

engineer in the service of the State of Pennsylvania, afforded great facilities.

This investigation was commenced without the most remote design of ever giving the result publicity, but solely for the purpose of enabling him to proceed intelligently in the discharge of professional duties. The facts elicited, led him to conclude that many important structures, and some of recent erection, exhibited defects which, although serious, had escaped the observation of merely practical builders; these will be pointed out in their proper places, and the writer will be amply rewarded for the labor of preparing this little treatise, if it shall prove the means of adding in the smallest degree to the stock of information already possessed on the important subject of bridge construction.

The treatise on bridge construction has been prefaced by a few pages on the resistance of solids, because a knowledge of this subject lies at the foundation of the art of construction. The mode of investigation is peculiar, and is believed to be more simple than those usually employed.

This part of the subject will not be interesting to those who are unacquainted with the application of mathematics to mechanics, but those who are, will perhaps be pleased with the simplicity of the solutions, and the novelty of representing strains by geometrical solids, deflections by parabolic areas, and the variable pressures at different points of beams by the corresponding ordinates of plane curves. The portion which refers to the principles of