The Columbus Street Railway Co.
1898 General Superintendent's Annual Report

Attribution and Background

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In 1898 the street railway in Columbus, Ohio was still new to electric traction. It had been only six years since the last horsecar line was converted to electricity. Their power plant had no reserve generation capacity. Not all the light horse car track had been upgraded to heavy weight rail. They needed to replace more of their original four-wheel streetcars with larger double truck cars. There was much work to be done to bring the streetcar system to 1900 standards.

The General Superintendent's Annual Report takes the reader back to 1898 and the challenges of managing an electric traction line.

Alex Campbell
Columbusrailroads.com

THE COLUMBUS STREET RAILWAY COMPANY

Annual Report

of the

GENERAL SUPERINTENDENT

--- 1898 ---

Prugh
Printer

To the President and Directors of -

The Columbus Street Railway Company.

Gentlemen:

Herewith is submitted a report relative to various features of operation and physical condition of your property for the year 1898, together with suggestions and recommendations for the current year.

Respectfully submitted.

W. J. Kelly
General Superintendent.

Columbus, Ohio,
January 16th 1899.

Earnings and Expenses:

The gross earnings for the year were in round numbers $680,000.00 and the car mileage 3,638,000; earnings per car per day $28.02; per car mile 18.3 cents; increase per car per day 9 per cent; per car mile 9 per cent.

The increase of $74,000.00 in gross earnings is due to three causes: improved business conditions, a decreased use of the bicycle and heavy travel during encampment and mustering of troops. While the gross increased but 12.3 per cent, the net earnings show an increase of 25 per cent. While this is gratifying, it is not altogether satisfactory, as expenditures in some departments were larger than they should be under normal conditions. Had necessary improvements been effected some years ago, your net earnings for 1898 would have shown an increase of at least 50 per cent. over 1897.

All of the items of operation show an increase over the previous year. For reasons hereinafter mentioned, maintenance of way shows an increase of 50 per cent. over the previous year. Maintenance of equipment increased 25 per cent. This is due to various causes. Heavy loads increase wear and breakage, and older cars and motors require increased expenditure to maintain them.

The transportation cost while showing a slight increase in the total, is the same per car mile as the previous year, viz; 4.6 cents.

The cost of power while slightly in excess of the previous year, the cost per car mile is the same, viz; .7 cents. In view of the fact that the cars were frequently loaded heavily and that the number of large cars in service was 50 per cent. greater than during previous year, the results are excellent.

The General Expense Account shows the largest increase of any of the items. This increase is made up of the three items, - Damage, Legal Expense and Sundries. While the actual cost for damages is less by far than at any time within five years, the apparent cost is larger. Upon the failure of the Guarantors Insurance Company of Philadelphia, it was deemed advisable to carry our own accident insurance. For this

purpose there was set aside each month the sum of $600.00 to meet possible damage claims. Fortunately our expenses for this purpose have been only about 50 per cent. of this amount, so that we now have a surplus to this account. The increase is legal expense is due to the fact that bills for services rendered in 1897 were not presented until 1898, and other expenses not directly chargeable to the operation of the property were incurred this year. Sundries, embraces various features of expenditure which occur biennially rather than annually, and can be readily explained.

Buildings:

Necessary building repairs have increased somewhat over last year. Owing to the perishable character of roofing, flooring, etc., building repairs are necessary at irregular intervals rather than annually. In addition to repairs mentioned at Power Station, we have made the following:

At South High Street; 98 squares new tar and gravel roof; doors widened 2 feet, to admit long cars on side tracks.

West Broad Street; only small minor repairs.

North High Street; roof resurfaced and floor of wash room paved with brick.

Rose Avenue; spouting and guttering all repaired, metal and woodwork painted, wash room rebuilt, paved and heated; brass furnace rebuilt and old decayed steel stack replaced with new brick stack.

Some new flooring is required at Rose Avenue and South High Street, and minor repairs at North High Street.

On the whole the buildings are in better condition than a year ago.

During the year the property at Oak and 18th Streets was sold, and funds received will be nearly sufficient for the purchase of much needed room for car storage. Within the past four years, although our car equipments have decreased in number, we have added to their length the equivalent of about 20 cars, so that now we have not sufficient room to shelter them. All this winter, about 15 open cars have been out doors

for want of shelter. I would suggest, therefore, that on lot now owned immediately east of the South High Street Car House, a house be erected for the storage of cars out of service, and on the lot recently purchased, adjoining the north side of the same property, a car house be erected for the storage of cars in service. Plans and estimates should be prepared at an early date, in order that buildings may be completed in time for summer use.

P o w e r S t a t i o n:

Building:

Various minor repairs and improvements have been made upon and in the building; woodwork in boiler room around water tanks has been renewed where decayed and broken; bolts in roof trusses all tightened; paving in boiler room relaid; cement floor laid in rear of boilers; pumps raised and wooden floor replaced with concrete. In the engine room the old wooden floor remaining in east half has been replaced with concrete; generator leads run in clay tiling underneath the floor, and all main feeder lines and light circuits placed on porcelain. About 50 feet of retaining wall has been built along the river, and lawn in front of station graded and fenced. Much of this work has been done by station employees without additional cost except for material.

The station on the whole is in better condition than formerly, excepting roof, which will require some repair this year.

Boilers:

The boilers are in good condition, as shown by the report of boiler inspector and their evaporation efficiency. Considerable difficulty has been experienced with scale, and labor and cost of scale removed has somewhat increased. We are endeavoring to get all the scale removed and keep it out, and our efforts give promise of success. When we reach this condition, efficiency and life of boilers will be increased and cost of cleaning will be no higher than with scale partially removed.

In November a battery of boilers were equipped with furnaces of our own construction at a cost of about $200.00. Some years ago a pair of furnaces nearly similar were constructed at a cost of $500.00, which

showed a saving of about 15 per cent. over the ordinary furnace. The new furnaces are quite as satisfactory, and during the year we hope to equip another battery.

Pumps, piping and fixtures are in good condition and will require no extensive repair.

F u e l:

During seven months, including the summer, our fuel was natural gas, at a fixed monthly rate, regardless of quantity used. As the price was fixed at a time when our coal cost more than at present, there was but little economy in its use, except a slight saving in labor. With more favorable cost of coal, we deemed it advisable to discontinue gas during the last month of our contract, and did so at a saving of 20 per cent. in fuel cost. Our total fuel cost for the year was $15,269.00.

Cost of Power:

Early in the year we installed a total recording Watt-meter, which measures the entire station output. Prior to that time the power was estimated from switchboard readings, which were necessarily inaccurate and unsatisfactory. Comparing the meter reading with the former estimate, the cost per k. w. is slightly higher. This does not indicate a real increase in cost, but shows that former estimates of k. w. output were too high. Considering that there were more large cars in daily service and that cost per car mile remained the same as previous year, it shows that the station operated at a higher economy and less cost per actual k. w. hour. In this connection I would suggest that cost per car mile as applied to cost of power has no real significance, and cost per kilowatt-hour is the only rational basis of estimate. Nearly 50 percent. of our cars are of long double truck type, with nearly double the weight and carrying capacity of the 16-foot cars. To afford the same carrying capacity in short cars would require an increased number and a corresponding increase in car mileage, which would reduce the earnings per car mile, make the cost of power per car mile correspondingly low, while cost per kilowatt-hour might be high. Cost per car mile is a vague indefinite quantity, depending upon the kind of car, load, grade,

condition of track, etc; while kilowatt-hour is a definite unit of measurement and is wholly independent of the means by which power is consumed. The car mile may be a fairly satisfactory unit by which to measure earnings and other expenditures, but is wholly inadequate for estimating cost of electric power.

Engines and Generators:

For some years we have been operating with but small reserve margin, both in engine and dynamo capacity. Now that nearly one-half of our car equipment consists of double truck cars with practically double the carrying capacity of the former small cars, the current consumption is materially increased and our station loaded to its full capacity. During the summer months and in the winter when heaters are required, every engine and generator is taxed to its full capacity, and the failure of even one of the smaller machines would cripple the service. At the present time we have not sufficient power to operate our cars and sweepers in a heavy storm. Our larger engines are in constant use, so that there is scarcely opportunity to make necessary adjustments, and no opportunity to make repairs which would keep either engine out of service for a day, as the remainder of the plant is not sufficient to carry the load. During the heavy loads of the past year and at the present time the small generators and engines are overloaded. These small machines have been in use nearly eight years; the insulation is carbonized from frequent heavy loads and constant attention is necessary to keep them in operative condition. Ninety per cent. of the electric repairs at the station is due to these machines, and it is doubtful whether or not they will prove serviceable through the winter. Excepting the Buckeye engines, the other engines and generators are small units, not well adapted to our present needs and not economical to operate. In order to meet our present demands for power and have a small reserve margin, it is necessary that we should install at once a large unit. I would recommend, therefore, that two of the smaller, high speed engines and six generators be replaced by a single direct coupled unit of about 800 k. w. capacity. From Four to Five Thousand Dollars

could probably be realized for the old apparatus and the new would cost approximately $30,000.00.

Omitting losses in belt transmission and heat losses in generators, as well as probable expense for repairs, the saving in fuel alone over the present engines would more than pay the interest on the investment.

It is important that a conclusion be reached in this matter at an early date, as it will require at least 100 days to construct and erect the machinery, and it is doubtful whether or not it can be completed within that time. During the erection our available power will be reduced to the lowest limit, and it is of the utmost importance that the new unit should be in service before the heavy travel of summer begins.

Maintenance of Equipment:

During the year careful attention has been given to repair of equipment, without materially increasing the working force, but with some increase in cost of material. The results have been quite satisfactory and the equipment is now in better condition on the whole than formerly.

Of the more extensive items of repair I would mention, 20 motors rewound entirely, 19 trucks furnished with new axles, 11 trucks overhauled and fitted with 33 inch wheels, 78 commutators re-filled, 10 cars repainted, 19 re-surfaced, 73 re-varnished, 297 new wheels put on, 346 commutators turned down, 457 armatures repaired, 84 field coils re-wound entire, 13 broken axles replaced with new.

In addition to the usual repairs we have built 10 single trucks of the Dupont pattern, and converted 12 16-foot cars into 6 28-foot double truck cars.

Excepting wear and tear incident to the service, the equipment is in good condition. It is our constant endeavor to maintain equipment at a high standard, as it is not only more economical in first cost, but has a general value in being pleasing and attractive to our patrons.

During the year we have added to our equipment 10 double truck open cars, 10 double truck closed cars and 20 motor equipments. This places our open equipment in good condition, but our closed equipment

should be further increased. But 20 new closed cars have been purchased since 1895. Meantime we have sold six old 16-foot cars and joined 40 short ones into 20 long ones; so that our car equipments while better and more satisfactory are less in number than three years ago. We are still operating a number of old horse cars purchased twelve to fifteen years ago. Including these, all our available equipment is barely sufficient for our daily use and we are unable to supply sufficient extra cars for races, foot ball games, excursions, etc.

Assuming that the average life of a car will not usually exceed ten years, and that additional cars are needed to provide for increased business, it seems advisable that at least ten new cars should be purchased each year.

Maintenance of Way:

During the past six years I have frequently referred to the necessity and economy of reconstructing a large portion of our old trackage, rather than endeavor to maintain it in an operative condition. In this period we have expended for maintenance of track $153,000.00, a sum equal to at least 70 per cent of the cost of replacing all our old track with new first-class construction. In addition to this expense there is properly chargeable to the cost of operation an indeterminate amount due to slower speed necessary on rough track, an increased cost of maintaining equipment and increased cost of power due to defective bonding and loose joints. With track in first-class condition, our cars could safely make at least 5 miles per day more than at present. At our average rate of earnings per car mile, this would increase the earnings per car 90 cents per day, or for the total number of cars in service for the year the increase would be $21,000.00. Maintenance of equipment during the past six years has cost $200,000.00. It is safe to assume that this cost is at least 5 per cent higher than it would be with tracks in good condition, or for the period mentioned $10,000.00 in excess of what it should have been with favorable track conditions. Adding these two items, the loss of revenue through decreased mileage, and increased cost of maintenance of equipment, to the actual expenditure for mainte-

nance of way, your old track has within the last six years cost more than would be required to rebuild anew every mile of the old horse car construction. During the past year the maintenance of way has cost the interest on a half million dollars, - a sum sufficient to nearly rebuild the entire system.

A considerable portion of our tracks laid within the past six years shows some signs of failing at the joints. In order to preserve this track and avoid heavy expense within a short time for joint repair, it is in my judgment desirable to cast weld most of these joints during this year. We have constructed a portable cupola, which is well adapted for work of this kind, and we will be able to do this work at a considerable saving over the price charged by contractors engaged in this work. It is no longer an experiment, as there are now in use many miles of track with welded joints in Chicago, St. Louis, St. Paul, Buffalo and Brooklyn.

Attached are blue prints, showing the relative amounts and total feet of various kinds of track construction. An inspection of these prints shows that 40 per cent. of our trackage is of the old horse car construction. Had this track been used solely for horse car service, it would now require renewal of ties and extensive repairs. Now that we are operating cars weighing from 7 to 10 times as much as the horse car, and at more than double the speed, it is evident that it is inadequate for the service imposed upon it. Mention has been made heretofore of the character of this construction, and yet the question is frequently asked, "Why not repair it?" Can you reasonably expect a construction of 10 years ago suitable for a load of 2 tons moving 6 miles per hour, to stand up under a load of 20 tons moving 15 miles per hour? The best answer as to why not repair it is your maintenance of way account of this year, which is almost entirely chargeable to not more than 15 miles of track. At least 50 per cent of the rails are split through the bolt holes, so that a joint splice cannot be maintained, and nearly 100 rails have been taken out on account of being broken in two. Either the maintenance charge with the attendant expense for maintenance of equip

ment must go on at an increasing rate or track must be reconstructed. I trust that you may consider it advisable to provide for rebuilding this year at least 15 of the 25 miles that should be relaid. The cost will depend largely on the character of the construction and paving.

All following estimates are in feet of single track. Those portions of track which should be relaid this year are, -

Long street from High to Washington avenue, 8,000 feet.

N. High street, 5th avenue to North street, 21,700 feet.

Main street, High to Rose avenue, 21,000 feet.

W. Goodale street, High street to Neil avenue, 4,000 feet.

Neil avenue, from 5th to 11th avenue, 6,000 feet.

Mt. Vernon & Cleveland avenues, replacing present single track and switches with double track throughout, 12,000 feet.

Schiller street, replacing single track and switches with double track, 8,000 feet.

S. High street, from Court House to Molar Road, 13,200 feet.

A total of 84,100 feet, or 15.9 miles.

Of this amount, Long street, North and South High street, W. Goodale street and a small portion of Main street, a total of 48,900 feet, will require 9-inch rail owing to track being paved with stone block: the remainder having brick paving a 7-inch rail can be used.

This will require 1,287 tons of 90-pound and 770 tons of 70-pound rail, with necessary spikes, fittings, etc., and 43,000 ties. The amount of ballast cannot be accurately determined, as there is a small amount of old ballast available on some sections of track and none on others. Probably three-fourths of necessary ballast must be new. The paving is also an indeterminate quantity, as a portion is badly worn and broken, and in taking up and relaying this may be larger than is now apparent. Probably one-half to two-thirds of it would be available for relaying. At present prices of labor and material, estimating the above indeterminate amounts on the basis mentioned, the approximate cost per mile of single track, spiked direct to ties spaced two feet, with six inches broken stone under and between ties, would be $7,700.00 for 7-

inch 70-pound rail, and $8,500.00 for 9-inch 90-pound tee, or for 16 miles $130,400.00.

Had the City Engineer the power, which speaking generally he should have, of determining the character of all constructions in city streets, we would doubtless be required to lay a full groove rail in all future track construction. This would not only add materially to the first cost on account of increased weight of rail, but would also add to maintenance of way, cost of power and maintenance of equipment.

It addition to the other considerations which I have urged, it seems to me important that our construction should be completed before an aroused public sentiment compels the use of the grooved rail.

Overhead Lines:

The increased cost of overhead repair is made up largely of two items, viz; 2.8 miles of new heavy trolley wire and span wire through the business section of High street, and 462 wooden poles which were replaced with steel ones, and 99 which were replaced with new wooden poles.

The lines are in excellent condition, considering the time they have been in service.

Besides the poles the larger items of repair are; 30,000 feet of steel strand, 2,100 trolley ears, 600 pounds graphite paint, 4,200 pounds feed wire and 7,200 pounds of trolley wire.

During the year 16 breaks have occurred in trolley line; 6 of these were due to parting at brazed joints, 3 at connecting ears, 3 at switches where wire was much worn, 1 pulled in two by car, 1 due to soft wire and 1 by falling wire. Aside from the regular daily labor of line crew, they responded to 642 emergency calls, and in no case was there undue delay or serious interruption of service.

Of the total number of our own poles in use, 1,732 are steel, 1,200 wood. In addition we have attachments for span wire on 429 telephone poles and 1,523 contacts for feeder lines on poles other than our own.

Our feeder supply has always been inadequate for economical operation, and with increased traffic at the ends of our lines, the line

losses are largely increased. The original installation made no provision for growth of business or increase in size and weight of cars. Their number is nearly sufficient, but they are too small for sufficient current supply. Their reconstruction would involve a very considerable expense, and in view of other urgent large expenditures is perhaps not advisable this year, except to a limited extent. With this exception, and the purchase of about 300 steel poles, no unusual expenditures in this department are anticipated this year.

Accident and Damage Claims:

During the year the total number of accident claims of all classes reported was 1,212, an increase of 195 over the preceding year. Of this number 766 were personal injuries and 388 were property claims, mostly for repair of vehicles. Of the personal injury cases 2 resulted fatally.

While the total number of cases seems larger, an evidence of the trivial character of most of them is shown in the small amounts paid out in adjustment. As evidence of the care and skill of our men, there are very few of these cases in which any blame is attached to those operating the car, either by the witnesses or ourselves. The temper of the press and the public in regard to this feature of operation has on the whole been very fair and considerate. Compared with other cities, we are very fortunate. A single case of fatal injury to a child in Brooklyn cost the street railway company more than the entire damage claims of this Company for three years at the present rate of loss.

Ninety-eight per cent. of our reported accidents were settled without litigation, and of those taken into court but 10 remain unsettled.

I n s u r a n c e:

For some years we have considered the insurance rate on our property excessive, but owing to circumstances over which we had no control we were unable to reduce it. Last year we were enabled to write our insurance at about 40 per cent. less than the board rate. We have improved our fire risk at the respective properties by minor additions and alterations and various safeguards, so that we consider we are entitled to

a low rate and the indications are that we will secure it for current year.

O l e n t a n g y P a r k:

During the season of 1898 nearly all sources of Park revenue showed a slight decrease over previous year. The revenue from bowling alleys increased 20 per cent. and merry-go-round 14 per cent. The total of all revenues, exclusive of fares, showed a decrease of only $106.00, or 1 1/2 per cent. less than the previous year. The number of passengers entering the Park was 257,000, being 19,000 or 7 per cent. less than in 1897.

Owing to the flood of last March, more extensive repairs than usual were necessary. Bowling alleys were submerged and ruined, and were replaced with new ones: boat house and floating docks were damaged to some extent, and grounds and paths required extensive repair.

While the Park in itself is not a source of revenue, it must be conceded that the increased travel resulting from the operation of a Park will offset any loss thus far incurred and yield a fair interest on the investment.

If the popularity of the Park is to be maintained, it is essential that provision be made for theatrical entertainments. Concerts have grown a little stale; natural scenery does not charm the masses and boating has lost its novelty. While a theatrical enterprise involves some risk from a financial standpoint, there is a strong popular demand for amusement of this character which will be satisfied with nothing less.

Bowling is now the popular athletic sport. Not including those who are members of private clubs, there are now in Columbus some sixty bowling clubs using public alleys. To secure a portion of this patronage, we should this season construct four additional alleys.

E m p l o y e e s:

The conduct and service of our employees during the year has been a subject of favorable comment both from our home patrons and visitors. During the summer many thousand strangers visited the Army Camp, and during this period cars were heavily loaded, - frequently with igno-

rant and reckless passengers. Our men are to be commended for their patience, forbearance and good judgment under trying conditions. Very few have been dismissed for cause and but few have quit the service voluntarily. Their beneficial organization is in a healthy financial condition and most of our employees are members.

The presentation of uniform suits, with service stripes, to men who have been in service five years and upwards, is a feature must appreciated by our men, and has been fruitful of many kind words from the general public. The number entitled to uniforms this year was about 20 per cent. larger than last year, making a total for the year of 99.

For several years we have thought it advisable to provide more attractive and comfortable waiting rooms at car house stations, but the demand for funds for other expenditures seemed as large as our earnings would warrant, so that this feature has not received the attention to which it is entitled. Considering that most of our men have but little leisure at the best and that their waiting hours are largely spent around our car houses, it would be in keeping with our policy of generous treatment to our men to make more adequate provision for their comfort, and we hope to be able to do this more fully this year.

Interurban Railways:

While it has no immediate relation to the maintenance and operation of The Columbus Street Railway property, the matter of electric railways connecting the adjacent towns and villages with Columbus is in my judgment one of decided importance to the owners of this property. The success of such roads in connection with every other large city in Ohio, as well as in other states, is making them an attractive investment for capital. Instead of waiting until outside capital constructs these lines and adverse legislation gives them valuable rights over your lines, or until the municipal ownership craze makes them impossible, it seems to me wise that necessary provision should be made to occupy this field now and own and operate such roads in conjunction with the present system. Such properties would from the start be more than self-sustaining based on the cost of construction and equipment, and would add mater-

ially to the earnings of this Company, and materially strengthen its position as regards local legislation and franchise rights.

In closing I wish to commend not only the rank and file of our employees, who in their respective positions have rendered faithful and efficient service, but also the heads of the various departments who have ably, intelligently, cheerfully and loyally performed their duties in season and out of season.

In at least two departments the salary is scarcely commensurate with the ability and intelligence shown and the service rendered. I would suggest, therefore, that a substantial increase be made in the salary of our Electrician, Mr. M. S. Hopkins, and our Line Foreman, Mr. Thos. Kerin.