order if possible, to perfect a plan of bridge which could be relied upon, and which might be substituted for those then upon the road.

Under this authority, experiments were commenced with models of the various bridges in use, which models were in all cases loaded to the breaking weight, thus any inherent defect, was clearly, and unmistakably made manifest.

These experiments were, at the outset, based upon the abandonment of the arch, for reasons herein stated, and it was determined to direct the investigation to the attainment of some simple form of truss, which would be sufficient.

As a basis of operations, a model of the plan of bridge last described was selected; this model represented a span of 150 feet in clear, and was built upon a scale of \( \frac{1}{4} \) inch per foot, the details being in every respect the same as in the full sized bridge.

The apparatus for loading, may be described as follows: Floor beams were placed one on each side of all the posts in the trusses, and as nearly thereto as possible, extending outside of the latter, to permit a platform to be suspended therefrom, by means of iron rods, two to each pair of floor beams—upon this platform was placed the load. By this arrangement, the load was suspended from each pair of posts in both trusses. 26,000 pounds of castings were prepared in pieces weighing 100 pounds each, these pieces were all of the same dimensions, and their lengths were equally divided by a mark through their centre. In order that the load might be applied equally upon both trusses, a line was drawn longitudinally in the centre