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## A PERIL TO THE NAVY.

Our finest armored cruiser, the "Brooklyn," is now in dry dock at the Brooklyn navy yard, having her hull patched up, straightened out and generally bent back into shape. It is only a few weeks since the battleship "Massachusetts" was in the same dock, undergoing the same treatment. In both cases these fine ships were disabled within a mile or so of the Brooklyn navy yard and at a time when they were steering a correct course through the proper harbor channels. The "Massachusetts," when the mishap occurred, was on the way to join Admiral Sampson's squadron, and though she was fully equipped for sea, with all stores on board, and down to her maximum draught, she should nevertheless have had ample water in the channels between the navy yard and the sea. As it was she grounded heavily on the Diamond Shoal, a reef that extends into the channel from Governor's Island, and received injuries which took many months to repair and cost the government about \$50,000. The "Brooklyn" grounded, or struck a sunken obstruction, when in mid-channel between Governor's Island and the Battery, on her way to the Decoration-day services at Grant's Tomb. Her bottom plates were indented, rivets sheared off, and damage done that will cost about \$8,000 to repair.

How long is this kind of thing to continue? If the recurrence of such preventible disasters were not suggestive of the grave perils to which the navy is exposed, it would become positively ridiculous—with such imperturbable gravity do we wreck our ships, and then proceed to patch them up again at so many thousand dollars apiece. The wonder of it all is that these obstructions were not removed from the channels years ago, when our first deep-draught warships were constructed. Surely it was not necessary for the "Massachusetts" to smash up \$60,000 worth of her bottom to convince us that Diamond Shoal was a reality, and not a fiction—a few fathoms of sounding line would have done that; and if there are sunken wrecks encumbering the channels of New York Harbor, it is surely a doubtful policy to use the bottom of the "Brooklyn" as a dragnet to determine their whereabouts.

We know nothing in all the river and harbor work of the War Department that compares in urgency with this problem of the approaches to the Brooklyn navy yard, and how it should come to be thus neglected is a mystery. Just beyond Governor's Island, skirting the Brooklyn water front, a channel 1,500 feet wide and 40 feet deep is to be constructed along the front of a series of docks into which a 25-foot draught ship will rarely enter; yet the ships of the navy are allowed to pass to and fro in peril for the want of a little dredging which would cost not a tithe of the millions that are to be spent on the above-named work.

## WHAT POOR ROADS COST OUR FARMERS.

If ever there were two classes of people that had a good cause in common they are the bicyclists and the farmers. The question on which their interests agree is that of the need for good roads; for while a hard, smooth surface is an absolute necessity to the wheelman, it is of even more vital importance to the farmer, seeing that the condition of the roads makes a serious difference one way or the other in his yearly profits. As the result of an inquiry made in 1895 by the United States Department of Agriculture, replies were received from over 1,200 counties giving the cost of hauling crops in various parts of the United States. The average load hauled was found to be 2,002 pounds; the average length of haul, 12½ miles; the average cost of hauling a ton of crops to market was \$3.02; while the average cost of hauling a ton for a distance of one mile was 25 cents.

In order to compare the roads of the United States with those of Europe the bureau through its consuls made careful inquiry on the subject of cost of hauling in England, France, Germany, Belgium, Italy, and Switzerland. The average cost of hauling one ton one mile was found to be in England 10 cents, in France 10 cents, in Germany 8½ cents, in Belgium 9½ cents, in Italy 7½ cents, and in Switzerland from 6 to

8 cents, the average for all these European states being 8½ cents per ton per mile. More than one cause may enter into this determination of cost, but that the great cost in America is due to our poorly made dirt roads is proved by the fact that while over the superb roads of Europe a farmer will haul three or four tons at a load, our farmers are able to haul only a ton or less than a ton over the "plow and scraper" ridge of soil which even at this late day is dignified by the name of road in many parts of the country.

## THE NEW CANAL COMMISSION.

Bearing in mind the vast interests at stake, we do not hesitate to say that the new canal commission, recently appointed by the President, is the most important engineering commission of modern times. Not only has it to decide whether this country is justified in undertaking a work which is estimated to cost over \$130,000,000, and may easily cost 30 or 40 per cent more than that, but its report will determine indirectly whether another important work—the Panama Canal—in which over \$156,000,000 has been already expended, shall be completed or abandoned.

It requires no very intimate knowledge of the canal question to prove that only one canal is required at the Isthmus, and that not more than one will be built. It is also evident to any one who is not blinded by national prejudice that a great maritime highway like this should be, and in the very nature of things must be, broadly international in the policy of its administration. As the matter now stands, there are two great rival projects before the public—one two-fifths completed and the other not yet commenced. Each has features to recommend it, although engineering, commercial, and military considerations point strongly to the completion of the Panama Canal as the most feasible scheme.

Although the present commission has been appointed for the ostensible purpose of examining all routes that are plausible, it is well understood that its chief duty is to determine which of the two routes, Nicaragua or Panama, has most to commend it to the active support of the United States government. To assist it in this work it will find a vast amount of engineering data ready to hand. At Nicaragua, in addition to the early surveys of Childs and Lull, it will have the Menocal surveys and those of the Ludlow and Walker commissions. At Panama it will find a complete set of surveys, plans, observations, etc., in such shape as to allow of active construction being undertaken at brief notice.

The commission includes Admiral Walker, Prof. Haupt, and Col. Hains, the former commission; Alfred Noble, of the Ludlow commission; two additional engineers, viz., Lieut.-Col. Oswald H. Ernst, of the United States Army, and George S. Morison, a former President of the Society of Civil Engineers; Prof. Wm. H. Burr of Columbia and Prof. Emory R. Johnson of Pennsylvania and Senator Pasco of Florida. There are thus two engineers from the army, three from civil life, two college professors, a senator and an admiral of the navy. One million dollars has been appropriated to cover the expenses of the investigation, which, all things considered, should be of such a character as to settle the question, as far as the United States is concerned, once and forever.

## COMMERCIAL VALUE OF WIRELESS TELEGRAPHY.

A striking evidence of the growth of scientific knowledge and the fidelity with which the scientific press safeguards the public against glaring scientific falsehood, is found in the recent attempt to produce a panic among the shareholders in telegraph and cable companies on account of the success of wireless telegraphy. It was otherwise twenty years ago, when the extravagant claims put forth for electric lighting caused the holders of gas shares to dispose of their valuable holdings. In vain did the scientific press urge moderation, pointing out that the cost and difficulties of the new system of illumination would prevent it from driving out gas lighting—at least for some years to come.

Remarkable as have been the results obtained with wireless telegraphy across the English Channel, there is nothing to warrant the belief that wire telegraphy is doomed. There is one radical difficulty which, alone, is sufficient to restrict wireless telegraphy, at least in the present stage of its development, to a very limited range of practical application. We refer to the fact that no means has yet been devised by which the wireless messages can be directed exclusively to the station for which they are intended. Before wireless telegraphy can be used for general commercial purposes some method must be devised whereby, as in wire telegraphy, the transmitter can communicate with one particular receiver to the exclusion of all others, and the receiver can exclude all messages except the particular one directed to it. Until this is achieved the new system must be barred from the field of ordinary commercial work.

A limitation affecting long distance telegraphy is also found in the fact that the length of the vertical rod has

a definite relation to the distance through which the message is sent, and as the mast used in the channel experiments, where the distance was 30 miles, was 177 feet high, it can be seen that this consideration also imposes a limit upon wireless telegraphy. Marconi has recently stated that the present limit of distance over which messages can be sent is about 80 miles; evidently then the problem of trans-ocean telegraphy by this system is far from solution. As a matter of fact, the inventor, with his characteristic modesty, has refrained from making any claims for his system except along those lines in which he has clearly demonstrated its usefulness. The most valuable application of the system is that which was successfully tested at the South Foreland, England, where now for some time wireless telegraphy has been in successful operation between the shore and the lightship. It has been proved that the apparatus is not affected by wind or weather, and we now know beyond question that it is possible to give infallible and early warning to shipping of the presence of dangerous shoals.

## MUNICIPAL BATHING ESTABLISHMENTS.

In the United States too little attention is paid to the individual comfort of its citizens. Everything is done for their safety, but in many little ways we are still far behind our transatlantic brethren. One of our greatest municipal defects is the lack of public baths. It is not necessary to dwell upon the need for public baths among all civilized peoples, the virtue of water and soap is conceded. Unfortunately, among the poorer classes it is not always possible for them to obtain adequate bathing facilities in the densely populated districts in which they live. Public baths properly constructed and handled form one of the most effective and far-reaching of municipal institutions for the promotion of cleanliness, good health and good citizenship. Boston, Mass., is a notable exception to the average American city as regards the bathing facilities which this city furnishes to her inhabitants. The experiments of Boston are highly instructive to all cities looking to civic development in the direction of ministering to the practical and essential needs of a community. Public baths in Boston date from 1866, and these were, we believe, the first public baths to be established by a municipality in this country. At first provision was made for a system of baths distributed at various points on the long shore line rather than for a few central establishments according to the British plan. Five floating baths were constructed at that time, and the general type was a low wooden building supported on a floating platform. Within each was a shallow tank through which the water flowed freely, air and light being admitted through the roof. The usual dressing rooms, etc., were provided. These proved so satisfactory that now there are ten of these floating baths.

In 1898 the number of bathing establishments was raised to twenty-three and there were 2,000,000 bathers, an increase of one and one-quarter millions over the previous year. New styles of floating baths have been devised in which the tank is left open to the sky and the capacity of one of them is 1,200 to 1,500 persons per day. In addition to the floating baths two swimming pools were established to supply the wants of the population which lives in the center of Boston. One of them is located in the small park contiguous to the tenement district of Roxbury, fresh water being supplied to the tanks by the city water works, 80,000 to 90,000 gallons being used per day, and from 1,200 to 1,500 patrons daily attend this bath. Men are allowed to bathe in the early morning and evening, the boys in the forenoon and girls and women in the afternoon. That a pool of this kind is not necessarily an expensive luxury will be seen when it is said that it cost only \$2,000 to complete it.

The most important of Boston's beach baths is at the North End Park, which, with its pleasure piers and improvements, cost the city \$350,000. Frequently 5,000 people bathe per day at this point. The baths which we have mentioned so far are, of course, restricted to summer use; but a new public bath house, open all the year around, will be opened on June 15. The building is most substantial and is thoroughly fire-proof. Separate bath rooms for men and women are provided on the second floor, and ample waiting rooms occupy the first floor. The men's rooms are provided with thirty inclosed shower baths and three inclosed tubs, while the women have eleven shower baths and six bathing cabinets. Each shower cabinet contains a dressing alcove and seat. All the partitions are of marble and the fittings are of the latest sanitary type, and the bather can regulate the temperature of the water flowing from the spray as desired. The tubs are of heavy white porcelain, with nickel-plated fittings, and it is doubtful if there is any more real comfort to be obtained in the luxurious bath rooms of the Back Bay district.

In the practical working of the entire system in Boston, fatalities are practically unknown. Swimming instruction is given to thousands and remedies are provided for use in case of cramps or other illnesses. In