the case in bridges, and if the arch is not stiff enough in itself to resist distortion, diagonals must be introduced in the web performing simply the office of counter-braces. Like them, they are strained the greatest in the centre of the span and least at the ends.

THE SELECTION OF BRIDGES

should be governed by economy and adaptability to location, since no one of the well-recognized types of bridges is better than another. Apart from such motives, any bridge designed on correct principles is a good one, whether a beam-truss, a suspension-truss, or a bowstring. On the contrary, any one is bad if improperly designed, and the principles of its construction ignorantly conceived. A general rule that will lead to satisfactory results is to ignore any plan of bridge that can not be accurately analyzed as to the character and amount of strain occurring in all its parts—such, for instance, as the Truesdell bridge, scores of which have been built during the last fifteen years; and assuming that the great majority are still in use, giving satisfaction to their users, yet their form of construction is one that removes them beyond the pale of the most refined analysis. They are purely empirical structures, and being such their construction should under no circumstances be permitted. It is bordering on criminality to build any structure on a plan that no human being can tell definitely any thing about, when there are so many plans that we thoroughly understand.