

advantage to be derived from their use in large structures. Think for a moment of this in connection with the erection of the Forth Bridge or of the Eiffel tower. If the engineers of those stupendous structures had had at their disposal a metal of 40 tons strength and 28 tons elastic limit, instead of 30 tons strength and 17 tons elastic limit in the one case and say 22 tons strength and 14 to 16 elastic limit in the other, how many difficulties would have been reduced in magnitude as the weight of materials was reduced; the Forth Bridge would have become even more light and airy, and the tower more net-like and graceful than they are at present.

"Then as regards the requirement of the military engineer, I am inclined to state firmly that there have not yet been placed at his disposal materials so well adapted to his purposes—whether of armour or of armament—as those I have now brought under your notice.

"In what may be called their natural condition these alloys have many properties which will commend them for these purposes, and when the best method of treatment, be it hardening or tempering, has been arrived at, I believe that their qualities for armour will be unsurpassed." *

Nickel armour-plates have been manufactured by Messrs. Schneider & Co. of "Le Creuzôt," France, and have been tested in different countries.

* *Journal of the Iron and Steel Institute*, No. 1, 1889.