

placed. This derrick car had a 60 ft. boom, which could also swing through 360° and could move itself up and down the track. This car was used to break up the larger pieces of concrete and load them on flat cars placed behind the concrete breaker, also to unload skips in which were placed the smaller pieces of concrete and earth, this material being dumped into wagons standing alongside. The concrete breaker and derrick car backed up on the old track as soon as the concrete was broken up for a rail length ahead of them.

The price of common labor was \$3 a day of 10 hours, and teams received \$8 a day shift of 10 hours and \$9.50 for night shift. The average haul for teams was $\frac{3}{4}$ of a mile and for the track cars about 2 miles. The cost of the work was as follows:

Digging up wood blocks, 8 9-10 cts. per sq. yd.

Tearing up old track, 11 cts. per ft. of single track.

Breaking up concrete, 40 cts. per sq. yd., or \$1.13 per cu. yd.

Excavation, loading and dumping, 82½ cts. per cu. yd.

Removing material by teams and work train, 65 cts. per cu. yd.

G. R. G. Conway, M. Can. Soc. C. E., is Chief Engineer of the B.C.E.R. Co., and the work was carried on under the supervision of C. B. Vorce, M. Am. Soc. C. E., Engineer of Construction, assisted by H. J. Tippet, Engineer Maintenance of Way, and A. J. Kennedy, Roadmaster.—Engineering and Contracting.

Handling Interurban Traffic With Trailer Cars.

As shown in the accompanying illustration of cars on the London and Lake Erie Ry. and Transportation Co.'s line between London and Port Stanley, Ont., the trailer system of handling dense traffic has been introduced this summer. Earlier in the year, two motor cars and two trailers were purchased in the United States, the design of which may be noted in the illustration. These cars are 50 ft. long, with a seating capacity of 58 people each. The motor equipment of each motor car is four 50 h.p. motors, two on each truck.

The cars, both motor and trailer, are rather unusual in body design, as the roof is of the arch type without a clerestory and deck sash along the sides. This makes a lighter construction that is both simpler and very pleasing to the sight. Both ends of the cars are completely enclosed, and have side doors with traps over the steps. The conductors and motormen have instructions to see that both are properly closed before putting the cars in motion when handling crowds, accidents being thereby largely prevented. The motor cars have centre doors at the ends leading out to the vestibules, which are at the same level as the body of the car, it being considered that such a design strengthens the body considerably for the trailer haul, as the centre sill is continuous. In the trailers, the vestibules are integral with the body. This permits of more space being available when the traffic is heavy. Extra precautions have been taken to prevent any injury to passengers from falling between the motor and trailer. It is for this reason principally that the ends of the trailer are enclosed. The end windows have cross bars at a convenient height for resting the elbows.

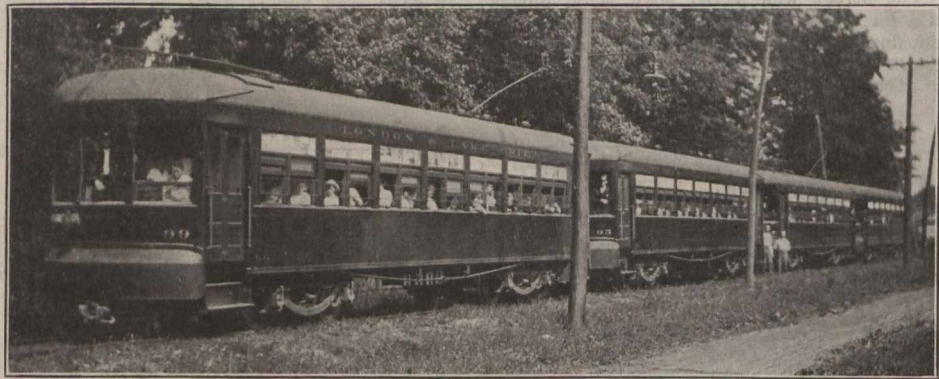
Another especial feature of the design is the efficient placing of the seats. The walls between the side posts are made particularly thin, and into the recess thus formed, the seats are set. With the windows open and the elbows resting on the sill, the passenger is able to sit up very close, leaving

ample space for the occupant of the inner seat without the latter sitting half out over the aisle as in the usual design of cars. The fact that the seats are set into the space between the side posts gives an additional width to the centre aisle of some six inches, giving a particularly clear passageway down the centre, which is of particular value when a big crowd is being handled.

No tests have been made as regards efficiency of the motor when operating alone, as compared to the former two-motor cars, but experience elsewhere would seem to demonstrate that it is as economical as the latter. When operating with trailers, these four-motor cars have been able to stand up in the schedule with the two-motor cars, and have given no trouble.

A new feature in the cars is the application of the combination air hose coupler, in which the two air connections to the trailer from the motor are made automatically by the coupler, the air connections being right in the side faces of the couplers, which are of an unusual design.

The cars are intended primarily for summer operation when the traffic from London to Port Stanley, the southern terminus of the line at Lake Erie, is particularly heavy. Provision has been made for their operation in the winter, when required, as they are all equipped with heaters and ventilators.



London and Lake Erie Railway and Transportation Co. Trailer Operation.

Electrification on the New York, New Haven and Hartford Railroad.

The N.Y., N.H. & H. Rd. is to be electrified between Boston, Mass., and Providence, R.I. The work will be done by equipping four tracks with the same single phase catenary system now in use at the New York end of the system. It is further stated that several tracks at the south station in Boston will be equipped for electrical operation, and that legislation permitting the construction of the much discussed tunnel between the New Haven and the Boston and Maine systems will be strongly urged. This very important extension of electric operation on the New Haven road indicates that in all probability there will be through electric service from Boston to New York before many years have passed. There are difficulties in the way of this which have nothing to do with electrification, except indirectly. Grade crossings must be eliminated, for instance, and it is very desirable to have substantial reductions in grade before electrification is inaugurated. Such work has already been done on the section from Boston to Providence, and consequently it is expected that the electrification of that line can be completed during 1913, including a large generating station at Providence and another at Readville, Mass. From Providence to New Haven the present conditions are not so favorable for electric operation, however, and it is likely that before the steam operation of passenger

trains is abandoned there electric operation on the two ends of the road will be pretty well standardized.

Automatic Signalling and Train Dispatching in Indiana.

After a thorough examination of the Simmen system of railway signalling and train dispatching as operated for the last three months on 18 miles of the Indianapolis and Cincinnati Traction Co.'s lines, official approval has been granted by the Railroad Commission of Indiana for its continued use. The traction company is ordered to install and have the same system in operation by Dec. 31, on its Indianapolis-Greensburg division from the junction at Indianapolis to Greensburg. In connection with this order, the Commission recommends to the traction company that any further improvements and developments of the Simmen system, which are to be made under the direction of the Commission and its block signal inspector, should have special reference to such arrangements of the apparatus that it will be impossible for trains in one direction to receive signals intended for trains running in the other.

In view of the Commission's approval the traction company has advised the manufacturer of this system, Northey-Plummer,

Ltd., Toronto and Indianapolis, that it has decided to have all of its lines equipped at once with the system. For the present, until its lines are extended, one dispatcher will operate the entire system, although later it may be found necessary to have the services of two dispatchers. It is the company's intention to have its entire system, comprising 107 miles, equipped by Dec. 31.

Trackless Trolleys for Shunting.—An interesting application of trackless trolleys is being made at Altona, Germany, for the shunting of freight cars. The fireless locomotives in use since 1909 are being replaced by trackless tractors operated by means of trolleys pressed by a rigid rod against a double pole overhead line. The trolley, arranged on the roof of the tractor, is designed for deviating on either side to a maximum distance of 11½ ft., so as to allow the tractor to travel on either track. A single overhead line thus suffices for the shunting service, and the loading of cars is not interfered with. The tractor, which weighs 6 tons, has been designed for handling up to 6 cars with their full load at a speed of 1.86 to 3.73 miles, and is worked by a 25 h.p. continuous current motor at 550 volts, driving all four wheels through a 10:1 worm gear. The coupling device is operated from the driver's stand, so that the brakeman need not pass between the buffers. The shunting line is $\frac{3}{4}$ mile long, and reaches as far as the boundary of Hamburg.