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NICKEL STEEL FOR THE QUEBEC BRIDGE.

Once more the plans of the Quebec Bridge are being discussed, and this time it is suggested that nickel steel be largely used in its construction.

Canada has the nickel, possessing the most important nickeliferous ore deposits in the world, and if nickel is a suitable material for this work-long-span bridges -it is to be hoped it will be used, for nothing else that we can think of will emphasize so well the value of our nickel deposits.

In Proceedings No. 7, Vol. XXXIV., of the American Society of Civil Engineers, J. A. L. Waddell dis-cusses the use of nickel steel for bridges, and the results of his study, experiments and observations led him to have faith in this new building material for bridges, and to prepare a set of specifications to be used in connection with design and construction where such a material is used.

His experiments showed that nickel steel developed an ultimate tensile strength of almost 40,000 pounds per square inch over that of carbon steel. The tests for elastic limit and compression were if anything more favorable to this material.

It was also shown that nickel steel would stand the abuse to which bridge steel is subjected in the shop and on erection.

Mr. Waddell's experiments in connection with corrosion are of especial interest. Bars of nickel and carbon steels were placed side by side in weak solutions of sulphuric acid, in damp salt, in locomotive fumes, and in wet cinders, and the loss of weight during a given time was ascertained. It was found the carbon steel was about 75 per cent. better than nickel steel in the acid test, while in the other three tests the nickel steel showed up much superior. This was especially true of the salt test, and this is a matter of considerable interest in dealing with this particular problem.

Following Mr. Waddell's paper, Mr. Wm. Webster publishes in Vol. XXXV., No. 3, of the Proceedings of the same society an article on "Nickel Steel Eye-bars the same society an article on "Nickel Steel Eye-bars for Blackwell's Island Bridge." The eye-bars used in this structure were the largest ever manufactured. Tests and experiments are described, and it is concluded that nickel steel of from 95,000 to 110,000 pounds per square inch in tensile in the unannealed specimen, and of 90,000 pounds per square inch minimum tensile in the annealed specimen would give eye-bars with a minimum elastic limit of 50,000 pounds per square inch in full-sized test and guard against brittle steel.

The strength of nickel steel is nearly twice that of carbon steel. This will give a much lighter bridge and a corresponding decrease in stresses due to dead load, which should make a large saving in cost and ease in erection.

CORROSION OF IRON AND STEEL.

At the spring meeting of the Iron and Steel Institute of Great Britain the question of the preservation of iron and steel was dealt with in three papers.

Mr. W. H. Walker, in a paper entitled "The Electrolytic Theory of the Corrosion of Iron," said that his particular object was to discuss the fundamental conceptions involved in the modern electrolytic theory of the corrosion of iron, to show that the older carbonic acid

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