

*five hundred pounds net*, as an average for the best bridge wire.

Mr. Chaley who built the celebrated bridge of Fribourg which is the longest of one span in Europe, states that by experiment he found strands of this size sustained over 1760 pounds before breaking. Mr. Ellett writes that his own experiments corroborate the statement.

While building the bridge from Queenston to Lewiston, I made a series of experiments consisting of twenty-two trials. In each case wires of the size referred to were subjected to a dead load hung vertically. The wires were taken from the workshop indiscriminately, and the result of the experiment gave as an average breaking weight *seventeen hundred and twenty-two pounds*: several of the pieces had over eighteen hundred pounds upon them before breaking, and one piece which was afterwards found to be the last end of a coil and consequently a little larger than the gauge sustained a trifle over nineteen hundred pounds before breaking.

The results although positively accurate for the pieces experimented upon, should not be taken as an average of bridge wire (a) of this number, because for long lengths, the probability of meeting with flaws is increased, and the stock from which the wire is made, is not always so uniform or of such tenacious nature; such wire however as is used for bridges should be capable of sustaining, without a question or doubt, fifteen hundred pounds breaking strain for every strand of the size and weight specified, and where due care is taken in the selection of stock and in the manufacture, the acids used in cleaning being entirely eradicated, a result

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(a) This wire was made by Messrs. Cooper & Hewett, of Trenton, New-Jersey. Mr. Washburn, of Worcester, Massachusetts, recently assured me he was prepared to enter into contract to furnish No. 10 bridge wire, capable of sustaining a breaking strain of 1800 pounds per strand.