

LONDON AND
PORT STANLEY
RAILWAY DIARY

C. H. RIFF

Electric Railway Department

Motor and Trailer Cars for London and Port Stanley Railway.

the Railway and Marine World for published particulars of the electric motor cars for the London and Port Stanley Railway, and, in the December issue, for 3 electric locomotives and 5 motor trailers. Specifications were presented for the bodies for the motor cars and trailers by the Hydrographic Commission of Ontario's staff, acting for the city of London, and tenders were opened early in December. While the electrification is going on, the line is being operated by steam by the London and Port Stanley R.R., which has it under

the car installation will comprise four motor cars and four trailers, both sets of structural details, differing in motor equipment. They will

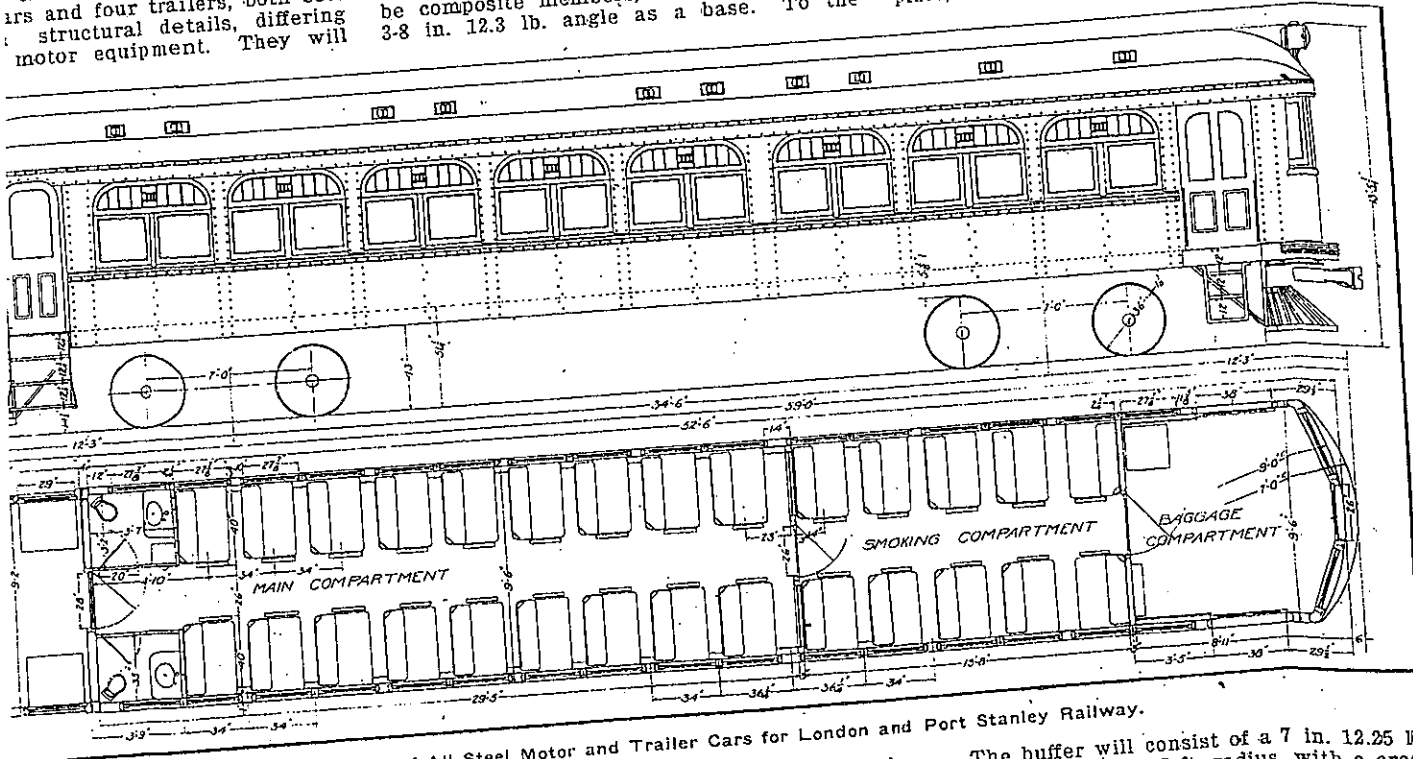
estimated as follows:—

	Motor.	Trailer.
Car body, complete as above.....	38,320	38,320
Control equipment	9,500	1,856
Air brake equipment	2,220	805
Four motors complete at 4,000 lbs.	16,000
Two 7 ft. wheel base trucks with 36 in. steel wheels	26,880	24,080
Total weight in lbs.	92,920	65,061

The entire frame of the cars will be of structural steel shapes and plates, with the centre and side sills continuous. The centre sill will consist of two 7 in. 15 lb. I beams at 20 in. centres, with a 3-16 in. cover plate, 24 ins. wide, extending between the diagonal tie plate in each panel. Centrally in each panel there will be a 3-16 in. plate, 9 by 24 ins., on the under side of the centre sill. The side sills will be composite members, with a 6 by 4 by 3-8 in. 12.3 lb. angle as a base. To the

ing to the side angle depth, and will consist of 3-16 in. steel pressings both between the centre sill I beams and between the latter and the side sill angles, flanged to a channel section. At the centre, these will be tied to the centre sill by 3-16 by 12 by 42 in. top plates. Diagonally between these tie plates in each panel there will be two 3 by 3 in. 4.9 lb. angles.

The body end sill will consist of a central 3-16 in. steel pressing between the centre sill I beams, which will extend to the buffer plates, outside of which there are to be two steel castings fitting between the I beams and a 6 in. 10.5 channel 26 ins. from the centre, which will form the end panels. The diagonal, passing alongside this casting to the end buffer. The top and bottom members of the end sills will be a 4 in. 6.25 lb. channel, the upper one on top of a 1-8 in. plate, 24 ins. wide, the width of the car.



Plan and Elevation of All Steel Motor and Trailer Cars for London and Port Stanley Railway.

all steel construction, of a design that is in use for heavy steam service, and have been developed as a result of extensive study of existing motor cars, and the experience of the London and Port Stanley R.R. that have had steel equipment in use for many years. The general dimensions of the cars are as follows:—

Over all	59 ft.
Over end vestibules	53 ft.
Over end of car body	48 ft.
Over all	9 ft. 6 ins.
Over sheathing	9 ft. 6 ins.
Over platform floor, including doors	9 ft. 5 ins.
From rail to top of roof	13 ft. 5 1/4 ins.
From under side of sills to roof, car light	9 ft. 10 1/4 ins.
From top of rail to top of roof	4 ft. 3 1/4 ins.

vertical flange of this angle there will be 1-8 in. steel side plate, 36 1/4 ins. deep, at the top of which, on the inside, there will be a 1 1/2 by 2 in. 2.77 lb. angle, and on the outside a 3-8 by 3 1/2 in. steel plate, this latter, with the angle and top of the side plate, forming the top section of the side sill girder.

The truck centres will be 34 1/2 ft. The body bolster above the trucks will be 12 ins. deep at the centre, tapering to the depth of the side sill angle at the side. Between the centre sills there will be a 3-16 in. steel pressing, with similar pressings forming the web of the bolster outside the centre sills. Under the centre sills there will be a steel casting for the centre pin connection. A 3-8 by 14 in. steel plate will form the top plate of the body bolster, with a 5-8 by 14 in. steel plate for the bottom plate.

The buffer will consist of a 7 in. 12.25 lb. channel, bent on a 7 ft. radius, with a cross 6 in. 10.5 lb. channel joining the curved ends. A 1-8 in. plate will cover this end form, being attached to the centre sill I beams and channel braces, the latter carrying the buffer stresses through to the body side sills.

The corner posts will be 4 by 4 by 3-8 in. 9.8 lb. angles. The main side posts will be 3 in. 4 lb. channels, all but the end ones being arranged in pairs at 8 1/2 ins. These pairs are to be placed on each side of the body bolster and cross bearer centres. Intermediate to these, there are to be 2 by 2 by 1/4 in. 3.56 lb. tees. Between the pairs of channel side posts at the centre of the car, and at the bolsters, there are to be 1/4 in. pressed steel fillers, each side of which will be a diagonal brace, that at the centre of 1/4 by 3 in. steel, and at the bolsters of 1 by 4 in. steel. There will be two sets of posts of 3 in. 4 lb. channels on

Electric Railway Department

Electrification of the London and Port Stanley Railway.

The electrification of the L. and P. S. R. is nearing completion, and the official opening is to occur at an early date, possibly during this month. The line is 23.66 miles long, connecting London, Ont., with Port Stanley, on Lake Erie, passing through St. Thomas. This line was one of the earliest built in this country, and since its inception in the early fifties, has had an interesting history, passing through several different managements in an attempt on the part of the municipal owners to secure better operation.

The line had its inception in a public meeting held in London in Jan. 1853, to consider the building of a line from London to Port Stanley, the movers being Murray Anderson, for many years President of the line,

ever, reports from 1860 to 1870 showed that in no year did the gross earnings fall below the operating expenses. In 1870, 14 years after the line had been placed in operation, the revenue was \$43,002.44, and the working expenses \$30,293.00, leaving a net profit of \$12,709.44. This was obtained with a total train mileage of 48,418, of which over 90% was revenue traffic. The total operating cost, including repairs, etc., was 62 cts. per train-mile.

The building of the line was commenced with a view to the general advantage and improvement of the country interested, rather than from any expectations of profits to be directly derived from revenue. It is said that in the early days the amount of

20 years. As the leasing company had the standard gauge, the L. & P. S. R. gauge was changed to conform to it. The L. & P. S. R. had another change when on Aug. 12, 1882, the G. T. R. absorbed the Great Western Ry., and operated the line until the completion of the lease in 1894. Prior to the expiration of the lease, the city of London acquired the stock held by the city of St. Thomas, in 1893.

On Dec. 1, 1893, an agreement was made between the L. & P. S. R. and the Lake Erie and Detroit River Ry., for the lease by the latter of the L. & P. S. R. for 20 years from Jan. 1, 1894 for \$10,000 a year rental, and in addition 10% on all gross earnings and receipts exceeding \$80,000 a year, which was

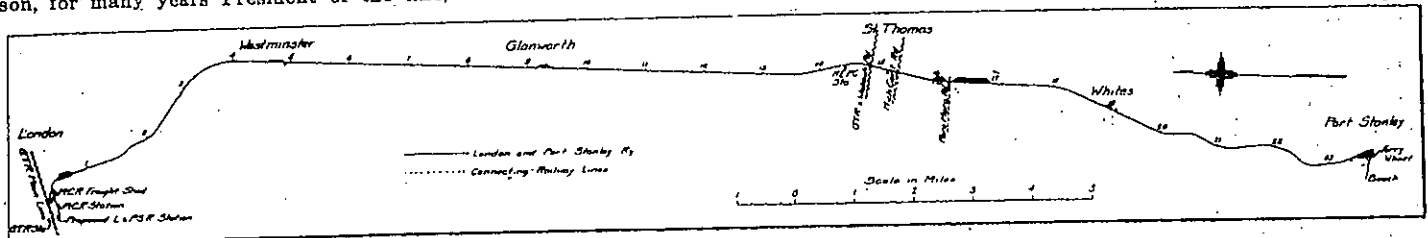


Fig. 1.—London and Port Stanley Railway, showing Connections.

and John Carling. The company was incorporated under its present name in 1853, under chap. 133, statutes of Canada. In August of that year the city of London de-

traffic anticipated was not realized by the projectors, but by bringing into competition the then existing trunk lines, a reduction in freight rates on farm produce and merchan-

confirmed by the Ontario Legislature in 1894. This lease was transferred to the Pere Marquette Rd. about 1906, when the latter leased the Lake Erie and Detroit River Ry. On the expiration of the L. & P. S. R. lease on Jan. 1, 1914, a temporary arrangement for the operation of the line was entered into with the Pere Marquette Rd., pending the electrification of the line, which was then in contemplation.

By the City of London Act, 1913, the corp-

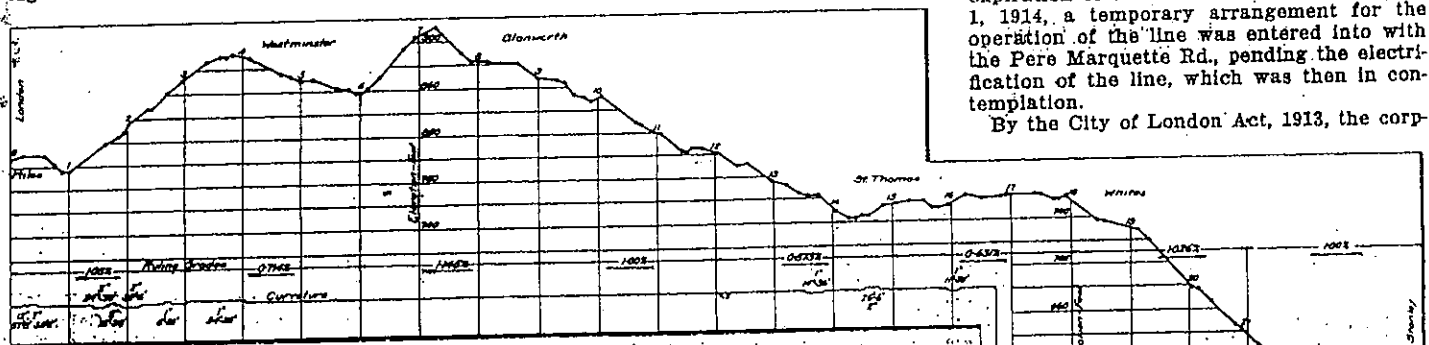


Fig. 2.—Profile of London and Port Stanley Railway.

cided to take £25,000 stock in the company, which was later increased, so that in 1885 it was stated before the London railway committee that the corporation had £162,850 in the venture. On Jan. 27, 1857, £20,000 more was granted by London to the railway. A book on Canadian railways, published in 1870, states that at that time the stock subscribed by the different municipalities, was as follows: London, £220,000; Middlesex county, £80,000; Elgin county, £80,000; St. Thomas, £8,500; total, £388,500. It was also stated that the railway was then indebted to London as follows: 1st mortgage bonds, \$175,000; stock, \$220,000; loans on 1st and 2nd mortgage bonds, \$220,000; interest, etc., \$592,126; total, \$1,342,248. The amount of private stock held at that time was only \$27,750. The line was opened Oct. 2, 1856.

From the first the line labored under financial difficulties from the fact that the cost of construction, which amounted to \$1,027,828.24, exceeded the estimate by about \$400,000, owing to the heavy cuttings, long embankments, and expensive bridges. How-

dise of as much as 50% was realized, which fulfilled the object for which the line had been built.

As originally constructed, the line had a 5½ ft. gauge, and was laid with 56 lb. iron rails. The bridges and all buildings were of wood. The rolling stock in 1860 consisted of 2 locomotives, 3 passenger cars, 42 freight cars and 2 baggage cars. This had been increased in 1870 by the addition of 3 more passenger cars and 2 freight cars. Between 1860 and 1870, the passengers carried had increased from 21,919 to 44,427, more than double, and the freight tonnage from 16,780 to 23,831, about 30%. The original gauge of 5½ ft. received early consideration with regard to changing to the standard 4 ft. 8½ in. gauge, as all the connections with the exception of the G. T. R. were adopting that gauge.

On Apr. 25, 1870, the Great Western Ry. entered into an agreement with the L. & P. S. R. for a 99 year lease for the station and connection at Waterloo St., London, in consideration of the building of shops, and on Mar. 24, 1874, it leased the L. & P. S. R. for

oration was given power to lease the L. & P. S. R. from the L. & P. S. R. Co. to construct and equip the line as a steam or electric road, and to raise not exceeding \$700,000 to construct, equip and operate it. The act also provided that the city might, by passing a bylaw, form a commission to be called The London Railway Commission, which would have the whole management and control of the construction, equipment, maintenance and operation of the line, the commission to have a membership of five, including the mayor ex officio, the other four to be elected for periods of two years, two to be elected annually. The implementing bylaw was passed by the London City Council, Nov. 29, 1913. The commission now consists of Sir Adam Beck, M.L.A., Chairman, P. Pocock, Vice Chairman, W. Spittal, Secretary (pro tem), M. D. Fraser, R.C., and H.

A. Stevenson, Mayor. This commission decided on the electrification of the line.

Traffic. As mentioned earlier the line was originally projected as a means of developing the country it traversed, and at the same time to provide an outlet for the populated centres along it to visit the pleasure grounds at Port Stanley, where the company acquired an area on the shore for that purpose. From the earliest days a heavy excursion traffic has been developed, for the encouragement of which rates less than 1/4

handled one mile amounted to 10,322,663, the average distance hauled is about 16 miles, showing that the bulk of the traffic is through, making for good operating conditions. The total freight revenue was \$84,692.88; total freight earnings, \$93,373.65; freight earnings, per train mile, \$1.6146; proportion of total freight earnings to total earnings, 68.73.

For the year ended June, 30, 1914, maintenance of way and structures cost \$25,008.39; maintenance of equipment, \$31,257.03; traffic

the London Railway Commission that the existing traffic interchange agreements will terminate July 1, 1915. Negotiations are now in process with both this line and the other three for new interchange arrangements, and it is expected that an early settlement of the question will be made.

The L. & P.S.R. has been using the G.T.R. station in London, but arrangements are being made for a separate terminal to the south of the G.T.R. station, on Richmond St., where the line will stub end. To permit

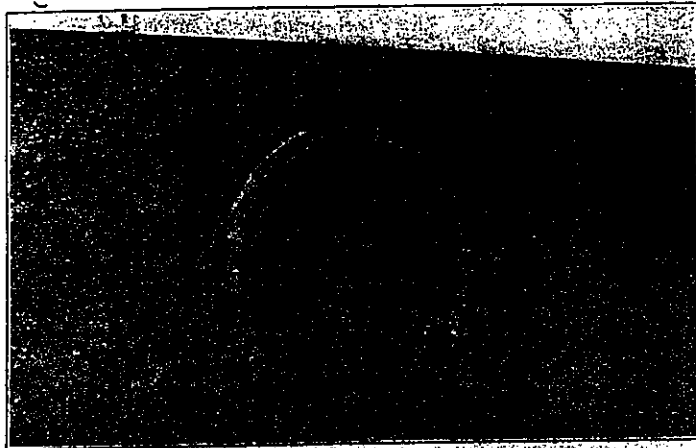


Fig. 3.—Sixty inch Concrete Culvert replacing Wooden Box.



Fig. 5.—St. Thomas Yard, Looking North from Southerly Approach.

ct. a mile were given. This traffic has ever since remained the principal passenger business handled, large numbers travelling by the line from both London and St. Thomas during the summer, a good service at attractive rates having been maintained by the successive operating companies. For the year ended June 30, 1914 the passengers carried were 132,669, at a rate of 1.574 cts. a mile. The mileage of passenger trains was 64,551, and of mixed trains 14,739. The

expenses, \$6,777.00; general expenses, \$3,230.15; total operating expenses, \$180,915.11. This gave a ratio of operating expenses to operating revenue of 133.18, a deficit of \$45,073.37.

In addition to the traffic handled by the lessee, the Pere Marquette Rd., the Michigan Central Rd. runs all its trains to London over the line from St. Thomas. The freight traffic of this line in London is very high. Likewise, the Pere Marquette traffic from

the entry of its line to this new point, the Board of Railway Commissioners for Canada issued orders 23,752 and 23,753, May 28 and 27 respectively, granting the railway power to construct a track on the north side of Bathurst St. between Wellington and Richmond Sts., and to take possession of certain G.T.R. lands as follows: A 40 ft. strip between Wellington and Clarence Sts., a 50 ft. strip from Clarence St. westerly, immediately north of Bath-



Fig. 4.—Overhead Construction on a Curve.

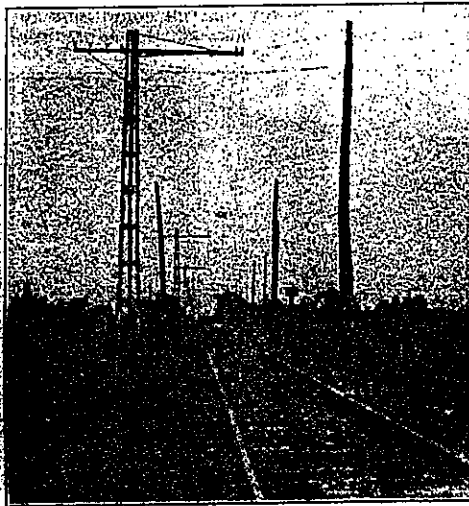


Fig. 6.—Overhead Construction at Glanworth Siding.

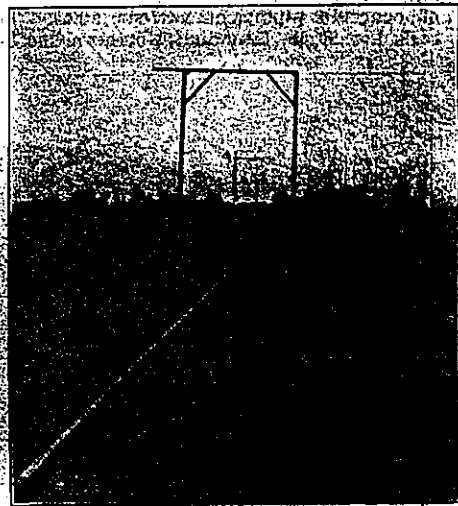


Fig. 7.—Overhead Construction on Bridge south of St. Thomas.

revenue per passenger train mile was \$0.51563. The total passenger earnings were \$40,884.22, or 30.09% of the total earnings.

Freight is, of course, the principal part of the traffic handled, consisting primarily of coal brought across Lake Erie from the Pennsylvania coal fields to Port Stanley by car ferry. Of the total freight tonnage, of 527,869 tons carried by the line in the above mentioned period, 552,182 tons, or 86%, was coal, of which 482,807 tons was bituminous and 69,375 tons anthracite. As the freight

the west, coming into St. Thomas over its leased Lake Erie and Detroit River Ry., is interchanged there for passage easterly by the Michigan Central Rd., over the section of the L. & P. S. R. connecting the two lines in St. Thomas, a distance of nearly a mile.

Agreements exist for the interchanging of G. T. R., Michigan Central Rd., Pere Marquette Rd. and Wabash Rd. traffic, the first at both London and St. Thomas, and the latter three at St. Thomas only. The Michigan Central Rd. has served notice on

the west of the foregoing for approximately the same distance to the easterly limits of Richmond St., immediately north of Bathurst St. It is also authorized to construct its tracks and erect poles, fixtures and wires along Bathurst St. between its present track at Burwell St. to connect with the authorized property on Wellington St., and is authorized to use the existing track of the Michigan Central Rd. between Burwell and Wellington Sts.

It is proposed to erect a new station on

the west side of the line in St. Thomas on Talbot St. to replace the existing station about two blocks further north, which will then be removed. No immediate changes are in contemplation for the terminals at Port Stanley.

Rehabilitation of the Line. When the line was taken over by the London Railway Commission it was physically in a very bad condition, and required complete rehabilitation of the track, and structures, with the exception of the bridges, to place it in good operating condition. The renovating was handled through the Pere Marquette forces, which

All the bridges were in good condition and required no repairs of consequence, but the culverts had for the most part fallen into disrepair, and required either replacement or reinforcing. Two new reinforced concrete culverts were built at mileage 8.2 and 12.4, replacing in one instance a broken masonry one, and in the other, a wooden box culvert. These two culverts are 8 x 6 ft., made of reinforced concrete, with wing walls on each side. Seven old masonry culverts were reinforced with a 6 in. lining of reinforced concrete, the mud sills being also removed and replaced with from 6 to 12 ins.

28 in. centres. The cross arm, 26 ft. clear above the rail, is a 4 in. 5½ lb. channel, bolted to two of the vertical arms, and is braced in front with light angles. The pole legs have a slight batter, 28 ins. from corner to corner of the angles at the base, and 12 ins. at the top of the pole. The poles are placed at 180 ft. centres on tangents, and at from 140 to 160 ft. on curves. They call for a strength to resist a strain of 2,000 lbs. at the top, falling at from 2,500 to 2,700 lbs. The tension will seldom exceed from 500 to 1,000 lbs. In yards, either wooden poles alone, or the steel poles with intermediate wooden

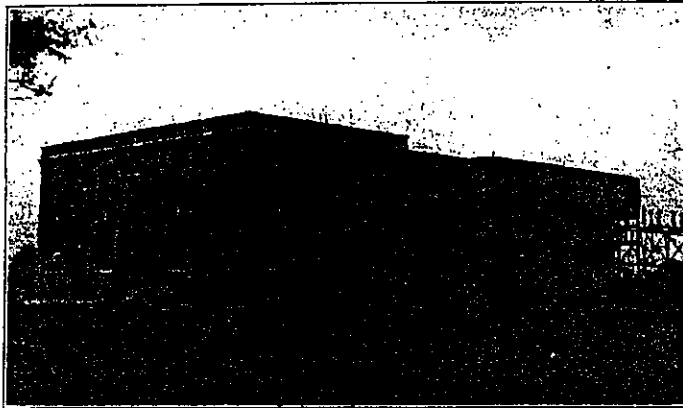


Fig. 8.—Hydro Electric Power Commission Sub Station at St. Thomas.



Fig. 9.—Method of Stringing Trolley and Feeder Wires.

was still looking after the line on the short term agreement made on the expiration of the 20 year lease. As mentioned in Canadian Railway and Marine World, Sept. 1914, contracts were let as follows: Algoma Steel Co., 3,000 tons of steel rails and angle bars and 30,000 tie plates; J. J. Gartshore, 380,000 spikes; Canadian Ramapo Iron Works, 52 sets of switches and frogs; Steel Co. of Canada, 34,000 track bolts and 65,000 tie plates; and Canadian Concrete Products Co., 1,100 ft. of concrete piping of various sizes. The rails are 80 lb. Canadian Northern section,

of concrete. About 15 concrete pipe culverts were put in, replacing for the most part broken down wooden box culverts. These varied in size from 24 to 72 ins., one of the 60 in. ones being shown in the accompanying fig. 3.

Electrification. For the electrification of the line, 1,500 volt d.c. was selected after a study of the single and three phase a. c. system, and the high and low d.c. systems, the 1,500 volt d.c. offering what appeared to be the best power for the conditions to be contended with, most of the more recent

poles, are employed, all at 90 ft. spacing. The wooden poles used are from 35 to 40 ft. long, with an 8 in. top.

Catenary suspension is employed on all main line work, with direct suspension in yards with wooden poles. The trolley wire is 4-0 grooved copper, suspended by clips at 20 ft. centres from a 300,000 c.m. copper catenary wire. The trolley wire is 23 ft. 3 ins. above the rail, giving a suspension at the poles of about 3 ft. The suspension consists of single and double pull-offs, depending on location.



Fig. 10.—Bonding Rails with the Oxy-acetylene Torch.

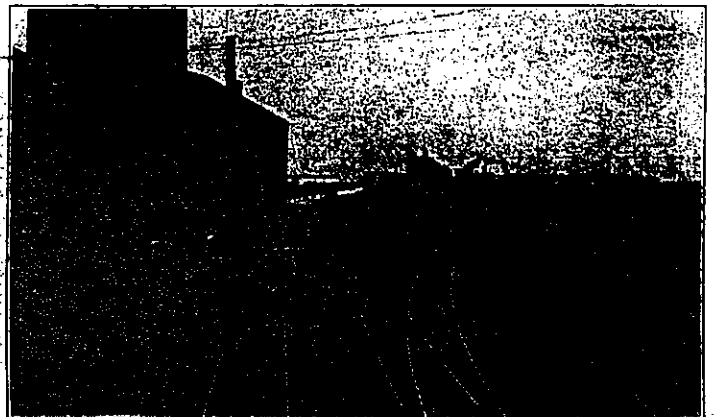


Fig. 11.—Port Stanley Yards, showing Car Ferry Wharf in Distance.

and with the exception of the tracks in London, St. Thomas and Port Stanley, and certain sidings, were laid during 1914. All other rail laying, with the exception of a few of the sidings now under discussion with the Pere Marquette Rd. with regard to transferring to the Commission, have since been laid, most of the ties being replaced by new untreated cedar throughout the whole length of the line, and all the track rebalasted with gravel taken from a gravel pit adjoining the line just south of St. Thomas, near Whites, so that today the track is in excellent condition.

Interurban electrification projects in Canada and the United States having adopted this voltage. The overhead work is supported on steel poles, which also carry the feeders, and dispatching wires. The poles are made of galvanized structural steel shapes, and weigh complete about 800 lbs. They are of triangular form, 35 ft. 0½ in. high, bedded in a triangular concrete base to give a 4 in. casing of concrete outside of the corners. The bases are 7 ft. deep, and are imbedded 6 ft. in the earth. They consist of three 60 deg. angles, 8-16 in. thick flanges, tied together with 8-16 x 4½ in. batten plates about

The line is anchored every ¼ mile by steel poles placed on the opposite side of the track, with an anchoring wire between it and the next adjoining pole, to which the catenary is tied. Dead ends are inserted at every 4 miles, arranged for in a somewhat similar manner to the anchoring, with a pole on the opposite side, the dead-ended wires paralleling each other a short distance, and then swinging off to the dead end poles. An anchor pole is shown in fig. 4.

Deflectors are provided at all switches, and in the larger yards the overhead work is direct suspended from cross spans from

the wooden poles, as in the St. Thomas yard, as shown in fig. 5, where the poles and cross suspension wires are shown prior to the trolley wire suspension. At minor sidings, such as that at Glanworth, fig. 6, the steel poles are carried through, with wooden poles on the siding side of the track, with suspension wires across from the adjoining steel poles to the wooden ones. On bridges the catenary construction is carried through by suspending the wires from a light steel overhead bridge as shown in fig. 7. All the insulators are tested to 3,000 volts. The sectionalizing is manually operated. Lightning protection is of the circuit breaker type and is provided at every fifth pole.

The bracket on the off side of the pole will carry 4 signal wires and a 500,000 c.m. aluminum feeder from the St. Thomas substation to Port Stanley. There are substations at London and St. Thomas, each equipped with two 500 k.w. 1,500 volt d.c. rotary converters, the one at London being located in the municipal electric plant, and the other at St. Thomas, in the Hydro Electric Power Commission of Ontario's substation, shown in fig. 8.

The method of erecting the overhead work is shown in fig. 9. The tops of two box cars were fitted with wooden frames, between which boards were placed on longitudinal members. The side railing above this floor was collapsible, swinging down on the floor when travelling on the line. The two cars, with a cable car, were moved along the line by a locomotive.

The process of bonding is shown in fig. 10. Ohio Brass Co. 4-0 copper bonds are used, welded to the outer side of the rail heads. The outfit employed consisted of a light four wheel car on the rails, carrying two cylinders, one of oxygen, and one of acetylene, behind which were supported a number of strands of copper wire for brazing. The process makes a good union very quickly.

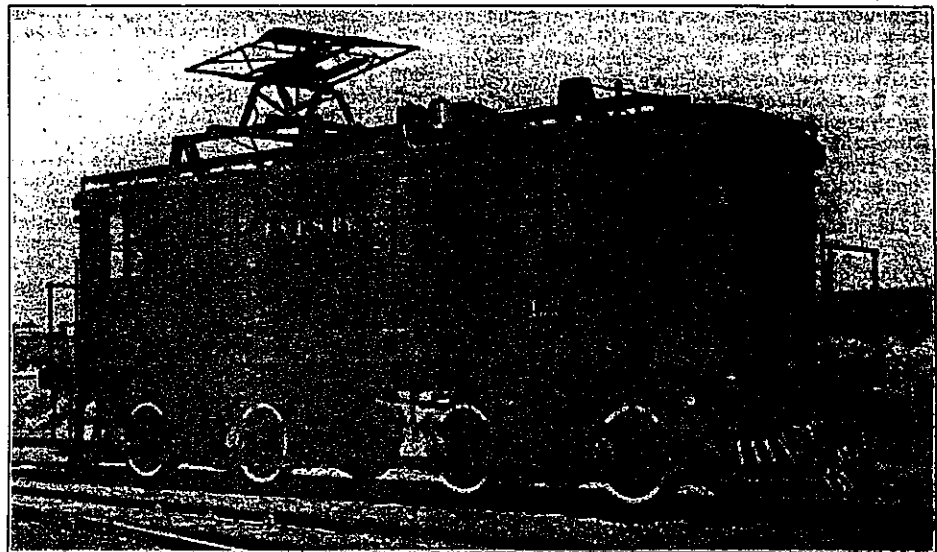
Electric Locomotives. As mentioned, the freight traffic consists chiefly in hauling loaded coal cars from Port Stanley to St. Thomas and London, a car ferry, operating over 10 months in the year, delivering the

ing to the line 30 loaded cars, and taking away 30 empties, each trip. The Port Stanley switching yard is practically level, and is approximately 1,000 ft. long. It is shown in fig. 11, which also shows the ferry dock in the distance.

These were the conditions to be met in designing the electric locomotives. For the purpose of specifying their capacity it was assumed that the traffic would be handled in 800 ton trains, and that certain periods of

sidings, and a train made up for the return trip, consuming possibly an hour.

Three electric locomotives, preliminary descriptions of which appeared in *Canadian Railway and Marine World*, Nov. and Dec. 1914, have been built. They are of the 4-0-4 type and are carried on two swivel trucks bringing all the weight on the drivers, while the equipment is housed in a steel box type cab extending over practically the entire length of the locomotive. Each one is pro-



Locomotive (Temporarily Equipped with One Light Trolley).

time would be desirable in handling the switching and interchange at points along the line. For instance, immediately after unloading and reloading the ferry, the locomotive would be required to classify the cars and make up the train in an approximate time of 45 mins., the maximum train to be moved being assumed at 15 loaded cars of 70 tons each. After this Port Stanley yard switching, the locomotive would haul the assumed loading of 800 tons up grade to

vided with four GE-251, 750-1500-volt motors designed for 750 volts across each armature and insulated for 1500 volts. Two motors are connected permanently in series and the two-motor groups thus formed are capable of connection in series or parallel for speed control. The cab is divided into three compartments, one at each end for accommodating the operator, and an intervening compartment where the control equipment and accessories are located. The operating compartments are provided with 1500 volt electric heaters. Each of the GE-251 motors has an hourly rating of 245 h.p. with 1500 volts on the trolley. At this rating the locomotives exert a tractive effort of 21,500 lbs. Control is effected by a double end, type M, standard equipment, a master controller at each operating position actuating the main 1500-volt contactors by means of a 600-volt circuit supplied from a dynamotor. Multiple unit train operation is arranged for so that the simultaneous control of three locomotives coupled together can be accomplished from any master controller. The equipment is also so designed that a locomotive may haul a train of 8 or 10 passenger trailer cars and provide 600 volt lighting energy for them. The current collectors consist of pantograph slider trolleys having two contact pans pressing against the trolley conductor. Two of these devices are furnished on each locomotive. They are electro-pneumatically controlled from any operating position with one, two or three locomotives hauling a train. The pantograph is shown in fig. 12. It is novel in design, the legs crossing each other in lazy-tong fashion, the reason for this arrangement being the requirement of a vertical range of 9 ft., without unduly lengthening the length depressed. The specifications call for a maximum safe speed of 45 m.p.h., and a capacity for accelerating an 800 ton train on a 1% grade with a clean, dry rail, and to be able to develop a drawbar pull for a 5 min. period corresponding to a 35% adhesion. They

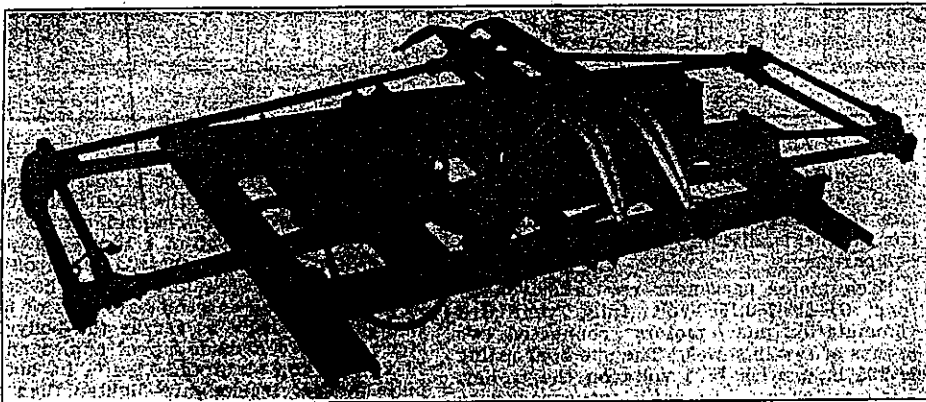


Fig. 12. Pantograph Slider Trolley.

cars to the line from the Pennsylvania coal fields across Lake Erie. Some additional traffic, consisting principally of loaded coal and merchandise cars, is delivered to the line at St. Thomas for London. The traffic from London to St. Thomas consists of loaded merchandise cars, and empty coal cars, while between St. Thomas and Port Stanley it consists almost entirely of returning empty coal cars for delivery to the car ferry. This ferry has a capacity of 30 cars on its four tracks, the two central tracks holding 8 cars each, and the outer two 7 cars each. It can make two round trips a day, deliver-

St. Thomas, with power to stop and start again at Whites, where a car might be passed. In St. Thomas the switching service, consisting of picking up and setting off cars to interchange lines and sidings, might take about 30 mins. The assumption is made that the trainload before reaching and after leaving St. Thomas would be approximately the same, on account of the balance between the freight dropped off and the London interchange from the connecting railways. Stops might be required at Glanworth and Westminster, and on arriving in London the cars would be distributed to the various

were delivered last week by the Canadian General Electric Co.

Cars. The original intention in ordering the car equipment was to provide 5 motor cars and 4 trailers, of all steel construction, the design of which was given in detail in Canadian Railway and Marine World, Jan. 1915. A plan and elevation of this all steel car is shown in fig. 13. It was subsequently decided to proceed as at first intended with the 5 steel motor cars, and to change the other cars to wooden construction. These include an express car, 3 trailer cars and a box car. The motor cars are of a design approaching that in use for heavy steam railway service, and have been developed as the result of extensive study of existing equipment, profiting by the experience of lines that have had steel equipment in use for years. The general dimensions of the bodies are as follows:—

Length over all	59 ft.
Length over end vestibules	58 ft.
Length over end of car body	48 ft.
Width over all	9 ft. 6 ins.
Width over sheathing	9 ft. 6 ins.
Width over platform floor, including trapdoors	9 ft. 5 ins.

ments, and the hinges, etc. The basket racks are continuous, removable in sections, running the full length of the car, and of a bronze finish. The seats are of a high back design, finished in plush for the main compartments, and in pantasote for the smoking compartments. They are 40 ins. wide overall, with the back rising to a height of 42 ins. The aisle width is 28 ins.

Each car has two lavatories, finished in white, with a sheet steel ceiling, giving a tile effect, and equipped with water closet, washstand, 5 gallon water cooler, and all requisites. The water is provided from a 50 gal. tank over top of the lavatory, under the roof. Each side of the roof contains 10 ventilators of the deflector type, automatic in their operation. The lavatories contain special lavatory room ventilators.

Four of the motor cars have the three compartment layout, while the other one has the two compartment layout. In the three compartment layout, the car end is slightly changed so as to incorporate the vestibule into the baggage compartment, 8 ft. 11 ins. long. Adjoining is the smoking compartment, 13 ft. 8 ins. long, with the main com-

also for simultaneous sanding, by electro pneumatic valves, of all cars from any operating position. The pantograph trolleys are identical with those on the locomotives.

Each car carries a combined straight and automatic air brake outfit of the variable release type, with the air supply furnished by 1500-volt compressors. The compressor governors are all equalized on a special wire running throughout the train in the auxiliary train cable.

The original intention was to have the heaters of the hot air type, situated at one end of the car, delivering air through a 3 x 8 in. duct of 1/4 in. steel along the floor line of the wall. This has been changed to individual seat 1,500 volt electric heaters, 28 heaters under the seats, 2 in the vestibule, and 3 in the baggage compartment. As the trailers are to be used for summer traffic only, they have no heaters, but air ducts are provided so that hot air heating may be installed if found necessary. The baggage car has 12 electric heaters; the box car will have none. The steel motor cars were built by the Jewett Car Co., Newark, Ohio.

The trailer cars are of wooden construction,

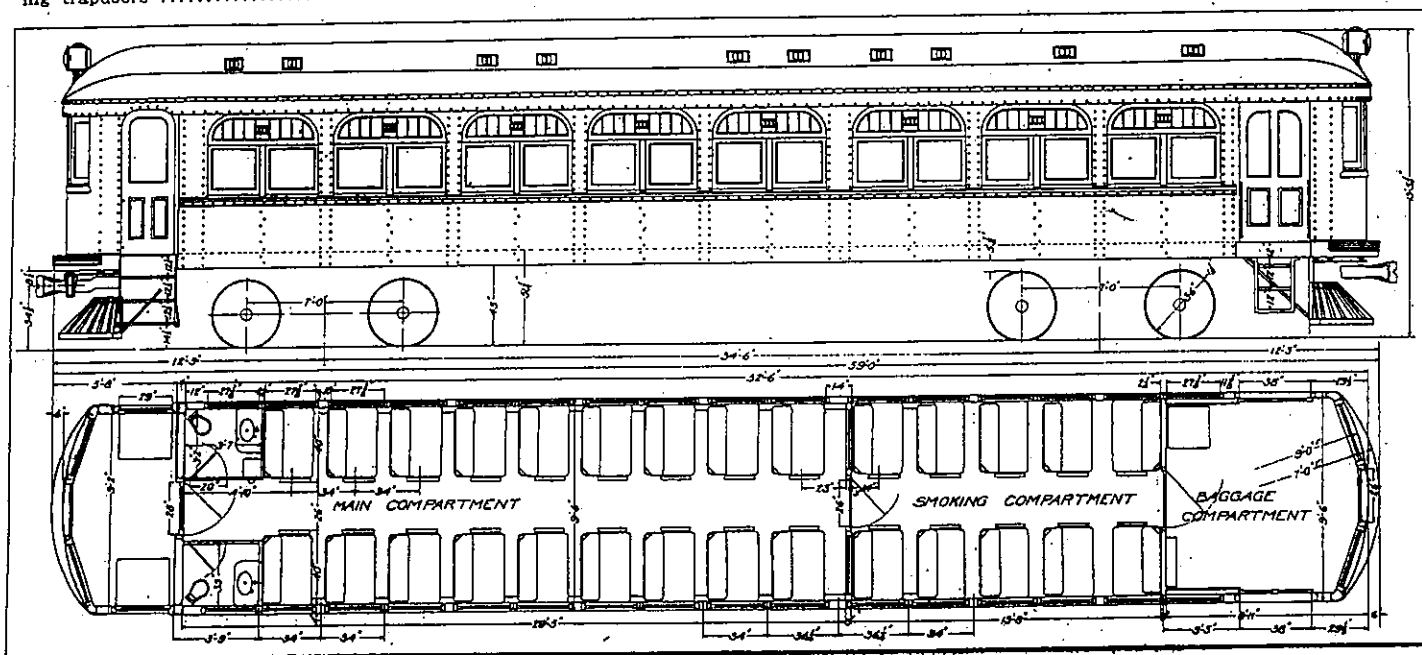


Fig. 13. Plan and Elevation of All Steel Motor Cars for London & Port Stanley Railway.

Height from rail to top of roof, car light	13 ft. 5 1/4 ins.
Height from under side of sills to top of roof, car light	9 ft. 10 1/4 ins.
Height from top of rail to top of platform	4 ft. 3 1/4 ins.

The weight of the car body, including heating equipment, seats, light foundations, brake rigging, draught gear, including supports, ready for the installation of the control equipment and air brakes, has been estimated as follows:—

Car body, complete as above	38,320
Control equipment	9,500
Air brake equipment	2,220
Four motors complete at 4,000 lbs.	16,000
Two 7 ft. wheel base trucks with 36 in. steel wheels	26,880
Total weight in lbs.	92,920

The entire frame of the cars is of structural steel shapes and plates, with the centre and side sills continuous. The inside finish is of the best selected inlaid mahogany, natural sanitary finish, including the doors, linings and mouldings, and the trimmings are of solid bronze, and include grab handles on the body corner posts and vestibule corner posts, match scrapers between the seats in the smoking compart-

partment 29 ft. 5 ins. long to the other vestibule. The two compartment car has the two vestibules, with the main and smoking compartments dividing the length into two compartments.

Each motor passenger car is driven by four GE-225-750/1500-volt fully ventilated commutating pole motors connected two groups of two in series. The one hour rating is 125 h. p. with 1500 volts on the trolley. Each motor car has sufficient capacity to haul one trailer car and provision is made for the motor and trailer cars to be operated in trains up to a total of three motor and three trailer cars. All trailer cars are equipped with master controllers at each end so that multiple unit train operation is possible from either end of any motor or trail car.

Control energy for a motor and trailer is derived from a 1500/600-volt dynamotor on each motor car. The dynamotor will also supply energy for lighting one motor and one trail car. Main and auxiliary train cables run continuously through a train, provision being made for the simultaneous raising and lowering of all pantographs and

tion, steel underframe, of almost the same general dimensions as the steel motor cars. They have two 8 in. channel centre sills, and side sills made up of a 12 x 3/4 in. plate and a 3 x 5 x 3/4 in. angle, trussed on the under side with a 1 1/2 in. truss rod having a 24 in. drop. End intermediate sills of 8 in. channels run back as far as the body bolsters, which are made up of angles and a 14 x 3/4 in. top plate and 14 x 3/4 in. bottom plate. The trucks are lighter than the motor car trucks, with 33 in. wheels and a 6 ft. wheel base. They are of the two compartment layout, as in some of the motor cars.

The express car is of wooden construction, steel underframe, the same as the trailer cars, only 64 ft. long, with the same motor equipment as the steel motor cars. It is slightly narrower than the passenger cars, 9 ft. 3 1/4 ins. wide, and has two 6 ft. doors on each side. It is equipped for double end operation.

A standard 30-ton box car, finished outside the same as the passenger cars, will be used for light freight service. It is of wooden construction throughout. The underframe consists of six sills, two side and

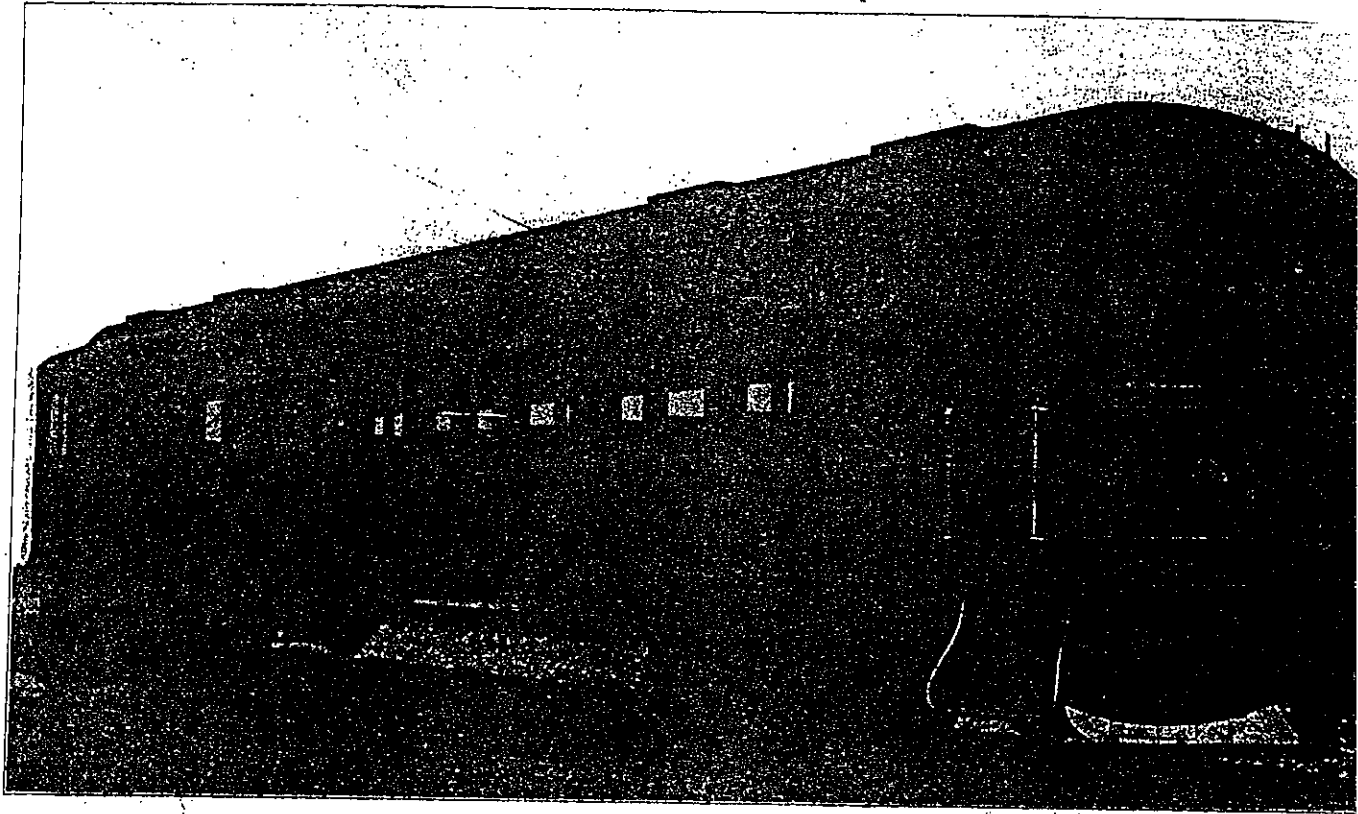
Steel Motor Cars, London and Port Stanley Railway.

Canadian Railway and Marine World for July contained a complete description of the L. & P.S.R. rolling stock, the steel motor cars being illustrated by an elevation and floor plan. An illustration of one of the completed cars is given herewith. They are 61 ft. 1 3/4 ins. long, over buffers, and are exceptionally wide, viz., 9 1/2 ft. over posts. This makes possible seats 40 ins. long, with aisle 26 ins. wide. The car is divided into baggage, smoking and general passenger compartments. In the main compartment there are two lavatories, one for men and one for women, with metal tile walls, and the floor set in cement. The bottom fram-

mahogany being finished in a rather light tone, and great care having been exercised in selecting soft harmonizing colors for ceiling and stained glass. Nothing in the way of incidental equipment, such as buzzers, air Sanders, fire extinguishers, etc., has been omitted, and a large switch cabinet extends from floor to ceiling, with slate back, containing all electrical switches. The roof is a compromise arch design. They were built by the Jewett Car Co., Newark, Ohio, and electrically equipped by the Preston Car & Coach Co.

Berlin and Waterloo Street Railway Annual Statement.

Following is the statement for the calendar year 1914 of this line, which is



Steel Motor Cars, London and Port Stanley Railway.

ing is made up of structural sills with pressed steel cross bridging, plate bolsters with pressed steel fillers being used. Side posts are of channel and tees of light section, with angle iron corner posts. The posts in bulkhead and partitions are also of channels, with channel header across between side plates. The entire outside and bulkheads are composed of steel plates. Carlines are pressed steel, and the roof is of large steel plates laid across the full width of the car. The cars are fitted with extra heavy steel pilots, and M.C.B. draw bars. The interior finish is mahogany inlaid, with inside and outside Gothic sash with cathedral glass, and storm sash fitted to all body windows. The ceiling is of agasote, and the wooden floor is covered with knoleum. The car is lighted by semi-indirect system with pendant fixtures, light wiring being in concealed conduit, as is also heater wiring, heaters being of the cross seat electric type. There is a vestibule on the rear end only, with triple steps covered with steel trap doors. The lavatories are very completely equipped with flush hoppers, wash stand with liquid soap holder, towel rack, etc., all fixtures being nickel plated. The interior of the cars present a tasteful appearance, the

August 1915

Opening of the Electrified London and Port Stanley Railway.

The newly electrified London and Port Stanley Ry., a detailed description of which was given in Canadian Railway and Marine World for July, was opened for traffic July 1, when some 2,500 passengers were carried from London, and over 1,000 from St. Thomas to Port Stanley, in addition to local traffic along the line. No freight was carried during the day. The power machinery is reported to have worked very well, but some slight defects developed which required adjustment. To enable these adjustments to be made, steam was used for the operation of the line for a few days after July 1, and the electrical operation of the line was reported to be working reasonably satisfactorily July 8. Freight carrying was started July 2, and it was reported July 8, that it was increasing and was being handled expeditiously.

The work of electrifying the line was done under the direction of F. A. Gaby, Chief Engineer, Hydro Electric Power Commission of Ontario, the assistant engineers of the Commission employed being E. G. Hewson, electrical work; H. L. Bucke, track work; A. E. Davison, pole work; and E. Brandon, substations. D. M. Morrison was resident engineer in charge of the whole work, with office at St. Thomas.

The official opening of the line took place July 22, when a large number of guests attended on the invitation of the London City Council, Board of Trade and Public Utilities Commission. They were taken over the line from London to Port Stanley and return in the afternoon, and were then entertained at dinner in London.

August 1915

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the west side of the line in St. Thomas on Talbot St. to replace the existing station about two blocks further north, which will then be removed. No immediate changes are in contemplation for the terminals at Port Stanley.

Rehabilitation of the Line. When the line was taken over by the London Railway Commission it was physically in a very bad condition, and required complete rehabilitation of the track, and structures, with the exception of the bridges, to place it in good operating condition. The renovating was handled through the Pere Marquette forces, which

All the bridges were in good condition and required no repairs of consequence, but the culverts had for the most part fallen into disrepair, and required either replacement or reinforcing. Two new reinforced concrete culverts were built at mileage 8.2 and 12.4, replacing in one instance a broken masonry one, and in the other, a wooden box culvert. These two culverts are 8 x 6 ft., made of reinforced concrete, with wing walls on each side. Seven old masonry culverts were reinforced with a 6 in. lining of reinforced concrete, the mud sills being also removed and replaced with from 6 to 12 ins.

28 in. centres. Above the rail, is a 4 in. 5/8 lb. channel, bolted to two of the vertical arms, and is braced in front with light angles. The pole legs have a slight batter, 28 ins. from corner to corner of the angles at the base, and 12 ins. at the top of the pole. The poles are placed at 180 ft. centres on tangents, and at from 140 to 160 ft. on curves. They call for a strength to resist a strain of 2,000 lbs. at the top, falling at from 2,500 to 2,700 lbs. The tension will seldom exceed from 500 to 1,000 lbs. In yards, either wooden poles alone, or the steel poles with intermediate wooden

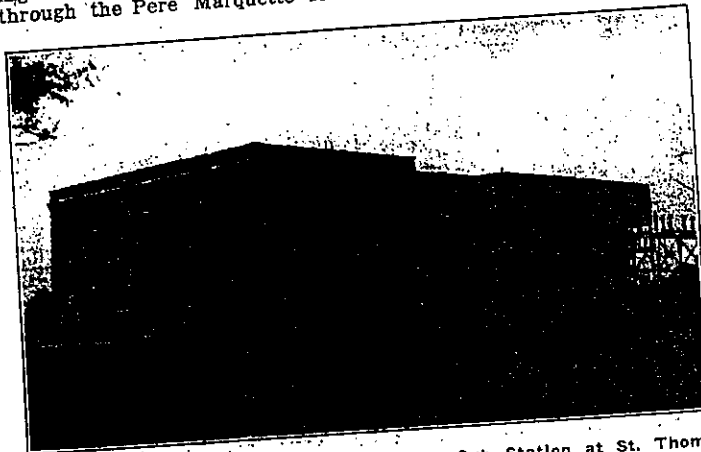


Fig. 8.—Hydro Electric Power Commission Sub Station at St. Thomas.

was still looking after the line on the short term agreement made on the expiration of the 20 year lease. As mentioned in Canadian Railway and Marine World, Sept. 1914, contracts were let as follows: Algoma Steel Co., 2,000 tons of steel rails and angle bars and 30,000 tie plates; J. J. Gartshore, 380,000 spikes; Canadian Ramapo Iron Works, 52 sets of switches and frogs; Steel Co. of Canada, 34,000 track bolts and 65,000 tie plates; and Canadian Concrete Products Co., 1,100 ft. of concrete piping of various sizes. The rails are 80 lb. Canadian Northern section,

of concrete. About 15 concrete pipe culverts were put in, replacing for the most part broken down wooden box culverts. These varied in size from 24 to 72 ins., one of the 60 in. ones being shown in the accompanying fig. 3.

Electrification. For the electrification of the line, 1,500 volt d.c. was selected after a study of the single and three phase a. c. system, and the high and low d.c. systems, the 1,500 volt d.c. offering what appeared to be the best power for the conditions to be contended with, most of the more recent

poles, are employed, all at 90 ft. spacing. The wooden poles used are from 35 to 40 ft. long, with an 8 in. top.

Catenary suspension is employed on all main line work, with direct suspension in yards with wooden poles. The trolley wire is 4-0 grooved copper, suspended by clips at 20 ft. centres from a 300,000 c.m. copper catenary wire. The trolley wire is 23 ft. 3 ins. above the rail, giving a suspension at the poles of about 3 ft. The suspension consists of single and double pull-offs, depending on location.



Fig. 9.—Method of Stringing Trolley and Feeder Wires.

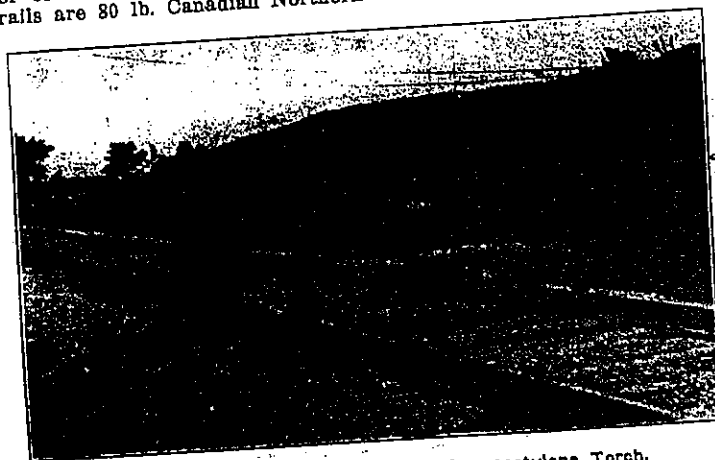


Fig. 10.—Bonding Rails with the Oxy-acetylene Torch.

and with the exception of the tracks in London, St. Thomas and Port Stanley, and certain sidings, were laid during 1914. All other rail laying, with the exception of a few of the sidings now under discussion with the Pere Marquette Rd. with regard to transferring to the Commission, have since been laid, most of the ties being replaced by new untreated cedar throughout the whole length of the line, and all the track rebalasted with gravel taken from a gravel pit adjoining the line just south of St. Thomas, near Whites, so that today the track is in excellent condition.

interurban electrification projects in Canada and the United States having adopted this voltage. The overhead work is supported on steel poles, which also carry the feeders, and dispatching wires. The poles are made of galvanized structural steel shapes, and weigh complete about 800 lbs. They are of triangular form, 35 ft. 0 1/4 in. high, bedded in a triangular concrete base to give a 4 in. casing of concrete outside of the corners. The bases are 7 ft. deep, and are imbedded 6 ft. in the earth. They consist of three 60 deg. angles, 3-16 in. thick flanges, tied together with 3-16 x 4 1/4 in. batten plates about



Fig. 11.—Port Stanley Yards, showing Car Ferry Wharf in Distance.

The line is anchored every 1/4 mile by steel poles placed on the opposite side of the track, with an anchoring wire between it and the next adjoining pole, to which the catenary is tied. Dead ends are inserted at every 1/4 miles, arranged for in a somewhat similar manner to the anchoring, with a pole on the opposite side, the dead ended wires paralleling each other a short distance, and then swinging off to the dead end poles. An anchor pole is shown in fig. 4.

Deflectors are provided at all switches and in the larger yards the overhead work is direct suspended from cross spans from

July, 1915.]

A. Stevenson, Mayor. This commission decided on the electrification of the line.

Traffic. As mentioned earlier the line was originally projected as a means of developing the country it traversed, and at the same time to provide an outlet for the populated centres along it to visit the pleasure grounds at Port Stanley, where the company acquired an area on the shore for that purpose. From the earliest days a heavy exposure of the line has been developed, for the encouragement of which rates less than 1/4

handled one mile amounted to 10,322,000, the average distance hauled is about 16 miles, showing that the bulk of the traffic is through, making for good operating conditions. The total freight revenue was \$84,692.88; total freight earnings, \$93,373.65; freight earnings, per train mile, \$1.6146; proportion of total freight earnings to total earnings, 68.73.

For the year ended June, 30, 1914, maintenance of way and structures cost \$25,008.89; maintenance of equipment, \$31,257.03; traffic

existing traffic terminate July 1, 1915. Negotiations now in process with both this line and the other three for new interchange arrangements, and it is expected that an early settlement of the question will be made.

The L. & P.S.R. has been using the G.T.R. station in London, but arrangements are being made for a separate terminal to the south of the G.T.R. station, on Richmond St., where the line will stub end. To permit

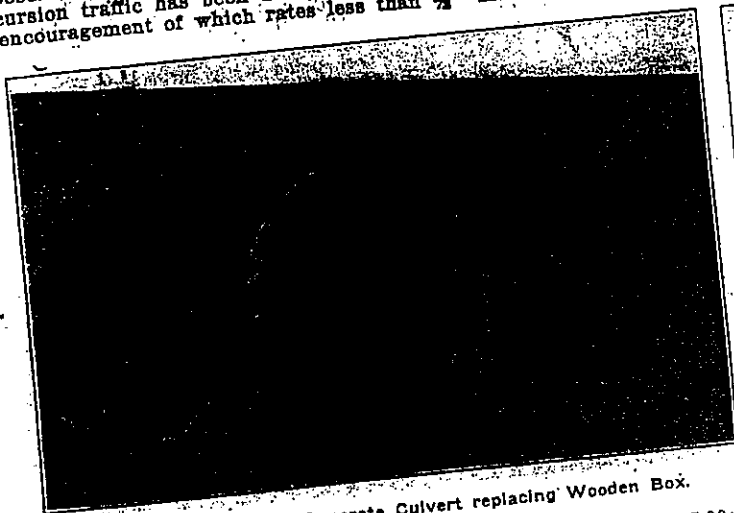


Fig. 3.—Sixty Inch Concrete Culvert replacing 'Wooden Box'.

ct. a mile were given. This traffic has ever since remained the principal passenger business handled, large numbers travelling by the line from both London and St. Thomas during the summer, a good service at attractive rates having been maintained by the successive operating companies. For the year ended June 30, 1914 the passengers carried were 132,669, at a rate of 1.574 cts. a mile. The mileage of passenger trains was 64,551, and of mixed trains 14,739. The

expenses, \$6,777.00; general expenses, \$8,230.15; total operating expenses, \$180,915.11. This gave a ratio of operating expenses to operating revenue of 133.18, a deficit of \$45,073.37.

In addition to the traffic handled by the lessee, the Pere Marquette Rd., the Michigan Central Rd. runs all its trains to London over the line from St. Thomas. The freight traffic of this line in London is very high. Likewise, the Pere Marquette traffic from

the entry of its line to this new point, the Board of Railway Commissioners for Canada issued orders 23,752 and 23,753, May 28 and 27 respectively, granting the railway power to construct a track on the north side of Bathurst St. between Wellington and Richmond Sts., and to take possession of certain G.T.R. lands as follows: A 40 ft. strip between Wellington and Clarence Sts., a 50 ft. strip from Bathurst St. westerly, immediately north of Bath-



Fig. 4.—Overhead Construction on a Curve.

revenue per passenger train mile was \$0.51563. The total passenger earnings were \$40,884.22, or 30.09% of the total earnings. Freight is of course the principal part of the traffic handled, consisting primarily of the coal brought across Lake Erie from the Pennsylvania coal fields to Port Stanley by car ferry. Of the total freight tonnage of 637,869 tons carried by the line in the above mentioned period, 552,182 tons, or 86%, was bituminous coal, of which 482,807 tons was bituminous and 69,375 tons anthracite. As the freight



Fig. 6.—Overhead Construction at Glenworth Siding.

the west, coming into St. Thomas over its leased Lake Erie and Detroit River Ry., is interchanged there for passage easterly by the Michigan Central Rd., over the section of the L. & P. S. R. connecting the two lines in St. Thomas, a distance of nearly a mile. Agreements exist for the interchanging of G. T. R., Michigan Central Rd., Pere Marquette Rd. and Wabash Rd. traffic, the first at both London and St. Thomas, and the latter three at St. Thomas only. The Michigan Central Rd. has served notice on

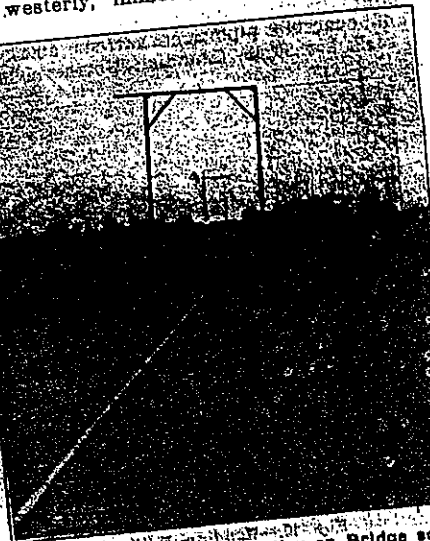


Fig. 7.—Overhead Construction on Bridge so of St. Thomas.

the west of the foregoing for approximately the same distance to the easterly limit of Richmond St., immediately north of Bathurst St. It is also authorized to construct its tracks and erect poles, and wires along Bathurst St. between present track at Burwell St. to connect the authorized property on Wellington and is authorized to use the existing of the Michigan Central Rd. between well and Wellington Sts.

It is proposed to erect a new station

December 1916 p 500

Electric Railway Department

Passenger Cars for London and Port Stanley Railway.

Some preliminary details of the three motor passenger cars which are being added to the London & Port Stanley Ry. equipment were given in Canadian Railway and Marine World for November. These cars will be, in most respects, duplicates of those already in service on the line, but in addition to being longer, there will be embodied a number of improvements, all making for increased convenience and efficiency. Following are the general dimensions of the car bodies:—

Length over all	71 ft. 7 ins.
Length over end vestibules	59 ft.
Length over end of car body	57 ft. 3 ins.
Width over all	9 ft. 10 ins.
Width over sheathing	9 ft. 6 ins.
Width over platform floor including trapdoors	9 ft. 6 ins.
Height from rail to top of roof (car light)	13 ft. 6 1/4 ins.
Height from under side of sills to top of roof	9 ft. 10 1/2 ins.
Height from top of rail to top of platform (car light)	4 ft. 3 1/4 ins.
Seating capacity of passengers	72

The weight of the car body, including heat equipment, seats, light foundations, brake, draft gear, including supports, ready for the installation of control equipment and air brakes, will be about 49,733 lb.; control equipment, 9,500 lb.; air brake equipment, 2,220 lb.; 4 motors complete, 16,000 lb.; 2 trucks, 7 ft. wheel base with 36 in. steel wheels and 6 in. axle with 5 x 9 in. journals, 25,006 lb., making the total approximate weight of the car complete, 102,459 lb.

The equipment, which will be supplied to the car builders by the Hydro Electric Power Commission of Ontario, which is handling the matter for the London Railway Commission, will, for each car, consist of:—4 G.E. 225B 1,500 volt motors, 1 type E, G.E. 1,500 volt control apparatus, 1 c.p. 29A. G.E. air compressor, including complete straight and automatic air equipment, double end, not including pipes and fittings; 2 G.E. pantographs complete, with main fuse in top of roof and insulation, not including brackets and suspensions; 2 headlights, 1 set of complete cables for motors and control, but not air equipment; 1 set of 1,500 volt electric heaters, but not including conduit cables and brackets; 2 trucks complete with wheels, axles and brake beams, to connect up with brake rod under car body furnished by the builders; 1 air signal system, not including piping; 36 seats, 24 finished in plush and 12 in fakrikoid; 1 complete storage battery.

The entire bottom frame of the car is to be made of structural steel shapes and plates, centre and side sills to be continuous, floor and side frames to include cross beams designed to transfer floor load to the side trusses. The floor framing will be braced diagonally between the cross beams, and the end and vestibule framing will have special provision against the effects of a collision. The corner and side posts will be of channel construction, and intermediate posts of T iron, side sheathing, including roof, of steel plate, braced and fastened to the bottom sills and side plates by rivets. The inside of the car will be of solid quarter sawed Mexican mahogany inlaid finish. The flooring of the main body and vestibule will be of yellow pine 3/4 by 3 1/2 in. double flooring for the whole car, and between each floor there will be two layers of waterproof felt paper. The lavatories will have rubber

tiling on the floors, white with blue lines, smooth finish. The platform will be on the same level as the car floor, and enclosed with stationary round vestibules sheathed outside with 1-16 in. sheet steel, and inside with wooden panels of ash. Each vestibule will have two drop windows and swinging end door with 26 in. opening, and two side swinging doors each with 29 in. opening. The step opening will be enclosed with single swing doors arranged to swing against the end of the car body, and the openings between the edge of the platform and vestibule doors will be fitted with trapdoors of metal with extension threshold. Triple steps of the steam railway car pattern, made of steel, fitted with anti-slip metal treads and brass finishing strips, after the Pullman design, will be supplied. The vestibule doors will be of mahogany, panelled in the lower portion and glazed in the upper. The roof will be of steel plate 1-16 in. thick, rivetted to the carlines, all joints to be welded or soldered to make a tight joint, and the whole roof will be smooth finish. Twenty automatic ventilators will be built in the roof, 10 on each side. Window fixtures will be finished in bronze, and each sash equipped with rubber weather strip all round, window frames of mahogany with 1/4 in. plate glass laid in rubber; the upper oval windows and the lavatory windows will be of opalescent cathedral glass, the latter being after the Pullman design. The cars will be provided at each end with one spring buffer complete, and with two air sanders. A steam locomotive pilot will be provided at each end of the cars, so arranged as not to interfere with the radial draft rigging. Each car will be equipped with two lavatories, complete with all up to date fittings.

In deciding on the specification details of these cars, the desire was to obtain as light a car as possible, consistent with absolute safety. The original approximate weight for the cars was 104,729 lb., but careful calculation and refinement of design, enabled the engineers to adjust the specifications and reduce the weight to 102,459 lb. The body weight of the car per foot length works out at 710.47, and the body and equipment weight per foot length is 1,463.7 lb. The average weight per car foot length for steam railway cars of similar length, complete with trucks, etc., is somewhere about 1,300 to 1,500 lb. The total dead load carried on the two side plates is 61,720 lb., and the live load 15,000, making a total of 76,720 lb. This load is divided as follows—on the centre span 55,000 lb., carried on the overhang 21,720 lb. The load carried on each beam at each end is 5,430 lb., the total load on each beam being 38,360 lb. The web is being stiffened against buckling, by the application of stiffeners at the ends and inner edges of bearing plates at all points of concentrated loads, and also at intermediate points, and not farther apart than the depth of the full web plate, with a minimum limit of 5 ft., the actual minimum distance between stiffeners being 2 ft. 10 in., and depth of web 3 ft. 0 1/2 in. The specifications adopted give maximum capacity of 3,871 moment of inertia, an excess on safe side of 1,509; 12,500 vertical shear, an excess of 11,100; stiffeners every 2 ft. 10 in.,

2 1/2 in. closer than required, and 0.00273 of span deflections, an excess over maximum demand of 0.00108 of span.

In construction generally, the details are the same as for the cars now in operation, all of which were fully described and illustrated in Canadian Railway and Marine World for Jan. 1915. The chief difference between those cars and the ones herein described, is in length, where an additional 10 ft. 7 in. is obtained. Among the improvements are, larger and more convenient lavatories, large water cooler with sanitary drinking cups, rubber tiling for flooring of lavatories, rubber matting over trapdoors, heavier fittings generally throughout the car, sliding doors leading from platform to main car body, spring buffers at each end of car, steps at both ends, larger doors of the sliding type over steps leading into the baggage compartment, two collapsible seats in the baggage compartment and trainman's locker, in addition to a few slight changes in design tending toward lower maintenance cost and general efficiency.

An order has been placed with the Jewett Car Co., Newark, Ohio, for two cars according to this specification, and the electrical equipment, which is practically the same as that supplied for the cars now in operation, has been ordered from the Canadian General Electric Co. Delivery of the cars is to be made by June 1.

The Ontario West Shore Railway Difficulty.

An engineer representing the Hydro Electric Power Commission of Ontario was reported, on Nov. 16, to be going over the old Ontario West Shore Ry. route from Goderich toward Kincardine, Ont. This is the railway partially built by a company, the controlling power in which was exercised by J. W. Moyes, Toronto, upon the proceeds of bonds guaranteed by the municipalities through which the line was to run. The municipalities are paying up on the bonds and have the uncompleted line as an asset. The object of the present survey is to ascertain the cost of completing the line and putting it in order for operation.

It is reported that the C.P.R. is interested in getting the line in operation and is prepared to offer a free right of way over the Maitland River bridge in return for freight shed privileges uptown. From the south bank of the Maitland River the route into Goderich would be along the river bank to the north end of Cambria Road.

Handling "Near Accidents."—In Buffalo, N.Y., conductors and motormen report license numbers of automobiles whose drivers are reckless, or who are responsible for "near accidents." The International Ry. safety committee communicates with the owner of such automobile, and if a second report is received against the same driver, the matter is taken up with the police department. It is expected that results mutually beneficial to both the railway company and auto owners will follow.

Electric Locomotive On L. & P. S. Wrecked By Explosion of Gas

Nov 15 1924

Southeast London Shocked By
Blast—None Injured As En-
gine Not Manned — Unusual
Accident.

Explosion of accumulated gas pro-
duced by the short circuiting of the
dynamo on L. & P. S. R electric loco-
motive No. 1 partially wrecked the
engine, blowing out the steel shuttered
windows and burning up the coils of
the dynamo.

The force of the explosion was felt for
blocks around, and residents in the
neighborhood of Phillip street yards re-
ported doors and windows shaken as if
by an earthquake. No damage was done
outside of the engine, as it was not
manned at the time by a train crew,
but was being shunted through L. &
P. S. R. freight yards by another
engine.

A short circuit to the dynamo pro-
duced an unidentified gas in such quan-
tities in the closed locomotive that
when the burning coils of the dynamo
ignited it the steel sliding windows
were burst open by the exploding gas.
The damage will not amount to over
a few hundred dollars for the rewinding
of the dynamo. No explanation of the
short circuiting of the dynamo has been
learned yet.

Retiring



ERNIE SHAW, popular alderman for
ward four, who announces his retire-
ment this year.

November 15, 1924

The 1, 2 & 3 train which struck the automobile in the car due out of London at 7:00 a.m. in the morning on the 1st of June the other another train was wrecked and left for Port Station.

ST THOMAS EVENING JOURNAL

LONDON AND PORT STANLEY RAILWAY

July 30, 1923 Two are injured in crossing crash. A London man in an oil truck was hit by an L&PS car Saturda at the stop 22 crossing, Port Stanley.

August 3, 1926 Dan McLaughlin in near fatal crash when he drove in front of a L&PS car near Glansworth crossing.

November 12, 1926 The L&PS train was hit by a Canadian Pacific engine at St Thomas. The electric power control apparatus in the front of the L&PS noon train of St Thomas from the Michigan Central station was wrecked Wednesday when the CPR engine crashed into the standing car as it stood fouling the crossing diamond. Damage to the car frame was not serious, but the power control machinery may have to be replaced. When this car which leaves London at 11:20 reached the MCR depot it stopped with its end overlapping the crossing diamond. When the CPR 10:05 train uncoupled at the depot it was given a clear signal to proceed to the yards by the MCR yardmaster. There was not sufficient clearance between the L&PS car and the diamond which was noticed by the engineer of the electric car. CPR train until it was too late to avoid striking.

April 26, 1929 L&PS relaying tracks at Port Stanley

August 10, 1929 Wreck at L&PS Glansworth when joy riders drive into the path of a L&PS car.

November 8, 1929 An L&PS car passes over a washout at Whites without mishap.

January 15, 1930 L&PS crossing accident.

April 12, 1930 L&PS traffic is booming.

September 8, 1931 A L&PS coach leaves the rails and careens along on the ties for about 250 feet. Twenty passengers were on board, but none were injured. The car derailed when a tire broke on the front wheel of the coach of train No. 7 of the L&PS yesterday morning. The coach did not leave the rails. The train which was to stop at Stop 7 southbound was travelling along at the usual speed approaching Stop 6, when a front tire broke from the heel. The wheels of the car slipped from the rails but continued to run along for some distance cutting into the ties but not running from the roadbed.

July 6, 1932 L&PS add oil tank spurs.

October 25, 1932 L&PS spur to Talbot Street depot north of Kains Crossing.

November 18, 1932 L&PS spur to freight sheds.

October 1, 1935 Radial crumbles truck hurling man over 70 feet. The crash occurred at the L&PS crossing at the Brockley station on the fourth concession. Mr Laidlaw drove into the side of the northbound radial car which was speeding along at about 60 mph. His truck was squeezed between the speeding radial and a heavy milk stand at the small station shelter, a signal standard and a steel tower supporting the radial power wire.

May 21, 1936 The old L&PS station at West Minster six miles south of the city caught fire. It was 80 years old. A family lived there, one room of the shelter was used by the L&PS as a waiting room, while the rest was rented to the Kopal family. West minster station was one of the original structures built when the old road was put through to Port Stanley Twenty-five years ago it was used by the Pere Marquette as a passenger and freight office.

July 29, 1937 An oil truck battered by an L&PS car at Port Stanley.

July 22, 1938 L&PS head on crash.

August 8, 1938 L&PS special service on the mental hospital.

September 13, 1939 L&PS baggage car came off the track at Moore Street on the MCR spur.

August 1, 1940 A spur line to be built to the RCAF school.

August 13, 1940 Lightning hit a L&PS motor car.

October 26, 1940 New L&PS service helps Air Students. The L&PS are stepping up their service to Crafts, the stop at the RCAF Technical Training Center and have added additional cars for a trial period to meet the needs of early morning traffic as well as afternoon traffic floods from the school around closing time.

October 31, 1940 New equipment is being studied. Cars usually left in the barns for winter may be used. With an increase of 72,000 in the number of passengers carried over the L&PS during the first nine months of this year railway officials today turned their attentions towards new equipment.

December 14, 1940 L&PS may use steam engines to haul freight out of Port Stanley. CNR sends engine No. 757 and nine cars to help L&PS.

December 20, 1940 The L&PS are searching Canada for electric cars

April 26, 1941 A derailment on the CNR at Hyde park sent two CNR trains over the L&PS.

May 18, 1941 Buffalo rail enthusiasts make a trip over the L&PS.

September 8, 1941 A L&PS motor car was hit by a gravel truck.

December 23, 1941 Troop trains comes into St Thomas over the L&PS on Tuesday morning hauled by a CNR 1200 class steam engine.

February 13, 1942 CPR, CNR and L&PS are handling troop trains.

December 23, 1942 Steam engines helps the L&PS move record traffic.

September 21, 1943 A Pere Marquette train ran over the L&PS.

August 10, 1943 A L&PS London bound coach caught fire on its roof.

May 12, 1944 Razing the old landmark L&PS station at the south end of St Thomas.

May 23, 1944 L&PS crash at Crafts Station two miles south of St Thomas Tuesday morning when a northbound L&PS car from Port Stanley crashed into the coach used to run shuttle service for the RCAF into St Thomas.

November 12, 1948 L&PS car hits truck.

February 19, 1949 L&PS tank car derailed at Port Stanley.

May 6, 1952 L&PS new schedule the worst in history.

August 15, 1952 L&PS crash at Glansworth when a standing car when a standing train was hit head on by a northbound car that came out of the fog.

Crash Jolts Commuters



COMMUTERS BETWEEN St. Thomas and London were given a jolt and seven were taken to hospital for treatment this morning when an eight-car freight train on the same line crashed into the rear of the two-car passenger train. The accident took place at Thompson road. Above is pictured the rear car of the passenger train, with the freight locomotive piled into it. Note the steps on the passenger train torn from the platform.

Collision On L. P. S. Sends 7 to Hospital

Freight Train Heading for London Jams Into Rear of Passenger Train Carrying 60 People, at Thompson Road

Seven persons were injured early today when a freight train heading for London jammed into the rear of a passenger train of the London & Port Stanley Railway, carrying 60 people, at Thompson road. The back ends of the two cars which made up the passenger train were damaged to the extent of \$1,000.

The seven were taken to Victoria Hospital, where they were treated by Dr. Edward Spence for cuts and bruises and X-rayed for possible other injuries. Most seriously injured were Mrs. Margaret Hadler, 30 Myrtle street, St. Thomas, with possible neck and back injuries; Mrs. Mary MacPherson, 11 Hamilton road, St. Thomas, with hurt shoulder, and W. J. Sproule, 78 Langarth street, motorman on the passenger train, who has possible chest injury, as well as abrasions to forehead.

Shaken Up
Keith Rowe, R. R. 1, Wilton Grove, was treated for possible injury to the knee, and James Kennedy, R. R. 8, London, had lacerations about the face. J. W. King, 426 Moore street, London, suffered cuts on the knee and Murray McCance, 556 Central Avenue, an injury to neck.

The rest of the 60 passengers were shaken by the jolt when the freight crashed into the back end of the commuters' train, but most of them were uninjured and went immediately to work attaching London in another train, which was sent from the station here to pick up all passengers.

Happened at 7:15
The accident happened about 7:15, as the passenger train was on its way from St. Thomas to London with its usual morning load of commuters. It was being followed by a freight train of eight cars and when the passenger stopped at Thompson road the freight crashed into it. The frame of both passenger cars at the rear were crushed downward. Little damage was done to the locomotive of the freight.

Cause Unknown
Cause of the accident is unknown. A heavy fog obscured sight and the freight, with its 400-ton load, was going slowly when the accident occurred. Officials stated, but the weight of the train was enough to move the passenger train about three car-lengths along the line.

M. Prece, 55 Fifth avenue, St. Thomas, was the majorman on the freight, and E. Bastard, 1 McKay avenue, London, was the conductor. J. W. King was the conductor of the passenger train. Neither of the men in the freight was injured.

Two trains from St. Thomas were sent to take passengers from London to St. Thomas and Port Stanley from Thompson road.

A shuttle service was conducted from the station at London to Thompson road, where passengers going south were met by trains from St. Thomas which took them to their destinations. About a half-hour delay was caused during the first two hours after the accident. The wrecked cars were removed by 10 o'clock and regular service was resumed.

July 24, 1945

CHILDREN'S SPECIAL AND TRAIN RUNNING SOUTH IN COLLISION

Frederick, Md., Feb. 9.—(AP)—
Special Train No. 10, carrying
children, collided with a southbound
train today.

**INQUIRY UNDER WAY
TO DETERMINE BLAME**

Two Special Cars, Car No. 2
Northbound and Car No. 10
Southbound, Collided.

Nine passengers were injured, including three children, in the collision. The children were being taken to the city of London, Md., for a special train. The train was carrying a large number of children, and the collision occurred while the train was running southbound. The train was carrying a large number of children, and the collision occurred while the train was running southbound.

The northbound train was carrying a large number of children, and the collision occurred while the train was running northbound. The train was carrying a large number of children, and the collision occurred while the train was running northbound. The train was carrying a large number of children, and the collision occurred while the train was running northbound.

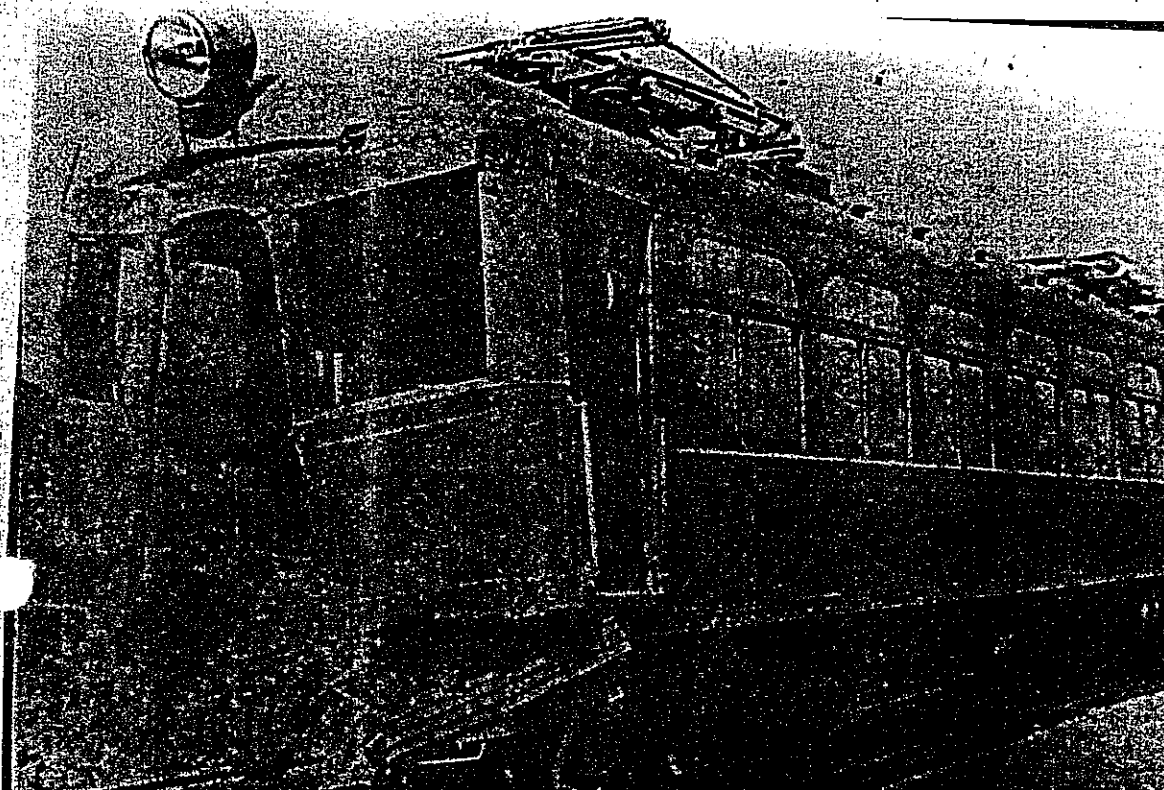
The inquiry is under way to determine blame for the collision. The inquiry is under way to determine blame for the collision. The inquiry is under way to determine blame for the collision. The inquiry is under way to determine blame for the collision. The inquiry is under way to determine blame for the collision.

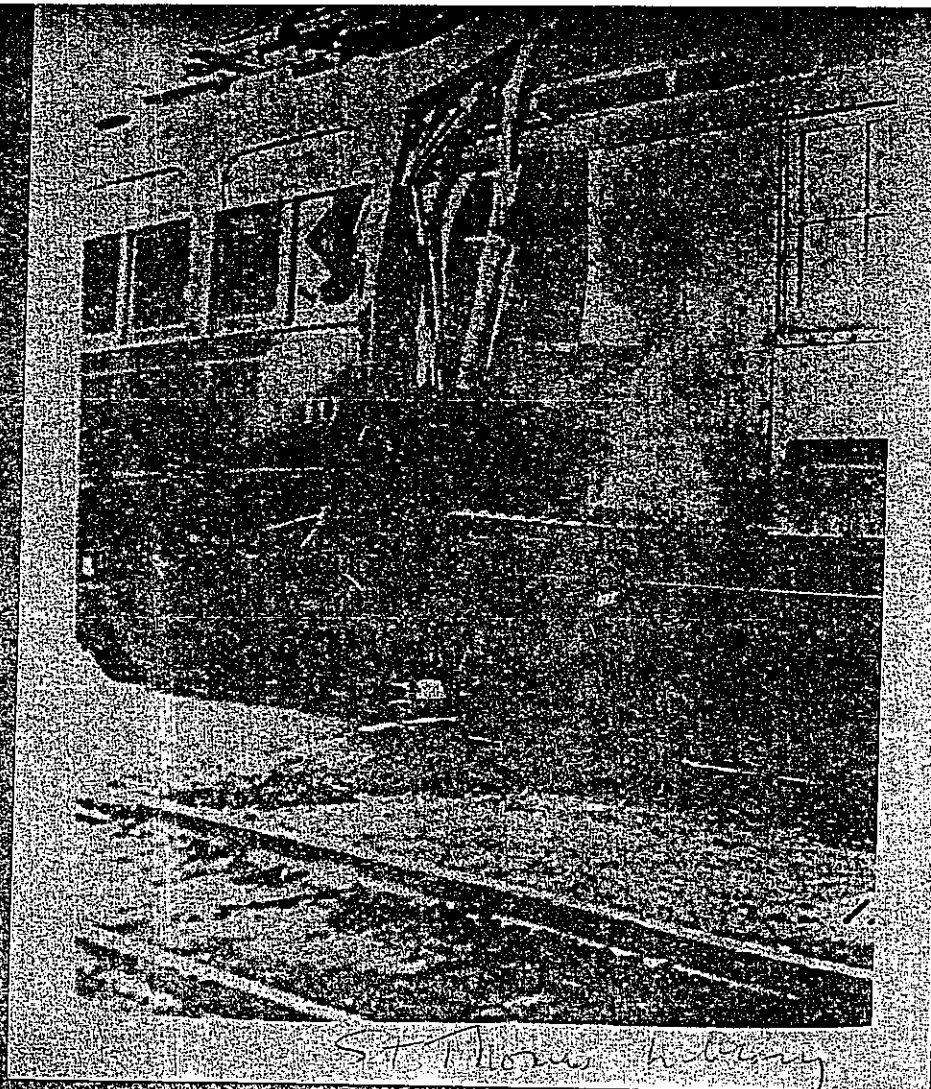
Car No 2 Northbound.
and
Car No 10 Southbound

February 9, 1934

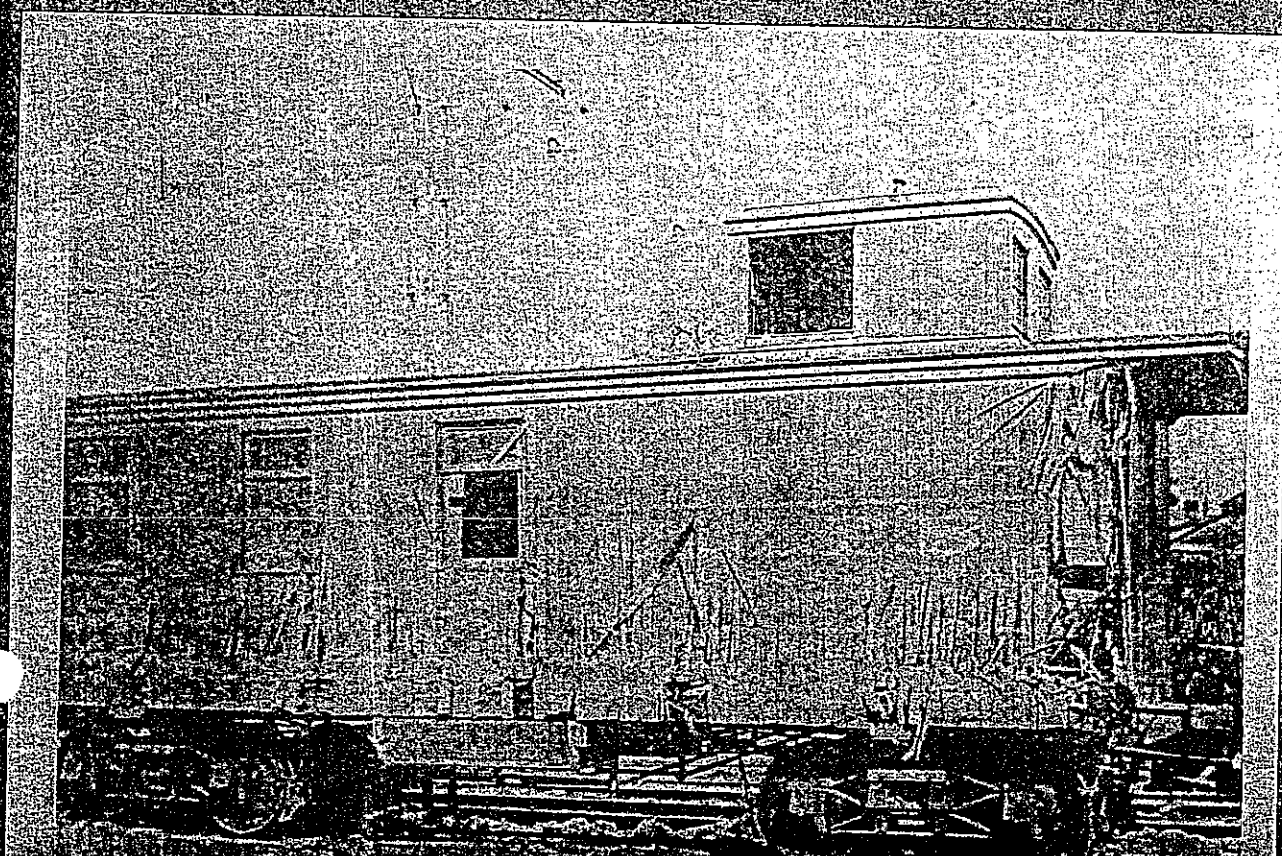


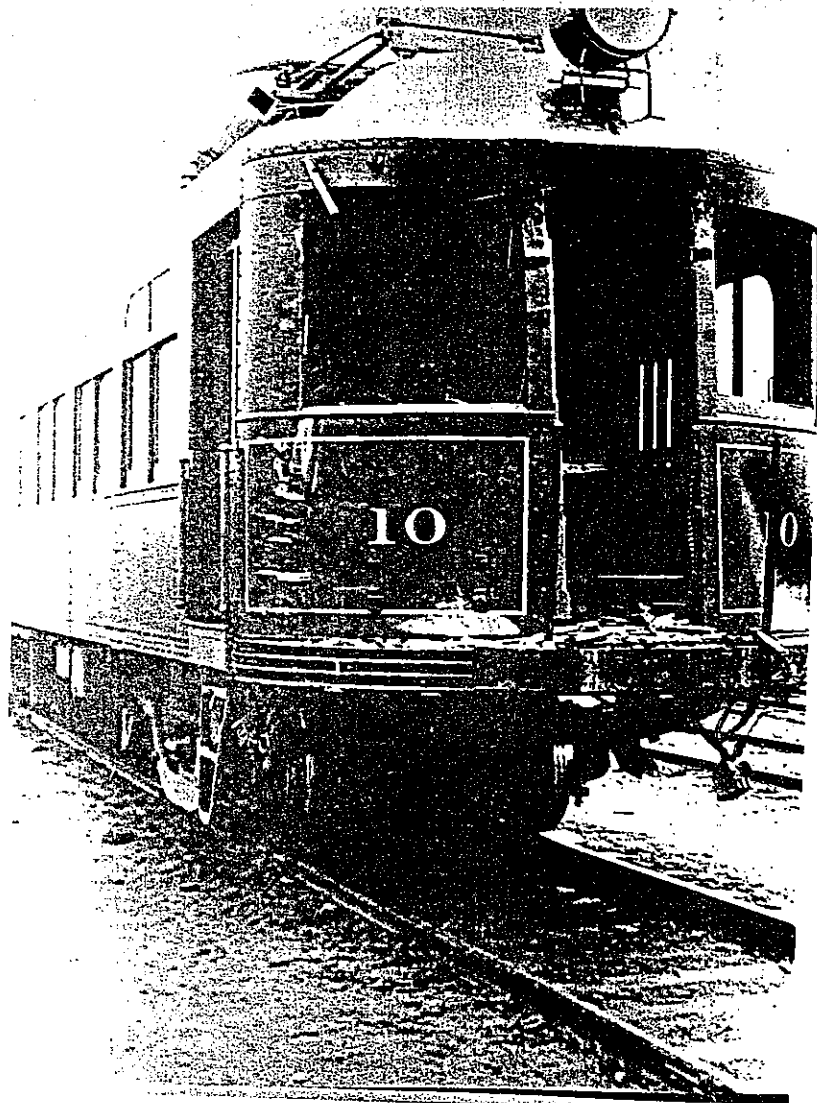
St Thomas library





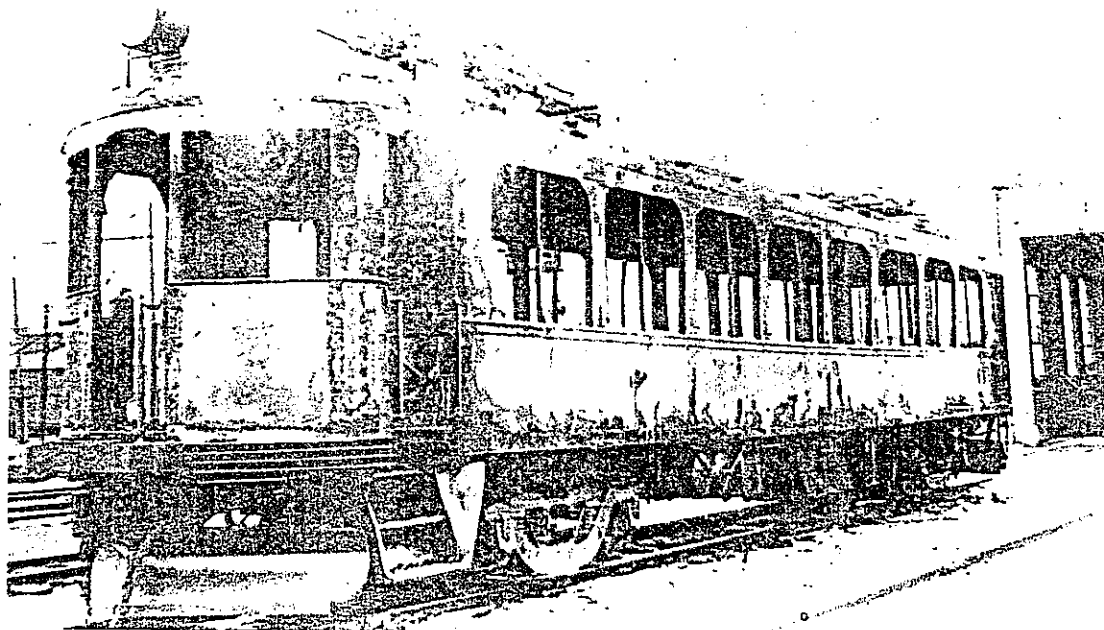
St. Thomas, N. H.





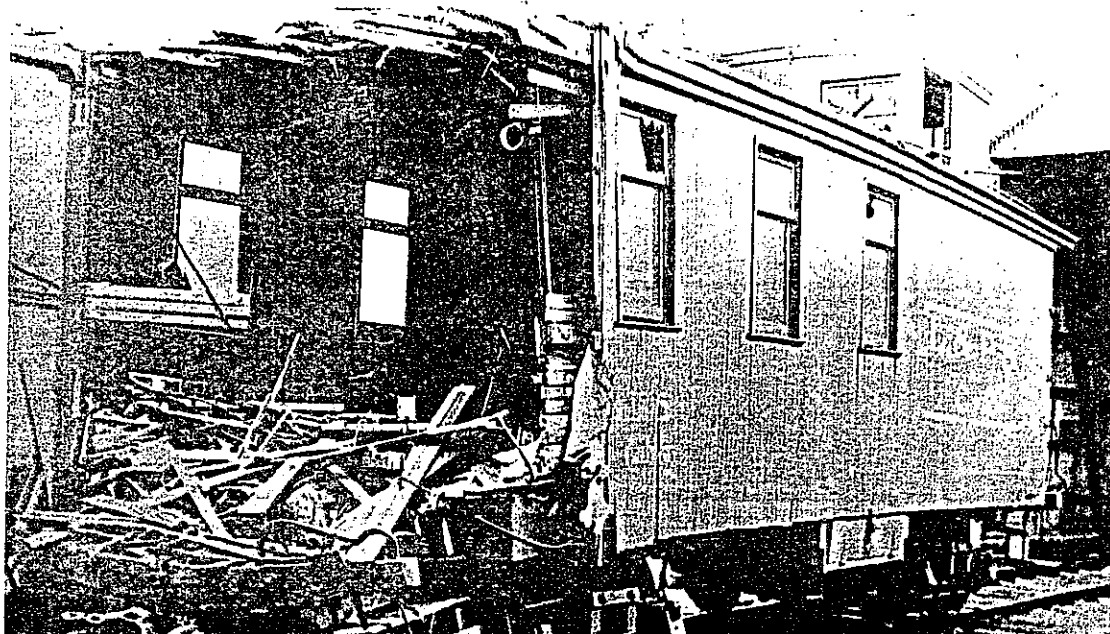
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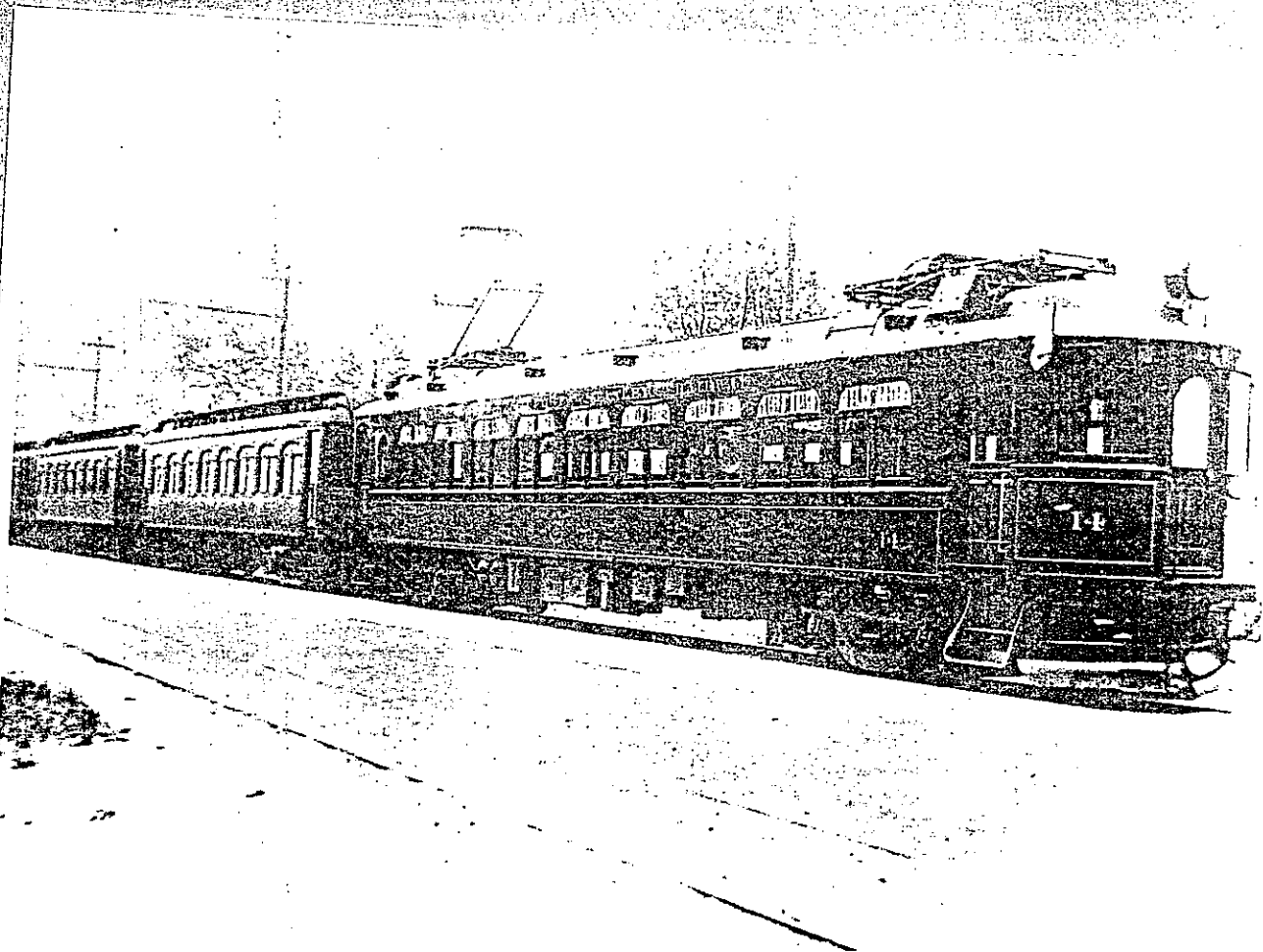
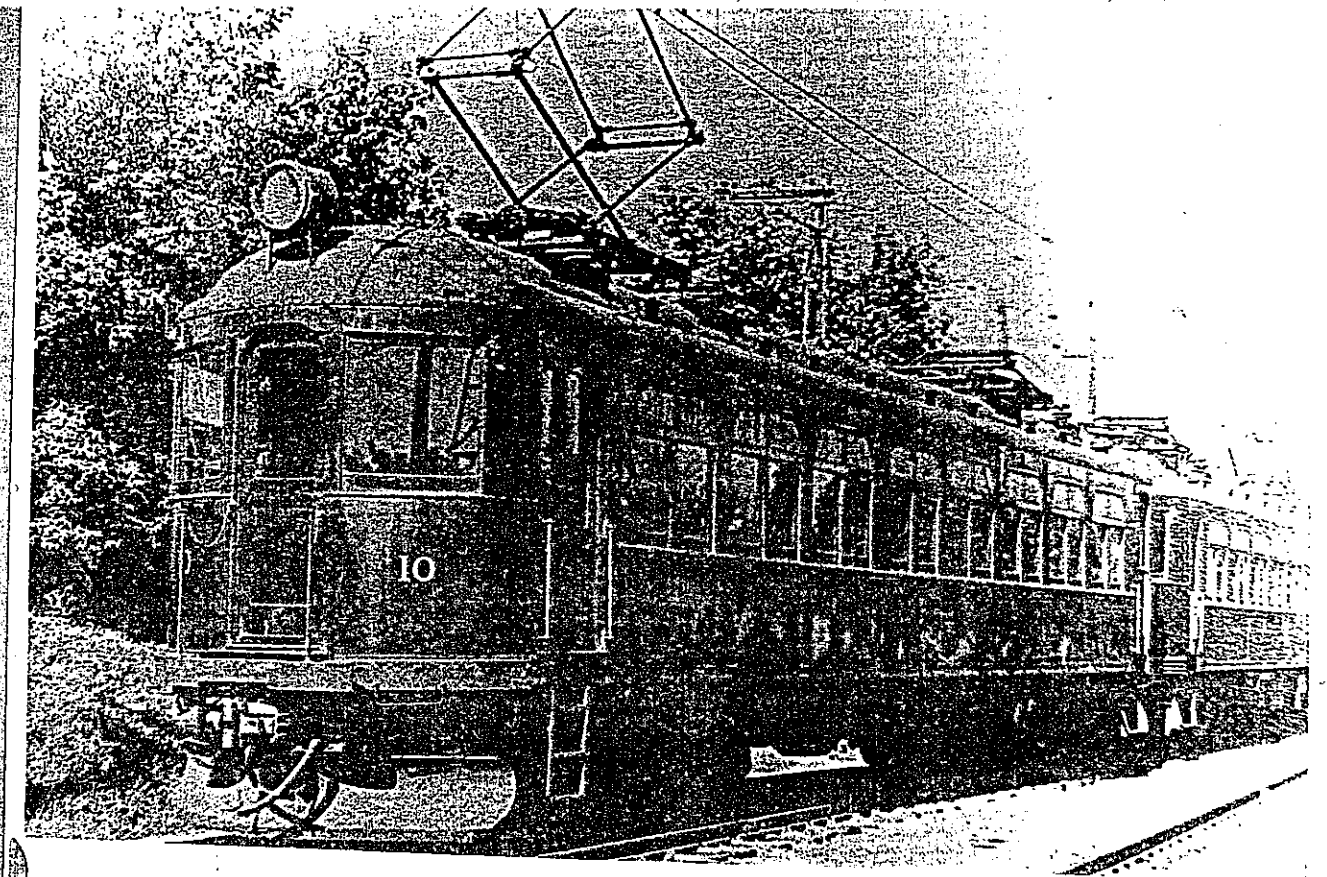


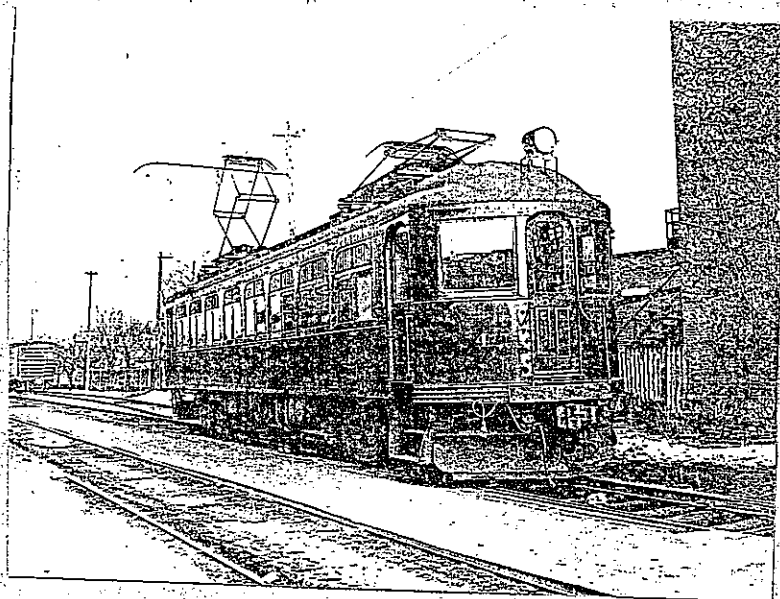
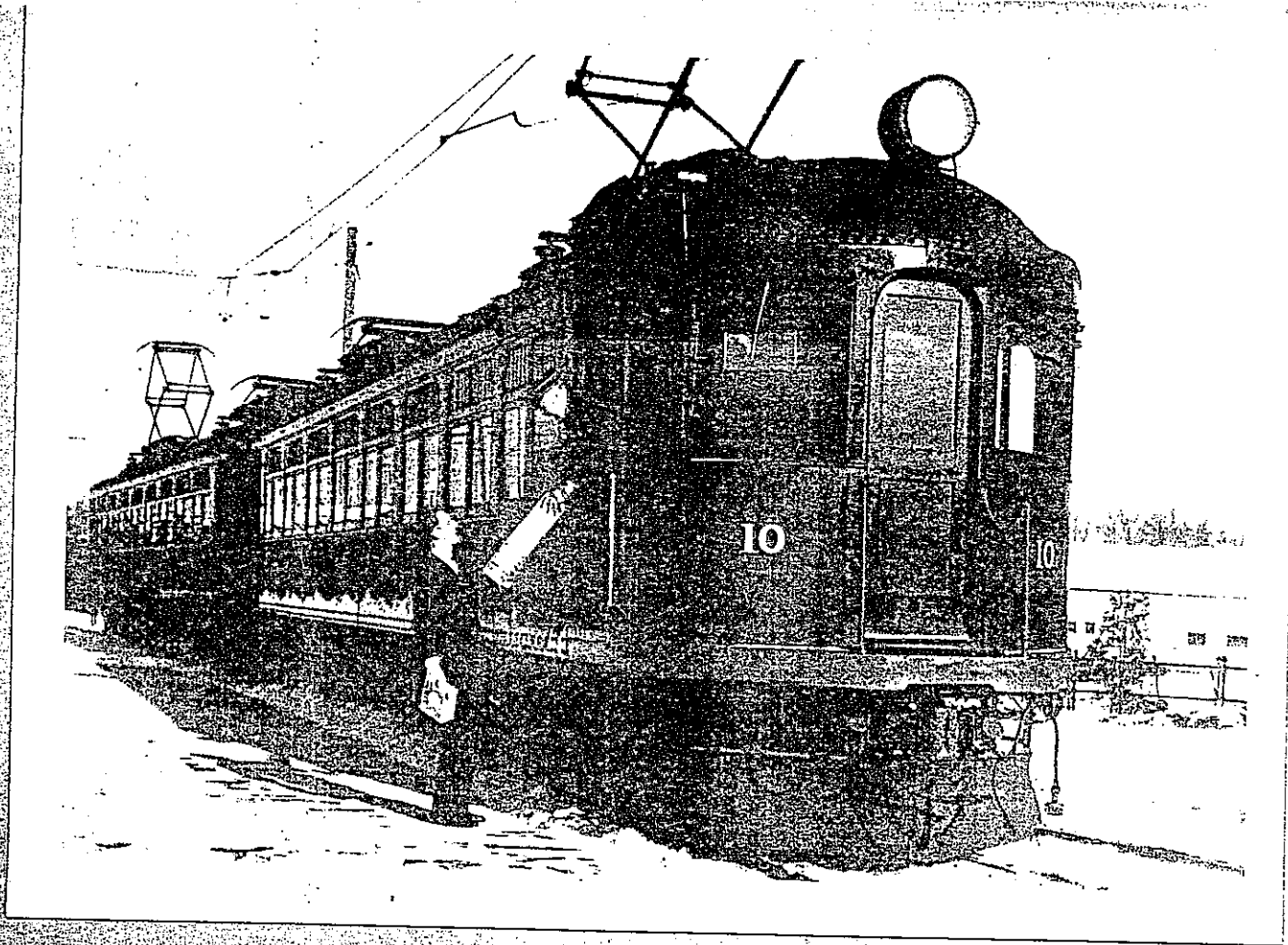


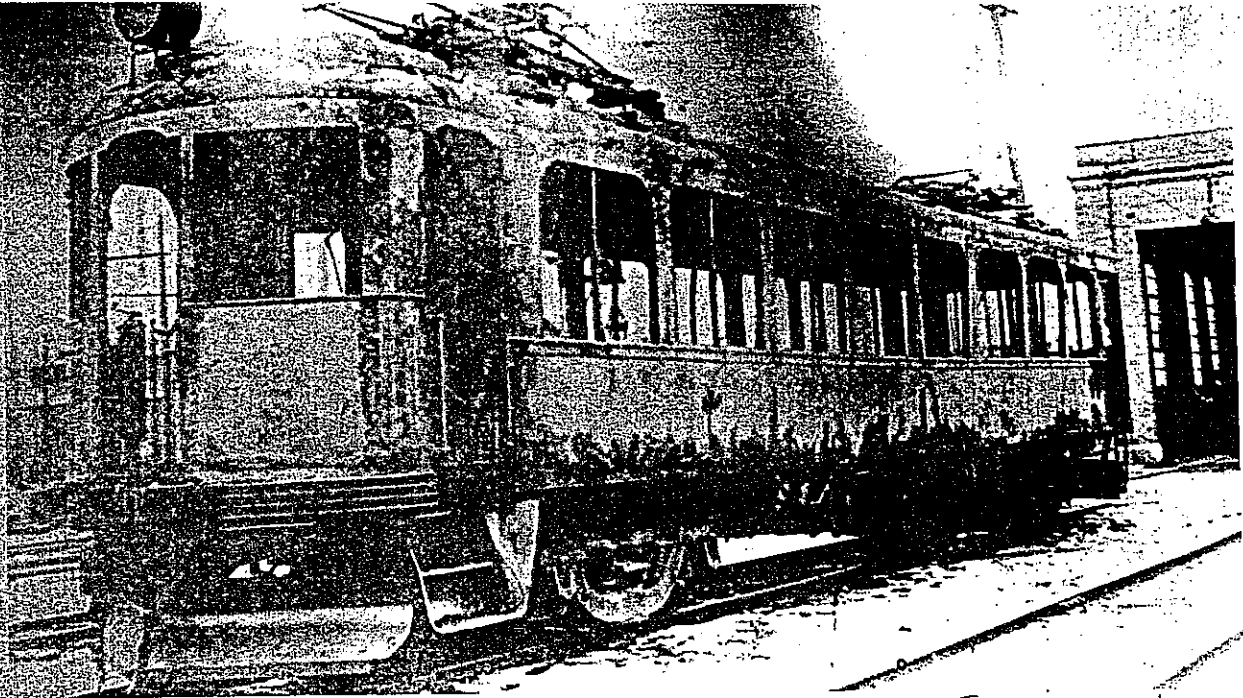
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L&PS railway accidents.





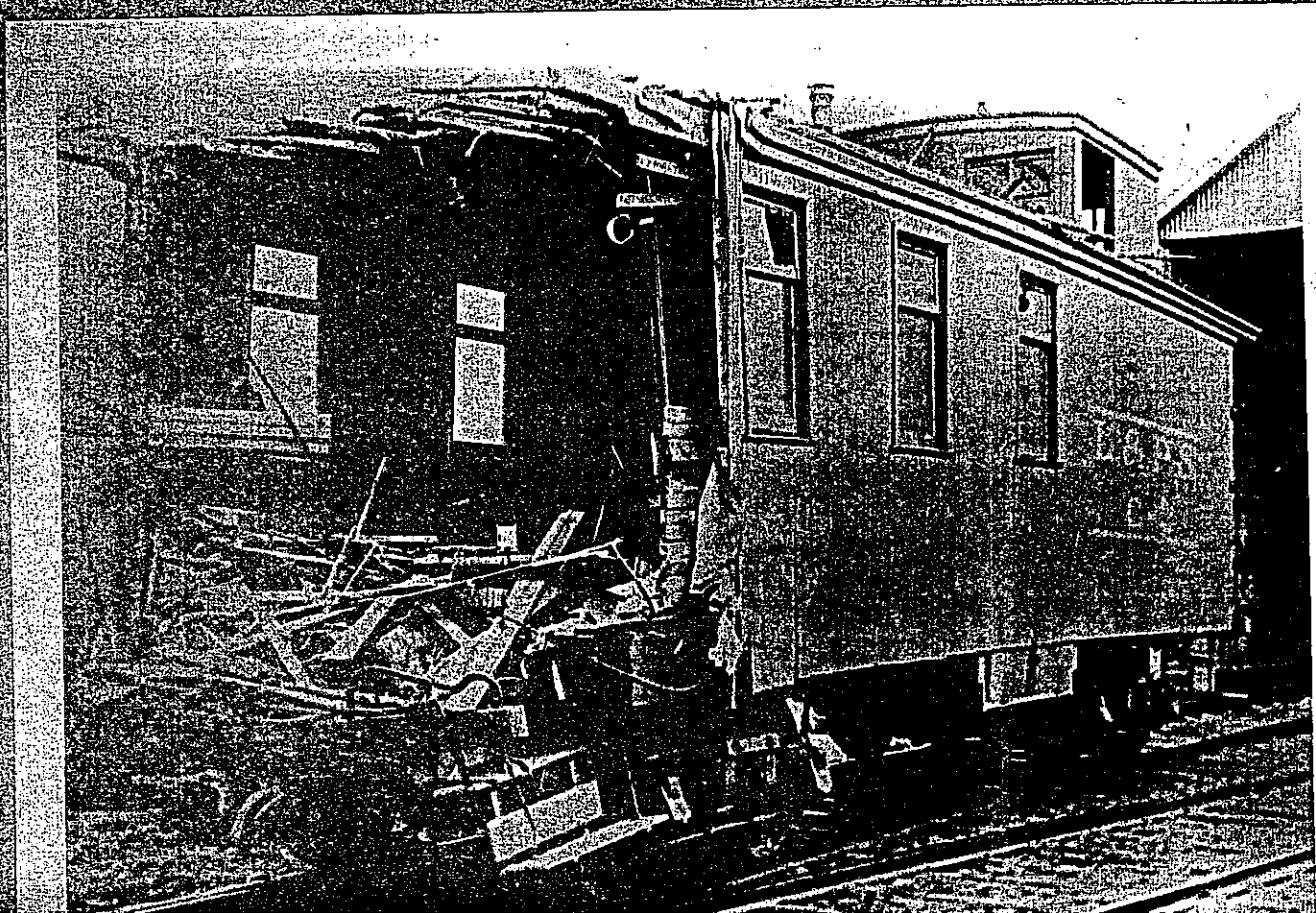




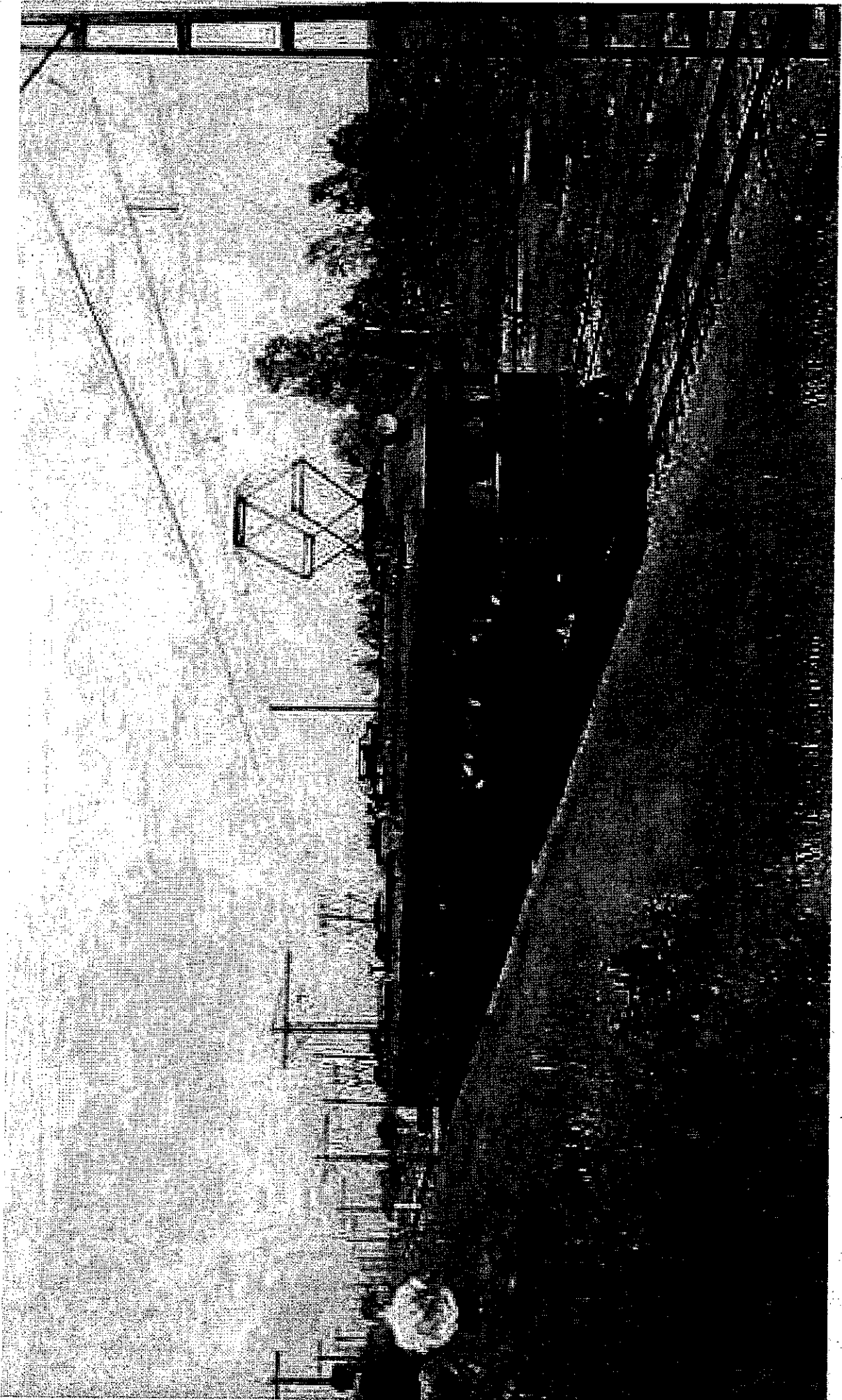
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L&PS railway accidents.







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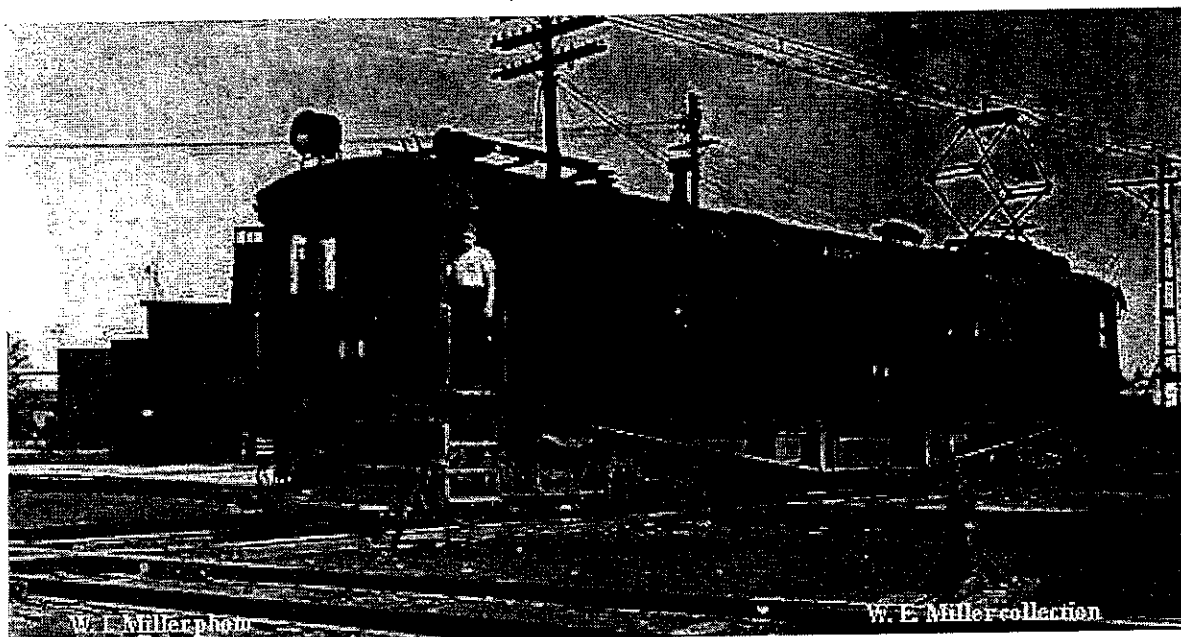
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**LONDON & PORT STANLEY RAILWAY EXPRESS MOTOR E1**

Southbound express motor, E1, crosses over the Canadian National / Wabash diamond at St. Thomas. Built by Preston Car & Coach Company in 1915, E1 cost \$13,321.22. Of wood construction with a wood frame, it had an overall length of 61 feet.

On occasion, E1 would be used as a freight locomotive, although it could only handle two or three light cars. It was scrapped around 1954 after being involved in collision with one of the electric freight locomotives.

Date of this photo is unknown but may be c.1950. It will be noted that one pantograph is missing, maybe due to it being damaged or it might have been needed for another car or freight locomotive. A photo on page 19 of the book, 'The London & Port Stanley Railway 1915-1965: A Picture History' by W. Glen Curnoe, shows E1 c.1950 lacking the same pantograph. Behind E1, on the north-west corner of the diamond is the CNR roundhouse.

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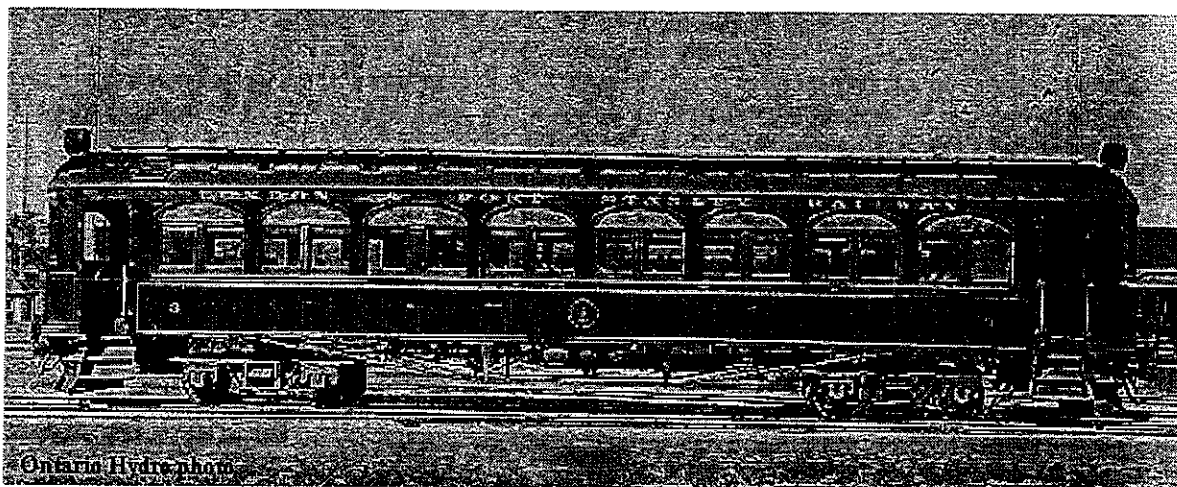
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LONDON & PORT STANLEY RAILWAY TRAILER CAR 3

Preston Car & Coach Company of Preston, Ontario, Canada, built three wood trailer cars for the L&PS in 1915 at a cost of \$6,567.12 per car. These were numbered 1, 3 & 5, following the L&PS system which gave motorized passenger cars even numbers, and trailer cars odd numbers. Seating 60 passengers, car 3 was equipped to operated as the first car in a train when required.

When the L&PS no longer required this car, due to declining ridership, the body was sold to a Port Stanley marina. The car is now on the property of the Halton County Radial Railway museum, Milton, ON.

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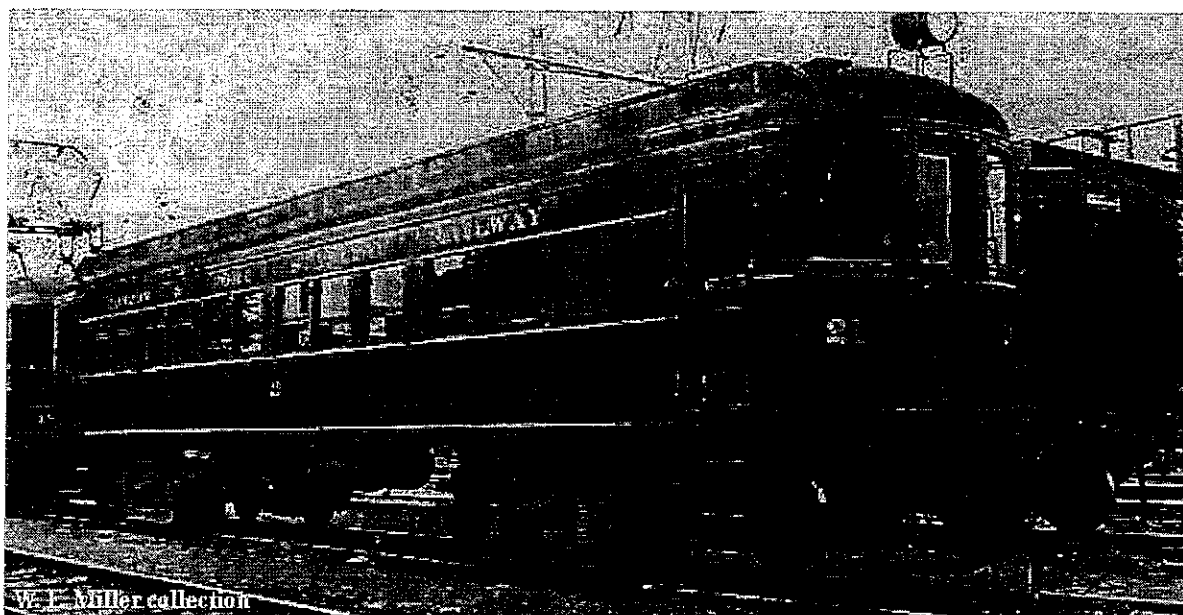
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**LONDON & PORT STANLEY RAILWAY PASSENGER MOTOR 18 & TRAILER
21**



During WW2 the L&PS found itself short of passenger equipment. Four motor cars where purchased from The Milwaukee Electric Railway and Light Company (TMER&L). Because of the cost involved in converting the cars to 1500 volt operation, it was decided to convert two of the cars to trailers. The motorized cars, formerly TMER&L 1135, ex 'Menominee', & 1136, ex 'Mendota'**, became L&PS 16 & 18

while former TMER&L 1129, & 1134, ex 'Waubeesee', became trailer cars 21 & 23. The four cars were normally operated as two sets, a motor car and a trailer. Occasionally all four cars would be coupled together, however, due to compatibility problems they could not be MU'd with other L&PS cars.

These photos were taken by my father at the L&PS London car shops on July 26, 1953.

All four of the ex-TMER&L cars were retired about 1955 owing to their deteriorated condition. Cars 16 and 21 have been preserved at the Illinois Railway Museum, Union, IL as TMER&L 1135 and 1129. I am not sure of the exact disposition of L&PS 23, but 18 was scrapped in 1955.

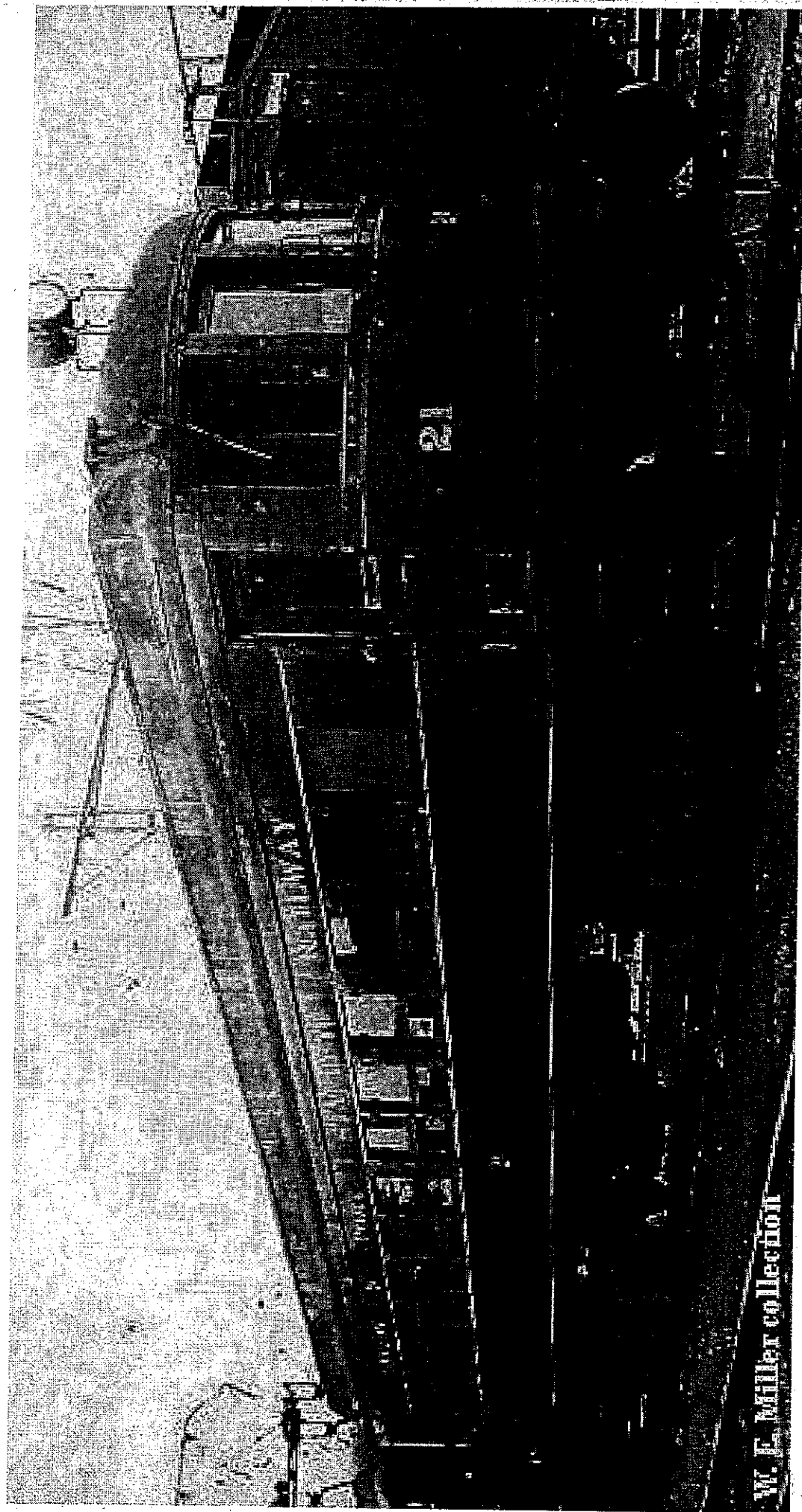
For more about these cars and the TMER&L, visit Don Ross' site
Milwaukee Electric Lines - Kuhlman Interurbans

The Milwaukee Electric Railway & Transit Historical Society

** A picture of 'Mendota' is shown on pages 170-171 of the book, *The Interurban Era*. Also on page 55 of *Traction Classics Volume One: The Interurbans*

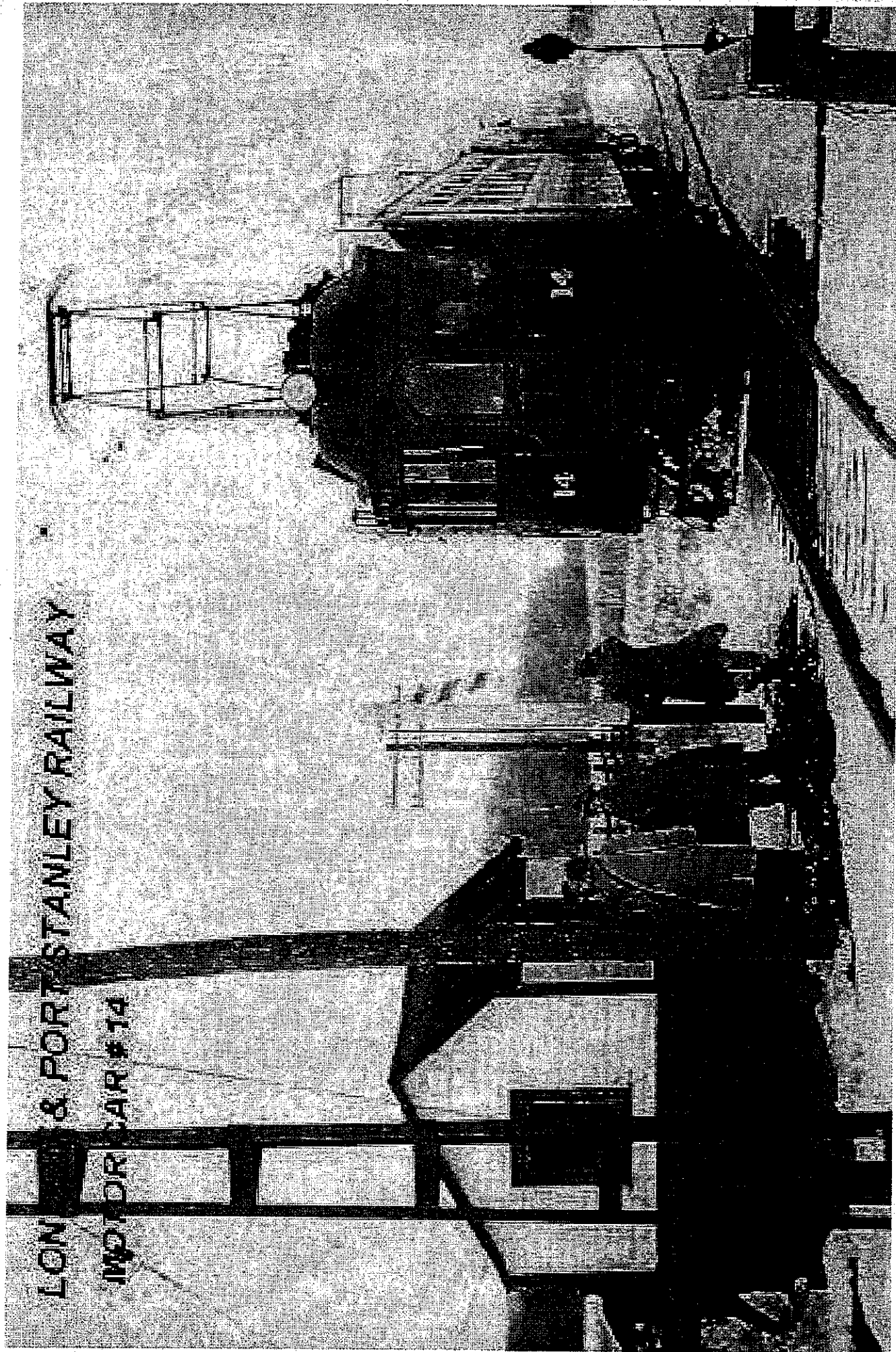
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LONDON & PORT STANLEY RAILWAY

MOTOR CAR #14



According to Specification!

C.A.Andreae

In the Year of Grace 1914, the City of London, Ontario, Canada, became the rather reluctant owner of a genuine interurban electric railway property, named the London and Port Stanley Railway Company. On July 1 of the following year, the City of London began providing service for passengers and freight to St. Thomas, an important intermediate city, and Port Stanley, on the shores of Lake Erie.

Also in 1915, the passenger rolling-stock of the railway was composed of five steel motor cars, Numbers 2, 4, 6, 8 and 10, built by the Jewett Car Company of Newark, Ohio, U.S.A. and three wooden trailer cars, Numbers 1, 3 and 5, built by the Preston Car and Coach Company of Preston, Ontario, a not-too-distant city.

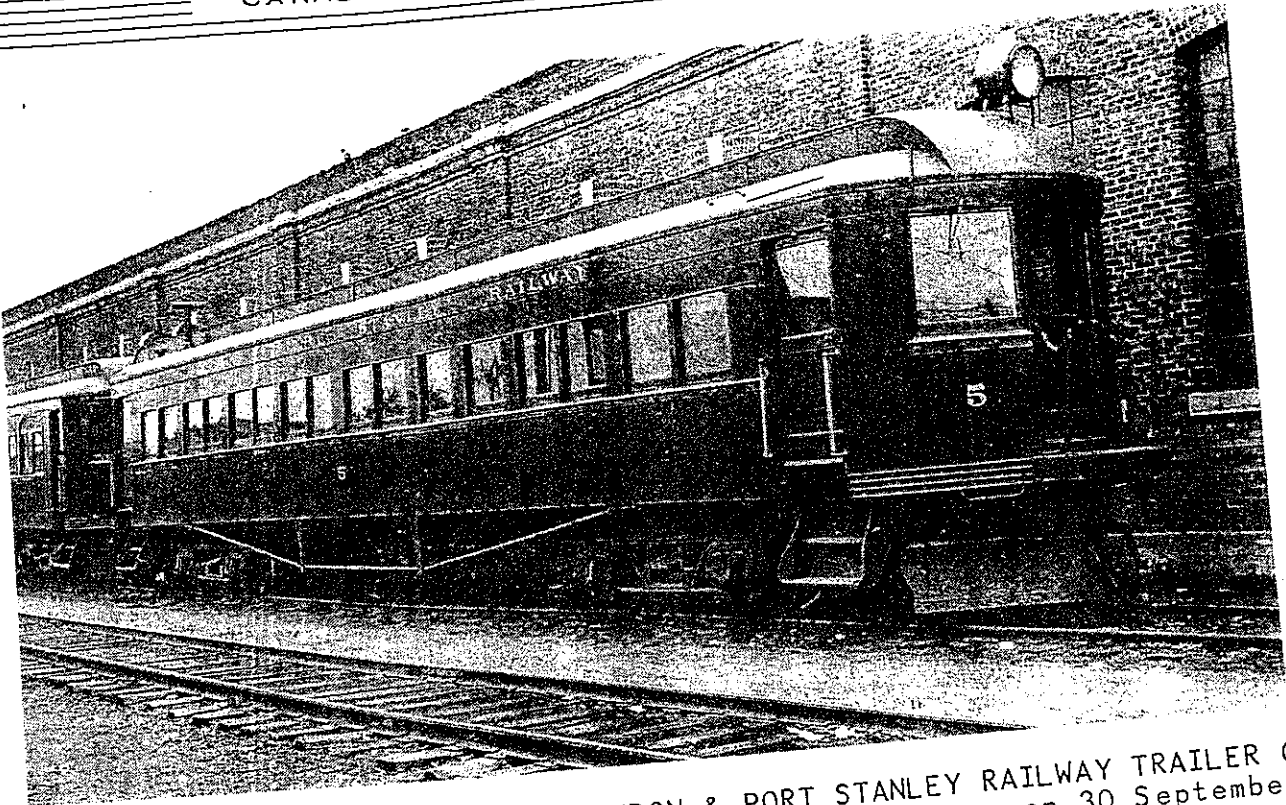
At the end of the first season of operation under the ownership of the City of London, the L&PS management discovered that several annoying problems had developed in the new wooden trailer cars from Preston Car & Coach. The first indication of this discovery appeared in a letter dated January 27, 1916, from Mr. Callahan, operating manager of the L&PS, to Mr. Campbell, general manager of Preston Car and Coach at Preston.

The letter explained that, because the latches on the trailer-car windows were not of the design or manufacture stipulated in the specifications, they did not maintain the windows in the raised or "open" position. Indeed, the windows had a definite tendency to unlatch and fall down, thereby inflicting severe bruises on the cranial (heads) of unsuspecting passengers. Such occurrences frequently resulted in expensive damage suits against the L&PS, which were all too frequently sustained by the courts. Could something please be done?

During the same year's operation, the baggage-racks in these trailers had become excessively tarnished and had turned black! Of course, this detracted from the interior elegance of the cars. The "last straw" - as far as the L&PS was concerned - was the condition of car Number 5, whose exterior paint had peeled badly. The car had been damaged by the Canadian Pacific Railway in transit from the factory at Preston to the L&PS at London.

Mr. Callahan of the L&PS felt quite justified in expressing the opinion that, inasmuch as the Preston Car & Coach Company had been able to claim for damages against the Canadian Pacific, the repainting of the damaged car should have been as good as - if not better than - the original job. This did not appear to be the case. Would it be possible, asked Mr. Callahan, to correct these details?

In order to underline the importance of this problem - as well as the others - the London & Port Stanley had withheld \$ 537.76 of the total purchase price of \$ 27,597.66 for the three wooden trailers, an action which had an immediate and somewhat unanticipated effect!



↑ THE SUBJECT OF THE ARTICLE: LONDON & PORT STANLEY RAILWAY TRAILER CAR Number 5, photographed at the London, Ontario shops on 30 September, 1956. The photo is from the collection of M. Peter Murphy.

On February 8, 1916, Mr. Campbell, GM of the PC&C indignantly replied to Mr. Callahan that the equipment had been inspected before it left the Preston plant by the Ontario Hydro Electric Power Commission engineer and had been considered satisfactory. It should be explained that the Hydro Electric Power Commission of Ontario was supervising the construction of the London and Port Stanley Railway, in anticipation of the line forming part of a larger network of electric lines being developed by the HEPC.

In the same letter, Mr. Campbell also noted very firmly that, as the trailer cars had been stored outside, unheated during the winter by the L&PS, the Preston Car and Coach Company could in no way be held responsible for the proper maintenance of the cars, i.e., tarnished baggage-racks and peeling exterior paint. Indeed, a valid argument.

Since no settlement seemed to be forthcoming at this stage, the impasse was referred to Major Spittal, Secretary of the L&PS, to see if he could determine who was responsible for the repairs to the cars. Accordingly, on February 18, Mr. Campbell wrote to Major Spittal outlining the PC&C's position. He insisted that his Company was relieved of all responsibility when the cars were inspected and accepted by the Hydro Electric Power Commission engineer. He noted further that the brass trim had been installed against the advice of his Company. Most railway companies, he remarked, requested polished bronze fittings in their cars, as this finish withstood wear and weathering better. Mr. Campbell - thrifty Scot that he was - concluded by repeating his Company's objection to paying the twelve-month maintenance costs for these trailer cars.

Mr. Baukat, mechanical engineer for the L&PS, had been supervising the



↑ AN INTERIOR SHOT OF LONDON & PORT STANLEY RAILWAY'S TRAILER CAR NUMBER 3, looking from the smoking section to the passenger section. The photograph was taken on 7 May 1917 and is from the Author's Collection.