entirely of iron ; but the distance from adequate iron works, and the absence of boiler-makers and competent workmen, were unfavorable to doing so ; on the other hand, timber could be obtained without difficulty, and there was no scarcity of carpenters, so that it was thought best to build of wood, which involved much complicated detail and difficult framing.

The caisson was provided with a false bottom placed below the cutting edge, over which it fitted like the cover of a paper box, braced against the cross-walls, and secured by iron rods. Five launching ways were placed below, which were carried out into deep water on piles, and the completed caisson was lowered by jack-screws upon five flattened timbers, fitted with guides, and arranged to slide on the ways.

The first work done in the river was to drive a compact clump of anchor piles, one hundred feet above the proposed pier ; these were driven and protected by riprap before the June flood, but it was thought unwise to drive the false-work piles at that time, because, even if they should remain undisturbed by scour, they would inevitably collect a large amount of drift, which might form an obstacle in the way of sinking the pier scarcely less serious than the wreck of the old caisson. On the 9th of August this danger was past, and the driving of the false-work piles was begun. They were sixty in number, of which forty-eight, two to each end, were intended to carry the weight taken by the suspension screws, the other twelve serving only as supports for the false-works.* The two central piles on the lower end were not driven till after the caisson had been floated into place. The disturbances of the river made the driving of these piles less exact than it should have been, but the irregularities were not too great to be taken out in the platform above ; they were generally driven from twenty-five to thirty feet into the sand, some of them even reaching the rock.

The piles were cut off as soon as driven at an elevation of 106.5, a platform was built upon them, and the trusses were raised which were to carry the suspension screws. These trusses were seven in number, and proportioned to carry a safe load of 1,000 tons. Each end truss carried two suspension screws, and each of the intermediate trusses four, the screws being in pairs, and placed

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* For arrangement of piles, see Plate V.