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Andrew F. Burghardt

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[Aller au sommaire du numéro](#)

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## *Some Economic Constraints on Land Transportation in Upper Canada/Canada West*

Andrew F. Burghardt

The examination of the patterns of transportation before the advent of the railway is of more than antiquarian interest. Most of our urban places were founded before the railway made the movement of freight and people overland, swift and relatively inexpensive. If we are to understand our urban centres adequately, we must go back to their origins; and in Southern Ontario that sets us into the decades when the movement of people and goods was inhibited by constraints imposed by horses, mules, and oxen, by boats of many kinds, and by walking.

Upper Canada, or Canada West as it was known after 1841, was essentially one long, thin strip of settlement along the northern shores of Lake Ontario and Lake Erie. Once the barrier effect of the Niagara Escarpment had been largely removed by the completion of the Welland Canal in 1825, the two lakes became one waterway oriented northeastwards towards Montreal and Quebec, or south-eastwards towards New York. Auxiliary waterways, parallel to this axis, were supplied by the Thames River, close to Lake Erie, the Grand River, around the end of Lake Ontario, and the Rideau Canal joining the St Lawrence and Ottawa Rivers. As a result, virtually no settlement was more than 30 miles inland from the lake shores, and the most highly-favoured urban centres were those on, or adjacent to, the shores of Lake Ontario (Figure 1). Water-borne transportation enjoyed almost every advantage at the time. It was quicker, cheaper, and, as a rule, more comfortable than any form of land transportation. Most important, it was the only feasible way of moving freight for any distance beyond a few miles. Any raft was an improvement over a horse or

oxen-drawn wagon. Grain, lumber, and meat exports were brought to the closest port.

It is no surprise then that the provincial (colonial) government poured far more money into water transportation, particularly into the construction of canals, than into the construction, improvement, and maintenance of roads. Under the heading "Public works in progress or lately finished, money expended up to 1 Jan. 1846," total expenditures of £987,508 were listed for the improvement of water transportation, but only £170,448 for roads and bridges (Smith 1846).

All traveller's accounts from the 19th

century agree that the condition of the roads was abominable. The surfaces were bumpy and rutted, muddy or dusty. Worst of all was the thawing of the land in early spring, when many roads became stretches of mud and water. Attempts were made to provide adequate surfacing. Logs and boards were used to produce "corduroy" or "plank" roads. However, the logs would shift, the boards would split, and both would disappear into the mud. Horses could break their legs in the holes. White pine planks had a life expectancy of fewer than seven years (Holbrook 40), although many rotted in half that time (Taylor 31).

Macadamization was not introduced into Upper Canada until 1837, but because

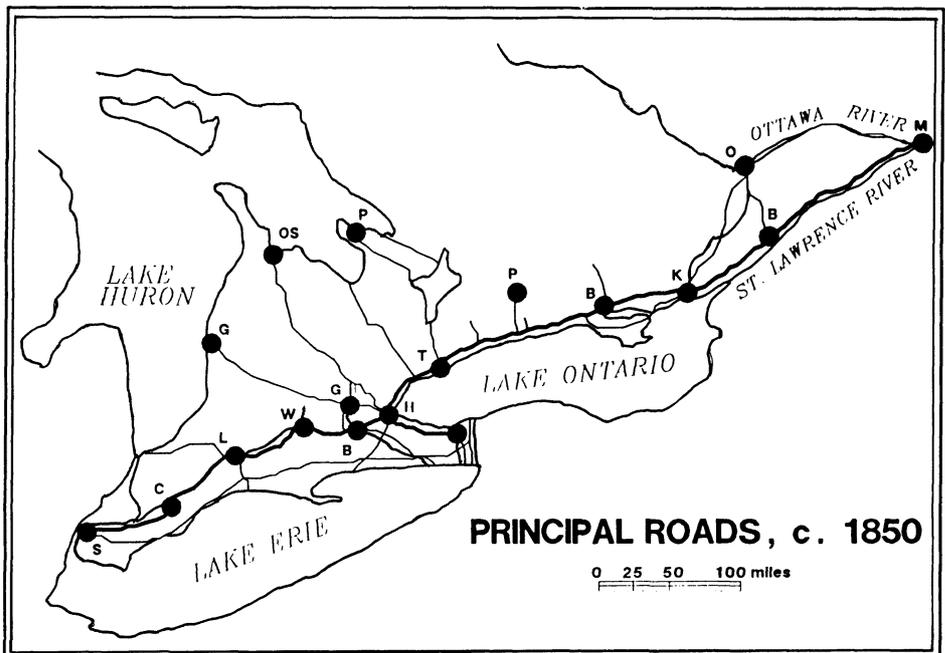


Figure 1

## Land Transportation in Upper Canada

of expense, was applied only on the most important routes. Perhaps the most difficult problem facing the road commissioners was the crossing of the many rivers and creeks. Bridges were extremely expensive, and wooden bridges, (the prevailing type), were susceptible to disintegration, splintering, and floods.

The inability of the colonial government to maintain the principal roads and bridges meant that many were handed over to private enterprise. Beginning in 1827, and becoming the norm after 1837, corporations were formed and granted powers to borrow sufficient money to improve and maintain the vital routes as toll roads. It is clearly beyond the scope of a short paper to attempt to cover every aspect of all forms of transportation. It is even a challenge to cover the paramount features of road-development and maintenance. Therefore this paper will limit its attention to the use of the toll roads in one inland portion of Canada West, and to a few economic aspects of stage coach service. The single inland region selected is that centred on London.

Figure 2 shows the number of two-wagons per year, as reported at the toll gates on the four toll roads leading out of London in 1844 (Journal). London was at the time one of the very few urban centres not on a lake or canal, and was thus particularly dependent on its road connections. The diagram shows most of the 26 toll gates along the four roads. The gates were located at fairly regular intervals along the roads, according to the traffic they bore. The two busiest roads had their gates spaced five to six miles apart; the least used road used approximately the same intervals close to

London, but had no gate in its final 25 miles. The densest traffic was on the short road which led through St. Thomas to Port Stanley on Lake Erie. The second densest was on the London-Brantford portion of the Montreal-Toronto-Hamilton-Detroit route, the road axis of Canada at the time (Reville). The lowest traffic was on the road to Sarnia, which was still a part of the frontier belt in the 1840s. It should be noted that no toll road extended to the north of London. Settlement north of the city was too sparse to produce the traffic needed to support road improvement and maintenance.

Except for the route to the south, to St. Thomas and Port Stanley, each road showed a marked drop in traffic in the stretches between the principal towns. This indicates that local traffic

predominated, and that the long-range shipment of goods was probably only a small proportion of the total freight movement. Even towards Port Stanley there was a decrease in volume with distance from London. A strongly localized central place pattern is suggested. Since the lowest figure on each road was necessarily the maximum number of wagons that could have been going all the way, the highest possible numbers in a year would have been half that number (to allow for each wagon to make a round trip), that is about 1250 to Sarnia, 2080 to Chatham, 2900 to Brantford and Hamilton, and 5000 to Port Stanley. Note that each of the four roads ended at a port. In addition to generating their own local traffic, ports served as connecting points to the outside world for the interior areas.

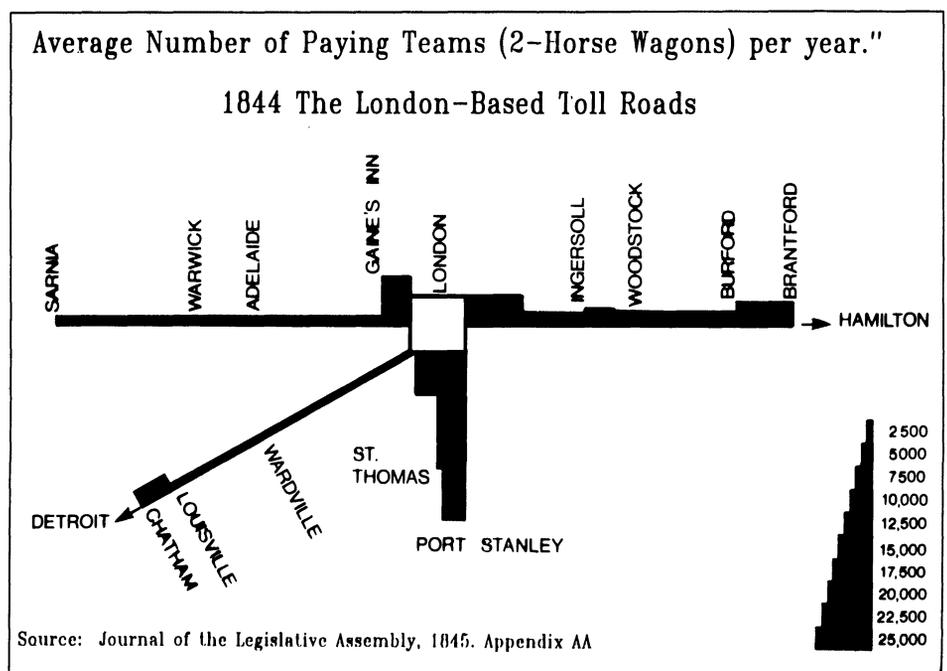


Figure 2

## *Land Transportation in Upper Canada*

The tolls charged were regulated and standardized by the government. Every toll gate charged the same rates: 9d = one four-horse wagon; 6d = one two-horse wagon; 4d = one one-horse wagon; 2d = one horseman; 1/2d - one head of "cattle etc."

The cost per mile in tolls paid, then, depended on the spacing of the toll booths; as a rule they were closer together where traffic was heavy and further apart where light. On a trip along the London-Sarnia road, a two-horse wagon would pay 1d/mile if driven from the centre of London to a point a mile beyond the first gate, but only about 1/2d/mile if driven all the way to Sarnia. No tolls were charged on "the Sabbath" (Sunday). All businesses were then closed and most movement was presumed to be for religious and social reasons.

The diagram is based upon the two-horse wagons, because they represented two-thirds (66.4 per cent) of all toll-paying vehicles, riders, and animals. Since the tolls for four-horse wagons were only 50 per cent higher than for two-horse wagons (9d vs. 6d), the larger team and wagon would appear to have been the more efficient way to move large amounts of freight. However, the four-horse wagons were rarely used, and nowhere were they more rare than on the principal export route, the road to Port Stanley. At the port itself, the four-horse wagon represented only 1.02 per cent of all the tolls paid. One may surmise that freight forwarding was still small scale, that large wholesaling firms had not yet moved away from the major ports, and that the farmers were moving most of the produce themselves to the ports or to the London market.

Very few animals were driven along the roads, or at least through the toll gates. In all probability cattle-drives, sheep-drives and the like must have been avoided because of the attendant weight loss, the time required, and the problems of control in a region where all the land along the roads was in farms. It was also probably cheaper to transport the animals in the wagons than to drive them on foot and pay a toll for each separate beast. Revenues on the toll roads varied widely. Averaged out, the revenues for 1844 were: London-Port Stanley £80 11s 11d per mile, per year; London-Brantford £52 8s 8d; London-Sarnia £17 5s 0d; London-Chatham £16 4s 10d. On the Sarnia road a full 59 per cent of all the revenue was collected at the first gate out of London. The temptation to keep the first few miles in good condition and let the rest deteriorate must have been strong.

Most of the capital expense of building a bridge, opening up a new road, or resurfacing an existing road was born by debentures. It is from the list of acts passed by the colonial legislature, allowing for the issuance of debentures, that we can gain some inkling of what costs were involved (Pattison). A bridge over a medium sized river such as the Grand, cost at least £2500; the Chatham bridge over the Thames River cost 1859. A loan of £55000 was authorized for the macadamization of the already existing London-Brantford route. With a length of 58 miles, that worked out to almost £1000 per mile (£948), for a road which passed over essentially flat land, with only one major bridge.

Throughout the 1840s, the standard rate of interest on such debentures was 6 per cent. On the London-Brantford road the

total income from tolls in 1844 was £3041, whereas the carrying charge on the debenture was £3300. In addition there were the maintenance costs and salaries, and, of course, the need to repay the loan itself. Not all roads were saddled with such a debt, but it must be kept in mind that this stretch was a part of the axis of the province. The road to Sarnia was planked, not macadamized, and hence suffered under a debt of "only" £16,000. However, that produced interest charges of £960 per year on a road which obtained only £1088 in gross revenue in 1844.

The legislative records carry numerous references to road companies in serious financial difficulties. An interesting case outside this immediate area, was that of the Dundas and Waterloo Turnpike Company, which committed itself to improve and maintain a road 30 feet wide between Dundas and Galt, in Waterloo County. In 1829 the company undertook the task with a capitalization of £25,000. In 1837, a further £25,000 debenture was authorized. Two years later, in 1839, a further £8,000 was authorized "to complete construction of a macadamized road..." Finally in 1840 a notice appeared that "the road from Dundas to Waterloo is now vested in Her Majesty and under the control of the Commissioner of Public Works" (Pattison).

It is clear that before the advent of the railway it was difficult to supply adequate means of land transportation at a bearable cost. Turnpikes were financially viable only in the vicinity of cities and towns. A successful toll road required, at the least, a large urban centre at each end, with one of the two preferably being a port. No toll road could run far out into

## *Land Transportation in Upper Canada*

the countryside and hope to obtain sufficient revenue to meet expenses, much less pay off the debt. Even in densely-settled Massachusetts, only six of the 230 turnpikes paid barely satisfactory returns to investors; by 1835 over half of them had been abandoned (Taylor, Holbrook). It is probable too that most of the freight exported was generated within 20 miles of a port. Away from the navigable waterways, the economy was cellular, with each central place in charge of a small-scaled economy based primarily on local inter-change.

Whereas most freight moved by water, or, barring that, by wagon, most human movement away from navigable water moved by stage coaches. Unfortunately, the coaches had to operate under severe difficulties. The condition of the roads has already been mentioned. These affected not only the length and comfort of the individual trips, but also the possibility of making connections, because most of the runs were locally owned and operated. A missed connection frequently meant the loss of a day, or longer, because only the larger centres had more than one run per day in any direction.

The service was necessarily slow. Even though horses could achieve velocities over eight miles per hour, such speeds could not be maintained for long. Even under ideal riding conditions, the horses would have to be changed every 12 to 20 miles. These frequent changes were more often than not welcomed by the passengers as a respite from the shaking and the weather. It was rare, therefore, for a stage coach trip to average more than four miles per hour. It was said that under poor conditions, a

man could walk faster than the stage could travel. Fernand Braudel has estimated the speed of road travel in the Roman Empire to have been 50 km per day (Braudel, p.370); in the 1840's it still took over ten hours to travel the 60 km from Hamilton to Toronto. A steamboat on one of the lakes could go twice as fast. It was normal therefore for a traveller from London to Toronto to take the stage coaches as far as Hamilton, and from there a boat to Toronto.

The stage coaches had a very low carrying capacity. After all, they were being propelled by two, four or six of the original horsepower. A two-horse coach normally carried a maximum of six passengers. A nine-rider coach required four horses, and twelve passengers required six horses. Nor were the coaches always full (according to Cary, the average capacity of a London, England coach in 1821 was 13). The horses had to be changed frequently and each of the stages required the barns, grooms, and facilities for caring for the horses. The horses, themselves, were expensive, and rarely lasted more than three years. For all practical purposes, the coaches could not carry freight. Even the baggage weight allowance for the passengers had to be kept low. The coach operators were thus caught in the bind of trying to make a profit from a service with very small capacity, but very high operation costs, which simply could not be reduced without destroying the operating (killing the horses).

For most of the coach runs the critical economic necessity came to be the reception of a mail contract. The stage coaches were the indispensable means of moving the post from town to town.

They were frequently referred to as "post coaches", or in the case of the Germans of Waterloo County, "Postkutsche" (Uttley). It is no exaggeration to say that the postal service was responsible for keeping the coach system in operation, and since only one such coach run would be required per day, one coach per day (at most) ran on most routes. The postal service operated on the "policy of self-sufficiency for all new routes" (Goheen, 37), which meant that there was no extension of routes beyond the well-settled areas.

Only one important integrated coach system was established, The Royal Mail Line of William Weller, who was born in Vermont in 1798 and settled in Cobourg in the early 1820s (Muntz, Guillet, Kyte, Meyers, Smith 1852, United Counties) Beginning with the York (Toronto) to Kingston run in 1829, Weller quickly built up a system serving almost all the major centres west of Montreal. By the early 1840s, he had acquired the mail contracts for most of the busiest runs in Canada West; for this, he was paid £2625 per year, a very sizable sum for those days. But carrying the mail entailed its own share of troubles. In those naive days, the government assumed that the mail would move as swiftly as possible, in effect more swiftly than people. The regulations under which contracts were let, called for an average speed of six miles per hour, with no stop to exceed eight minutes in length. For a run between two neighbouring towns this would normally cause no serious problems, but on longer runs, such terms proved to be impossible to meet, even for William Weller with his four-horse drawn carriages, with the royal emblem emblazoned on their sides. Weller was heavily involved in moving passengers

## *Land Transportation in Upper Canada*

and petty freight (parcels and newspapers), so that his average speed was only around three miles per hour. After numerous warnings his contracts were terminated in January 1853, but with a severance reimbursement of one year's pay. By the next year, the railways were running and charging only one-third per mile what the stage coaches had had to charge.

Land transportation faced two fundamental intractable problems. The first was the cost of creating and maintaining the roads in an area which had never known roads before. The tax base was low and the government had other priorities. When the improvement and maintenance of the major roads was placed into the hands of private enterprise, the toll road companies proved unequal to the task. The second was the absence of an adequate source of motive power. Oxen could pull heavy loads but were too slow for passengers or even for freight beyond a few miles. On the other hand horses were too weak and were extremely expensive. Costs per passenger mile were high and could not be lowered because there was simply no way to improve the efficiency of the operation, given the low population density of the province.

Meinig, commenting on "the principle of location theory" proposed that "initial location advantages at a critical stage of change become magnified in the course of development" (396). The mid-19th century was such a critical stage of change, and it was apparent at that time that aspiring urban centres had to be located on navigable water. Then, once they had developed, the larger towns came to dominate the highway and, later, the railway patterns. As had been true for

the turnpikes, the massive capitalization required to lay the rails meant that only rail lines between pre-existing cities could hope to be profitable. Because of the costs of land transportation, the urban centres functioned far more perfectly as central places in the pre-rail era than they have ever since. (King, Christaller). It is not too much of an exaggeration to state that before the railway the urban network of Canada West resembled a loosely-coordinated system of city!

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