

existing the judge explained that it was useless to go on taking evidence, unless it was shown that it was invalid. J. Bicknell appeared for the Co.

Mixed-up Information.

"NIAGARA FALLS, ONT.—Many improvements & repairs, according to report, are to be made on the Niagara Falls Park & River Ry. as soon as the frost is out of the ground. W. Phillips, Manager, has submitted a report of inspection of the road to the Government, & the improvements are ordered on his suggestion."

The foregoing, from the Railroad Gazette, New York, is altogether incorrect. Mr. Phillips, being Manager of the N.F.P. & R. Ry., would hardly be likely to make an inspection of it for the Government, nor has he made any report on it to the Government. As stated in our issue of Dec., '98, pg. 273, Mr. Phillips was appointed by the Ontario Department of Public Works to inspect the Port Arthur-Fort William electric railway, & suggested certain things as necessary to be done, which the Government has ordered.

The Gorge Road.—Early in Feb. the control of the Niagara Falls & Lewiston R.R. was sold to New York parties, & J. R. Megrue, of New York, was elected President, succeeding J. M. Brinker, of Buffalo, who built the road. After a careful examination of the affairs of the Co., it became evident that the mode of operation must be thoroughly reorganized, & that a considerable expenditure will be needed for repairs & improvements, for which bonds must be issued. The road has done a fair amount of business, carrying over 240,000 passengers during 1898. The expenses of operation & maintenance are large, & the management has not been economical. On the petition of the directors Mr. Megrue has been appointed Receiver for the property, & has opened an office in Erie County Bank Building, Buffalo. Messrs. Mott, Sprague, Brownell & Marcey are counsel for receiver & G. A. Ricker is engineer. The operation of the road was stopped on Feb. 14 owing to the shutting down of the Niagara Falls Hydraulic & Manufacturing Co., which furnish power, & will be resumed in the spring after the road has been thoroughly overhauled & put in first-class condition.—Electrical World.

Receiver Megrue has appointed C. W. Taylor, Superintendent; G. Garland, Auditor, & W. L. Marcey, Attorney. No announcement has yet been made as to whether the Gorge Line is to pass into the hands of the International Traction Co., which has recently acquired other lines in the vicinity of Niagara Falls & Buffalo, but that would appear to be its manifest destiny. Large quantities of rock & other debris have fallen on the track this winter, & considerable money will have to be spent on it before traffic is resumed. The Receiver informs us that the work to be done includes a careful cleaning of the banks, the alignment of the roadbed & the erection of some bridges. He hopes to resume operations about May 1.

The Electrical Trades Directory & Handbook for 1899, published by The Electrician Printing & Publishing Co., London, Eng., price 10s., shows a great advance in the extension of the directorial division of the book, & in the large additions made to the handbook division. The latter additions include very complete & elaborate sheet tables giving technical data & statistics relating to electricity supply for lighting power & traction in all parts of Great Britain, & a sketch map, diagrams, &c., complete this statistical information up to Feb., 1899. The capital expenditure up to Dec. 31, 1898, is given of the principal electricity supply undertakings.

International telegraphs and data relating to the telephone are also included, & it is claimed, & we think with justice, that the book is as perfect & complete as such a work can possibly be made by great care & attention to the details of compilation & arrangement. The great development in electrical industries is shown by the increased bulk of the book, which comprises some 1,500 pages, care having been taken to omit everything that is not of a purely electrical character. The biographical division contains sketches of the careers of over 300 prominent electricians, & more than 60 of these sketches are accompanied by a recent portrait. All divisions of the book are of an international character, rendering the publication of great value to an important & rapidly-extending industry. The chief new features of this edition are an increased bulk of 80 pages, the sheet tables largely extended, a very full directory of directors of electrical companies & electric traction data & statistics.

Birmingham, Eng., Tramway.—At a meeting of the Birmingham City Council Mar. 7 it was decided by a vote of 60 to 1 to take over the street tramway & operate it as a department of the municipal service at the expiry of the lease to the Co., of which Jas. Ross, of Montreal, is President. The lease has but a short time to run, & the plant will at its close be taken over at a valuation G. C. Cunningham, formerly City Engineer of Toronto, is managing the railway for the Co. Since it passed into the hands of the Co. the trolley has been introduced, & it is believed that a fair profit will come to the Co. from that change.

TELEGRAPHS & CABLES.

The Laying of the Atlantic Cable.

By A. E. Morrison of the Anglo-American Telegraph Co., Charlottetown, P.E.I.

As soon as the fact was established that a telegraph could be constructed by the aid of electricity, the attention of discoverers in Europe & America was turned to the invention of some insulating substance by which wires could be enveloped & buried in the earth. It was not deemed practicable to place them in the open air upon poles, from the fear that they would be constantly broken by accident, or from malicious motives, & it was supposed necessary to insulate them from the atmosphere. The first insulating substance used being hemp or cotton saturated with asphaltum tar, a plough was invented for the purpose of opening a trench in the earth for burying the wires, but on account of the expense & the difficulty of obtaining anything like good insulation, the idea of laying them underground was abandoned. Still the fact was apparent to all, that perfect insulation or something approaching it was imperatively demanded for crossing wide rivers. For this purpose copper wire covered with cotton yarn dipped in asphaltum tar, and the whole enclosed in a lead tube was used.

In 1847 a person in New York designed a submarine cable, the covering of which was to be glass, in the form of a ball & socket joint. The object was to get something which would unite both strength & flexibility, & at the same time furnish the best insulation. I do not know whether he ever had any of this cable manufactured, but he endeavored to get some of the telegraph people to engage in the manufacture of it. It is probable, however, that nothing was done about it, for about this time gutta percha was discovered & was applied to submarine telegraphing at once, it proving to be one of the best insulators known. In 1849 an experimental gutta-percha covered wire, 2 miles in length, was submerged in the sea off Folkestone Harbor, one end being connected with a wire leading to London, &

the other with a telegraph instrument on board a steamship, communication was maintained during the day, until the wire was collected in. The success of this experiment led to an attempt to lay a submarine cable across the English Channel between Dover & Calais in 1850. It consisted of a copper wire covered with gutta percha, unprotected by any outside coating. But after a few hours the communication thus established was abruptly stopped. A fisherman took up part of the cable on his trawl, & cut off a piece which he bore in triumph to Boulogne, where he exhibited it as a specimen of rare seaweed with its centre filled with gold! This accident caused the attention of scientific men to be directed to the discovery of some mode of preserving submarine cables from similar casualties, & a suggestion was made that the wire insulated with gutta percha should form a core or centre to a wire rope, so as to give protection to it during the process of laying down as well as to guard it from vessels' anchors & the rocks. In 1851 another cable was laid between Dover & Calais, & this idea adopted. It contained 4 conducting wires, and was protected by an armor of 10 iron wires. In 1852 the first ocean cable in America was laid across the Straits of Northumberland, between Prince Edward Island & New Brunswick. In 1853 cables were laid between Dover & Ostend, a distance of 80 miles, between Oxford Ness & Holland, 120 miles, & between Scotland & the north of Ireland.

In 1852 a project was started in Newfoundland to run a line of steamers between Galway & St. John's in connection with a telegraph to Cape Ray, where a submarine cable was to be laid to Cape Breton, & thence by means of another cable to Prince Edward Island & New Brunswick. A company was formed by F. N. Gisborne, who started to construct a road from St. John's to Cape Ray, over a barren tract of 400 miles, & succeeded in laying the Prince Edward Island cable on Nov. 21, 1852, but he was not successful in a similar attempt to connect Newfoundland with Cape Breton. Meanwhile, the company became involved in pecuniary difficulties, & Mr. Gisborne, in 1854, proceeded to New York, where he hoped to find money to enable him to carry out the scheme. He met C. W. Field & laid his plan before him. Mr. Field listened with attention, & thought over the project. To lay these cables so as to connect Newfoundland with New Brunswick & to run a line of steamers from St. John's to Galway would shorten the time of receiving news in New York from Europe 4 or 5 days, but if a cable could be laid in these seas the great Atlantic might be spanned. Mr. Field terminated his reflections that night by an eminently practical measure. Ere he retired to rest, he sat down and wrote two letters, one to Lieut. Maury, author of the Physical Geography of the Sea, as to the practicability of laying the cable, & to Professor Morse in regard to the scientific possibilities. Replies from both gentlemen reassured him, & he proceeded to form a company. He put down the names of 10 of the principal capitalists in New York, & proceeded to unfold to each in succession his project. He called meetings of these gentlemen at his house, & after full discussion & consideration, it was resolved to form the New York, Newfoundland & London Telegraph Co.

Mr. Field entered into an agreement with Mr. Gisborne for the purchase of the Newfoundland Co., & proceeded to Newfoundland to obtain from the Legislature an act of incorporation. After some little delay the Legislature with only one adverse vote granted valuable privileges to the Co., giving a monopoly of telegraph rights in Newfoundland for 50 years. The Co. also obtained from the Prince Edward Island Legislature the exclusive rights of landing cables on the coast.