



# Practical Essay on the Strength of Cast Iron and Other Metals Volume 2 Containing Practical Rules, Tables, and Examples, Founded on a Series of Experiments with an Extensive Table of the Properties of Materials

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This historic book may have numerous typos and missing text. Purchasers can download a free scanned copy of the original book (without typos) from the publisher. Not indexed. Not illustrated. 1846 Excerpt: ...inches, I the distance between the supports in feet, w the breaking weight in lbs., w any other weight, d its deflexion, and m the modulus of elasticity in Sbs., for a square inch: putting 4-5 for the distance 4 feet 6 inches, above, we have  $\frac{4-5}{x} \times \frac{b}{d^2} \times \frac{f}{m}$  The value of being taken from the Table m b d3 d f (Part I. art. 256, ) the value of the modulus m 432 /- being obtained from the Table. 99. In all the preceding experiments on rectangular bars, the defect of elasticity, measured by the deflexion remaining in the bar after the load had been removed, was observed, for reasons previously given (arts. 86, 92) and to show the law which regulates this defect, its value, with equal additions of weight, will be collected from the mean results upon each iron, and placed under the corresponding weights in the following Table. above. DEFECT OF ELASTICITY. 100. Defect of elasticity, or set, as obtained from the mean deflexion of bars cast from models 1 inch square, laid on supports 45 ft. asunder using only those irons upon which experiments had been made, as to the set, upon all the weights set down. 101. Comparing the mean sets, or defects of elasticity, in each series of the preceding Table, with the computed ones, it appears that the defects vary nearly as the square of the weights the set being the abscissa and the weight the ordinate of a parabola. Hence there is no force, however small, that will not injure the elasticity of cast iron. 102. When bars of a \_L\_ form of section are bent, so as to make the flexure to depend upon the extension or compression of the vertical rib (as in arts. 86, and 94, experiments 14 to 16), the set is nearly as the square of the extension or compression these being measured by the deflexions. 103. In all the prece...

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