

The river connection at the east end of this dock system is to be by means of a lock 500 feet by 80 by 25. These are the salient points of this scheme which is intended to afford means for a cheap and speedy transportation of the increasing freight which must necessarily centre in this city after the completion of the enlarged canal system. The fleet of first class ocean steamers and sailing vessels that now frequents Montreal forms a pleasing contrast with the solitary "Sarah Sands" that came steaming into port in 1853; and it must vastly increase on the completion of a comprehensive and uniform canal and railway system, extended as it will be to Manitoba, and on to the Pacific coast, and centring in Montreal as a general distributing point. Greater proportionate changes in the shipping interests of this harbor will probably occur during the next decade than have been witnessed since 1853, provided suitable harbor and station accommodations are furnished.

This is the only feasible scheme ever devised for the improvement of the harbour of Montreal, and indeed the only one possible. It is pleasant to see the good people of that city awaking out of the illusory dream which used to be entertained by those of their citizens possessed of property in the direction of Point St. Charles.

We have a very clear recollection of hearing the member for Montreal West indulge in very unparliamentary language, as a member of a committee, because one of the witnesses asserted that except the St. Mary's current could be overcome it would be a useless attempt to construct an harbour at or above Point St. Charles, and he then declared there was no current at all interfering with access to the present port, and that all attempts to construct a harbour to the eastward would be a failure, and that in short, "westwards, the star of Empire holds its way"—but he was a good Tory in those days which may account for the aversion of intellect.

Apart from all this there is a great future before Montreal—the plan now proposed will benefit not only the port as an harbour, but it will prevent, to a very considerable extent, the dreaded ice shove.

The building of the wharf will increase the depth of water above St. Helen's Island and thus make it less possible for ice to ground in front of the city. There are other advantages well known to the talented Engineer, who devised the plan, but we have no space to enter into details. It is only necessary to say that if this design is not carried out the enlargement of the St. Lawrence and Welland Canals will fail to produce the full value of their respective outlays to Canada.

We have to thank T. D. SULLIVAN, Esq., Librarian to the Royal United Service Institution, for a copy of Captain GERARD H. W. NOEL's Naval prize essay for 1876.

The following synopsis is from *Broad Arrow* of 25th March:

"The subject of the naval prize essay for this year was on the best types of war vessels for the British Navy; considered from

three points of view—firstly, for combined action; secondly, for single cruisers of great speed; and, thirdly, for coast defence. With regard to vessels for combined action, Commander Noel expresses his opinion that the first consideration is that they should be thoroughly seaworthy, by which he means that a man-of-war should be possessed of a reserve floating power that would enable her to be seaworthy in a crippled state, or after rough handling in action. This can only be effected by avoiding excessive top weight, and by abolishing armor plating for the protection of the battery. She should be as unsinkable as possible by artillery, and her engines and steering gear, which are the motive and directing power, should be protected, the former by armour, and the latter by being placed below the water line. She ought to have watertight compartments on the cellular system, with double bottoms, which double bottoms might be filled with cork, so that if the outer skin were pierced the cork would still supply its full floating power. She should be protected by armour only above and below the water line, and if this were done, she would be able to carry more guns. A speed of fourteen knots on the measured mile is requisite for these vessels. If these and other suggestions, which are fully developed in Commander Noel's essay, were carried out, he maintains that our ironclads would combine a powerful though unprotected battery, with a perfectly seaworthy vessel possessed of great speed and turning power. His ideas with regard to what is wanted in single cruisers of great speed, and as to the requirements of vessels intended for coast defence, are stated in detail, with equal clearness, and display a thorough mastery of the subject. Indeed, we do not know where there is to be found in such a short space so much information, and so much matter for pondering on, as there is to be found in this essay. Its author seems to us to have completely mastered the conditions of the difficult problem to be solved, and the following remarks as to the cost of our Navy show that he has set about his task in a spirit which will, at any rate, be appreciated by the taxpayer:—

"The fifth consideration is the cost. This, though the last, is not by any means the least in many ways. It does not become a nation rolling in wealth to quibble over the sum to be expended on the protection of that wealth. But in this, as in all other outlays, the country looks to receive the value of its money. A certain sum is yearly voted to furnish England with an efficient navy, and if this is not wisely expended, the country becomes dissatisfied. But, should it at any time be necessary, that sum, great as it is, would be doubled. What we want, then, is not to lavish, but to be prudent in our expenditure, and to use such foresight in building our ships as will ensure our always holding the proud position of 'Queen of the Seas.'"

"The cost of our present sea-going ironclads is so vast, that of necessity it greatly limits their number. By a reduction in their size and in the complications of their build, we should find ourselves possessed of a considerably larger number of really efficient ships for the same sum now expended on a few monsters!"

A lively discussion on the merits of this very valuable essay came off at a meeting of the Royal United Service Institution on Monday 27th. Sir SPENCER ROBINSON in opening the discussion said:

"That the essayist had practically con-

demned the present ironclad fleet, and as to what Captain Noel called the second class being failures he could not agree with that. As to applying all the armour to the water line and leaving the other vital parts of the ship unprotected, he (Sir Spencer) objected to the suggestion altogether. In order to procure a very imperfect protection at the water line Captain Noel would take away the whole of the protection for the men; but what would be the result of a broadside on such a ship? The aim of the enemy would be very much easier and sure, and he would sweep the deck, destroy the guns, and ruin the ship. He had a great regard for the essayist, and wished him every success in his profession, but if Captain Noel should go into action on a ship built on the type he advocated he would certainly never expect to see him again."

The discussion was again taken up on Thursday evening, 30th March, when the following very valuable suggestions were made by General SCHOMBURG, R.A.:

"He hoped he should not be considered presumptuous in speaking on this subject, but as his brother officers might have to fight in these ships he took a great interest in them. In considering the essay they thought not to show any feeling; living as they did when changes were daily being made in armaments and kindred subjects, and when the whole system of warfare had been revolutionised, no one should treat a new proposal as an attack on existing ships. He felt therefore that this essay was not an attack on anything that had gone before, and they ought to be proud that a young naval officer had brought forward his views so modestly and with so much ability. The success of an ironclad at the present time could only be considered as probable, for until an ironclad had been in action her success could not be definitely decided upon. In Captain Noel's proposed ships for combined action he was right in putting the unsinkability of the ships in the first place, and he (the speaker) agreed with the essayist in the opinion that the value of bow fire had been thought too much of, but some cover was necessary to protect the men from raking fire. With regard to the guns, if they were placed on a turn-table they could be worked without exposing more men than those who served the guns, and even they might cover themselves except when actually at work. One thing had been overlooked in the essay, and that was the strengthening of the deck which covered the boilers, machinery, and magazines. As to coast defence, in vessels of the *Devastation* class there was too small a margin of flotation. The circular ironclads ought more properly to be called circular and moveable batteries, not ships, and they would be most useful for the defence of the Thames, the Mersey, and other large ports. If the defence of these rivers was not organized before war commenced it could not be done afterwards, and in case of war Liverpool would be burnt down to a certainty. Another thing forgotten by Captain Noel was the advantage of mortar boats, for by means of mortar boats many arsenals might be burnt that were considered to be impregnable. One of the principal things required in the navy was a very large reserve."

We have always held precisely the same principles—in every respect—but we have not the same faith in the ram as the distinguished officer who followed the General's lead.

Commander Scott said the real want was