ters, a negative strain of from 41,000 to 51,000 lbs. to the square inch, say an average of 46,000 or more. Square bars, according to Expt. 9, length equal to 18 times the width of the side, will sustain about 45,000 to the square inch.

Now a hollow cylinder, of a thickness of metal not exceeding about $\frac{1}{3}$ of the diameter of the cylinder, according to calculation, has a transverse strength about 50 per cent greater to the square inch, than a square bar whose side equals the diameter of the cylinder. Hence, a hollow cylinder whose length equals 18 times its diameter, ought to sustain a negative strain of 67,500 lbs. to the square inch.

It should be observed, however, that direct experiments upon the lateral strength of the pieces used for arriving at the results and conclusions above stated as to negative strength, shewed them to possess uncommon strength transversely, even to from 30 to 50 per cent greater than the fair average transverse strength of cast iron, as will be seen hereafter.

Therefore, I do not consider it proper to estimate the negative strength of hollow cylinders of the proportions above stated, at more than from 40,000 to 50,000 lbs. (say 46,000) to the square inch.

Now, the hollow cylinder being evidently the form best adapted to sustain a negative strain, or a transverse strain in all directions, it would be well worth the while to have a set of thorough experiments, to determine accurately their actual strength. This has never, as far as I have learnt, been done, and therefore I shall assume the above estimate on the subject, as probably, not very far from the truth, subject, however, to correction whenever the facts and evidences shall be obtained, upon which the correction can be founded. In the mean time, since we know not the exact ratio between the greatest safe practical strength and the absolute strength of iron, and therefore should, ...