of freight, where time is an important object.

