

pneumatic dry dock, now in use in all countries. Mr. Dutton proposed simply to make the pneumatic dry dock into a wet dock by building up the side walls and putting in end gates between them. Simple as this device appears, it puts navigation hydraulics upon an entirely new basis, and, in the judgment of the most eminent engineers, must revolutionize canal construction all over the world.

Merely to indicate the meaning of this new invention, it will now be possible to construct huge ship-lifts of equal size, and at least eight times as high as the greatest lock now in existence. Two locks, each lifting 160 feet, could replace the twenty-five locks now required along the Welland Canal. The cost of these new locks, built as large as the new lock at the Sault, would not be more than \$3,000,000 each. They would pass a ship from Ontario to Erie in an hour, where it now requires a day.

It is from the invention of the pneumatic-balance lock that Mr. Dutton has developed his huge scheme for a maritime canal, which has recently been before Congress and the Legislature of Albany. It will extend from the mouth of the Welland Canal on Lake Erie, utilize a portion of the canal, descend, by a pair of locks set tandem, into the Niagara River at a point about opposite Lewiston, utilize and enlarge the present Canadian canal system along the St. Lawrence river as far as Lake St. Francis, and there fork in two directions; one arm will reach by a new canal to Montreal, and thence by the St. Lawrence river to the sea, while another will extend from Lake St. Francis to Lake Champlain, reverse the current of that lake, and reach from the lower end of Champlain to Waterford, on

the Hudson river. It will involve only about ninety miles of artificial canals, and afterwards fifteen miles of this will be cut out by the construction of a new canal from Lewiston, on the Niagara river, to a point above the Falls on the American side. The project will require the expenditure of a vast sum of money, but Mr. Dutton has associated with him some of the best-known engineers in the country, together with a number of heavy capitalists, and it is proposed to construct this gigantic system without a dollar of subsidy from either the Canadian or United States government. The Canadian Parliament, in chartering the North American Canal Company two years ago, gave it the right to use the summit levels of the Canadian canal system along the St. Lawrence and across the Welland Peninsula, to acquire and enlarge any present locks, and to construct such new locks and canals as will be required to complete the enterprise. Such national legislation as is needed in this country has been introduced in Congress by Senator Allison, of Iowa.

Specifically, Mr. Dutton proposes to build a canal equipped with locks of sufficient size so that an ocean freighter like the Cevic may sail at river speed from New York to Chicago, and that without material interruption. He proposes a canal system with locks of twenty-six feet draught, sixty-five feet wide, and 510 feet clear length, which will lift vessels carrying 12,000 tons of freight. In place of the thirty-five to fifty-five locks required in any other plan yet proposed for a similar canal, this project involves but five. In a word, instead of an estimated expenditure of at least \$200,000,000 for locks, the latter, under the new

construction, will not require more than \$15,000,000. The projector estimates that to carry the first ocean steamship from New York to Chicago will require the expenditure of \$100,000,000, and to complete the canal to enable vessels like the Cevic to make river speed through the dredged channels will require the outlay of as much again—in all, some \$200,000,000. —Harper's Weekly.

OUR CONSULAR SERVICE.

"The consular service is the practical and business side of our foreign intercourse," writes ex-President Harrison in July Ladies' Home Journal. "There are more than twelve hundred persons in the consular service of the United States. These are located in the important commercial cities and towns of the world, and are described generally as Consuls General, Consuls, commercial agents, interpreters, marshals and clerks. The duties of a Consul are various and multifarious. He is the protector and guardian of American commerce; provides for destitute American sailors and sends them home; he takes charge of the effects of American citizens dying in his jurisdiction, having no legal representative; he receives the declarations or protests of our citizens in any matter affecting their rights; he keeps a record of the arrival and departure of American ships and of their cargoes, and looks after vessels wrecked; he reports any new inventions or improvements in manufacturing processes that he may observe, and all useful information relating to manufactures, population, scientific discoveries, or progress in the useful arts, and all events or facts that may effect the trade of the

MICA BOILER and STEAM PIPE COVERING

WHAT IS THOUGHT OF IT!

To whom this may concern.

This is to certify that we have used some of the Mica Pipe Covering on one of our main pipes in the tannery during the present winter and must say that it has given the very best satisfaction, there is no heat that escapes from the outside covering, it hardly being warm, in consequence there is very little condensation in the pipes. We can cheerfully recommend it to any parties wanting pipe coverings.

Yours truly,

(Sgd.) BREITHAUP BROS. & HALL.

PENETANGUISHENE, March 12th, 1896.

PETROLIA April 22, 1896.

MESSRS. THE MICA BOILER COVERING CO., Toronto, Ont.

GENTLEMEN:—In regard to the Mica Pipe Covering on which you have asked us to report, we would say that we placed this covering on the steam pipes in our block of stores and offices last winter and at once noticed the largely increased heating capacity of our plant and a great saving in fuel. The covering was put on by our own men without any difficulty whatever.

Yours faithfully,

(Sgd.) VANTUYL & FAIRBANK.

THE MICA BOILER COVERING CO., City.

GENTLEMEN:—We have tested the Mica Covering which you put on the boiler of the Dredge "Atlantic" in September last and find that it has effected a saving of about one-half ton of coal per day, or about twenty-five per cent. We believe it is the most durable covering for marine boilers in

the market, and will stand the wear and tear incidental to such boilers. We consider it a valuable improvement over the cement coverings owing to the convenience of removal and replacing same, for inspection or repairs to boiler.

Yours truly,

TORONTO DREDGING & CONTRACTING CO.
(Sgd.) F. DOTY.

THE TORONTO FERRY COMPANY, (LIMITED),
North of Scotland Chambers,
18 King Street West.

TORONTO, December 12, 1895.

THE MICA BOILER COVERING COMPANY, Toronto.

GENTLEMEN:—I have much pleasure in certifying that the Mica Boiler Covering placed by your company on the boiler of our steamer "Thistle" has proved satisfactory in every respect and has fully proved every claim you made for it. I find that since it has been put on, the consumption of coal has been reduced no less than twenty per cent. My chief engineer's report of the Mica Covering is very favorable, not only for its extraordinary coal saving qualities but also on account of the ease with which any part of it can be removed and replaced without injury. After the season's work I find the covering in perfect condition, and from the flexible nature of it and its inability to crack or crumble I anticipate a very long life for it.

All the steam pipes at our Electric Power Station at Hanlan's Point are covered with the Mica Covering and my engineer there also reports it as a first-class piece of work. From my experience of the above covering during the past season, I have no hesitancy in pronouncing it to be the best that has come under my notice.

Yours truly,

W. A. ESSON, Manager.

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