Parker, Owen Sound, A. B. Smith, Toronto, Thos. H. Wadland, Hamilton; D. Thomson, Hamilton, L. B. McFarlane, Montreal; John Yule, Guelph.

Mr. Morrison, seconded by Mr. Edkins, moved that a Committee be appointed to revise the constitution and by-laws of the Association, and to report at the to-morrow afternoon session. Carried.

The following were named to constitute the Committee. Messrs. K. J. Dunstan, J. A. Kammerer and A. E. Edkins.

Mr. Yule: I would move that a Committee on Statistics be appointed, consisting of Messrs. D. Thomson, A. B. Smith and C. H. Mortimer. The motion was seconded by Mr. Wadland, and carried.

On motion of Mr. Edmondson, seconded by Mr. Johnson, the name of J. Yule, of Guelph, the mover of the resolution, was added to the Committee.

A Committee on Legislation was also appointed, composed of Senator Thibaudeau, of Montreal, and J. E. B. Powell, of Ottawa.

Mr. Smith moved, seconded by Mr. Thomson, that the ballots used in the election of the Executive Committee be destroyed. Carried.

The business of the day being over, the Chairman declared the meeting adjourned.

In the evening the delegates visited by invitation the power house of the Hamilton Electric Light and Power Company, and were shown through the new building by the manager, Mr. D. Thomson. All the visitors agreed that for solidity, convenience and the perfection of its machinery this is a model station. The visitors were regaled with cigars and light refreshments, and were made to feel that they had spent a thoroughly enjoyable and profitable time.

SECOND DAY.

The morning session was called to order at 10:30.

The President read letters from Mr. A. A. Wright, of Renfrew, and Mr. W. J. Johnson, of the *Electrical World*, regretting their inability to attend the Convention. The latter sent a substitute in the person of Mr. McLaughlin. A letter was also read from Mr. C. E. Harris, of the Bell Telephone Co., Halifax, Nova Scotia, who had purposed being present but had been prevented.

The Chairman: The first new business we should take up before we proceed with the carrying out of our program, should be to decide upon the time and place of holding our next Convention, and whether it will be advisable to meet annually or semi-annually.

Mr. Whiting. In view of the absence of some of the members of the Executive Committee, it would be advisable to leave the decision of those questions until a later hour. I move that this matter be postponed until 3 o'clock.

Mr. Thomson: I will second that motion. Carried.

The Chairman: As per program, there is an excursion to Hamilton Beach, band concert and luncheon prepared for this evening's entertainment, and Mr. Thomson wishes me to announce that the delegates will get their tickets from him before leaving. Extra tickets can be had at $1 each. The train will leave the King street depot at 8 o'clock. Regarding the railway certificates of the delegates: I will be glad if the delegates will hand in their certificates to the Secretary. You understand, of course, that in order to make arrangements with the railway officials, it was necessary to guarantee so many passengers, and unless the delegates report to the Secretary we will be unable to carry out this plan. It seems to me that a number of the members of the Association have come along to the Convention without making application for this delegate's certificate.

Mr. Johnson: I move that we request the members of the Association to register their names in the Secretary's register, so that he may have the names to show the railway company if necessary. Seconded by Mr. Taylor. Carried.

The Chairman. I have pleasure in introducing to the Convention Mr. Neilson, who will read a paper on "Long Distance Telephony," which I am sure will be listened to with great interest by all present. (Applause.)

LONG DISTANCE TELEPHONY.

The subject of long distance telephony is of such magnitude that the only difficulty in putting the matter before you, is not that I may say too little, but that I may tire you by writing too much. I intend treating the subject from a popular point of view rather than a scientific one. The large number of members who are not connected with the telephone business will, I have no doubt, appreciate this. I also think the subject, in Canada at least, must in the future always be considered from a commercial standpoint. There is no doubt as to the possibility of building lines that would work say from Quebec to Sarnia, but that wires of that length, or even much shorter, would pay, is open to argument. In Canada our merchants and others do not seem to have the money to spare, or perhaps do not transact a large enough business, to justify them in paying rates that in the United States are paid as a matter of course. I need only mention in connection with this, that while a Buffalo merchant pays $4 for a five minutes conversation to New York, or $5 for the same to Boston, it is extremely doubtful if a Montreal or Toronto merchant would pay $3, or even $2, for a similar conversation between these points.

When early in 1877 it was announced that a line was being worked by telephones between a residence in the suburbs of Boston and a factory in the same city, it is doubtful if any person imagined that in less than a dozen years, commercial and social conversations would be carried on daily between points up to seven hundred miles apart. Even the inventor, Professor Bell, is not likely to have considered such work probable. It is a fact however, that, taking New York as a centre, metallic circuit lines now run to Boston, Philadelphia, Baltimore, Washington, Buffalo, Pittsburg, Cleveland and intervening cities, and in Canada similar lines have been built in the province of Quebec, from the ancient city to Montreal and the capital, also from Montreal to Sherbrooke, St. Johns, &c., and in Ontario, from Peterborough via Port Hope, to Toronto, Hamilton, London, and places between. Other lines of the same description are now being constructed or are under consideration. On all of these lines conversation is easily carried on: so easily indeed, that even at the longest distances, voices are recognized, and communications calling for the use of figures and difficult words and sentences, are transmitted as perfectly as if the speakers were in the same room. In Canada these lines have been built by the Bell Telephone Company, and in the United States by the American Telephone and Telegraph Company of New York working in connection with the American Bell Telephone Company of Boston and the different local companies in the territory through which the wires pass.

The subject of my paper naturally divides itself into three heads: the lines, the equipment, and the rates.

LINES.

When wires were first erected for the purpose of communicating by telephone, between points at a distance, it was quite natural that as many of the officers connected with the business had formerly been telegraphers, the construction should be the same as they had been in the habit of using, and accordingly No. 9—and in some places No. 12—iron wire was used, strung on poles of the usual length—25 or 30 feet—and on ordinary glass insulators, or sometimes without insulators, the reason for the latter being that it was supposed that where two or more wires were strung, the leakage to the ground would prevent a certain amount of cross talk. It is needless to say this expectation was not realized, and that first-class insulation is now considered as essential as on telegraph lines. Many miles of such lines were erected in the States before 1885. In the Dominion, the Bell Telephone Company of Canada was early in the field, and in October 1881, a line of No. 12 iron wire was put up between Hamilton and Toronto. It was soon seen, however, that iron wires,—even of a good size,—were not satisfactory over distances of a hundred miles, and even with copper, induction was very apparent, and made conversation difficult when more than that distance was attempted. It was then seen that only by metallic circuits and the use of copper wire was it possible to do thoroughly first-class and satisfactory work over long distances.

In 1885 the American Telephone and Telegraph Company constructed a line between New York and Philadelphia, carrying twenty-six wires, or thirteen metallic circuits. As soon as an attempt was made to use these lines it became apparent that the difficulty of working, on account of induction between the metallic circuits, was as great as with single wires. A large number of experiments showed that only by a most complete system of transposition, so that every metallic circuit should maintain the same relative exposure to every other circuit, was it possible to overcome this difficulty. This involves much more work than would naturally be supposed, but it is absolutely necessary for efficient working. The success of this New York and Philadelphia line was such that the company commenced the construction of a line from New York to Boston, carrying eighty wires. This also works perfectly, as I can testify from personal use. Extensions to Albany, Saratoga, Syracuse, Rochester and Buffalo, followed, and at this date thousands of miles of poles, and many thousand miles of wire are in use, the property of the before mentioned company.

The poles used in building these lines are of the best material procurable. Cross-arms are of pine securely fastened by lag screws, and braced with iron braces so that each arm is as rigid as the pole itself. The poles are put into holes much deeper than usual, they are tamped more carefully, and in soft ground cement, sand, and broken stone, make an artificial foundation. The poles are of course closer together than is usual in telegraph construction, and on curves the distance is again shortened. It is simply impossible, looking at it from a reasonable point of view, to build pole lines in a more perfect manner than the lines of the long distance company.

WIRE.

The wire is No. 12 B. & S. G. (.104 inch diameter) of hard drawn copper, with a resistance of 5.2 ohms per mile. All joints are made with the McIntyre sleeves, which seem to give as good a connection as any soldered joints, without endangering the strength of the wire by heating. Where many wires are required, ten are strung at a time, the ends of the wires being drawn from the drums by a team of horses. A long bar to which all the wires are fastened, is drawn along by the horses, and at each pole a lineman is stationed to lift the wires to the proper place. I need not say that in Canada we do not string ten wires at a time, but if we should ever find it necessary to do so, we have the experience of our friends in the States to guide us.

While the mechanical work on these lines is so perfect, great care is also taken that when erected everything shall remain in the finest order at all times. The route for the line is selected