THE CHIGNECTO SHIP RAILWAY.

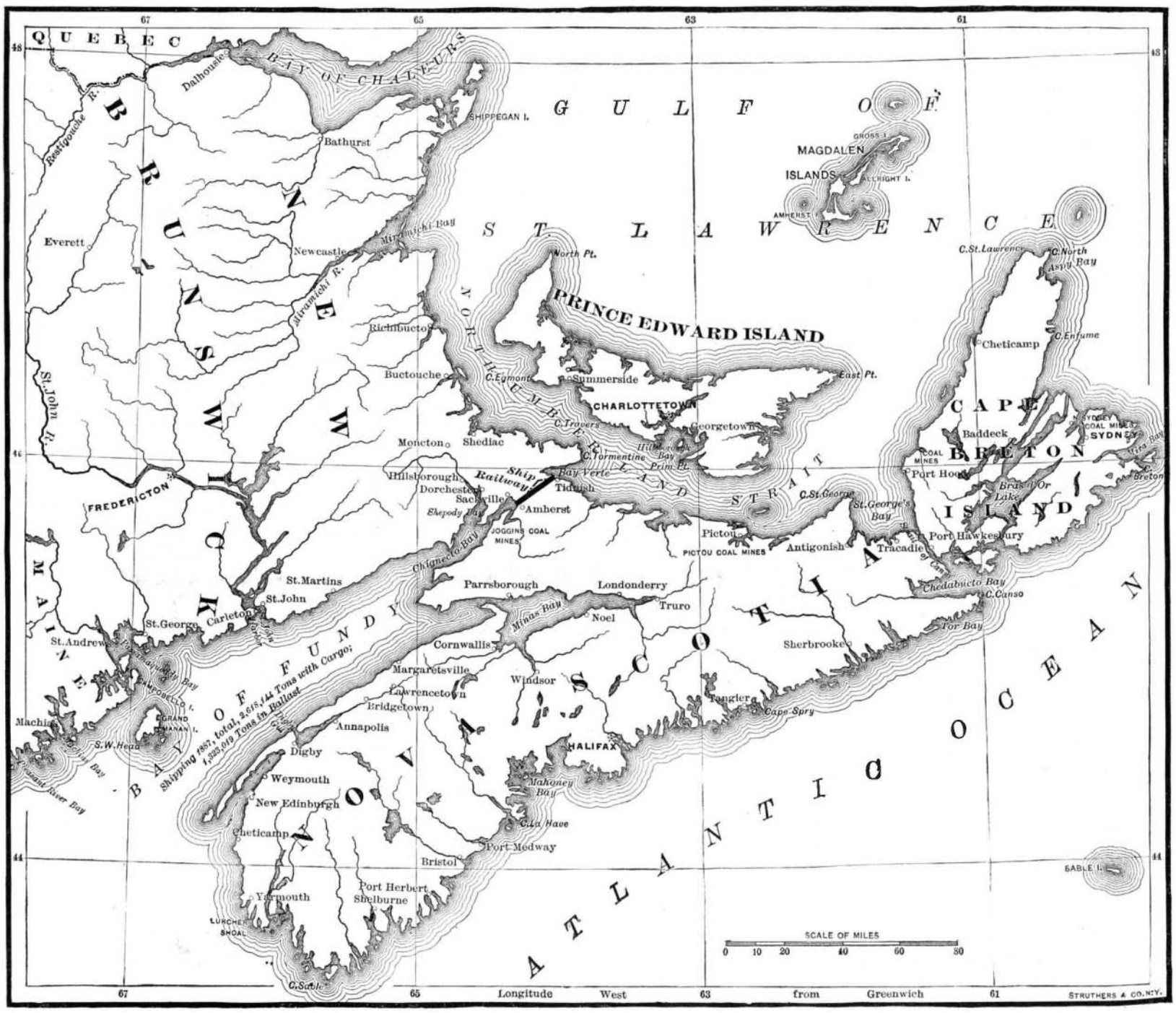
We give a map showing the location of an interesting and novel engineering enterprise which is now under construction in Canada. The proposal to carry ships by railway has been frequently discussed and elaborated before, notably in connection with the Isthmus of Panama and the adjacent Honduras and Nicaragua interoceanic routes, but the Chignecto ship railway is the first practical attempt to supersede canal communication by means of railway lines.

The narrow neck of land connecting the Province of Nova Scotia with the mainland of Canada has long been considered as a suitable site for a canal, to obviate the long and dangerous coasting voyage either by the Straits of Canso or that outside Cape Breton Island, a saving of some 300 or 700 miles respectively. The route has frequently been surveyed by engineers, but the heavy cost of cutting the canal and the practical difficulties connected with the extraordinary rise of the tides (some seventy feet at springs) in the Bay of Fundy have prevented the execution of the work. The scheme of Mr. Ketchum, C.E., for a ship railway, was finally adopted, and the Chignecto Marine Transport Railway was incorporated by special act of the Dominion Parliament, with a share capital of $2,000,000, and an authorized debenture capital of $3,500,000. The Canadian government, in consideration of the advantages to accrue to the maritime provinces and the intercolonial trade generally, granted to the company a subsidy of $175,000 a year for twenty years from the opening of the line. The capital was raised in London, and a contract made with Messrs. Jno. G. Meiggs & Son for the work. Construction was commenced in September, 1888. Sir John Fowler and Sir Benjamin Baker, the well-known engineers of the Forth bridge, are associated with Mr. Ketchum in the superintendence of the works, which it is expected will be completed in the autumn of the present year, 1891. The principal portions of the great work are now approaching completion.

The map which we give shows the position of the railway and the great saving of distance to be effected by the use of the new route, which will moreover permit the use of lake-going vessels in the coasting trade between New England and Canadian ports. A basin 500 feet long and 300 feet wide is constructed at the Bay of Fundy end of the line, with a gate to inclose the water when the tide is out. Leading from this basin is a lifting dock 230 feet by 60 feet, containing twenty hydraulic presses for lifting vessels with their cargoes a height of forty feet. The vessel is floated into position between the presses and immediately over a gridiron and cradle, the whole being then raised by the lift until the rails supporting them are brought up to the level of the rails on the railway. The vessel and the cradle (which rest on wheels) will then be hauled off, by hydraulic apparatus, to the railway track. The extreme weight proposed to be raised is 3,500 tons, including the gridiron cradle and a loaded vessel of 2,000 tons displacement, or 1,000 tons register.

The railway is a double track, seventeen miles long, perfectly straight and on almost a dead level, the steel rails weighing 110 lb. to the yard. The large number of wheels carrying the cradle will distribute the load, so that each wheel only carries a comparatively small burden. Two locomotives, one on each track, are calculated to move with ease the largest vessel proposed to be carried across, at the rate of ten miles an hour. On arriving at the terminus a reversal of the process will lower the vessel to the water level, the whole transit occupying a period of two hours.

It seems probable that, when the practicability of the system has been demonstrated on the Chignecto railway, the transport of ships by rail may be adopted on several routes where for various reasons waterways cannot be provided. Theoretical objections to the scheme meantime have little weight in face of the opinion of the eminent engineers who have planned and now superintend the work, and of the support of the Canadian government, evidenced by the guarantee given to the capital. In subsequent numbers we intend to illustrate the details of this remarkable work.



MAP SHOWING THE LOCATION OF THE CHIGNECTO SHIP RAILWAY.

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The New York Pasteur Institute.

Dr. Paul Gibier, Director of the New York Pasteur Institute, in his first annual report gives as follows the results of the preventive inoculations against hydrophobia performed at the above institute during the first year of its existence (February 18, 1890, to February 18, 1891): 828 persons having been bitten by dogs or cats came to be treated. For 643 of these persons it was demonstrated that the animals which attacked them were not mad. Consequently the patients were sent back, after having had their wounds attended, during the proper length of time, when it was necessary.

In 185 cases the anti-hydrophobic treatment was applied, hydrophobia of the animals which inflicted bites having been evidenced clinically, or by the inoculation in the laboratory, and in many cases by the death of some other persons or animals bitten by the same dogs. No death caused by hydrophobia has been reported among the persons inoculated. Indigents were treated free of charge. The persons treated were from all parts of the country.

Shipping Subsidies in France.

The law on the merchant marine in France, whereby shipbuilders were paid a subsidy for vessels built, and owners a mileage allowance for French-owned ships, lapsed some time ago, but has been renewed, says *Engineering*, for another year. The act came into operation ten years ago and provided that shipbuilders should get for composite vessels, when built, 45 francs per ton gross register; for wooden ships of over 200 tons, 20 francs per ton; and for iron and steel vessels, 60 francs. French ship owners get for long distance voyages 1·50 francs per 1,000 miles, with a diminution every year of 7½ centimes for wooden and composite vessels and 5 centimes for iron vessels. This applies only to vessels built in France or to vessels built or purchased for French owners prior to the passing of the act ten years ago. French vessels built abroad subsequent to the passing of the act only get half these rates—75 centimes per 1,000 miles; but vessels built abroad and not put under the French flag prior to the lapsing of the act a week or two ago, secure no subsidy. Some new building firms have been created under the law, notably Chantiers de la Loire, Nantes, and St. Nazaire. The Compagnie Transatlantique do not receive a subsidy. They have, instead, a subvention from the government in connection with the New York and West Indian mails. The report of subsidies paid in 1889 has just been issued, and shows that 8,486,531 francs, equal to $1,675,000, were paid in shipping subsidies in that year, the number of vessels participating being 415, and the tonnage 348,857 tons. To earn the subsidy these vessels sailed an aggregate of 7,975,362 miles. In 1882 the subsidies were $400,000 less than in 1889.

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