As an example of this difference, we may allude to the test weight placed on the flooring of the Fairmount bridge—a work which was slightly built and intended only for common travel, and on which no extraneous means are applied to add to that stiffness which it derives from its own inertia.

This bridge, as is shown by computation and experiment, is depressed $3\frac{1}{4}$ inches by a load of two tons; or, by the rule laid down and verified by observation, it is about eight times as flexible as that in the plan before us. It would be bent just about as much under the weight of a loaded cart and one horse, as the heavy rail-road bridge, proposed for the Connecticut, would be under that of a 20 tons engine.

Yet, notwithstanding this flexibility under the action of small weights placed in the centre of the arch, that structure was publicly proved by placing on the platform *two columns* of loaded carts, each containing as much stone as the horses could pull upon the bridge, and drawn up as near together as they could stand, while the foot-ways were at the same time filled with people. With this weight, due to 39 carts, horses and loads, and probably reaching 120 tons, the depression of the flooring was not visibly greater than is frequently produced by placing three or four such teams in the centre of the arch.

After standing some time on the bridge, this train was started off simultaneously. No injury resulted to the structure, no motion was produced which would have been hurtful, if inconvenient, had the double train