A TREATISE ON ROOFS AND BRIDGES; WITH NUMEROUS EXERCISES

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EDWARD A. BOWSER

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A TREATISE

ON

ROOFS AND BRIDGES

WITH NUMEROUS EXERCISES

BY

EDWARD A. BOWSER
PROFESSOR OF MATHEMATICS AND ENGINEERING IN RUTGERS COLLEGE

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PREFACE.

The present treatise on Roofs and Bridges is designed as a text-book for the use of schools. The object of this work is to develop the principles and explain the methods employed in finding the forces in Roofs and Bridges, and to train the student to compute the stresses, due to the dead, live, snow, and wind loads, in the different members of any of the simple roof and bridge trusses that are in common use.

The aim has been to explain the principles clearly and concisely, to develop the different methods simply and neatly, and to present the subject in accordance with the methods used in the modern practice of roof and bridge construction.

In introducing each new truss it is at first carefully described, and the method of loading it explained. A problem is then given for this truss, and solved to determine the stresses in all the members. This problem is followed by several other similar ones, which are to be solved by the student. Nearly all of these problems were prepared especially for this work, and solved to obtain the answers. The instructor can at any time easily make up problems for his pupils without the answers.

The book consists of four chapters. Chapter I. is entirely given to Roof Trusses. Chapter II. treats only of Bridge Trusses with Uniform Loads.

Chapter III is devoted to Bridge Trusses with Unequal Distribution of the Loads. This is divided into three parts, as follows:

(1) The use of a *uniformly distributed excess load* covering one or more panels, followed by a uniform train load covering the whole span.

(2) The use of one or two *concentrated excess loads*, with a uniform train load covering the span.

(3) The use of the *actual specified locomotive wheel loads*, followed by a uniform train load.

Chapter IV treats of Miscellaneous Trusses, including the Crescent Roof Truss, the Pegram and Parabolic Bowstring Bridge Trusses, and Skew Bridges.

The stresses in this work are nearly all given in tons, the word "ton" meaning a ton of 2000 pounds. Any other unit of load and of stress might be used as well.

My best thanks are due to my friend and former pupil, Mr. George H. Blakeley, C.E., of the class of '84, now Chief Engineer of the Passaic Rolling Mill Company, for reading the manuscript and for valuable suggestions.

E. A. B.

Rutgers College,
New Brunswick, N.J., October, 1898.

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