rise and fall amounts in the extreme to seven feet six inches. If the inflated caisson were just barely touching at high water, it would press upon the supports with a force of four thousand tons at low water, all of which had to be met by the strength of the edges and frames, there being no side friction as yet.

The air-chamber was, therefore, divided into six rooms by five dividing frames. These frames form a heavy truss of pine posts and stringers, with side sheathing and side braces to the roof every six feet, and are proportioned according to the strains in the launching. The ends of the frames are secured to the sides of the caisson by knees.

THE LAUNCH.

It was concluded to limit the pressure of the caisson during the launch to two-and-a-half tons per square foot of launching surface. This required seven ways in all, two under the edges and five under the frames. The total launching weight was 3,000 tons, comprising 111,000 cubic feet of timber, and 250 tons of iron.

The launch was arranged sideways, that is, with the long face of one hundred and sixty-eight by fourteen feet six inches high towards the water. The groundways were laid at an angle of one inch per foot, the caisson standing fifty feet back from the end of the ways. In order to buoy up the forward end of the structure, as it entered the water, and thus prevent its entire immersion, a temporary watertight compartment was put in, one-third of the whole width. It served its purpose admirably. A full complement of wheelbarrows, crabs, winches, and other tools, were likewise placed within for future use.

The groundways consisted of two timbers eleven inches square, bolted together sideways. They were grooved like the guide of a planer, the upper launchingway fitting them correspondingly, only the outer ways were provided with ribbons.

The great danger to be apprehended in launching so large a mass on seven ways, consisted in the liability of one end