Grand Trunk Railway, and later manager and master mechanic at the Point St. Charles locomotive works. Besides discharging the duties of these positions, he acted as consulting mechanical engineer to the Montreal Street Railway during the construction of the power house. He was appointed general manager of the Toronto Street Railway Company in January, 1897, resigning in the fall of the same year to assume the position he now fills. He is a member of the Canadian Society of Civil Engineers and an associate member of the Institute of Civil Engineers, England.

Mr. James Ross, C.E., vice-president and managing director, was born in Scotland, coming to Canada in the seventies. Since then he has been identified with the construction and management of various well-known steam railroads, his most notable work in that direction being the construction of the line of the Canadian Pacific Railway across a considerable portion of the prairies and through the Rocky mountains and the Selkirks into British Columbia. Since 1892 Mr. Ross has directed his attention and energies chiefly to street railways, and the cities of Montreal, Toronto, Winnipeg and St. John owe the successful construction and operation of their street railway systems largely to Mr. Ross' directive ability. In 1896, in conjunction with Mr. William McKenzie, of Toronto, Mr. Ross acquired the tramways systems of Birmingham, England, with the object of converting the system to electricity, and in 1897, in conjunction with the same gentleman and others, secured a charter and franchise from the Government of Jamaica to build electric tramways on the island. Mr. Ross is vice-president of the Toronto Railway Company, president of the Winnipeg Electric Railway Company, and of the St. John Railway Company, and president of the Dominion Bridge Company.

The comptroller of the company, Mr. W. G. Ross, was born in Montreal in 1863, and was appointed to the position in 1896. Previous to this he was engaged in the reorganization of the accounting departments of the Montreal, Toronto, Winnipeg and St. John Street Railways, which all have a uniform system of accounts. Mr. Ross is a prominent member of the Street Railway Accountants' Association of America, and one of the organizers of the same.

Mr. Martin H. Watts, the secretary of the company, is a native of London, Eng., where he was born in 1861. He came to Canada toward the end of 1886, and in December of that year entered the service of the Canadian Pacific Railway, where he was employed for four years in the law department of the company. In April, 1893, he secured the appointment of private secretary to Mr. Henry A. Everett, the well-known street railway promoter of Cleveland, Ohio, and at that time vice-president and managing director of the Montreal Street Railway Company. He filled this position, and subsequently that of secretary to Mr. Granville C Cuningham, late manager and chief engineer of the company, until June, 1896, when, upon the death of Mr. Edward Lusher, Mr. Watts was appointed secretary.

Mr. Duncan A. L. McDonald, the superintendent of the Montreal Street Railway Company, was born at St. Thomas, Que., in June, 1859, and removed to Montreal in 1875. He entered the service of the Montreal Street Railway in 1881 as a "knight of the whip," in order to acquire a thorough knowledge of street railway work from its very commencement. He was soon advanced to conductor, and after about twelve months' service in that capacity, was promoted to the position of road-master. In 1886 he severed his connection with the company, but anticipating the progress that the trolley system would make, he went to St. Paul and Minneapolis in 1889 and secured a practical knowledge of the operation of electric tramways. He returned to Montreal in 1892 and re-entered the service of the Montreal Street Railway in the capacity of inspector. He was appointed to the position he now occupies in 1894.

QUESTIONS AND ANSWERS.

"J. M.," Toronto, writes as follows regarding the Arthur transmission plant: "Your article in January number, regarding above, for which I have to thank you, has been carefully read. On figuring out the line on the basis of the figures which you give, namely, that it delivers to the primaries of the step down transformers, over 13 miles of No. 4 wire, 9 amperes at 2,080 volts, I find that the loss in line only is 15½ %. To get the total transmission loss, you must add to the above the losses in the transformers and in the secondary wiring, which will bring the total to something over 19%, instead of its being less than 5%, which your November article states it to be. If I am mistaken in above, I should be glad to be corrected. If my figures are correct, the publication in your February issue of an article correcting the November article will be much appreciated."

ANSWER.—In answer to the above, we believe the calculations given are correct, but the article in the November issue did not state the number of amperes transmitted at that time, which, for our correspondent's satisfaction, we may state was only five amperes, and at the pressure then in use, the ohmic loss was less than five per cent. In our reply in January, we perhaps should have noted that the loss was more than five per cent., owing to the transmission of nine amperes of current instead of five, for which the line was originally laid out. The business in Arthur has grown to such an extent that the owner of the plant has found it necessary to purchase a 1,500 light machine, and to operate at 4,000 instead of 2,000 volts, which will leave the losses, owing to the increased voltage, very small again.

"H.W." asks: (1) Will common iron wire serve as lightning arrestors when strung on electric poles from top to bottom, with the lower end connected with water? Will lightning jump from the electric wire to the ground wire or iron wire when placed an inch or two apart? (2) Is there any probability of acetylene gas or lime-light taking the place of electric light? (3) Is the system of using 220 to 240 volt lamps likely to come into general use? Do the underwriters accept these lamps?

ANSWER. (1) If ordinary fence wire is placed as described, with a few inches projecting above the top of the pole, and the lower end buried, it will be of great assistance as a lightning guard to the machinery, especially if lower end reaches water. Such wires should be placed quite frequently, say every fifth pole. Do not, however, take out the station arrestors. An inch gap is a rather long distance for the lightning to strike across, especially if there be any "grounds" on the system. (2) It is not wise to prophesy, but in the writers' opinion acetylene or lime-light will never displace electricity. Advantages claimed for acetylene