that it is unnecessary to describe it here; the only point worthy of attention being, that the joists should be dapped one inch on to the lateral struts, and that they should go on so hard that it will be necessary to drive them into place. This can be accomplished by cutting each dap a sixteenth of an inch short, and bevelling the end of one dap slightly, in order to give the joists a start when they are being driven down. When they come to their bearings, they should be spiked to the lateral struts by a five-inch spike at each end, driven obliquely.

In regard to the flooring, Mr. James Owen, C.E., in a paper read before the American Society of Civil Engineers, specifies as follows: "Lay no plank wider than nine inches. This prevents wide joints in shrinkage. Bore all holes for the spikes to prevent splitting, and put no spike nearer than four inches to the end of the planking."

In long bridges of several spans, it may be economical to dispense with the upper falsework by using a travelling derrick, running upon wooden stringers, for the purpose of handling the heavy sections. Under these circumstances, the whole of the portal might be connected while lying upon the falsework, then hoisted into place in one piece, and supported there by shore timbers from the first bent of falsework. The bridge should be completed as the traveller retreats: otherwise there will be difficulty in carrying the members past the traveller. The material should be brought on cars within reach of the derrick.

The last thing to be done is to take down the falsework, and draw the piles from the bed of the stream. The latter is easily accomplished by a crab on the bridge; the rope being attached to the head of the pile, which is vibrated transversely in all directions while being lifted by the tension of the rope.

There is no reason why a well-designed iron highway-bridge, when properly cared for, should not last forever. Under loads which are light and slowly moving, compared to those of railroad-bridges, the iron cannot possibly wear out; and, when properly protected from the weather, it cannot rust. Of course the wooden parts of the structure must be replaced from time to time as they wear out or decay.