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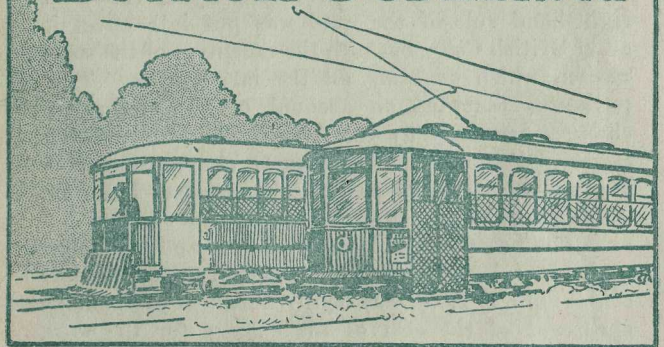
How the Rule of the Road was changed in British Columbia



JANUARY 1, 1922

BRITISH COLUMBIA ELECTRIC RAILWAY COMPANY

VANCOUVER, B. C.

UNTIL 6:00 a.m. on January 1, 1922, coastal British Columbia, practically alone on the North American Continent, "kept to the left." The custom probably originated in the days when the Province was a British crown colony and the British rule of the road remained even after the inclusion of the Province in the Canadian federation.

For reasons which have no place in this story, the government of British Columbia several years ago decided to conform to the traffic rule prevailing in the rest of the continent. On July 1, 1920, the right-hand rule of the road was put into effect in all of British Columbia with the exception of the coast region, which contains all the large cities. That part was excepted on account of the mechanical changes necessary by the British Columbia Electric Railway Company in Vancouver, Victoria and New Westminster, as well as on its interurban lines, the whole comprising a system of 366 miles of track.

The heavy expense involved was another deterrent, but a basis being finally agreed upon, the date of January 1, 1922, was finally fixed. A preliminary statement of the cost of the change for the work done up to the end of December, 1921, as rendered to the government of the province showed an expenditure of approximately $250,000.00, which was only a small fraction of the estimated total. The single item of special steel for cross-overs and other track work on the mainland

amounted to no less than $70,000.00 delivered. It is the arrangement with the government of British Columbia that it will pay for half the cost of the change, provided that half does not amount to more than $350,000.00.

The problem was one which no district had ever tackled before. As the vehicular traffic could be changed in a moment, that constituted no difficulty. Not so the street cars and the tracks. The problem, therefore, resolved itself into one for the British Columbia Electric Railway Company.

How were the street cars to be made into right-hand cars, to be ready for operation on January 1? How could alterations be made while the service was still running? How could right-hand cars be operated on the streets before the change took place? How could the tracks be changed overnight? Would the switches take the cars in the opposite direction?

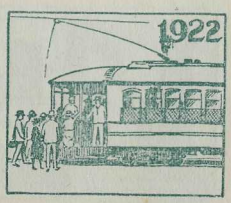
These were questions to which the B. C. Electric organization gave thought for many months before work actually began. The departments vitally affected were these:

The mechanical department, which had to make the alterations in the cars;

The maintenance-of-way department, which had to make alteration in the tracks and the stations;

The electrical department, which had to change the overhead wiring;

The traffic department, which had to train its personnel.

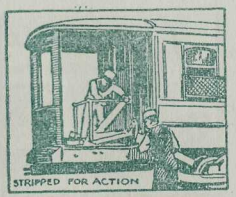


The work centered as regards the mainland at Vancouver, and as regards the Vancouver Island system, at Victoria. It is proposed to deal in this booklet with only the mainland system.

It was, of course, impossible to change cars for the right-hand rule completely. Temporary, or at any rate partial, changes had to be made, and these made so quickly that a minimum of cars would be removed from service. It was also essential that cars so removed for alterations be returned to service as soon as possible. No time could be spared for allowing paint to dry; for that reason, all parts were made separately and painted before put together.

The scheme adopted was to open the right-hand side of all platforms and to board up these openings temporarily, while retaining the left-hand doors for use until the change took place. Arrangements had to be made to effect all changes in a few minutes. After the change, the rest of the work could go ahead, such as removing the left-hand gates, steps, and permanently boarding up the openings.

The mechanical department on the mainland had to deal with 177 single-end cars; 68 double-end cars; 5 snow sweepers; 2 city snow plows.

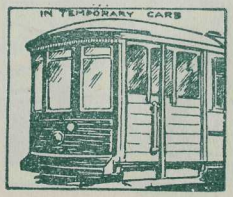

STRIPPED FOR ACTION

The work on these cars was performed at the Prior Street shops, these being most centrally located. On account of the congested state of these shops and the additional

space required, three tracks in the adjacent car barns were taken over. Five tracks, with storage space for 30 cars, were accordingly laid on the second storey of the Mount Pleasant car barns, to store cars thus displaced. This greatly facilitated the work at Prior Street.

In work of this sort, depending so largely upon speed, it was necessary to have a thoroughly-trained organization. Previous to work being started on the cars, all barn foremen were notified by letter of the importance and necessity of having all cars ordered in, placed on the desired tracks in Prior Street shops so that the carpenters would not be tied up by having to wait for cars to work on.

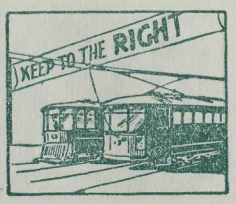
A start was made with a test car on May 1, 1921. The blind side of the rear vestibule was taken out, the channel-iron sub-sill was reinforced and moved back toward the centre of the platform to allow for the new step openings, new steps were installed and the dividing post put in to separate entrance and exit. As soon as this operation had been completed, the new right-hand steps were covered over with a wooden plank on a level with the floor of the platform, the side boarded up temporarily and the windows replaced. At the front end of the car, the blind side was torn out and a new door fitted in, folding steps installed (but, of course, without the operating mechanism, which could not be installed



until the change to right-hand drive was made). Another car of a different type was then brought in and the same process gone through.

There are 65 cars of these two types and the plan adopted was to make patterns of each part and order material in large quantities, ready-made. Here the purchasing department came into play.

The largest items of expenditure were incurred in the purchase of track material, such as frogs, cross-overs, switches and special work. New plans and surveys had to be made and these plans approved by the provincial government engineers before any action could be taken. After this it was necessary to submit the plans to the city engineer for approval and this caused a further delay before tenders could be called for and quotations obtained, and it was not until August 10 that the first order could be placed with the steel mills in the United States, where it was necessary to obtain this material in which manganese steel was largely used. This delay, combined with the fact that delivery had to be made for the most part on a special date, caused considerable additional expense and the nature of the work necessitated that special care should be observed to avoid any error, which would seriously delay the work of changing over.



In changing the vestibules of the cars, a large number of new patterns had to be made in connection with the operating gates and these had

to be made of cast steel and all orders were placed with a local engineering works to be filled. Orders were also placed on local sash and door firms for approximately 350 folding doors, panels and window frames and sashes to the value of $2,000.00.

Complete sets of snow sweeper castings and operating parts for right-hand drive had to be obtained from the makers of the snow sweepers in Ottawa for the five snow sweepers in Vancouver and one in Victoria.

In addition to the large amount of overhead material, trolley frogs, insulators, copper and guy wire, etc., twelve electric track switches at the main track crossings in the city had to be changed over and the material for the latter items alone amounted to over $1,200.00. Many tons of angle iron, special plates and rods, as well as large quantities of paint, nails, screws, etc., and thousands of feet of lumber were ordered from and supplied by local firms and the purchase of this material, calling for tenders and procuring quotations for same caused a considerable amount of extra work in the purchasing department alone, apart from the work of attending to the customs clearance and delivery before a specified date.

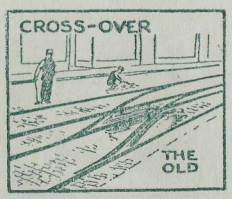
By the time materials began to arrive, the carpenter shop and the blacksmith shop were ready. Additional carpenters were engaged gradually until work was going on

rapidly. As soon as work on one class of car was well under way, a car of another class was brought in, and, after being stripped and its requirements known, all the woodwork and iron-work was made ready and painted so that it would be dry when placed on cars. With this system of mass production, all parts required for cars could be turned out more quickly and cheaply, and there was no danger of men or cars being held up for certain parts. Cars could also be sent back on the streets a few minutes after leaving the carpenters' hands, no time being wasted while paint was drying.

To give an idea of how the work went on, it may be said that 30 of the 200 class cars were finished in three weeks; 30 of the 326 class in two weeks; 35 of the 241 class in two weeks and 15 of the 260 class in about 10 days.

The 300 class cars were started on November 14, and up to the end of the year, 16 out of 25 were permanently reversed, it being feasible to operate these on the left-hand with only slight inconvenience to the public.

During all the work from May 1 to December 31, the system was never in a position when it could not fill the maximum demands of cars for the city service. The usual routine of maintenance work on cars was carried on as usual,



despite the unusual conditions in the shops. A total of 51 city, and 47 interurban cars went through the shops for wheels and overhauling during the period, as well as a number of cars for accidents caused by collisions with vehicles and for other car ailments.

Equal in importance and urgency to the changes in the cars were the changes in the tracks, new cross-overs, derails, electric switches, points and springs in switches. As early as 1913, estimates had been made of the cost of making these changes and final plans were prepared at the beginning of 1921.

It must be explained that all over the system there are "cross-overs" to enable a car to get from one track to another. For obvious reasons the entrance to that cross-over must be such that a car does not take the cross-over when proceeding along the straight track, otherwise it might "split" the points. When the rule of the road changed, those cross-overs which were adjusted for left-hand traffic therefore had to be changed. Unfortunately, this meant ripping out the entire special work and scrapping most of it, the switches and mates being of no further use. Similarly, tracks leading out of the car barns brought cars formerly to the left-hand tracks. Unless these were changed, cars would have to go through laborious switching in order to be reversed, a procedure which did delay service materially the first few days until the tracks were changed. Again certain "Y's" were not good

for right-hand as well as left-hand operation. In this case, special work had to be ordered.

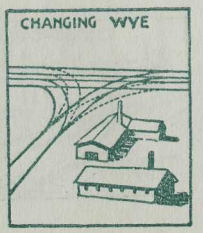
Briefly, the work of the maintenance-of-way department on the mainland under the original programme was this:

Take up and lay with new material, 33 permanent and 6 temporary track cross-overs; take up and relay wye layouts; change electric switches; change derails; change elevation of interurban tracks on curves; change location of 24 platforms and stations on Central Park interurban line. An idea of the cost may be gained from the fact that the reversing of cross-overs cost about $4,000 each and of wyes, about $10,000.00 each.

This work entailed the ordering of large quantities of special work. For the mainland system alone these orders were placed early in 1921:

16 new standard cross-overs complete.
3 new "Y" layouts complete.
2 new special cross-overs complete.
1 new layout for Cedar Cottage loop.
1 new layout for Union Street spur.
9 new sets of switches and mates for open track cross-overs.

It is impossible to use a left-hand switch or mate for a right-hand turnout from a straight track, so more switches and mates will be required. This track work will not be finished before December 1, 1922.



During the latter part of 1921 one permanent cross-over was com-

pleted in reversed position; sixteen electric switches were installed in new positions and the ground work completed. They were not connected up with the electric contactor until the morning of January 1.

There remained considerable work to be done on the night of December 31, 1921, before cars started operation at 6 o'clock the following morning.

All cross-overs not previously reversed had to be plugged with wood or a rubber block.

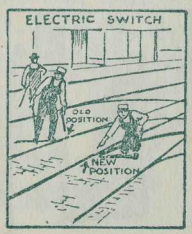
Facing points not attached to switchbox mechanism had to be plugged or mechanism connected.

Whistle posts, crossing signs, etc., on Central Park line had to be placed in new locations.

At one o'clock in the morning of January 1, 1922, four gangs of men started working in four different sections of Vancouver City. Each gang was in charge of a competent foreman and the foremen were under the direction of the roadmaster. The entire organization was under the engineer-of-way.

Gangs of men are now at work putting in reversed permanent cross-overs and reversed permanent wyes.

Another department affected was the electrical department, which has charge of the overhead wires, the electric switches and so forth. Before the change took place, this department did considerable work in renewing trolley wire,



especially on grades where the change would mean that previously a car ran down hill, taking little power, whereas, after the change, it would take more power. In such places the trolley wire had got thin and had to be replaced with thicker wire.

In conjunction with the track department, the electrical work on as many electric switches as possible was done. Contacts for these switches were actually installed ready for switching over in a moment.

Even the skip-stop signs painted on the poles had to be relocated. This work required several weeks, and cost nearly $500.00.

The time of the change was chosen as 6 o'clock in the morning, as at that time there would be a minimum of traffic on the street. For several days previously, the various departments of the company organized themselves for a quick change.

On the cars, the work consisted of removing the temporary barricade on the right-hand side, tying up the gates on the left-hand side and blocking up the front left-hand exit door.

Cars began to come into the barns early in the evening of December 31. Stripping started at 8:30 o'clock that night, and by 5:30 the next morning, by working continuously, all cars were finished. It had been expected that the left-hand side would be left open for several days, until it could be closed in, but before the men quit

work to go home to sleep, 62 cars had had the barricade placed on the left side, thus keeping the draught out of the back vestibules. By Tuesday, January 3, at 10 a.m., all cars had had the left side of vestibules closed.

The electrical department had its linemen organized and furnished with three extra tower wagons, built upon trucks. It was proposed to make as many changes as possible during the night, but owing to the short time between the passing of the last car and the first car, little could be done that night. By working steadily after the change, most of principal points were adjusted by noon on January 1. The newness of the change brought out some peculiar features in connection with the overhead work, as well as other work. The electric track switches were new and caused a great deal of trouble, due to want of adjustment, it having been impossible to test and adjust them beforehand.

The frogs and curves gave trouble for several weeks after but when it is considered that frogs and curves require months and perhaps years of adjusting, to change and run in the opposite direction with the slight delays that were experienced, reflected credit on the line department.

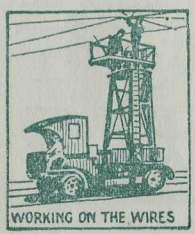
For the first two days, no difficulty was experienced and cars remained on time, but in the rush hour on Tuesday, the service fell behind for one or two reasons. To under-

stand them it is necessary to review the work of training the car crews.

For many months, British Columbia Electric Railway officials had foreseen exceedingly difficult operating conditions when the rule of the road changed. Aside from the mechanical problem, there was the keeping of cars on schedule, the preventing of accidents and the general education of the public, so that the cars should not be slowed up unnecessarily. The traffic department first set out to inform its staff of inspectors and on the morning of January 1, a full force was on duty by the time the first cars came out.

Next, through bulletins and the company magazine devoted to employees' affairs, it urged caution and gave details of operations under the new conditions. A detailed bulletin was prepared for each line separately, showing the car crew exactly the condition of switches, the points where slow speed was imperative and the like. A general appeal for caution and safety was issued just prior to the change.

The public was taken in charge likewise by the company. For two months previous to the change, the company conducted a "Safety First" campaign, features of which were a booklet on teaching safety, issued to every school teacher in the district, numbering 1,700, and a "Safety" essay competition. A leaflet was issued to automobile owners and drivers and mailed by

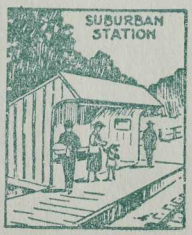


WORKING ON THE WIRES

the provincial government along with windshield stickers. Of these leaflets, 29,000 were printed by the company. In all, 110,000 pieces of printed matter, devoted exclusively to the change in the rule of the road were issued by the company, not to mention other references and full page newspaper advertisements in all Vancouver, Victoria and New Westminster daily papers. The work done by the company was commented upon by the *Vancouver Sun* thus:

"The B. C. Electric from the first assumed responsibility for making the streets safe during and after the change. The B. C. Electric went to a great deal of trouble and expense to inform and advise the public how to conduct themselves to obviate accidents."

When the rush hour of the first business day in January arrived, it was found impossible to maintain schedules. One reason was that trolleys frequently left the wire. On the first trip on one line, seven miles in length, the trolley came off the wire ten times. Gradually this difficulty was removed. The switches, however, had been worn in one direction and rough corners often projected, tending to throw cars off the track. In several cases this did actually happen. The result was that with the general campaign for safety, coupled with the desire of car crews to keep their cars on the track at any cost, cars made much slower speed on curves. On Tuesday, cars got half an hour or



more behind time, and it was impossible to regain it. At the intersection of Hastings and Main Streets, where cars cross at the rate of one a minute, congestion occurred because of the decreased capacity of this crossing owing to slower speed. Serious delays occurred for a week or more

The accidents either to street cars or to vehicles in general were practically negligible. No collisions between street cars and vehicles were reported. One or two collisions between automobiles took place but the accidents reported were actually fewer than under ordinary conditions.

The work on the cars and on the tracks is only half done. The first work on the cars is to place the gates on the right-hand side and thus prevent any possible accidents. This entails cutting new rods and levers. Ten thousand ball-bearings were ordered for the gates alone. Next, the front bulkheads, or the partition between the motorman's vestibule and the main body of the car, must be altered to allow a door on the right-hand side. The wire netting on the right-hand windows must be placed on the left. The front doors must be put on the door-operating levers. Finally, the temporary barricade on the left side must be removed, the old steps removed and the whole side permanently boarded up. This will require a year and a half of further work.

Additional copies of this booklet may be obtained at Information Bureau, Carrall street station, Vancouver; at Vancouver and New Westminster ticket offices of the B. C. Electric; at B. C. Electric showrooms in Vancouver and New Westminster; or at Publicity Department, 304 B. C. Electric Building, Vancouver. On receipt of stamped, addressed envelope, the publicity department will mail a copy to any address desired.