

**EXPERIMENTS ON THE TRANSVERSE  
STRENGTH AND OTHER PROPERTIES  
OF MALLEABLE IRON: WITH  
REFERENCE TO ITS USES FOR  
RAILWAY BARS: AND A REPORT**

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Experiments on the Transverse Strength and Other Properties of Malleable Iron: With Reference to Its Uses for Railway Bars: And a Report by Peter Barlow

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**PETER BARLOW**

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**EXPERIMENTS**

ON THE

**TRANSVERSE STRENGTH AND OTHER PROPERTIES**

OF

**MALLEABLE IRON,**

WITH

**REFERENCE TO ITS USES FOR RAILWAY BARS;**

AND A

**R E P O R T**

FOUNDED ON THE SAME,

**ADDRESSED TO THE DIRECTORS OF THE LONDON AND  
BIRMINGHAM RAILWAY COMPANY.**

**BY PETER BARLOW, F.R.S.**

**COR. MEM. INST. OF FRANCE; OF THE IMP. AND ROY. ACAD. OF  
PETERSBURGH AND BRUSSELS, ETC.**

**LONDON:**

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**1835.**



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DOCTORS' COMMONS.

## P R E F A C E.

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IN order to render some remarks and observations in the following pages intelligible to the general reader, it will be necessary to state a few particulars relative to the circumstances which gave rise to the experiments, and to the appearance of them in their present form.

The Board of Directors of the London and Birmingham Rail-way Company, desirous of carrying on the great work in which they are engaged on the most scientific principles; and, if possible, to avoid the enormous cost of repairs which has attended some large works of a similar description, offered, by public advertisement,

a prize of one hundred guineas "for the most improved construction of Rail-way Bars, Chairs, and Pedestals, and for the best manner of affixing and connecting the Rail, Chair and Block to each other, so as to avoid the defects which are felt more or less on all Rail-ways hitherto constructed;" stating, that their object was to obtain, with reference to the great momentum of the masses to be moved by locomotive Steam-Engines on the Railway,

1. "The strongest and most economical form of Rail.

2. "The best construction of Chair.

3. "The best mode of connecting the Rail and Chair; and also the latter to the Stone Blocks or Wooden Sleepers. And that the Rail-way Bars were not to weigh less than fifty pounds per single lineal yard."

In consequence of this advertisement, a number of plans, models, and descriptions were



deposited with the Company within the time limited by the advertisement; and others were received afterwards, which, although not entitled to the prize, were still eligible to be considered with reference to their adoption for trial. On the 24th of December last, a resolution was passed at a meeting of the Directors, appointing J. U. Rastrick, Esq. of Birmingham, N. Wood, Esq. of Newcastle, Civil Engineers, and myself, to examine and report upon the same, with a view to awarding the prize; and, at the same time, we were requested to recommend to the Directors such plans, whether entitled to the prize or not, as might be considered deserving of a trial. We met accordingly in London; and, after a long and careful examination of the several plans, drawings, and written descriptions, recommended those we thought entitled to the prize, which was awarded by the Directors accordingly. But that part of our instructions which required us to recommend one or more rails for trial, we were unable to fulfil to our satisfaction, principally for want of data to determine which of the proposed rails would be strongest and

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