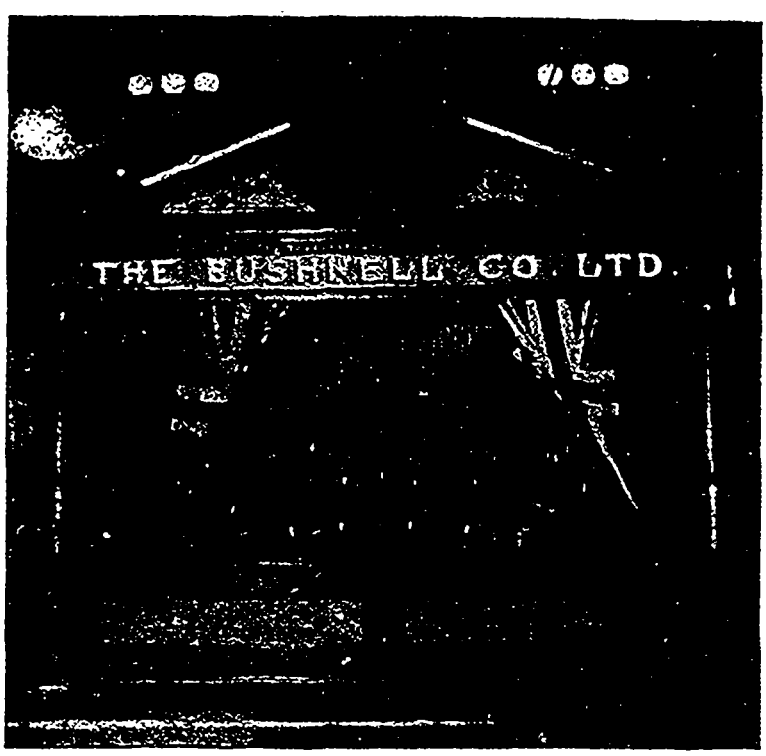
certain amendments to the constitution. The report mentioned that the liabilities of the association exceeded the assets by about $5,000, and it was thought advisable to raise the amount by subscription among the members A list was started and the amount soon raised. The new constitution as amended did not provide for the admission of "supply men," and after a warm discussion it was decided to adhere to the present plan of limiting membership to street railway companies.

In the afternoon an adjournment was made to attend a reception given by the governors of McGill College, in the Engineering building, where Prof Bovey and his staff of professors in the various departments of engineering gave the visitors an interesting exhibition of tests and experiments, which were much enjoyed. After the tests were made the visitors were shown through the departments devoted to electricity, hydraulics, steam and gas engines, wood and iron turning, iron and brass founding, blacksmithing, draughting rooms, cement testing, and the timber and metal testing laboratories. After an address of warm welcome from Prof. Bovey, the visitors were taken upstairs, where an ample spread of refreshments awaited them.

On Thursday morning the president announced the following committees:—



BUSHNELL CO.'S EXHIBIT OF OILS.

On Ways and Means—R. B. Harrison, H. M. Littell, T. H. McLain, W. Y. Soper (Ottawa), H. M. Watson, Charles Odell, Charles Green, E. C. Goodrich, T. C. Pennington and John N. Akarman

On Nominations—C. D. Wyman, Milwaukee; Charles S. Sergeant, Boston; John B. McClary, Birmingham; W. J. Thompson, Camden; Edward Lusher, Montreal; John A. Seely, New York; Henry Scullin, St. Louis.

W. J. Hammer, chairman of the Committee on Standard Rules for Electrical Construction and Operation of the Nat. Elec. Light Association, was permitted to present a resolution of that body advocating the formation of a joint committee representing various scientific bodies, and having in view the general adoption of a common code of rules. It was decided to appoint a delegate to this joint committee.

A paper was read by W. L. Brown, of Atlanta, Ga., on "Ties and Poles." He thought six years was the longest that could be expected of pine ties, and eight years of oak ties. Ties in poorly drained roads decay more rapidly than in a well ballasted and drained track. The metal tie, which some engineers strongly advocate, must be well imbedded in concrete, and if it is granted that a concrete foundation is necessary in any really good track, the use of metal may bespeak good judgment. In New Orleans, good results have been obtained with red cypress, under horse tracks, and this is said to have been found sound after twenty-eight years service. White cypress is worthless, but red and black cypress are durable. Timber preservatives such as "brunettizing," or treatment with chloride of zinc, are advisable in dry localities, but not in wet, for the following reasons; the chloride is easily washed out; leakage currents from the rails may destroy it, and it rusts the nails and spikes. Creosoting is not open to these objections. For a long time the standard size of ties was 6x8 in. by 8 ft. long, but the company with which the writer was associated changed these to ties 5x9 in. by 7 feet long, with good results As to poles, red cedar has been almost universally used, though in crowded cities iron set in concrete is also used. He estimates the life of cedar poles with large hearts at about 12 years. Some last 20 years, but the life of the pole is limited practically to the life of the sap, as the heart itself is too weak for the service under tension. Properly creosoted pine poles, 30 ft. long and 8 in. diameter at the top, should be superior to any poles on the market, and should cost in the States, when treated with 10 lbs. of creosote per cubic foot, not more than $5 each, erected. The reason they are not used by the telegraph companies is that being chiefly along the railways and not protected against fire, a creosoted pole being inflammable, would not pay.

The committee on patents, after referring to the trouble companies have over patent law suits, recommended that a bureau similar to that of the Western and Eastern Railway Associations be formed to deal with all patent questions.

It was decided that the next convention should be held at St. Louis.

The officers for the ensuing year were then elected as follows: President, H M. Littell, vice-president and general manager of Atlantic Avenue Railway, Brooklyn, N.Y.; vice-president, G. C. Cunningham, Montreal Street Railway; second vice-president, Gen. William H. Jackson, president Nashville Street Railway, Nashville, Tenn.; third vice-president, J. W. Morgan, president Camden, Gloucester & Woodbury Railway Company, Camden, N.J.; secretary and treasurer, T. C. Pennington, secretary Chicago City Railway Company: executive committee, Joel Hurt, president Atlanta Construction Railway Company, Atlanta, Ga., Prentiss Cummings, vice-president West End Street Railway Company, Boston, Mass., C G Gooderich, vice-president, secretary Twin City Railway Company, St Paul, Minn., A Markle, general manager Lehigh Traction Company, Hazelton, Pa; W. F. Kelly, general manager Columbus Street Railway Company, Columbus, Ohio.

The committee appointed to report on the question of using salt and sand to keep tracks clear in winter, reported as follows:

The use of salt on the rails at certain times and during certain conditions of weather is absolutely necessary in order to clear the rails of a film of ice that will otherwise form on them. Without the use of salt, it would be very unsafe to operate cars on a hilly system during winter, and your committee is of opinion that no road can afford to dispense with its use Salt has been used on street railways throughout the United States constantly while horse cars were in vogue, and now more than before is its use imperative in the operation of electric cars. In like manner, sand is a necessity on the rails in order to give the wheel a "proper grip" on the track. In St Louis, Mo., the quantities of salt dumped on the tracks is in excess of three thousand tons in the course of one winter. There is no objection on the part of the local authorities or health board, to its use, and but for the use of this salt, it would be impossible to operate our cars. The use of sand is also absolutely necessary, and its use is not interfered with in any manner, any more than is the use of salt.

On Friday the topic of "Furnishing Free Music and other Entertainments" was taken up. Mr. McLean, of Indianapolis, said his company owned the only large park in the city, and found it profitable to give entertainments there in the summer, particularly band concerts. No accidents had occurred. Mr. McClary, of Birmingham, said his company had a park of 100 acres, with a lake, and walks and drives, and every week night there is music, while on Sundays there is a sacred concert. It was found profitable.

J. F. McElroy presented a paper on electric heaters for cars, with diagrams showing that the electric heater is a more efficient one than stoves, being set lower and diffusing its heat more evenly through the car.

The banquet was held at the Windsor Hotel, the association's headquarters, on the evening of the 17th, and though it was very largely attended and the speeches were good, the dinner itself and the decorations were not in the style for which the Windsor is reputed among American guests.