connection it is proper to state, that the material in a suspension bridge is in the best possible state (being always in tension) to bear its load; and can safely be loaded to much nearer its full breaking strength than where exposed, as in many other structures, to strains first of tension, and then of compression. Experiments prove this beyond all question; and it is an element of economy for which Mr. Wasell gives no credit.

I have thus far shown that the writer has fallen into error, first, in his assumption of load; and second, as to the length of the cables. Thirdly, that by making no allowance for the self-adjustment of the system (by an increase or diminution of the cradling of the cables) he induces a condition of things which cannot possibly exist; and finally, that even on the supposition of fixity of position, the elasticity of the material in the cables allows of but an insignificant increase of strain in either pair of cables before the other comes into full bearing; the final conclusion being, that even under the most extreme conditions of temperature and load, *no danger is to be apprehended to the structure.*

I propose, in closing, now that I have disproved the defects claimed by Mr. Wasell, to show that the design for the Niagara bridge has some positive advantages, which are derived from what he considers a faulty construction.

It would have been very easy to have arranged the land cables so as to compensate exactly for the differences in deflections in the main span; but the upper ones were made longer because one anchorage