

TESTS ON THE TENSILE STRENGTH OF STEEL BOILER PLATES.

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The following table gives the results of tests of specimens cut from two plates of flange steel. Six specimens, marked A and B respectively, were cut from each plate, those with odd numbers lengthwise, or in the direction of rolling, and those with even numbers crosswise, or parallel to the rolls. The specimens were sheared from the plates and then planed to an uniform width of 2 inches, the metal injured by shearing being removed.

The tests were made on the 200,000 lbs. Riehle Testing Machine in the Laboratory of the School of Practical Science, the specimens being placed in the machine with a clear length of 15 inches between the jaws.

The Yield Point was determined by the drop of the beam, and was strongly marked, every specimen stretching considerably without any further increase in load.

An examination of the table will show that both plates were slightly stronger crosswise than lengthwise, but no general conclusions can be drawn from such a small number of tests.

Tests which were made at the Watertown Arsenal in 1885 on 48 steel plates, varying in thickness from $\frac{3}{16}$ inch to $\frac{3}{4}$ inch, one specimen cut lengthwise and one crosswise from each plate, indicated that the strength in each direction was substantially the same; in many of the plates it was almost exactly the same, in about half the others the strength lengthwise was a little greater, and in about half a little less than the strength crosswise. These conclusions have been confirmed by other tests.

The percentages of elongation in column 7 were calculated from the formula of the Committee of the American Society of Civil