neer, but an expert in bridge designing. He should receive a handsome salary, and be allowed enough assistance to enable him to do his work in a satisfactory and efficient manner. His tenure of office should be for life, or for a long term of years, and should be beyond the reach of politics and politicians. As long as his work be done efficiently, his position should be assured to him; for a man of the requisite experience and ability would not be willing to accept the position under other conditions.

The letting of bridge contracts to the lowest bidder is the worst method that could be adopted, even when plans and specifications are on file; for the work generally goes to the most unscrupulous bidder, who will secure his margin of profit by diminishing the weight of the details. This weight should be about twenty-five per cent of the total weight of iron-work in the bridge, and it is quite possible to reduce it to one-half of this amount.

If ignorant commissioners must have a rule for letting, it would be better to award the contract to the highest bidder. But the proper way would be to engage the services of a man who knows something about bridge construction, and have him figure out the probable cost of the bridge, allowing a fair margin for profit. A margin of from fifteen to twenty per cent is not excessive, even upon a liberal estimate of cost; for such a margin by no means represents the contractor's actual profits. From it must be subtracted, not only a portion of the annual office expenses, including salaries of clerks, draughtsmen, and engineers, but also the bidding expenses of several lettings where the contractor has been unsuccessful. Then, too, there is the risk of bad weather, high water, rise in price of iron, delay in shop, etc., any one of which is liable to absorb the whole calculated profit, to say nothing of the liability of losing the bridge by a freshet during erection.

When the appropriation is small, it is much better to build a good combination bridge than a poor iron one, because the wood-work of the former can be replaced when it wears out; while the iron, if properly cared for, is as good as new. But a used-up iron bridge is worth little more than the cost of taking