

PREFACE.

THIS work is principally a compilation of the results of investigations made by the author during the last three years, and presented in a number of papers to the various American engineering societies. Several portions of the book, including many of the tables, are new, as this is the first systematic treatment, by the author, of bridges for cities and manufacturing districts; the previous papers having dealt especially with those for country roads. In making this compilation, the author has been governed by no blind adherence to what he has already written, but has made changes wherever they have appeared to be advisable.

One of the chief objects of this work is to reduce the labor of iron highway-bridge designing to a minimum, for which purpose every thing that could be so arranged has been tabulated. Not only are the exact sizes of hip verticals, joists, floor beams, beam hangers, lateral rods and struts, portal rods and struts, vibration rods, intermediate struts, lattice bars, stay plates, etc., given for all practical cases, but also the most economic dimensions of panels and trusses, and dead loads, so exact that by their use all necessity for a second trial is avoided. These tables, it is hoped, will prove useful to those in the actual practice of bridge designing, enabling them to greatly reduce the time required to make diagrams of stresses and sections and estimates of cost. The other tables, although they do not give final results, should also be of service.

The value of the book may appear to some readers to be limited, in that it treats of only the Pratt and Whipple systems; but it must be