an animal of small weight passing over these structures, is sure to produce a friction sufficient to destroy the same in a short period of time.

Second, as every piece of iron differs more or less from another in strength, by the superior soundness or fineness of its grain, so it is impossible to furnish a chain, the links of which shall be of equal strength throughout.

Third, if the former position was possible, yet, as the strength of each link so much depends upon the goodness of the workmanship in the tempering and forming of the same, it would be altogether erroneous to assert that every link in a chain would be made alike sound.

Fourth, could these two last objections be cancelled, there yet would remain another important truth behind, that must greatly conspire to prevent any sound calculation on the strength and durability of a Bridge constructed of chains; namely, the inequality of strain or longitudinal pull on the different links composing each chain.

Fifth, may be added another important defect, attendant on this kind of Bridge, namely, the natural and certain tendency that frost produces upon all iron, to make it brittle, and consequently to lessen its strength, derived by cohesion. If this be a fact, we may naturally infer that, were the chains for a Bridge made strong enough to carry all the weight required, in Summer, yet they are liable to break down with half that weight in Winter, and as it is also a fact that we have a right to calculate on double the weight being put on such a Bridge in Winter, more than in Summer, through rain, ice, and snow; then, quere, whether a Bridge of this kind, if it even possessed four times the strength it required in Summer, could in any wise be depended upon in Winter, while it was subject to the unfriendly embraces of an enemy so capable of effecting its destruction? and as the breaking of one link would not only endanger the whole fabric, but, very probably, utterly destroy it, how easy is it to prove that a structure so easily affected cannot be of long duration, and that, at the best, they are but mere temporary expedients.