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NEW YORK, SATURDAY, APRIL 6, 1901.

The Editor is always glad to receive for examination illustrated articles on subjects of timely interest. If the photographs are *sharp*, the articles *short*, and the facts *authentic*, the contributions will receive special attention. Accepted articles will be paid for at regular space rates.

PROSPECTS OF THE NEW ERIE CANAL.

In reply to a committee from the Commerce Convention in Syracuse, Governor Odell has expressed himself as being opposed to the policy of urging the Legislature to authorize the construction of the Erie Canal along the lines of the scheme which was strongly indorsed by his predecessor. As an alternative, the Governor is in favor of the completion of what is known as the project of 1895.

The canal, with the exception of such work as has been done in carrying out the 1895 scheme, is in the condition in which it was left after the enlargement of 1862. It has a depth of 7 feet, a bottom width of 52 feet and is capable of accommodating boats of 240 tons, with a capacity of 8,000 bushels of wheat. The plan of 1895, which is the one now indorsed by the Governor, provides for the deepening of the canal to 9 feet, with top and bottom widths of 73 and 49 feet, thereby providing accommodation for boats of 450 tons, with a capacity of 15,000 bushels of wheat. It provides for a single pneumatic, or some other form of single mechanical lift at Cohoes and Lockport, together with other changes at important points along the route of the canal. The estimated cost of this project is $2,161,645.

The alternative scheme, which was reported upon about twelve months ago by the Special Committee on Canals, calls for the enlargement of the canal to a depth of 12 feet, and a bottom width of 75 feet, with capacity for barges of 1,000 tons carrying 33,335 bushels of wheat. The scheme is estimated to cost $62,000,000; and it was drawn up on these ambitious lines because it was felt by the committee, in view of the recent completion of the Canadian system of canals with a minimum depth of 14 feet throughout, and in view of the strenuous effort which is being made to divert the Western wheat trade to Canadian ports, that the time had come to enlarge the Erie Canal sufficiently to enable it to compete successfully against its well-equipped rival. It was found that the 9-foot canal, while it was a decided improvement, as far as it went, would be altogether inadequate to meet the present emergency. The larger scheme, it was urged, would have a capacity of 20,000,000 tons per annum, and that the saving on that tonnage as compared with the present canal would be $12,200,000 per annum. The proposed canal could carry freight at a third of the cost by rail, and, as compared with the lowest rail-rate ever quoted, the saving across the State of New York, on a prospective tonnage of 20,000,000 tons, would be about $18,000,000 per annum.

After a careful study of the question, the Governor says he is satisfied that, on account of the strong opposition in some sections of the State against any further use of the State's money for canal purposes, it will be impossible to secure favorable legislation for the expenditure of the $62,000,000 required for the larger scheme. He is satisfied that the 9-foot canal would be regarded by the Legislature in the nature of a compromise, and that the necessary money for its construction could be secured.

We thoroughly agree with the Governor in his conviction that if anything is to be done in the way of improvement in the Erie Canal, it must be done at once, and that if the question should be allowed to lie dormant a few years longer, it might be impossible to secure appropriations of any kind for canal improvement. At the same time, we cannot but feel that if the citizens of this State, particularly those that live in what are known as the "granger counties," could be induced to look upon the question broadly, and not merely from the viewpoint of local interests, they would see that the construction of the 12-foot canal would promote the interests, not only of the terminal points at Buffalo and New York, but indirectly, by the multitudinous and far-reaching benefits which always accrue from a general increase of trade, the interests of the whole State. It is scarcely to the point that Governor Odell should draw a contrast between the crowded state of the canal docks in his boyhood's days and their comparatively deserted condition just now. In those days, not only was railroad competition less severe, but the canal, as such, was adequate in conveniences and methods to the necessities of the time; whereas to-day in its present condition, it is as much out of date as a system of one-horse street cars would be on the Broadway surface line in this city. With a 12-foot canal and 1,000-ton barges, the economic conditions of operation would be so vastly improved that we think the Governor would soon witness a return to the prosperous conditions of an earlier day.

WATER-TUBE BOILERS IN THE BRITISH NAVY.

At a time when our naval authorities are adopting the water-tube boiler, exclusively, for use in our new warships, the recent adverse report of the British Admiralty Committee against the use of the Belleville water-tube boiler cannot but excite great interest in this country. Indeed, the British navy is so vast, and its constructors and engineers have been in the main so successful in producing permanent types of vessels, that a reversal of their policy, involving the practical condemnation of the boiler power of the numerous and powerful ships that have been built during the past four or five years, has produced a pronounced sensation throughout the whole naval world.

The determination to adopt this boiler was made after a series of trials carried out in one of the gunboats of the navy, and the "Powerful" and "Terrible," cruisers of over 14,000 tons displacement and 22 knots speed, were the first important vessels in which it was placed. Following close upon the trials of these ships came the announcement that the Admiralty had decided to install the Belleville boiler in all future battleships and cruisers. The "Powerful" and "Terrible," however, had not been long in service before complaints began to be heard against the performance of the new boilers under daily service conditions. There were difficulties in maintaining the desired steam pressure, and they proved to be very extravagant in coal consumption. Although a consumption of fuel of about 1.8 pounds per indicated horse power per hour was given out as the result of a trial, it was found that the average consumption of the same ship, when cruising, was between 2.5 and 2.8 pounds per indicated horse power per hour. When we compare this with the consumption of 1.3 pounds, actually recorded last season on the fastest transatlantic steamer, and with the consumption of 0.97 pound recently achieved on a 400-mile trial of one of the freighters of the Inch Line of steamers, it can be seen that an adverse report from the Admiralty Committee was a foregone conclusion. We cannot do more than briefly summarize the more important findings of the committee, and must refer our readers to the current issue of the Supplement for the full report.

In the first place, the committee are of the opinion that the advantages of the water-tube boiler, from the military point of view, are so great that, provided a satisfactory type can be found, it is preferable to the ordinary cylindrical type. They do not consider that the Belleville boiler has any such advantage over other types of water-tube boilers as to lead them to recommend it. The principal objections of the committee to this type are that the circulation of the water is defective; that an automatic feeding apparatus of a delicate and complicated kind is necessary; that a great excess of pressure is required in the feed pipes and pumps over the boiler pressure; that the water-gages do not reliably indicate the water-level; and that the up-keep of the Belleville boiler has so far proved to be more costly than that of the cylindrical boilers; while the additional evaporating plant required and the greater coal consumption on ordinary service as compared with cylindrical boilers, has hitherto nullified to a great extent, the saving of weight effected by its adoption. Lastly, the evidence before the committee showed that a large proportion of the coal expended in the navy is used to distill water and for other auxiliary purposes; and for such purposes the cylindrical boiler is considered to be more suitable and economical than any type of water-tube boiler. The report recommends that, as regards future ships that may be authorized, the Belleville boilers should not be fitted; as regards ships recently ordered, on which not much work has been done on the boilers, the boilers be not fitted; while the boilers are to be retained on completed ships and on those under construction, in which any alteration would delay completion.

While condemning this particular type, the committee is fully alive to the manifest military advantages of water-tube boilers as such; and they recommend an extended trial of four types of straight-tube boilers, which are now being adopted in foreign navies. These are the Babcock & Wilcox, the Niclausse, the Dürr, and the Yarrow large-tube boiler. It will thus be seen that a large section of the most recent ships of the British navy is equipped with a boiler which its own expert committee condemn, a fact which proves that in naval, as in many other matters, it is well to make haste slowly.

LONGITUDINAL FRAMING FOR THE HERRESHOFF CUP-YACHT.

Each of the two yachts that are being built for the defense of the "America" cup will present decided features of novelty among boats of their size and purpose. The Crowninshield yacht, as we pointed out in our issue of March 30, presents novelty of form, being for a 90-foot craft a wide departure from the Herreshoff model, and a purely original creation. The new Bristol boat, on the other hand, will adhere closely to the "Columbia" in form, but will differ radically from her in construction, her designer having broken away from traditional ideas—at least, in yacht construction—by substituting longitudinal framing for the transverse framing by which, from time immemorial, the boat-builder has given his craft the necessary strength. In the transverse system, as followed in "Independence," the form of the boat is preserved by 79 frames, spaced 21½ inches apart (not 2½ feet, as, by a typographical error, was stated in our last issue), and the longitudinal strength is afforded by tie-rod trussing in the overhangs, by side and bilge stringers, and by the natural resistance to distortion of the hull and deck plating, acting in a general way as a tubular girder. On this system, the transverse framing is the fundamental feature, and the longitudinal system is subsidiary to it. In the new Bristol boat, the main framing is longitudinal, and the transverse frames are worked in as subordinate and auxiliary. The result is a reduction in the total weight of material for a given strength. The idea is new in yachts, but not in naval architecture, Brunel having built the "Great Eastern" half a century ago on this system. It is stated that Herreshoff has reduced hull weights 25 per cent as compared with "Columbia." This is manifestly impossible; if he has saved from 7 to 10 per cent, he has done well.

OUR ADVANCING TRADE.

Although the recent increase in the exports of iron and steel manufactures from the United States has been simply phenomenal, there is at present no sign of falling off of the rate of increase. An analysis of the February export figures shows that for the eight months ending with February, 1901, the total export is six and a half millions greater than the truly phenomenal figure of last year, and nearly three times the total for the eight months ending with February, 1891, which means an increase of 10 per cent in a single year, and 333 per cent in the decade. In the eight months ending with February, 1901, iron and steel formed 3 per cent of the total domestic exports, whereas in the eight months just ended they formed 7 per cent. These total figures are particularly gratifying when it is known that the exports cover a great diversity of products, thus proving not only that our manufacturers are rapidly increasing their output, but that they are each year fabricating a large proportion of the product, and thereby securing for themselves and for the labor employed the greater share of the profits arising from such manufacture. Thus, ten years ago, such articles as typewriters, cash-registers, pumping machinery, electrical machinery, and other articles requiring a high degree of manufacture, had no place in the export schedules of the United States; whereas now they constitute an important part of our annual exportations of iron and steel, and are steadily increasing both in volume and in the number of foreign markets in which they find profitable sales. To take a single instance, we may quote electrical machinery, in which in 1891 no exports whatever were recorded; while in 1900 the figures for the transactions of two-thirds of the year had reached about $2,500,000. For a similar period in the present year they had risen to over $3,500,000. Another gratifying feature is the fact that the area of distribution steadily and rapidly enlarges. Exports which formerly went only to the principal countries of Europe are now shipped to China, Japan, Australasia, Africa, and the islands of the South Sea, where such articles as sewing machines and typewriters find a market in the most distant islands.

SYLVICULTURE AND THE SUEZ CANAL.

In an interesting article on the above topic, the Revue des Questions Scientifiques describes as follows the highly successful efforts of the Suez Canal Company to protect the banks and approaches of that great highway of the world's commerce by a systematic planting of trees and shrubs of various sorts.

The Suez Canal Company is utilizing to great advantage saplings, shrubs, and large trees in order to consolidate its banks, and to preserve the maritime canal from the encroachments of the desert. The operation began in 1897, and was continued from year to year with the improvements suggested by experience.