

ELECTRICAL AGE

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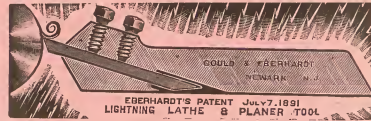
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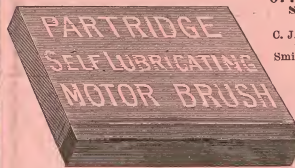


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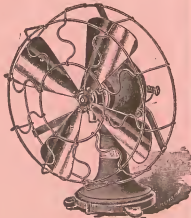
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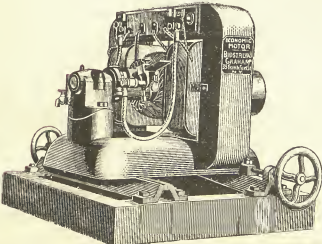
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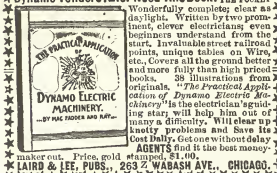
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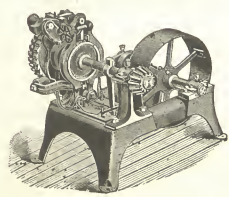
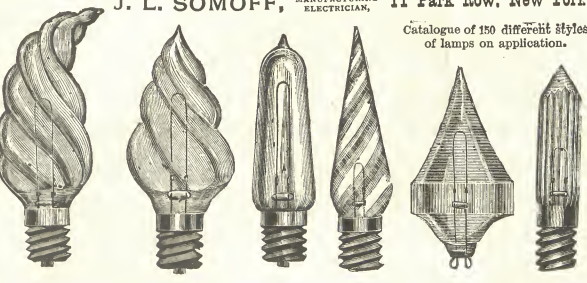
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NEW YORK, OCTOBER 19, 1895.

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NEW YORK, OCTOBER 19, 1895.

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## THE AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS.

On account of conflicting dates the monthly meeting of the American Institute of Electrical Engineers at New York and Chicago has been postponed, by direction of President Duncan, from October 16 until October 23, the week following the Montreal Convention of the American Street-Railway Association. The following-named papers will then be presented: "The Local Annealing of Hard-Faced Armor Plates," by Hermann Lemp, jr., of Lynn, Mass.; and "The Rotary and Behavior of Fuse Wires," by Prof. W. M. Stone, of Chicago.

## THE PROGRAMME OF THE CONVENTION.

For the benefit of the delegates and others at the Convention we give an outline of the programme, as far as it has been arranged up to the present time.

Special committees will report on the following named

subjects: "Transfers," "Municipal Ordinances;" "Labor Question—Wages Paid to Employés;" "Experience of Roads in Furnishing Free Music and other Entertainments to the Public;" and "Physical Operation of Roads."

The annual dinner will take place on Thursday evening, October 17. Each company that is a member is entitled to the free admission to the banquet of two of its officers. Each additional officer, or any other gentleman in attendance at the meeting not an officer of a member-company, will be charged ten dollars; ladies' tickets, five dollars each.

The Exhibition of Street-Railway Supplies will be held in the Victoria Skating Rink, back of the Windsor Hotel. The building has been engaged for two weeks, beginning with October 9, and ending October 22.

## THE AMERICAN STREET-RAILWAY ASSOCIATION.

### HISTORICAL SKETCH.

The Montreal meeting is the fourteenth held by the association. The association was organized in Boston, Mass., in 1882.

The following table gives the names of the places of meeting of every convention since the organization of the association, and the name of the president during each year. The organization meeting is counted as the first.

| MEETING. | YEAR. | PLACE OF MEETING. | PRESIDENT.          |
|----------|-------|-------------------|---------------------|
| 1.       | 1883. | Chicago.          | H. H. Littell.      |
| 2.       | 1884. | New York.         | Wm. H. Hazzard.     |
| 3.       | 1885. | St. Louis.        | Calvin A. Richards. |
| 4.       | 1886. | Cincinnati.       | Julius S. Walsh.    |
| 5.       | 1887. | Philadelphia.     | Thomas W. Ackley.   |
| 6.       | 1888. | Washington.       | Charles B. Holmes.  |
| 7.       | 1889. | Minneapolis.      | George B. Kerper.   |
| 8.       | 1890. | Buffalo.          | Thomas Lowry.       |
| 9.       | 1891. | Pittsburgh.       | Henry M. Watson.    |
| 10.      | 1892. | Cleveland.        | John G. Holmes.     |
| 11.      | 1893. | Milwaukee.        | D. F. Longstreet.   |
| 12.      | 1894. | Atlanta.          | Henry C. Payne.     |
| 13.      | 1895. | Montreal.         | Joel Hurt.          |

## FREIGHT AND MAIL SERVICE ON ELECTRIC ROADS.

Many interurban and suburban electric railways are now doing a freight business that, in many cases, is the source of a considerable revenue to the operating company. This is perfectly legitimate business, and in almost every instance could not be controlled by steam roads in the region, for the reason that the trolley lines are more conveniently reached and the cars are run oftener. Farmers, especially, appreciate these advantages and are greatly benefited by them. The subject was discussed in a paper by Mr. Benjamin Norton at the Albany meeting of the New York State Street-Railway Association, which was held on September 17, last. He asked in the title of his paper if a freight and mail service on street railways was profitable or unprofitable, but proved in his discussion of the subject that it was decidedly profitable to carry freight on his road. The subject no doubt will receive some consideration at the Montreal convention, and for the benefit of those particularly interested we publish Mr. Norton's paper on another page in this issue.



THE CITY OF MONTREAL.

ITS PAST AND PRESENT.

Montreal occupies the site of an Indian village named Hochelaga, which Jacques Cartier found on his arrival in 1535. In 1642 the town was founded; in 1758 it was fortified, and in 1779 it contained 1,200 houses. It was, however, merely an outpost of Quebec, both under French and British rule, until 1832, when it was made an independent port. Since then its growth has been rapid.

The city is 600 miles from the mouth of the St. Lawrence river, and 335 miles north of New York, and is situated on an island at the base of Mount Royal, which gives the city its name. The population is about 225,000, of whom nearly three-fourths are Roman Catholics. The drive around the mountain is delightful. This mountain, possessing wonderful natural advantages, is being converted into a magnificent park, which, when completed, will not be excelled in size and beauty.

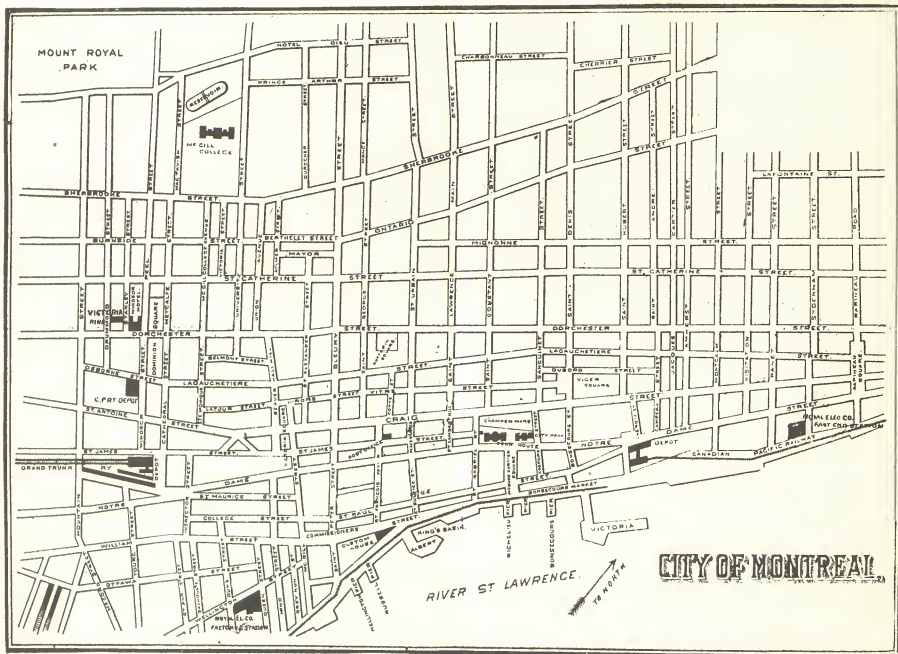
The island is 30 miles long and 10 broad, and owing to the wonderful fertility of the soil it is justly called the Garden of Canada. Montreal is destined to be one of the most important cities for the world. With the several ocean steam ship lines making this city their American terminus, and the extensive system of railway lines centring here, Montreal has direct and independent communication with all parts of the world. The following brief notice of some of Montreal's principal attractions may be of interest to visitors: The French Parish

mands of the entire city and surrounding country, the vista extending for miles in all directions. This tower contains an immense bell, weighing nearly 30,000 pounds, which is one of the five largest bells in the world. The left tower contains a musical chime of bells. The interior



WINDSOR HOTEL, MONTREAL, HEADQUARTERS OF THE A. S. R. A.

decorations of the church are exceedingly fine, and include numerous valuable paintings and statues. The other churches in Montreal noted for beauty of design and decoration are the Church of Gésu, the English Cathedral and



MAP OF THE CITY OF MONTREAL.

Church of "Notre Dame" is the largest church in America, and is capable of seating 10,000 people. Its two large towers are 220 feet high, and an ascent of the right tower will well repay the visitor by the magnificent view it com-

several Presbyterian churches. The new Roman Catholic Cathedral, recently erected, is after the style of the St. Peter's, at Rome, and next to St. Peter's it will be the largest and most elegant in the world.



The principal buildings of Montreal are noted for the substantial manner in which they are constructed and for their architectural beauty.

Montreal has many places and objects of interest to visitors, among which are: McGill College Museum, etc.; the Art Gallery, Phillips' Square; Christ Church Cathedral and Methodist Church, St. Catherine street; St. Peter's Cathedral, opposite the Windsor; Church of Gesu, which is exquisitely frescoed; Chapel of Notre Dame de Lourdes, and Chapel of the Nazareth Asylum; Church of Notre Dame, elevator to tower, greatest bell in America, Chapel of Notre Dame in rear of the Grand Altar; Victoria Hospital, Pine avenue; Y. M. C. A. Building, Dominion Square; Board of Trade Building; Bonsecours Church, (oldest in city.); Grey Nunnery Chapel, Bonsecours Market, Victoria Bridge, City Hall, Nelson's Monument, Court House; Kennels, Montreal Hunt Club; Bank of Montreal; Post-Office, St. James street; La Salle Museum—Wax Tableau; Academy of Music, Queen's Theatre and Sohmer Park—places of amusement; St. Helen's Island.

MONTREAL STREET RAILWAYS.

THE MONTREAL STREET RAILWAY COMPANY.

In 1891, when the National Electric Light Association held its convention in Montreal, the street-car lines in that city were operated by horse-power. Since that time, however, a great change has taken place in the matter of street transportation facilities. Montreal now stands among the leading cities in which the trolley system is operated, and it is noticeable that the system has injected the spirit of progress and enterprise among the people—a result that never fails to follow the introduction of the trolley system everywhere.

There are two street-railway companies in Montreal, and these control all the lines in the city and its suburbs. These companies are the Montreal Street-Railway Company, and the Montreal Park and Island Railway Company. Up to the present time the two companies have equipped 95 miles of their lines on the trolley system. Of this trackage the Montreal Street-Railway Company own

78.85 miles, which includes sidings, shops, barns, etc. This company's lines cover the business and residential sections of the city and afford excellent service in all directions.

The company's rolling stock consists of 163 motor cars and 104 trailers. Some of the car bodies are of Canadian manufacture, the others coming from "the States." The electrical equipment of the motor cars represents both United States and Canadian manufacture—the Royal Electric, the Westinghouse and General Electric Companies being represented in this regard.

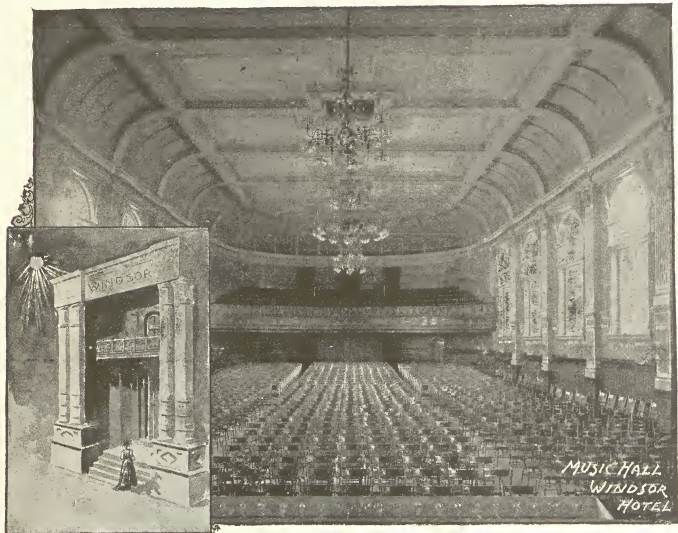
The power station of the company is located on William street, corner of McCord street. This location is very convenient to coal-yards, and as the Lachine Canal runs close by, fresh water in abundance is obtained for steaming purposes. The building has a frontage on William street of 350 feet, and is a

substantial brick structure. The section devoted to the engine room is 80 x 200 feet. It is well lighted by large side windows and by windows in the roof.

The steam-power plant consists of six cross-compound Corliss engines of 600 H. P. each, which run at about 70 revolutions per minute. Three of the engines are belted to two 300-K. W. General Electric multipolar generators. Two of the generators are set on one bed plate, and by means of a friction clutch one or the other or both may be operated. The other three engines are belted to four 200-K. W. General Electric bipolar generators.

The switchboard, which is located at one end of the building, is very attractive and complete. It stands ten feet above the gallery floor and runs the entire length of the building. The board is built up of terra-cotta bricks and covered with a coating of adamantine plaster. Westinghouse instruments are used for the different circuits, the face of each being illuminated by an incandescent lamp. The board is 62 feet long, 11 feet high and nine inches thick, the gallery being reached by two short flights of stairs. A very complete annunciator system is provided for intercommunication between the switchboard and the engines.

The boiler plant consists of 16 double-flue Lancashire



CONVENTION HALL, WINDSOR HOTEL, MONTREAL.

Among the other objects of interest may be placed the Bonsecours Market, the Government House, Hotel Dieu Hospital, McGill College, and various other institutions of learning; the different nunneries, the statue of Queen Victoria, Nelson's Monument, the Young Men's Christian Association Building, Mount Royal Cemetery and the wonderful reservoirs, excavated out of solid rock, located 206 feet above the river, and being 25 feet deep. The supply of water for these reservoirs comes from above the Lachine Rapids, and their cost, with machinery, was over \$2,000,000. The Lachine Canal is one of the principal public works.

The drives around Montreal are exceedingly pleasant, the enjoyment of the beautiful scenery being enhanced by the splendid carriage roads. The wharves of the city of Montreal are not equalled in America. They are constructed in the most substantial manner.

The Victoria bridge, which connects the city with its opposite shore, was built and is owned by the Grand Trunk Railway, and is used for railway transit exclusively.

Do not fail to register your name at the ELECTRICAL AGE's headquarters, Montreal.

boilers, made in Manchester, England. The boilers are rated at 250 H.P. each and are designed to carry a working pressure of 125 lbs.

The overhead construction along the lines is of the standard type, Morris Tasker & Co.'s sectional iron poles being used. The trolley wire is No. 00 B. & S. gauge, and is supported by "West End" hangers with mechanical clips; span and guard wires are of No. 9 galvanized iron wire. Both solid and stranded No. 0000 feeders are used on the line, and the rails are bonded with No. 4 copper wires soldered to rivets driven in the rails and interconnected at short intervals.

The track rails are of English make, and are of the grooved girder type,  $6\frac{1}{2}$  inches high and weighing 72 lbs. to the yard.

The company's main repair shop is located on Coté street, and is a brick structure two stories high, and 150x



SAULT-AU-RECOLLET TERMINUS MONTREAL PARK AND ISLAND RAILWAY.

115 feet. Most of the upper floor is devoted to repairing of car bodies, a section being used for armature winding and repairing. On the ground floor is the machine shop and car shed, the power for the shop being supplied by an electric motor taking its current from the trolley line, and the car shed having a capacity of 16 cars. Under each track in the car house is a pit 100 feet long and five feet deep.

Each pit is provided with a truck and hydraulic lift for handling the heavy parts of the motors. Adjoining the repair shop is a brick car barn with a capacity of 20 cars, and an emergency station with an emergency wagon and comfortable quarters for the men, who are always on duty ready to respond to fire-alarms and other emergencies in connection with the operation of the road. There are besides this shop three others in different parts of the city.

The company's records show that the cars run 650,000 car-miles per month, carrying 2,600,000 passengers.

The Montreal Street-Railway Company has a capital of \$3,000,000. It obtained its franchise on July 19, 1892, for 30 years, agreeing to pay therefor to the city annually four per cent. on its receipts up to \$1,000,000; six per cent. on amounts from \$1,000,000 to \$1,500,000; eight per cent. on \$1,500,000 to \$2,000,000; ten per cent. on \$2,000,000 to \$2,500,000; 12 per cent. on \$2,500,000 to \$3,000,000 and 15 per cent. on all amounts above \$3,000,000.

The officers of the company are: L. J. Forget, president; J. Ross, vice-president and managing director; E. Lueher, secretary and treasurer; G. C. Cunningham, manager and chief engineer; D. McDonald, superintendent.

#### MONTREAL PARK AND ISLAND RAILWAY CO.

The Montreal Park and Island Railway Company is essentially a suburban system, though under a working arrangement with the Montreal Street Railway it has rights over its tracks to the central parts of the city, and

at the present time is running cars to Craig street, which is one of the principal business streets of the city, thus bringing suburban passengers without change of cars to the centre of the city.

At present two lines are in operation. (1) The Back River line, cars for which leave the corner of St. Lawrence and Craig streets, continuing up St. Lawrence and St. Dominique street to Mount Royal avenue, the northerly limits of the City of Montreal; at the corner of Mount Royal avenue and St. Lawrence street, the Montreal Park and Island Railway begins, and from this point to the present terminus at Sault au Recollet is a distance of 6.55 miles. This line is single track. An extension of this line is in contemplation that will extend to St. Vincent de Paul, which will render the line a greatly increased traffic.

(2) The Mountain Division, cars for which leave the corner of Craig and Bleury street, continuing up Bleury street and Park avenue to Mount Royal avenue, where the Montreal Park and Island Railway commences; thence northward and westward, through Outremont, Cote des Neiges, and Notre Dame de Grace to the Town of Westmount, where a junction is made with the Montreal Street Railway. The length of the Mountain line is six miles, half of which is double track and half single track.

In addition to these lines there is an extension of about a mile into the "Annex," a growing section of the municipality of St. Louis du Mile End along Park Avenue, which bids fair to become a favorite residential locality at an early date.

During the summer months the lines do a very large business, the routes being chosen so as not only to afford easy and quick transportation to the suburbs for business men, but also to carry pleasure seekers to and through most delightful places, affording fresh air and lovely scenery, such as few places in America can boast of; and to make the circuit of Mount Royal in one of the M. P. & I. cars is something every visitor tries to do before leaving the city.

The line is all laid with 56 lb. Cammell steel rails of T section, the joint fastenings are angle bars, plain fish plates, and some Stever rail joints; the last named are promising very well. The ties are nearly all hard white



WINTER SCENE ON MONTREAL PARK AND ISLAND RAILWAY.

cedar, and Fox tie plates are used on curves and on some tangents.

The overhead construction is of the West End type. The double-track work is nearly all centre construction, the remainder being span construction. The poles are cedar, 30 feet long, and eight inches diameter at top. The feeder system is overhead and is chiefly of 0000 wire; it and the trolley wire were made by the Dominion Wire Co., of Montreal.

The equipment consists of 17 motor cars and seven trailers. Seven of the motor cars are open. The motors



are 30-K. W., some of the Westinghouse No. 3 and some No. 12. The remainder are Royal electric equipments with No. 28 Westinghouse controllers; these motors are really 37½-K. W., and are well suited to the needs of the road. The quality of work in the "Royal" equipments is excellent, which easily accounts for the good results obtained. There are two motors on each car.

The cars are of various makes, mostly from local firms.



BACK RIVER STATION MONTREAL PARK AND ISLAND RAILWAY.

The speed of cars is, outside of the towns, about 12 miles per hour, and in the town seven miles per hour. The various franchises extend for 30 years, and are exclusive in their privileges, also including in some instances electric lighting powers.

The power house is located temporarily in the Exposition Company's building on Park Avenue, but preparations

Royal Electric Co. The switchboard is not of a permanent character, and in fact, pending the construction of a new power house, there are many things about the power house of a temporary nature which serve very well the purpose under the existing circumstances.

The engines are two in number; the larger one has 22x48 cylinder and the smaller one has 16x42 cylinder, both of the Corliss non-condensing type, belted direct to the generators.

The boilers are four in number, 60 inches diameter and 14 feet long, with 80 tubes 3½ inches diameter.

The officers of the company are: Hon. Louis Beaubien, president; Hon. J. Rosaire Thibaudeau, vice president; R. L. Gault, treasurer; Henry Holgate, manager and engineer; Alfred Roy, accountant; Henry Harper, electrician.

### THE WINDSOR HOTEL, MONTREAL.

HEADQUARTERS OF THE AMERICAN STREET RAILWAY ASSOCIATION.

The Windsor is one of the finest hotels on the American continent, and its location is one of the most charming in the city; being centrally located, it is within easy reach of the business section and only a few minutes' walk from the main railroad station.

The appointments of the Windsor are of the most elegant character, and no efforts nor money have been spared to keep it up to its high standard of excellence. The rooms are luxuriously furnished, and every convenience is provided for the comfort and enjoyment of the sojourner.

The Grand Rotunda is the first feature to attract attention on entering the hotel at the Dominion Square entrance. Here are situated the hotel office, backed by a magnificent stained glass window, ticket and telegraph offices, and the cigar and book and newspaper stands. The rotunda has a dome roof which is lighted by skylights. The rotunda has recently been refrescoed, giving it a magnificent appearance. The floor is of square marble slabs.

The Grand Promenade, on the first floor above the



GRAND PROMENADE, WINDSOR HOTEL.

are being made for constructing a new power house on the Lachine Canal, and transmitting by high tension current to sub-stations to be located in various parts of the territory covered.

There are two four-pole generators in use, one 200-K. W. and one 100-K. W. rated capacity, both made by the

ground, is 180 feet in length by 40 in width, and is carpeted with the softest of Wilton carpets of rich design. Running down the centre of the promenade are beautiful columns, around the top of which are circles of electric light. The promenade is furnished with comfortable lounges and chairs.

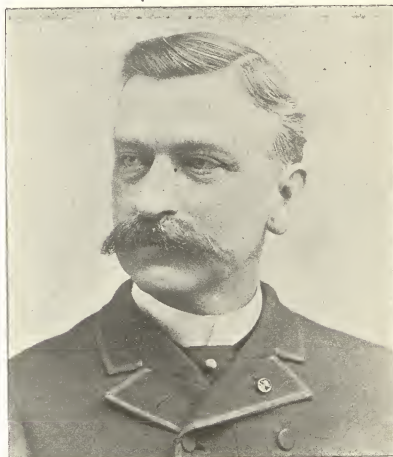
The dining-room of the Windsor is a magnificent hall. It is 112 feet long by 52 feet wide, and is 27 feet high, and has an elegant marble floor. The room is lighted by three large domes, around each of which is a circle of

electric lights, and when the lights are turned on the effect is truly beautiful. This dining-room has a seating capacity of 500, and it is said to be one of the largest and best frescoed dining-rooms on the American continent.

### OFFICERS OF THE AMERICAN STREET RAILWAY ASSOCIATION.



JOEL HURT, PRESIDENT A. S. R. A.



COL. J. N. PARTRIDGE, SECRETARY PRO. TEM. A. S. R. A.



W. WORTH BEAN, ST. JOSEPH, MICH.  
FIRST VICE PRESIDENT A. S. R. A.



COL. J. H. CUNNINGHAM, BOSTON.  
SECOND VICE PRESIDENT A. S. R. A.



RUSSELL B. HARRISON, TERRE HAUTE, IND.  
THIRD VICE PRESIDENT A. S. R. A.

#### JOEL HURT, PRESIDENT A. S. R. A.

The extreme South, represented by President Joel Hurt, and the extreme North, represented by the fair city of Montreal, this year clasp hands, and the warm-hearted people of the Canadian Metropolis welcome the association of which Mr. Hurt is the head.

Mr. Hurt is one of the most widely known street-railway men in the United States. He symbolizes energy and progress, and is one of the association's staunchest advo-

cates. He is, besides, one of the most prominent citizens of Atlanta, Ga., where all his interests are.

Mr. Hurt is a Southerner by birth, being born in Russell county, Ala., in 1850. Through his own efforts, backed by a determination to shine in the world, he secured a good education, which culminated in his graduation in 1871, from the University of Georgia, with the degree of civil engineer. He at once entered the practice of his profession, and spent some time in building new railroads in Arizona and Colorado. He afterwards re-



turned to Georgia and was engaged for a couple of years in the building of the North-Western Railroad of Georgia. On the completion of this work he began a commercial career as an insurance and real-estate broker. He materially aided in the upbuilding of Atlanta through various business and financial companies which he organized. In 1882 he became secretary for the Atlanta Home Insurance Company. He was the organizer of the East Atlanta Land Company, which has been so successful in developing what is now the finest section of the city.

In 1891 Mr. Hurt was elected president of the Atlanta Consolidated Street-Railway Company, and at once undertook the task of bringing all the city street-railway companies under one management and equipping them with electricity. The results of his efforts in this direction is that Atlanta has, today, the best managed and equipped street-railway system in the South.

Mr. Hurt was elected president of the Street Railway Association at the convention last year, which was held in Atlanta, and a more popular and intelligent gentleman never filled the chair.

### COL. JOHN N. PARTRIDGE.

Col. Partridge, president of the Brooklyn City and Newtown Railroad Co., Brooklyn, N. Y., and secretary *pro tem* of the American Street-Railway Association, is one of the best known street-railway men in the country.

He was born in Worcester County, Massachusetts, in 1838, and began his mercantile career in Boston. Col. Partridge was in active service during the war, serving three years of that awful period of strife in a Massachusetts regiment. Since the war he has resided in Brooklyn and become prominently identified with the street-railway interests in that city. He was at first in the mercantile business in Brooklyn, and was afterwards Fire Commissioner for one term, than Police Commissioner for one term, both terms under Mayor Low.

Col. Partridge has been president of the Brooklyn City and Newtown Railroad Co. for nearly ten years.

### COL. J. H. CUNNINGHAM.

Col. Cunningham, second vice-president of the American Street-Railway Association, is one of the busy men that the street-railway business has produced. He was president of the Massachusetts Street-Railway Association for three years; president of the Norwich (Conn.) Street-Railway Co. for nine years, and president of the Plymouth and Kingston Street-Railway Co., Plymouth, Mass., for five years.

At the present time he fills several important positions, and the interests with which he is associated are all prosperous under his counsel and capable and careful management.

Col. Cunningham is the vice-president of the Gloucester, Street-Railway Co., Gloucester, Mass., and president of the Boston Construction Co., which has built several street railways in New England. He is besides a large owner, or director in the following named street-railway companies: Lynn and Boston Street-Railway Co.; Gloucester Street-Railway Co.; Worcester and Suburban Street-Railway Co.; Haverhill and Amesbury Street-Railway Co.; Gloucester and Rockport Street-Railway Co.; Athol and Orange Street-Railway Co., and Reading and Lowell Street-Railway Co. He is interested in several other non-electrical industries, being the largest owner and a director in the Chelsea Ferry Co., which line runs between Boston and Chelsea, and president of the Winnisimett National Bank, of Chelsea, Mass.

Col. Cunningham was in the state military service for 12 years, three of which he was assistant adjutant general of the State, with the rank of colonel. He has a host of friends, and is highly esteemed by all who know him.

### RUSSELL B. HARRISON.

Mr. Russell B. Harrison, 2d vice-president of the American Street Railway Association, is known to all street railway men as one of the most progressive spirits in the electric street-railway business. Mr. Harrison is president of the Terre Haute Electric Railway Company, of Terre Haute, Ind., and through his capable management he has brought the condition of his road up to such a point that it is now generally regarded as a model of electric railway construction, both as regards roadbed and equipment.

Mr. Harrison is a firm believer in doing things well, and that he practices what he preaches is evidenced by the excellence of the Terre Haute system. At the last meeting of the association—in Atlanta, Ga., last October—he read an interesting paper entitled "The Rail Construction of the Terre Haute Street-Railway Company," which was the means of elevating that company's system to the dignity of a standard, and the road has ever since been referred to, comparatively, in connection with other new street-railway undertakings.

Mr. Harrison is quite a young man yet, full of energy and determination, and was engaged in several successful enterprises prior to his appearance in the electric railway field. He is a mining and electrical engineer by profession, and spent several years in Montana in the mint service of the government and in mining and stock raising. He was also engaged in the newspaper business in the West, and later, in New York City, as one of the owners of Frank Leslie's Illustrated Newspaper.

The wonderful development of the electrical business attracted Mr. Harrison's attention, and he decided to cast his fortune in that direction. He disposed of his New York newspaper interests and has, ever since, been engaged in the electric railway and electric lighting business. He has established for the Terre Haute road a national reputation for solidity of construction, particularly heavy track construction, and has introduced many novel and interesting improvements in the electric railway, electric lighting and the steam-heating business.

The Terre Haute Electric Railway Company, in connection with its railway operations, does the public and commercial lighting and steam heating of Terre Haute.

Mr. Harrison, it may be noted, is the son of Ex-President Benjamin Harrison.

### D. G. HAMILTON.

D. G. Hamilton, member of the Executive Committee of the American Street Railway Association, was born in Chicago. He received his education in the schools of that city and afterwards attended Asbury University (now De Pauw) from which institution he was graduated in 1865. He then took up a course of law and graduated from the University of Chicago.

Mr. Hamilton is a man of great business capacity, and is actively interested in many large enterprises. He was for many years a director in the Chicago City Railway Company, and is now president of the National Railway Company, which controls and operates five of the lines in St. Louis, of each of which he is also the president. These roads are the St. Louis Railroad Company, Cass Avenue and Fair Grounds Railway Company; Baden & St. Louis Railway Company; Citizens Railway Company, and the Southwestern Railway Company—the last named having been in operation since August 1, last. The Cass Avenue & Fair Grounds Railway Company was created by the consolidation of the Cass Avenue Railway, the Northern Central Railway and Union Railroad Companies.

Besides these large interests Mr. Hamilton is the manager of the Utica Cement Manufacturing Company, a director of the Union Mutual Life Insurance Company, of Maine, and a member of the Board of Trustees of the University of Chicago.

## HENRY C. PAYNE.

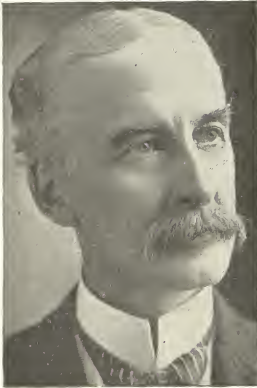
Henry C. Payne was born in Ashfield, Mass., on November 23, 1843. The early years of his life were spent in his native town, where he attended the country school. He afterwards went to the Shelburn Falls Academy, where he was graduated at the age of sixteen. After this he went into business in Northampton, Mass. At the breaking out of the civil war he enlisted in the 10th Massachusetts Volunteers, but owing to his youth he was not mustered in. In October, 1863, he moved to Milwaukee, and started life as clerk in a dry-goods house, in which business he was engaged for four years. During this period he became interested in the Young Men's Library Association, and was elected its president. He afterwards became interested in politics and, in 1872, became leader in the organization of the Young Men's Republican Club. Under his guidance the association became a power, and is now known as the Republican Central Committee of Milwaukee county. In 1876 he was appointed postmaster of Milwaukee by President Grant, which office he held for ten years.

## IS A FREIGHT OR MAIL SERVICE PROFITABLE OR UNPROFITABLE ON STREET-RAILWAYS.\*

BY BENJAMIN NORTON.

The simplest answer to this question is yes, if it can be performed at a profit, and no, if it must be performed at a loss. Now, apparently, the question is solved, and I have no further need to discuss it; but, as this is a subject which will eventually be taken up seriously by most electric railway companies, it is worthy of very careful consideration.

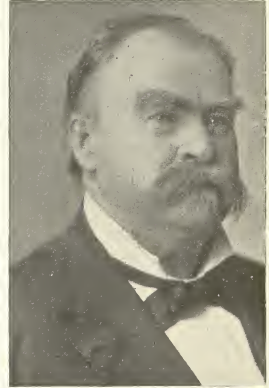
In the case of a street-railway which has no suburban outlet and no direct or close connection with some other line which operates, or can conveniently operate, a freight service, it might be a very unprofitable venture to undertake this class of traffic. Today, however, there is hardly an electric railway (and we will speak of electric roads only now, since horse power is a thing of the past) which does not have suburban outlets or chances for them. Therefore, we may safely say that a freight service as a general



D. G. HAMILTON, ST. LOUIS.  
Member Executive Committee A. S. R. A.



HENRY C. PAYNE, MILWAUKEE.  
Ex-Pres. and Member Exec. Com. A. S. R. A.



GEN'L W. H. JACKSON, NASHVILLE, TENN.  
Member Executive Committee A. S. R. A.

Mr. Payne is a man of extended business interests, and in 1885 became president of the Wisconsin Telephone Company, which office he still holds. He is also a director of the First National Bank, and holds official positions in various railroads and other concerns in that section of the country.

He became interested in street-railway work, and was president of the Milwaukee and Cream City Street-Railway Company until this line became a part of the Villard system. He was afterwards vice-president and general manager, and is now one of the receivers of the Milwaukee Street-Railway Company. Mr. Payne is very popular and universally liked by street-railway men and others who are acquainted with him. He was president of the American Street-Railway Association during 1893-94.

## CONSOLIDATION IN PHILADELPHIA.

The Philadelphia, the Electric and the People's Traction Companies were consolidated on October 7, under the title of the Union Traction Company of Philadelphia. The combined companies form the greatest single system of street roads in existence, with about 425 miles of road now operated and a combined capitalization in stock and bonds, including that of all the subsidiary companies, of more than \$108,000,000.

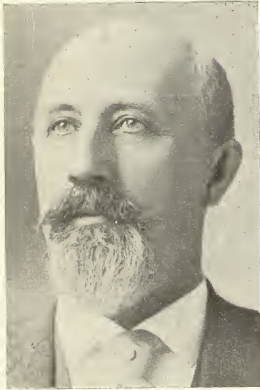
rule ought to pay. Very few electric railroads thus far have branched out into this field, and as I happen to be interested heavily in a line which has gone vigorously into the matter, I can tell briefly our experience and can show you what a successful feature of our business the freight branch of it is; so much so, that we have a regularly organized freight department, way-billing merchandise in regular steam railroad fashion, and running regularly scheduled freight trains, all of which pays, and pays handsomely. This line grew out of a tumble-down horse railroad in the City of Newburgh, and, after being rebuilt and extended and equipped electrically, we found ourselves tapping the rich Walkill Valley at Walden, twelve miles away, and terminating at the front door of one of the largest cutlery works in this country, running by all the stores and shops in town, and giving an opportunity besides to the dairymen of Orange County to get their milk, butter and cheese to boats on the Hudson river at Newburgh inside of an hour, when formerly they had carted it the distance over the rough country roads, the teamster spending pretty much the day at it and returning home at night with their mule teams tired out and often a broken-down wagon.

This line today, because it is a short cut in the first place, (Continued on Page 223.)

\* Paper read before the Convention of the Street-Railway Association of the State of New York, Albany, September 17, 1895.



SOME FAMILIAR FACES THAT WILL BE SEEN AT THE MONTREAL CONVENTION.



EDGAR PECKHAM,  
President Pechham Motor Truck & Wheel Co.,  
New York.



H. L. SHIPPY,  
Manager J. A. Roebling's Sons Co.,  
New York.



FRANK S. DE RONDT,  
Manager Standard Paint Co.,  
New York.



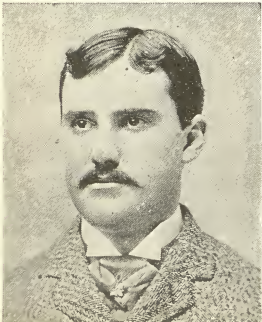
ANDREW RADEL,  
President and General Manager Bridgeport Traction Co.,  
Bridgeport, Conn.



HENRY SETZER, JR.,  
Director Bridgeport Traction Co.,  
Bridgeport, Conn.



JOHN C. DOLPH,  
Eastern Manager Forest City Electric Works  
of Cleveland, Ohio.



KING J. P. MCQUAIDE,  
Secretary and Treasurer National Conduit Mfg. Co., N. Y.



MAJOR H. C. EVANS,  
The Johnson Co., New York.



A. J. CORRIVEAU,  
Montreal Park and Island, Ry., Montreal.



CAPT. WILLARD L. CANDEE,  
The Okonite Co., Limited, New York.



JOHN A. BRILL, OF J. G. BRILL & CO.,  
Car Builders and Trucks, Philadelphia.



JOHN A. SEELY, OF BELDEN & SEELY,  
Electrical Contractors, New York and Syracuse.



J. S. SPEER, SECRETARY  
Partridge Carbon Co., Sandusky, Ohio.

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THE MEN WHO MAKE  
PARTRIDGE BRUSHES.

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The two pictures, on the right and on the left, are of the faces of two gentlemen well-known to street-railway men. They are those of James Partridge and J. S. Speer, of the Partridge Carbon Co., Sandusky, Ohio. Every electric railroad man is familiar with the excellence of the Partridge Company's brushes for railway motors. A great majority of these railways use these brushes with the best of results, and Messrs. Speer and Partridge will endeavor to satisfy all others at the convention that the Partridge brushes are the best and most economical to use.



JAS. PARTRIDGE, MANAGER  
Partridge Carbon Co., Sandusky, Ohio.



H. M. WATSON, PRESIDENT  
Buffalo Railway Co., Buffalo, N. Y.



JAMES W. GODFREY, MANAGER  
India Rubber and Gutta-Percha Insulating Co., N. Y.



FRANK BROWNELL,  
Brownell Car Co., St. Louis, Mo.



(Concluded from page 220.)

and because goods can be transported at low rates, in the second place, is handling the dry goods and other merchandise for Walden merchants, shipped from New York by boat to Newburgh; the raw material for the cutlery works, in the way of steel, brass and wood and other supplies, and bringing back manufactured material in cases; hay, straw and fruit; and condensed milk in cans from the Borden condensery only two miles from our terminus at Walden. The road runs along the highway in some portions, and at other points the line is set back from the roadway on independent property; but we run near to many large farms, and the men on these places hustle their hay and straw in bales out the side gate to the track and stop the freight car handily, saving (besides 50 cents to \$1.00 per ton freight) a long drive to the steam road freight house.

In the month of August the operating cost for handling our freight was a trifle over 40 per cent of the gross re-



CAPT. W. WOLCOTT MARKS,  
Bishop Gutta-Percha Co., New York.



WILLIAM S. SILVER,  
Of William S. Silver & Co., Car  
Springs, New York.

ceipts. We ran three motor freight cars, carrying from 8 to 12 tons each, and four flat or gondola cars as trailers, carrying from 6 to 8 tons each. At Newburgh the line runs alongside the string-piece of the steamboat dock, so that everything can be easily skidded between the boats and cars. We also run close to the Erie and West Shore freight houses and tracks, insuring an all year round New York connection, although as a rule the Ramsdell line of boats is out of service but one month of the year.

Some of our Walden friends remarked the other day that the Walkill Valley Railroad people had soured on the trolley, because their freight trains in both directions were running through Walden without stopping, and they were discussing the notion of discharging their freight agent at that point altogether. I may add that the past week we have hauled from Walden to the Hudson river, among other kinds of freight, about 75 tons of grapes, and the coming week we will do the same. The rate of 13 cents per hundred pounds net to us makes \$2.60 per ton, which is a good rate, and requires but one trip per day of a motor freight car and trailer to get it. To earn the same amount of money with a passenger car would take the entire day, and a regular full day crew besides.

The experiments now being made by the New Haven railroad people on their Nantasket Beach road are probably not new to you, and it looks very much as though freight business on electric railroads would not only be profitable in the near future but generally be adopted as a means of revenue by a large percentage of such companies.

As to mail contracts, while the government compensation is comparatively small, the actual cost to a company for performing the service is so little that they must be profitable, to a certain extent; but aside from this no large corporation in a large city where the circumstances call for such a contract, should overlook a special safeguard in time of strikes. During my presidency of the Atlantic Avenue Company in Brooklyn we undertook to serve the government in this regard and prepared special cars. Part of these cars were devoted to the mail and the mail clerks,

and part to regular passengers, so that when they were on the line they were earning money from passengers for the company, the same as other cars, while the U. S. Mail signs always insured a clear track in crowded streets.

Our experience during the great strike of last winter proved conclusively the value of a government contract for carrying the mails. The 19 cars on our Fifth Avenue line, which, by the contract, were permitted to carry the legend, U. S. Mail, were not molested, and we were able to keep that particular line open throughout the whole trouble. In view of all the circumstances, I believe a mail contract for a street railway is one of the most profitable things for a small one that they can undertake.

## GENERAL TRACK CONSTRUCTION.\*

BY C. LOOMIS ALLEN.

The evolution of track construction for electric service from that of horse-cars has been very rapid, when considered with the length of time it has taken the steam roads to reach the point of excellency which many of them have attained. In fact, some of our electric roads can show permanent way equalled by but few of the steam roads.

The days of stringer-box girders, three-point or butterfly light girder and light tee-rail sections have passed away, to make place for the deep girder or deep tee-rail sections; the former being used in cities and villages of some size, the latter in country roads and small towns. In the transformation of motive power of a railroad system from horses to electricity or cable, the last department—generally speaking—to receive any outlay of money is the track department; and then only when the car-repair bills and track maintenance are so costly as to demand an investigation and its consequent repairs. Many of you who have passed through this experience can remember how heavier rails and stronger joints alone was the prescribed remedy, which when applied were found to be only temporary, and poor track the results after a few months of operation. It has been only recently and after very costly experience that any attention has been given by street-railroad officials to the matter of foundations, or to the conditions of the sub-grade upon which is placed the ballast, and I am sure that experience will bear me out in my statement that economy in track maintenance begins with the making of firm foundations.

A great many obstacles are encountered in finding firm foundations for electric roads, with which the steam roads do not have to cope. Let me cite a case which in cities is very common. A street is about to be paved with permanent pavement, and the street-railroad officials having secured the best of track material, propose to lay permanent track. Having decided upon the plans of construction, they enter upon their execution. The first work is the matter of excavation of the material in the street to sub-grade; as is generally the case, the sewers, water-mains, gas-mains, electric conduits or sub-ways have been previously constructed a sufficient length of time to allow the trenches to settle—the popular idea is that one winter will settle trenches—the surface of the street seems firm and fairly solid; excavation progresses to such depth as is desired, and the rolling of the sub-grade with a heavy roller to make thoroughly firm has begun. Then appears the conditions of improperly filled trenches, vexing the engineer in charge of construction and making him thoroughly disgusted with the manner in which the construction of underground structures is conducted; and well he has a right to be; with sewers in the centre of the street, gas, water and sub-ways on either side, very little of the undisturbed ground can be found. The only remedy is to properly fill all the trenches and make them firm foundations. It is enough to discourage the intentions of any railroad company from constructing permanent way, in the face of just one difficulty the size of this. It makes men feel as if they were at their own expense

\* Paper read at the Convention of the Street-Railway Association of the State of New York, Albany, September 17, 1895.

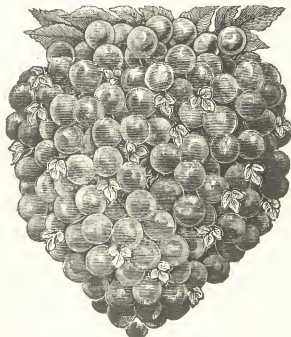
making good the poor work of municipal authorities, and in some cases this is true.

Back-filling of trenches in a general clause is always provided for in the specifications for underground structure. This clause is supposed to cover the treatment of all classes of soil, but, in actual practice, each type of soil requires a very different treatment. I do not propose to discuss the manner or methods of trench filling, but I do suggest that railroad companies co-operate with city officials in placing in specifications for underground structures clauses pertaining to the proper filling of trenches. Post the bidding contractors on such work that these clauses are for the purpose of properly filling the trench, and to the successful contractor in obtaining such a contract, by all means see that the conditions of this clause are fully carried out. The question of back-filling has never been given the amount of attention that should have been given it by engineers, the universal belief being that the concrete foundations of pavements will bridge these settlements. How many poor pavements have we in cities, and how many pieces of poor track can be seen from this erroneous practice. Some few railroad companies have become so thoroughly discouraged in attempts to obtain firm foundations that they have been to the great expense of placing concrete foundations six inches thick under the ties to support them, thus bridging the various settlements. This method may be practical in some cases where firm foundations are not obtainable, but beyond these extreme cases, its cost removes it beyond practical use. I maintain that trenches can be properly filled and by the aid of sufficient rolling a firm sub-grade can be obtained, permitting the use of broken stone ballast and lessening the cost of concrete foundations by two-thirds. Remove all soft and spongy places in the sub-grade; lay tile drains connected to sewers to such points as seem at all springy, and have the line of the sub-grade, after it has been thoroughly rolled, conform in line and section to the finished grade.

(To be continued.)

#### HANDSOME ELECTRIC LIGHT NOVELTY.

The accompanying illustration is of a very handsome electric light novelty recently brought out by L. D. Hatton & Company, 11 Warren street, New York. It represents a cluster of grapes, and is intended to fit over an



ELECTRIC GRAPE CLUSTER.

incandescent lamp. The electric light shining through gives a very beautiful effect, strongly imitating a cluster of natural grapes.

These grape clusters are tinted in various shades to correspond with the colors of the fruit they are intended to represent, and the large California wine producers are using a great many of them, giving them away to their favored customers.

They are durable and can be washed without danger of breaking. They are nine inches high, eight inches in

diameter, and weigh only eight ounces. They are provided with  $3\frac{1}{4}$  inch fittings.

These grape bunches will no doubt meet with a large demand from cafés, wine rooms, and other places where decorative lighting is wanted.

## Telephone Notes.

JACKSONVILLE, FLA.—Jacksonville Telephone Co. incorporated. Capital \$100,000. W. N. Shine, of Tallahassee; A. H. King, of Jacksonville and C. B. Collins of Tallahassee.

TELEPHONE PATENTS ISSUED OCTOBER 8, 1895.

TELEPHONE SYSTEM.—Frederic D. Shepard, Milwaukee, Wis. (No. 547,460.)

TELEPHONE SWITCH.—Willard M. Miner, Plainfield, N. J. (No. 547,613.)

AUTOMATIC TELEPHONE SYSTEM.—George K. Hutchins, Baltimore, Md. (No. 547,755.)

## Street Railway Notes.

CROMWELL, CONN.—The Selectmen of Cromwell have granted the Middletown Electric Railway the privilege of a trolley system through that town.

FREDERICK, MD.—The Frederick Aldermen have granted a franchise to the Frederick and Middletown Electric Railway Co. The road must be built within two years, under the franchise.

JACKSONVILLE, FLA.—It is said that an electric road between Jacksonville and St. Augustine will be built this winter. The capital stock of the company is placed at \$2,000,000.

WAVERLY, IA.—J. N. Bowman, president of the First National Bank, is interested in the company to be incorporated to construct an electric road between Cedar Falls and Waverly.

SAGINAW, MICH.—At a meeting of the Township Board of Bridgeport, a 30-year franchise was granted to the Saginaw Street-Railway Co. to run a line along the Genesee Plank Road, from the city limits to Bridgeport.

## New Corporations.

MILWAUKEE, WIS.—The Chicago and Wisconsin Inland Lakes Railroad Company has been incorporated by A. E. Case, Frank Boden, S. Marcus Rothschild, A. J. Toolin and G. D. Green, to build an electric railway from Chicago, Ill., to Madison, Wis., and branch lines to the lake resorts. Capital stock, \$10,000,000.

SAN FRANCISCO, CAL.—Merced Falls Electric Power and Manufacturing Company has been incorporated by R. H. Dunham, Herman Jahn, J. T. Fleming, Augustus Laved, Alameda, Ga.; Basil Owen, London, England. Capital stock, \$1,000,000.

BALTIMORE, MD.—The Equitable Electric Light Company has been incorporated by Henry A. Parr, John Cowan, George R. Webb, J. William Middendorf and Richard R. Culbreth, for the purpose of supplying electric light and power. Capital stock, \$50,000.

LOS ANGELES, CAL.—E. E. Peck has organized an electric light company with a capital stock of \$80,000.



**NEW YORK CITY.**—Croton Valley Electric Railway Company, incorporated to construct a narrow gauge street surface railroad about four miles long, from the New York Central station in Croton-on-the-Hudson to the new Cornell dam. Capital, \$10,000. Directors, Charles E. Grattan, Edward White and Robert B. White, all of Croton-on-the-Hudson.

**COLUMBUS, O.**—The Citizens Light, Heat & Power Company, of Columbus. Capital, \$200,000. Incorporators, Charles S. Knight, R. T. McDonald, of Fort Wayne, Ind., and Thomas Cooper, B. C. Beggs, and R. R. Rickly, of Columbus. It is proposed to establish an electric plant, and it is understood that the project is backed by the Fort Wayne Electric Corporation, of Fort Wayne, Ind.

**NIAGARA FALLS, N. Y.**—Niagara Falls Street-Railway Co., incorporated, to construct a street surface railroad. Capital, \$50,000. Directors: Arthur G. Dennison, Charles H. Hinchman, George L. Estabrook, Jr., Joseph S. Clark and Robert L. Byron, of Philadelphia, Pa.; James S. Simmons, E. H. Stewart, Walter P. Horn and Spencer J. Lawrence, of Niagara Falls.

**TOWSON, MD.**—The Wetheredville, Franklinton and Edmondson Avenue Electric Railway Co. has been incorporated. Capital, \$25,000. Incorporators, Wm. Ferguson, Joseph Henry Judic, Charles W. Dorsey, Dr. Joseph C. Monmonier and Levy Z. Condon.

**NEW YORK CITY.**—The Wilson-Bates Electric Company of New York city, incorporated to manufacture telephones and all kinds of electrical or magnetic machinery. Capital, \$1,500. Directors, William C. Wilson, George B. Bates and Henry G. Issertel.

**BETHEL, VT.**—The Bethel Electric Lighting and Power Co., organized with a capital stock of \$15,000. W. H. Creamer, treasurer and general manager; Mr. Stafford, president.

**CINCINNATI, O.**—Simplex Interior Telephone Co. of Cincinnati incorporated. Capital \$5,000. Incorporators, Walter L. Bradshaw, John Seymour, Emil Koll, Robert G. Stevenson and James McClain.

**SOUTH HAVEN, MICH.**—The Oak Telephone Co. incorporated. Capital \$20,000. Officers, C. J. Monroe, president; B. E. Harmon, treasurer; A. T. Dewer, secretary and manager.

## Possible Contracts.

**NEW YORK CITY.**—Blake & Nally will erect five five-story flats on 88th street, west of Amsterdam avenue, to cost \$120,000, from plans prepared by Architects Webster and Thompson, 215 West 125th street. Specifications include steam-heating appliances, electric bells, etc.

**LA PORTE, IND.**—Plans and specifications are being prepared for the erection of a water and light plant, for which bids will be received. A. Van Balkenburg, secretary.

**PITTSBURGH, PA.**—Presbyterian Board of Colportage have had plans made by architects for a ten-story structure, which they propose to erect on Wood street. Cost \$150,000.

**BAYPORT, L. I., N. Y.**—Architect Cummings of Long Island City is engaged on plans for brick passenger and freight depot buildings, for the Long Island Railroad Co., at Bayport.

**TOTTENVILLE, S. I., N. Y.**—Staten Island Rapid Transit Co. will erect a two-story building with a double track trestle 338 feet in length, at Bentley street, to cost \$67,000. Contractor Colin McLean.

**JOHNSTOWN, N. Y.**—George A. Streeter of Johnstown and parties from New York, will soon erect an electric plant, which is calculated to furnish the city of Johnstown, its business places and private residences with light and power.

**NEW YORK CITY.**—R. S. Ely will erect a four-story and

basement brick store and saleroom at 373 5th avenue, to cost \$10,000. Architect, John Downey.

**BROOKLYN, N. Y.**—McLaughlin Bros. will erect an eight-story printing-house on South 11th street, to cost \$60,000.

**NEW HAVEN, CONN.**—T. G. W. Jefferson & Son contemplate the erection of a new block on their property on Grand avenue, from plans made by Architect L. W. Robinson.

**DUNBAR, PA.**—A business block containing opera-house and hotel is to be erected in Dunbar, at a cost of \$50,000 or \$60,000.

**BOSTON, MASS.**—J. Pickering Putnam, architect, has prepared plans for a hotel to be erected on Commonwealth avenue, beyond the Three Roads. Work will be begun at once. Charles Francis Adams and others, trustees.

**HOT SPRINGS, VA.**—President Ingalls of the Big Four and Chesapeake and Ohio, has received plans for a \$100,000 hotel to be built at the Hot Springs.

**GRAFTON, WIS.**—A \$10,000 hotel will be erected by Edward Mueller.

**BROOKLYN, N. Y.**—At a meeting of the Brooklyn Diet Dispensary, 21 De Kalb Avenue, Mrs. J. F. Langstaff, second vice-president, stated that the officers of the dispensary had decided to lay before the Board of Trustees a plan to build a memorial home.

**NEW YORK CITY.**—The Bohemian Gymnastic Association, "Sokol" 536 East 5th street, will erect a four-story brick club house, at 420-424 East 71st street, to cost \$55,000. Architect Julius Franke, 287 4th Avenue.

**PECONIC, L. I., N. Y.**—A club house is to be erected on Robins Island, in Peconic Bay, by the Robins Island Gun Club. The Harlem Wheelmen have appointed a committee to procure a site on the west side of the city for a club house, to be erected after plans prepared by Robert D. Morrison.

**JERSEY CITY, N. Y.**—The site committee of the Palestine Building Association held a meeting September 26, and virtually agreed on a site.

**BUFFALO, N. Y.**—Mr. White of the architectural firm of McKim, Mead & White, 160 5th Avenue, New York city, has been in Buffalo, looking at the Academy of Music property and figuring on the work of planning for the new music hall to be built.

**BROOKLYN, N. Y.**—The plans and specifications of the new building for the Brooklyn Institute of Arts and Sciences were approved October 3, by Building Inspector Wesley C. Busch. Architects McKim, Mead & White, 160 5th Avenue, New York city. Builders, P. J. Carlin & Co.

**NEW YORK CITY.**—Horace S. Ely & Co., 64 Cedar street, will erect a modern business building.

David L. Newburg has sold to Jere C. Lyons, 81 East 125th street, property at 491-493 Broadway and 446 Broome street, fronting on Broadway. The old buildings on the site will be torn down on February 1, and a modern 12-story business building erected on the site.

**SYRACUSE, N. Y.**—Ground has been broken for the new Saul block in James street, adjoining the Klein property. The building to be constructed will be five-stories, brown stone, brick, with cut-stone trimmings.

**NANTICOKE, PA.**—Evan J. Williams intends building a business block on Market street.

**PHILADELPHIA, PA.**—Preliminary plans are being made for a new fire station at Sixth and Sansom streets, on the site of the old Board of Health office, and also one on Belmont avenue, below Girard avenue. A new police and patrol station is to be built on Trenton avenue, below Dauphin street, to replace present structure. The new police and patrol and fire station of the 11th district, at Montgomery avenue and McClelland street, is to be built by Contractor McManus.

**NEW YORK CITY.**—John T. Williams, purchaser of the property at Broadway and White street, will, next spring, erect a modern fire-proof and commercial building on the site.

## ELECTRICAL SOCIETIES.

The Brooklyn Electrical Society held its regular meeting in the Edison Assembly Rooms, 360 Pearl street, on the night of October 8. M. E. Desnoeue gave a lecture on "Submarine Cables and their Possibilities."

**JOURNALISTIC.**—*The American Engineer and Railroad Journal*, which has been published monthly by M. N. Forney, 47 Cedar street, New York, will after November 1 next, appear bi-weekly. This is a wise move and we expect to see our contemporary appear weekly before long.

## Trade Notes.

The Stationary Engineers' Gazetteer Association, 159 La Salle Street, Chicago, has recently issued its Stationary Engineers' Gazetteer of Illinois. It is very complete, and contains a list of Chief Engineers of all steam plants in Illinois; names, locations, and meeting nights of all stationary engineers' associations in Illinois, and much other valuable and special information.

The Okonite Company, Ltd., make a specialty of feeder wires for street-railway use. They are tough and tenacious and are not affected by extreme changes in temperature. Okonite has made an enviable record both in this country and abroad, and is deservedly the most popular insulation known to the electrical fraternity. It is strictly high-grade and "never disappoints."

Mr. John C. Dolph, 126 Liberty street, eastern manager of the Forest City Electric Company, of Cleveland, Ohio, is securing many large orders for his company's roll-drop commutator segments. He is making a special bid on railway work. All manufacturers and repairers of commutators are using these bars, and electric railway companies are deriving the greatest of satisfaction from their use. In addition to the standard railway and motor dynamo bars which Mr. Dolph carries in stock at New York, he can supply at short notice many of the various sizes of motor and dynamo bars of standard manufacture. Prompt delivery of goods is one of the Forest City Electric Company's strong points.

ELECTRICAL and STREET RAILWAY PATENTS  
Issued October 8, 1895.

- 547,441. Electric Bicycle. Hosea W. Libbey, Boston, Mass. Filed Oct. 9, 1894.  
547,457. Trolley-Track. Antony Schumacher, Millington, N. J. Filed Mar. 21, 1895.  
547,460. Telephone System. Frederic D. Shepard, Milwaukee, Wis., assignor to Frederick S. Ilesley and James Sawyer, same place. Filed Feb. 18, 1895.  
547,476. Motor-Truck. John A. Brill and Walter S. Adams, Philadelphia, Pa. Filed Jan. 3, 1894.  
547,482. Wheel-Fender. Herbert Claud, Annapolis, Md. Filed May 8, 1893.

- 547,483. Cut-Off. James H. Dousman, Milwaukee, Wis. Filed Dec. 19, 1894.  
547,522. Car-Fender. James W. McKinnon, New York, N. Y. Filed Dec. 21, 1894.  
547,536. Electric Car-Lighting Apparatus. William Biddle, Brooklyn, N. Y. Filed Dec. 24, 1894.  
547,537. Electric Car-Lighting. William Biddle and Harry E. Dey, Brooklyn, N. Y., assignors to said Biddle. Filed Jan. 9, 1895.  
547,564. Current-Motor. Oscar A. Petterson, Contention, Oreg. Filed Mar. 16, 1895.  
547,566. Car-Fender. Earl Sherwood, Honesdale, Pa., and George B. Parsons, Shawneetown, Ill. Filed July 13, 1895.  
547,568. Electric Key-Action for Pipe-Organs. Edwin S. Votey, William B. Fleming and William D. Wood, Detroit, Mich., assignors to the Farrand & Votey Organ Company, same place. Filed Jan. 21, 1895.  
547,578. Car-Fender. James W. Hentz, Baltimore, Md. Filed Oct. 16, 1894.  
547,613. Telephone-Switch. Willard M. Miner, Plainfield, N. J. Filed June 4, 1895.  
547,628. Car-Fender. Frank B. Crooker, Fitchburg, Mass. Filed Apr. 3, 1895.  
547,659. Electric-Arc Lamp. Harold E. Bradley, Pawtucket, R. I. Filed July 1, 1895.  
547,660. Insulator-Pin and Insulator. Charles F. Carroll, Manistee, Mich., assignor of one-half to Thomas Scott, same place. Filed June 6, 1895.  
547,707. Street-Car Fender. Richard A. Breul, Bridgeport, Conn. Filed Mar. 23, 1895.  
547,714. Time-Controlled Electric Heater. Levitt E. Custer, Dayton, Ohio. Filed Dec. 22, 1894.  
547,753. Cut-Out for Arc Lamps. Daniel Higham, Boston, Mass., assignor to the Higham Electric Company, Portland, Me. Filed June 27, 1895.  
547,755. Automatic Telephone System. George K. Hutchins, Baltimore, Md. Filed May 6, 1893.

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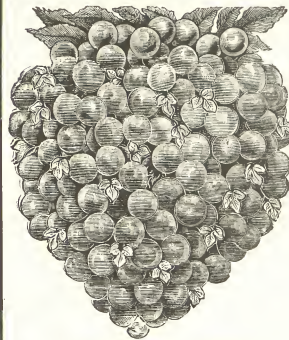
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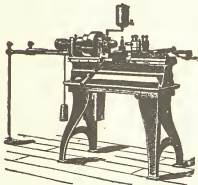
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We would quote the following, given in the February issue of the Street Railway Journal, from an article on "Motor Repairs" by W. E. Shepard.

"The Whole Armature should be carefully painted with two thin coats of P & B."

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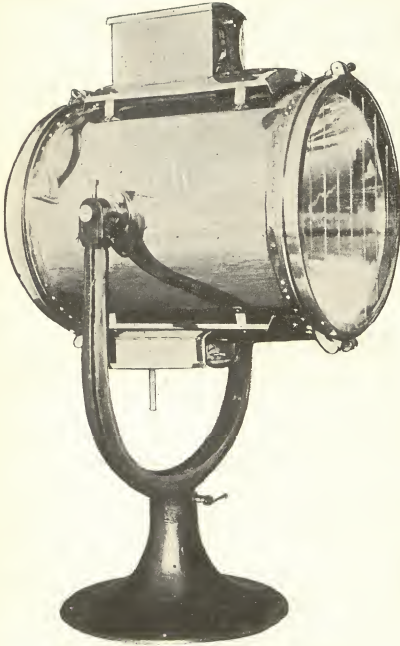
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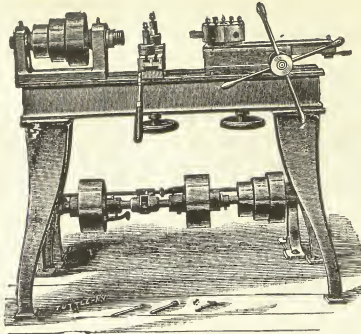
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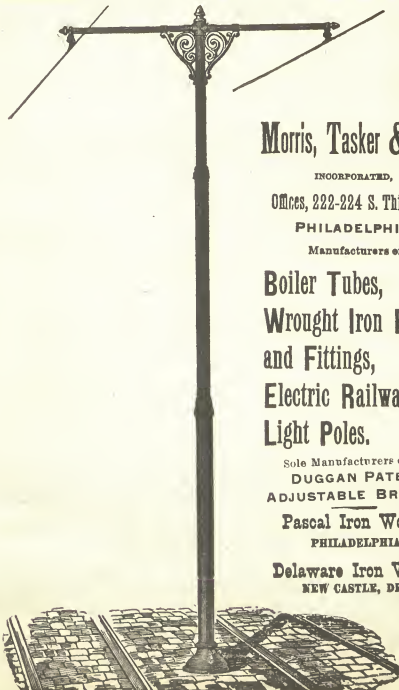
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Fig. 1.

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Fig. 2.

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Fig. 3.

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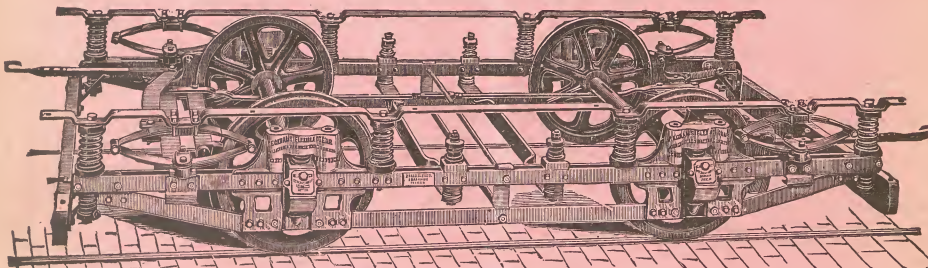
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