



One of the new cars. Note the low height, tapered ends and curved roof specially designed for high speed operation

## *Cincinnati & Lake Erie's*

# NEW DE LUXE CARS

## *Challenge the Steam*

**W**HAT is perhaps the most interesting and significant experiment of recent years in the development of interurban passenger traffic appears to be a pronounced success. This experiment, which has been tried on the lines of the Cincinnati & Lake Erie Railroad in Ohio, seems to point the way for the upbuilding of the passenger business of many interurban properties whose physical characteristics are such that sustained high speeds can safely and comfortably be made.

Early in 1929 the management of this interurban, under the leadership of its president, Dr. Thomas Conway, Jr., began a series of experiments designed to point the way to the evolution of an interurban car much faster and more comfortable than any which had theretofore been built. To this end the company adapted some of its low-level trucks to permit of unusually high speed and mounted them under car bodies generally similar in appearance and size to those which the management had in mind. These experiments were conducted in conjunction with the Westinghouse Electric & Manufacturing Company, the General Electric Company, the J. G. Brill Company, the Cincinnati Car Corporation, and the Westinghouse Traction Brake Company. Many valuable lessons were learned; many baffling problems were encountered and, one by one, they were solved. Specifications embodying these developments were thus gradually built up under the active supervision and direction of W. L.

Butler, executive vice-president of the railway, who, more than any other man, is responsible for this unusual contribution to the car builders' art.

In these experiments certain premises of the management were clearly established:

1. That it was possible to build a car of aluminum and steel which, while light in weight, would possess the necessary staunchness and rigidity for sustained speeds on level tangent track in excess of 75 m.p.h. and also have satisfactory riding qualities.

2. That it was possible to obtain these results with a low-level truck, using 28-in. wheels, provided the adaptations and changes worked out during these experiments were made in the truck design to withstand the extreme stresses and to absorb and cushion the magnified road shocks, side sway and other forces incident to such high speeds.

3. That, all things being equal, a car of the low-level type would ride much better at high speeds than the conventional interurban car.

4. That the attainment of such speeds was conditioned upon the evolution of motors which would meet the truck clearance limits and possess the power necessary.

5. That with such high speeds one of the most serious problems was braking, and that methods of braking additional to air brakes must be employed. The new cars are equipped with both air and magnetic brakes, interconnected so that the latter come into use only after the air-brake application approaches the safe limits of wheel friction.

6. That to attain great speed the lines of the car itself were important. The roof must be as low as possible consistent





Luxurious fittings are used in the observation-lounge compartment



An unobstructed view is obtained from the rear of the observation compartment



Comfortable seats are used in the coach, and the entire front end of the car has been opened up so that passengers may look ahead

Revolutionary and luxurious equipment attaining speeds in excess of 80 miles per hour permits a brand-new type of long-distance passenger service. Rapid increase of business is being made without undermining existing traffic



## Railroad and the Bus

with proper ventilation and interior appearance, and the lines of the car such that it would not tend to "float" at high speeds. The car should be streamlined, and the roof lines should be so designed as to increase the traction at high speed.

### CLEAR VISION FRONT DEEMED ESSENTIAL

From interviews by the company's traffic supervisors and checkers with hundreds of passengers, both on its own rail and bus lines and those of competitive steam railroads and interstate bus lines, the management became convinced that one of the major objections of the traveling public to the interurban car in favor of the bus was that the bus passenger's view was unobstructed; he could see where he was going and enjoy the scenery in front as well as on either side. This greatly increased his interest and enhanced the attractiveness of the journey. While it was recognized that electric railway operators were reluctant to have the front ends of their cars "opened up" because of the danger of flying glass in collisions, the management determined to adopt the characteristics of the bus and of the limousine and by placing shatter-proof glass in all front and rear sash of the car, reduce or eliminate this hazard. Moreover a metal bulkhead with shatter-proof glass between the front corner posts of the car at the rear of the platform, forms, as it

were, a second line of defense to the passengers in the event of a collision.

Interesting and serious construction problems were presented in thus opening up the front of an interurban car designed to operate at unusually high speeds. Unusual aerostatic pressure would be encountered. The problem of making a car airtight in severe weather must be solved. Because the rear was to be arranged like a steam railroad observation car, it was necessary that all passengers should enter and leave, except in emergency, through the front door. With the future possibility of operating in the Cincinnati subway, it was decided, rather than to have the door extend to the bottom of the lower step, to use a short door and a hatch, mechanically operated and weather and wind proof.

The primary problem was the development of motors within the clearance limits with power to attain the desired free running speed of at least 75 m.p.h. After prolonged negotiations, both General Electric and Westinghouse contracted to construct such motors.

One-half of C. & L. E.'s new interurban cars are the de luxe observation-lounge type; the remainder are coaches. In neither is provision made to carry dispatch freight or trunks—the management being convinced that passengers will not tolerate delays to load merchandise or heavy baggage. Trunks and dispatch freight are handled on certain local runs at times of light traffic, where the type of car purchased in 1927 is operated. In their general features the new coach and the de luxe car are



Table I—General Specifications and Dimensions,  
Cincinnati & Lake Erie Cars

Length over all.....	43 ft. 9 in.	
Length over body posts.....	33 ft. 10 in.	
Truck wheelbase.....	6 ft. 2 in.	
Bolster centers.....	23 ft. 2 in.	
Width over all.....	8 ft. 9 in.	
Height, rail to trolley base.....	11 ft. 4 in.	
Height, rail to car floor.....	39 in.	
Body.....	Steel and aluminum	
Heat insulating material.....	Compressed cork	
Interior trim.....	Aluminum, finished in imitation of walnut and old ivory	
Motors.....	Ten cars—General Electric No. GE706-A	
Trucks.....	ABC—74 D (Cincinnati Car Corporation)	
Wheels.....	Rolled steel, 28 in. diameter	
Weights:		
	De Luxe Type; Westinghouse Equipment	Coach Type; General Electric Equipment
Trucks.....	12,300 lb.	12,300 lb.
Brakes—Air.....	2,900	
Magnetic.....	1,300	
Car body, with toilet room equipment.....	13,200	13,200
Seats.....	2,400	2,400
Other accessories.....	1,100	1,100
Sub-total.....	33,200 lb.	33,200 lb.
Motor and control equipment.....	14,600	15,100
Totals.....	47,800 lb.	48,300 lb.

identical except that the space set apart as an observation-lounge in the de luxe type is fitted with transverse seats in the coaches and no luggage compartment is provided in the coach, a small space being reserved for this purpose behind the rear seats.

The railway has had in force about a year a successful profit and savings sharing plan by which its employees participate in the fruits of economies and increased

a largely augmented service with a relatively low increase in operating expenses.

The salient features of the specifications of the new cars are summarized in Table I.

The first impression gained is that the car is very low. Its riding qualities, unusual even in a car for ordinary speeds, are due to its low center of gravity, made possible by the use of a low-level type of truck; the absence of high bolsters and the low roof. The taper of the ends to cut down wind resistance is clearly apparent, as is also an adherence to recent notable tendencies in automobile design such as high body sides, or a relatively high window sill. By thus bringing up the window ledge the problem of keeping the car comfortable at high speeds in severe winter weather is minimized. Drafts when the windows are raised in the summer also are reduced. It is, moreover, possible to raise the window sash sufficiently to avoid interference with vision. The relatively high side sheathing and wide letterboards give the car an appearance of solidity and permit a maximum of diagonal and lateral bracing. Concealed lights on the front dash, standard on earlier C.&L.E. equipment, were retained, as were the lamps at the four corners of the car, which the company has found greatly decreases automobile collisions in city streets. Space is provided on the front dash to carry signs for company advertising. Because of the speeds attained, a special locking device had to be devised to prevent these signs from being blown off. A double Hunter illuminated sign shows the destination of the train in white and its name in red



The latest Pullman fixtures are installed in the toilet



Fare collection is made easy by use of a special cash register



Luggage compartments are an appreciated feature of the de luxe cars

profits. When the time came to formulate definite plans for the operation of the new equipment and the inauguration of the new long-distance high-speed service, President Conway submitted to the trainmen a proposal that all passenger service on the Columbus and Toledo divisions should be operated by one man and that all de luxe service on the system should be so operated. After thorough consideration the men voted to adopt the plan. One-man operation of this service has been entirely successful; both men and management are enthusiastic concerning it. An interesting feature was that, through the introduction of the blue ribbon long-distance service, enough additional car-hours were run to provide employment for all trainmen. Thus it has been possible to give

letters, a black background being used for both. Attractive train emblems, similar to those on the crack steam railroad trains, are carried on the rear of all de luxe cars. The names of these trains were selected from some 1,211 submitted by employees and their families in a cash prize contest inaugurated by the company. The art work in connection with the train emblems was executed by the Geyer Company, advertising agent of the railway. Upon the inaugural trip of each of these trains, the respective prize winners and their families were the guests of the management. This tangible recognition of the part which the employees played was featured in the local newspapers as a "human interest" story.

Of the 38 lineal feet inside the car, exclusive of the



toilet and luggage compartment, 14 ft., or approximately 37 per cent, are contained in an observation-lounge section in the rear. This section is furnished attractively with large, comfortable lounge chairs and couches upholstered in mohair and small reading tables, carrying attractive reading lamps, spaced at convenient intervals. A Wilton carpet covers the floor. The forward section of the car is equipped as a coach.

In the design of seats for these coaches, the plan originally worked out by the Conway interests for the Chicago, Aurora & Elgin was adhered to. Care was taken to make sure that the seats were low enough to be comfortable for the short-legged passenger. Seat centers were spaced at 33 in. to give plenty of leg room. After much experimentation the proper construction of

No interurban car has ever equalled the speed developed by this new equipment. Many miles have been "clocked" by competent and experienced observers in which the new cars ran better than 90 m.p.h. The particularly remarkable thing about these cars is that at such high speeds their riding qualities are better than those encountered upon many Class 1 steam railroad observation cars on crack trains. There is a reassuring absence of side sway, tremor or vibration. The passenger enjoys the exhilaration of air flight, where no air pockets are encountered, but without its noise and vibration. In the earlier days of operation, many men who thought they had fast automobiles tried their luck in racing these fliers. They were soon left far behind. Certain of the de luxe trains overtake and pass such



The fast trains broke into the movies by winning races against an automobile and an airplane

seat cushions and back cushions was determined to give comfort without excessive springiness, tending to intensify road vibrations. A type of headroll was chosen which would invite relaxation but not be so bulky as to strike the hat. The seats are finished in genuine green leather. They are 39½ in. wide and designed to "fit the back."

Believing that the operator should be as comfortable as the passenger, equal care was given to the design of his seat. Sample seats embodying varying characteristics were constructed by the Hale & Kilburn Company and shipped to the plant of the Cincinnati Car Corporation, which received the contract for the construction of the cars in accordance with the plans and specifications of the company. These seats were set up in a dummy front end, or platform, in which was located the controller, air-brake valves and other apparatus to be placed on the operating board of the car. The trainmen's cooperative committee then journeyed to Cincinnati, and after explanation of the features of the operator's board, made a careful study of the arrangement from the standpoint of the trainman. The outcome was an entire rearrangement of the operator's board. All apparatus on the front end of the car is inclosed, avoiding unsightly piping, wiring, etc., and improving the appearance of the car. In accordance with the practice on its Cincinnati division, the National cash register is used to record fares.

The new car is equipped with the most modern type of toilet, and the latest sanitary standards have been observed in providing iced water for passengers. Another special feature of the de luxe car is a luggage compartment, situated opposite the toilet.

#### REMARKABLE ACCELERATION AND SPEED SHOWN IN TESTS

In the official tests of these cars, conducted by the railway and representatives of Westinghouse and General Electric, respectively, recently concluded, results were obtained that exceeded all expectations. These are summarized in Table II.

steam trains as the "Ohio State Limited" to the great amusement and gratification of the interurban's passengers.

The Cincinnati & Lake Erie Railroad, like the typical interurban, runs on city streets in several places. The high speed of its equipment is not required for city service, but it enables the cars to make up for time lost in necessarily slow operation on these streets and to land the passenger at his destination in such good time as to induce him to use the interurban in preference to the steam railroad or his own automobile.

Illustrating the advantages of speed, on the Toledo division, the average schedule speed of the de luxe runs on private right-of-way, i.e., excluding city streets, is 46.25 m.p.h. The average schedule speed under such conditions on the Columbus division is 54.1 m.p.h. In other words, this new equipment, like the fleet automobile, when on city streets can observe traffic regulations and the requirements of safety, but make the required schedule by sustained high speed in open country.

#### "WE'RE IN THE MOVIES NOW"

The Cincinnati & Lake Erie achieved the goal of all publicity men by breaking into the movies when *Pathé News Weekly* made a sound film record of the staged race between one of its flyers and an airplane. This footage was incorporated in a regular *News Weekly* which has been shown to millions of people all over the

Table II—Results of Speed and Acceleration Tests  
on the New C. & L. E. Cars

	Coach Type Cars, Equipped with General Electric Motors	Observation-Type Cars, Equipped with Westinghouse Motors
Rate of acceleration, m.p.h.p.s.	1.7	1.6
Rate of braking, m.p.h.p.s.	5.25	4.95
Distance to stop from full speed, after emergency brake application, feet.	918	1,040
Observed free running speed on level tangent track, m.p.h.	79.8	83.8
Average d.c. energy consumption per car-mile, measured at the car, kw.-hr.	3.88	3.89





Each of the blue ribbon trains was given a name in a competition among employees.

United States since July 12. Incidentally, the company's executive officers have had many letters of inquiry from interested electric railway officers who have seen this movie in their neighborhood theaters.

Emulating Pathé's example, the Mayfield Photo Service, which produces movie film of interesting events for local theaters, requested permission to arrange a speed contest between a special racing automobile and one of the flyers. It was decided to hold this race between Springfield and Columbus where the National Pike parallels the railway private right-of-way. In order to insure the safety of the automobile, motorcycle police escorts were provided to clear the road. The race was photographed from the interurban car, from an airplane and from fixed locations along the road. The film tells an exciting story. The automobile beat the interurban on the getaway and the succeeding footage shows the tremendous speed which both attained. The motorcycle police found it impossible to hold the pace and gradually fell behind, but fortunately the road at the time was reasonably free of traffic. The racing car tore on, but little by little the interurban forged ahead; when the race was over the automobile was fifteen lengths in the rear.

The large movie houses in Ohio were quick to see the sporting aspects of these thrilling contests. The State Theater in Dayton featured it during the week beginning Aug. 9. At the theater's request, the railway made arrangements to run "The Red Comet" over the city tracks in Dayton. The car was covered with banners on either side, announcing the moving picture feature and was equipped with a radio-phonographic reproducing device to attract the attention of passers-by. An unusually large attendance at the State Theater during the week was reported. Other large moving picture houses throughout the C.&L.E. territory have run a similar film.

The management is convinced that this moving picture publicity is the most valuable advertising which the new service has secured. It dramatized, as nothing else could have done, the epochal character of the new innovation in transportation. It aroused the sporting instincts of many thousands of people; it created the desire to ride upon this new service. Above all, it carried to thousands of motorists the lesson that, from this time forth, the automobile driver should exercise extreme caution in crossing the tracks.

Prior to the inauguration of the new service a vigorous and carefully

prepared publicity campaign had been mapped out and was progressively executed. The company's publicity agents furnished news stories to the local press, chronicling in turn the imminence of the completion of the cars, the delivery of the first car, its preliminary trials, the general nature of the changes decided upon, the successive arrival of additional cars, steps taken to train the crews in the new equipment, the work being done by the maintenance-of-way and line departments in preparing the property for the new fast service, and, in general, the revolutionary character of the service contemplated.

In this way, the curiosity and interest of the public and of the newspaper editors were gradually fanned. On Sunday, June 29, the Geyer Company, as the representative of C.&L.E., was host to some 150 newspaper men and women representing the daily and weekly publications in the various cities and towns served. They were brought to Dayton in the new de luxe observation type cars. At the luncheon explanation was made of the plans for giving publicity to the new service, both through news stories and through paid advertising. Many questions were asked and answered. The guests were returned to their homes in the de luxe equipment. This luncheon greatly quickened the interest of the newspapers in the bold experiment, and gave to their editors first-hand knowledge of the attractiveness and comfort of this new service.

#### CARS EXHIBITED IN LEADING CITIES

Between July 15 and 19, a new de luxe type car and a new coach were placed side by side with the old equipment previously used on the I. C. & E. or Lima-Toledo properties, in the public square or other prominent location in Cincinnati, Columbus, Dayton, Toledo, Springfield, Hamilton, Lima, Bellefontaine, Middletown and West Jefferson. This display of the new equipment was currently advertised in the local press. Many thousands

of people passed through these cars. Representatives of the company's traffic and operating departments, as well as picked men from among the train crews, were in attendance. In addition to distributing a souvenir booklet picturing the new cars and explaining the high-speed service, these men answered many questions.

In order to appreciate the significance of the new service made possible with the de luxe equipment, it is necessary to consider briefly the recent



Prominent banks co-operated to use window displays featuring the movies of the races won by the new cars





These are reproductions of the illuminated signs carried at the rear of the trains

history of the property. The Cincinnati & Lake Erie Railroad, the president of which is Thomas Conway, Jr., came into existence on Jan. 1, 1930, at which time, coincident with taking title to the Indiana, Columbus & Eastern and Lima-Toledo properties, the Cincinnati, Hamilton & Dayton Railway changed its name. These acquisitions gave the consolidated company a through interurban line from the Ohio River, at Cincinnati, to the Great Lakes at Toledo, a distance of 220 miles, as well as a fast east-and-west line connecting Dayton, Springfield and Columbus. The distance from Dayton to Columbus is 72 miles.

Readers of *ELECTRIC RAILWAY JOURNAL* are familiar with the notable success achieved by the Conway interests in the upbuilding of the C.,H.&D. property. These interests acquired this property early in 1926 after a checkered career of receiverships, abandonments and prolonged litigation extending over a period of some nine years. Steps were immediately taken to modernize the property. Interurban trackage was reconstructed in large part and rehabilitated throughout; the power supply was modernized, new automatic substations being constructed and an adequate and reliable source of power provided; a modern car shop was acquired at Moraine, just south of Dayton, at which point the company's offices also were established. Finally, all old equipment was scrapped and new equipment was purchased and put into service. The running time was shortened, schedules were rearranged to give frequent and convenient trains, modern methods of selling service and developing traffic were instituted, and a vigorous publicity policy was inaugurated and steadily prosecuted. In consequence, the C.,H.&D., unlike other interurban carriers of Ohio, in the years from 1926 up to the beginning of the current business depression, not only held its traffic against the inroads of the private automobile, but actually increased its passenger revenues. This unusual achievement attracted the attention of the entire industry.

The most rapidly growing portion of the road's busi-

ness, however, was the freight traffic. This business was handled almost entirely in conjunction with neighboring interurban lines. After prolonged study, the management finally decided that the investment of substantial sums, year after year, in developing freight business, in the face of the highly uncertain future of the connecting interurban lines reaching the principal traffic centers on Lake Erie, was of doubtful wisdom. Accordingly, the C.,H.&D. acquired title to them. The Conway management believed that in addition to freight it could successfully develop a substantial passenger traffic on the interurban lines north and east of Dayton, which connect large centers and pass through farming country and villages.

#### AUTOMOBILE COMPETITION SEVERE

The railway lines are paralleled throughout by improved concrete highways, the National Pike between Dayton and Columbus and the Dixie Highway between Toledo and Cincinnati. The I.,C.&E. and Lima-Toledo lines in past years have felt the full force of automobile competition, and in earlier years were subjected to motor bus competition. These motor bus lines were acquired by the Conway interests, in conjunction with the interurban properties. At once the motor bus and rail passenger rates were made identical, and tickets interchangeable, making it possible for the passenger to use either the rail or the bus, as he might elect. Motor bus and rail schedules were co-ordinated.

Prior to the acquisition of the I.,C.&E. and Lima-Toledo lines, the management made a thorough survey of their passenger traffic possibilities. The conclusions were that the possibilities for the development of local traffic, of the type formerly handled on the I.,C.&E. and Lima-Toledo properties, were either non-existent or exceedingly limited. Some additional traffic would doubtless be attracted by new, attractive modern and fast cars, operated in local service. Dr. Conway became convinced that the only promising field involved the creation of a brand new type of service to attract long-distance pas-



The movies were well advertised by running cars covered with banners through the main streets of several cities



sengers between Cincinnati and Toledo, Cincinnati and Columbus, Dayton and Columbus, or Dayton and Toledo, for example—distances ranging from 71 to 220 miles. The development of this business, however, involved getting the roadway into condition to permit of very high-speed operation and evolving a type of interurban car which would embody the comfort and speed which the management believed the public demanded. Early in 1929, prior to taking title to the other properties, an extensive rehabilitation program was inaugurated to permit of high-speed operation. At the same time a new type of flashing light highway crossing signal was evolved by the company's staff and installed at important highway grade crossings on the property.

On Sunday, July 6, the new high-speed through service with observation-lounge car equipment was inaugurated. This consists of three daily limited trains each way between Cincinnati and Toledo, with connections for Detroit; three each way between Cincinnati and Columbus, and two additional de luxe limited trains between Dayton and Columbus. This gives the passenger traveling between Cincinnati and Dayton the choice of six limited trains. The passenger between Dayton and Columbus has the choice of four limited trains, while traffic between Dayton and Springfield is served by seven limited trains in each direction daily. In addition, the local service is retained without change.

#### NEW REDUCED-RATE EXCURSION TICKETS INTRODUCED

The management is convinced, as a result of its experiments in the past two years, that many interurban railroads have advanced their fares to a point beyond that which will yield the maximum return; certainly this was true on many parts of its own property. The public compares first-class interurban service more closely with bus service than with steam railroad service. An endeavor to charge fares approximating those of a steam railroad drives traffic to any competing buses, or to the private automobile. The company believes that the aim should be to improve the load factor—the proportion of occupied car seats and the number of profitable trains operated daily—and should charge that rate of fare which will produce the maximum operating revenue and the highest load factor.

Coincident with the introduction of the new de luxe service and new equipment in the local service, a system of special tickets was offered at attractive rates, designed to develop business. Prior thereto round-trip tickets cost twice the one-way rate, but under the new plan five-day round-trip tickets between important centers are sold at substantial reductions. Week-end excursion tickets also were instituted. A comparison of rates before and after July 6 between typical important stations is given in Table III.

No extra fare is charged for the de luxe service, either in the coach portions of the car or in the observation-lounge section. A passenger can ride for the same cost on the de luxe service, the regular local service, or in the company's bus lines, as he may elect; the special tickets above mentioned are accepted on all three.

The existing rates applicable to country stops and small towns or villages were not changed, but with special tickets and rates a successful drive is being made for this type of business.

Some interesting experiments have been made in the stimulation of relatively short-haul interurban traffic. In

Table III—Round-Trip Ticket Rates on the Cincinnati & Lake Erie

Between	Miles	Rate Prior to July 6	New One-Day Rate	New Five-Day Rate	New Week-End Rate
Cincinnati and Dayton.....	60	\$2.90	\$2.25	....	\$1.35
Dayton and Columbus.....	71	4.50	3.00	....	2.25
Dayton and Springfield.....	27	1.60	1.00	....	1.00
Dayton and Lima.....	93	4.40	3.50	....	2.35
Springfield and Lima.....	66	3.90	3.00	....	2.15
Columbus and Lima.....	110	6.80	5.00	....	3.50
Springfield and Columbus..	45	2.90	2.00	....	1.55
Cincinnati and Springfield..	86	4.50	4.00	....	2.15
Springfield and Toledo.....	139	8.20	....	\$6.00	4.10
Columbus and Toledo.....	183	8.80	....	6.50	3.90
Cincinnati and Columbus..	131	7.40	....	5.00	2.85
Cincinnati and Lima.....	152	7.40	....	5.75	3.65
Cincinnati and Toledo.....	225	12.70	....	8.00	4.60

Table IV—Record of Ticket Sales by Weeks

Week Beginning	Tickets sold (equivalent one-way trips)
July 20	189
27	190
Aug. 3	274
10	338
17	488
24	432
31	556

Table V—Earnings of De Luxe Service by Weeks

Week Beginning	Earnings per Car-Hour
July 6	\$5.86
13	7.44
20	7.95
27	8.77
Aug. 3	9.43
10	9.69
17	11.02

Table VI—Comparison of Aggregate Receipts from Ticket Sales at Principal Stations of the C. & L. E.

Office	Per Cent Increase		
	July 1930 Over June 1930	August 1930 Over June 1930	August 1930 Over August 1929
Dayton.....	16	32	40.5
Columbus.....	18	46	43
Toledo.....	16	39	....
Cincinnati.....	74	662	....

Table VII—Effect of New Service on Local Car Earnings

	Local Rail Service Receipts, Cents Per Car-Mile		
	Cincinnati Division	Columbus Division	Toledo Division
Average earnings in month preceding inauguration of blue ribbon service—June, 1930.....	36.9	35.8	21.4
First month of operation of de luxe service—July (de luxe service in effect 25 days only)	36.5	27.7	21.2
Second month of operation of de luxe service—August.....	37.1	27.4	21.8

the summer of 1929 a special one-day round-trip rate of 50 cents was offered between Middletown and Hamilton, a distance of about 12 miles, and a special twelve-ride ticket, good for 30 days, selling for \$2.50. Previously the round-trip rate was 80 cents, or double the one-way fare, and no special ticket had been sold. The purpose of these experimental rates was to determine to what extent the workers in factories in either city, residing in the other, could be induced to use the interurban rather than their automobiles. In two months the revenue passengers between these cities increased 97 per cent.

On the Columbus division, about 11 miles east of Dayton, is the village of Osborn, at which are the plants of the Wabash Portland Cement Company and the Southwestern Cement Company. These plants employ a considerable number of workers living in Dayton, and many Osborn residents travel back and forth to Dayton to business and to shop. The one-way fare between Dayton and Osborn was 30 cents and the round-trip 60 cents. The one-way rate remains unchanged, but on July 20



the round-trip rate was reduced to 40 cents. This change was advertised in the local newspapers. A leaflet giving the new rates and the schedule of trains was distributed by employees of the company in a house-to-house canvass. The record in Table IV of ticket sales by weeks since this change was made is most interesting.

Encouraged by the success of these experiments, it is planned to cover in similar fashion a number of other communities of secondary size served.

One of the most impressive features of the de luxe service is the steady increase in its traffic and earnings, week by week. The record is summarized in Table V.

According to the statistical studies of the American Electric Railway Association, the average passenger earnings of 34 interurban lines throughout the country in 1929 averaged \$9.29 per passenger car-hour.

The increase of travel from the new service also is clearly seen in a comparison of ticket sales at important stations. Table VI shows substantial gains at Dayton, Columbus and Toledo, ranging from 16 to 46 per cent. The showing at Cincinnati has been more spectacular than at any station on the property, the aggregate ticket sales in August being 662 per cent in excess of the June business. The most significant feature of this record is that it has been created in a period of intense depression, when industrial employment and general business conditions were tending downward.

#### EARNINGS OF THE LOCAL RAIL SERVICE HOLD UP

The blue ribbon trains make no stops in the rural districts or in the smaller villages and make only a limited number of stops in the larger cities and towns. In the rural districts the de luxe service is not competitive with the local service, which was continued without change. It does offer competition, however, for traffic between the larger communities, which constituted the major portion of the previous business.

The effect of the de luxe service upon the earnings of the local rail service is pictured in Table VII. The astonishing fact disclosed is that, with the exception of the Columbus division, the de luxe service apparently drew no traffic from the locals. The volume of de luxe service operated on the Columbus division between Dayton and Springfield is somewhat greater than on any other division.

Through a subsidiary company the Cincinnati & Lake Erie operates motor bus service paralleling its Columbus division. The de luxe service and the new and more attractive equipment in the local service have diverted about 12 per cent of the traffic from this bus line, although new buses were installed a few weeks prior to the introduction of the new rail cars and no change was made in the bus schedules. The diversion of business is due to the much higher speeds and greater comfort and convenience of the rail service. The scheduled running time from Dayton to Columbus of the local rail service is 40 minutes less than on the bus, while the de luxe service makes the trip in 55 minutes less time than

the bus. It was, of course, impossible to speed up the bus service to keep pace with the rail service, both for physical reasons and because of the speed limits stipulated by the Ohio commission and the state law.

A substantial amount of the de luxe business has been diverted from the interstate buses, especially between Cincinnati and Detroit. The scheduled running time of the de luxe service, including the connection from Toledo to Detroit, is 1 hour and 45 minutes less than that of the interstate bus lines. In other words, this epochal experiment seems to show clearly that a fleet, comfortable rail car, embodying de luxe features, to a very large degree will supplant the motor bus in popular favor.

But the most important lesson to be drawn from this experience is that the high-speed blue ribbon service has developed brand new business for the interurban — traffic which theretofore had used neither the local rail service nor the company's bus line. Where this new

business comes from cannot accurately be determined. Interviews with passengers on the de luxe trains, however, indicate that it is made up, in the main, of traffic diverted from the steam railroads and from the private automobile. It is perhaps significant that on July 27 the Big Four Railroad withdrew two trains—the east and westbound trips of the "Senator"—between Cincinnati and Columbus. A large part of the de luxe travel has been business which has been stimulated or created through constructive publicity and modern methods of passenger solicitation, much of which would not have moved otherwise.

### Interdependence of Industry and Transportation Emphasized

EFFECTIVE publicity and merchandising is being carried on by the United Railways & Electric Company, Baltimore, Md., through its car-rider publication *Trolley News*. To emphasize the interdependence of industry and transportation is the object of a series of articles being presented under the general heading "Arteries of Industry." In each issue of this pamphlet, one of the larger Baltimore industries and its product is described, setting forth its importance in the industrial life of the city and emphasizing the fact that the great majority of employees use the street car lines and that the industry is dependent upon and really owes its development to the transportation service.

The following paragraph, used as a preface to each article in the series, repeatedly drives home the basic thought that:

Today the strength of American Industry flows through its transportation lines. These brief sketches will aim to tell something about the dependence of Baltimore's great and rapidly growing industries upon public transportation and what is being done to keep pace with this growth.

The industries themselves are appreciative of this publicity and in many cases have asked for additional copies for their employees and customers.



Newspaper representatives from cities in the C. & L. E. territory were brought to Dayton and entertained at a banquet by the company's advertising agents