of a breakwater, or sea wall, of sufficient strength and height to prevent the overflow of the city from the Gulf.

3. Plans and specifications and estimates of the cost for filling and grading the city, so as to protect it from overflow, and to secure sufficient elevation for drainage and sewerage.

The board of engineers selected for the purpose were Gen. Henry M. Robert, chief of engineers, U. S. A., retired; Mr. Alfred Noble, and Maj. H. C. Ripley, all engineers of national renown. In January, 1902, this board submitted plans calling for the construction of a solid concrete wall and the raising of the grade of the city to the level of the top of the wall. Under the plans submitted, which were unanimously adopted, the total estimated cost of the sea wall and grade-raising was $3,505,040. The wall was planned to extend 3½ miles around the Gulf side of the city, and the government later agreed to further extend the wall nearly a mile, at a cost of $591,046.25, making the total length about 4½ miles. The sea wall was to be constructed by the county, while the grade-raising was to be done by the city, with the exception of 100 feet along the sea wall right-of-way, to be carried out by the county. The county issued bonds sufficient to carry out the building of the sea wall, while the aid of the State was sought in the grade-raising. The city was authorized to issue bonds to the amount of $2,000,000 for grade-raising purposes, and the State legislature agreed to remit the taxes for eighteen years, the taxes to be paid as usual, but the share which formerly went to the State to be used as a sinking fund for the redemption of the bonds and to pay the interest.

Work on the sea wall was started in October, 1902, and the county's extension was completed in July, 1904. The government extension of one mile was finished this month. Some idea of the immensity of this undertaking may be obtained by considering the following figures: The wall is built of solid concrete made of Texas granite and Portland cement. It is 4½ miles long and weighs 40,000 pounds to the lineal foot. The wall is built upon a round piling foundation, the piles being 45 feet in length, and not less than 12 inches at the top and 17 inches at the base in diameter. The piles are driven in four rows at intervals of 4 feet from center to center. The wall proper measures 16 feet at the base, is 17 feet high, and 5 feet across the top. It is protected from undermining on the Gulf side by an apron of rip-rap 27 feet wide, as well as by a row of sheet piling extending the entire length of the wall, and driven down to a depth of twenty-four feet.

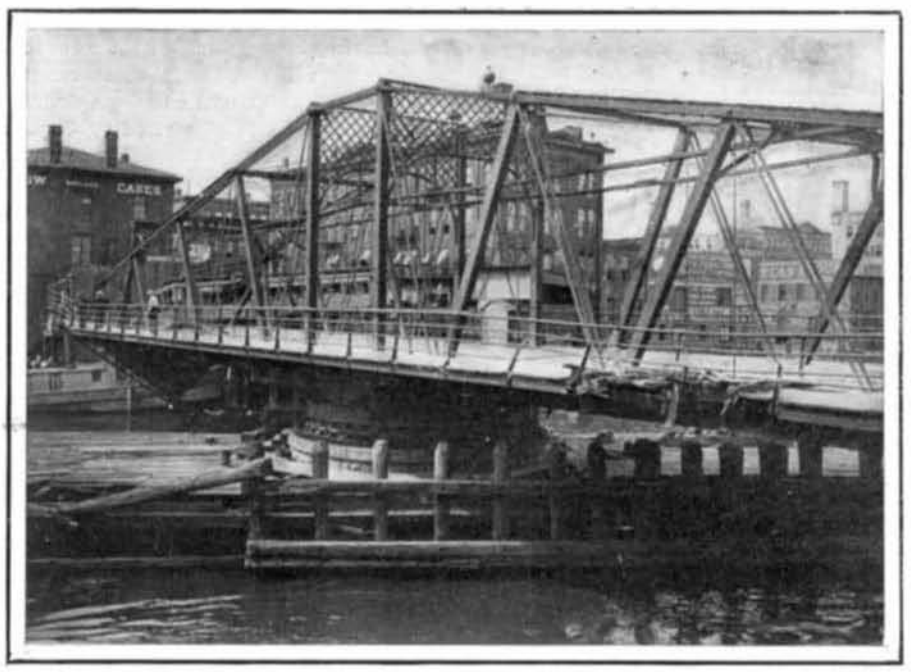
In the 3½-mile county extension were placed 13,300 carloads of material—5,200 carloads of crushed granite, 1,800 carloads of sand, 1,000 carloads of cement, 1,200 carloads round piles, 400 carloads sheet piling, 3,700 carloads of rip-rap, and 5 carloads of rim-filling rods.

Work on the grade-raising has been in progress fifteen months and the entire undertaking is expected to be completed early in 1907. The plan for filling in, while unique, is very satisfactory and its practicability has been fully shown. The initial move was the digging of a canal parallel to the sea wall and intersecting the avenues of the city. The material taken from the canal was used for filling in the sea wall right-of-way. The canal right-of-way was leased for a nominal sum and all the houses removed. With the building of the canal the material for filling in the city is being obtained from the bay and from between the government jetties by self-loading and discharging and self-propelling dredges. These steam from the excavating ground through the canal to pipe-line stations at points where the canal intersects the avenues. At these points the excavated material is forced through pipes running down the avenues, the sand remaining to fill up, the water running off through a discharging canal. In this manner very rapid progress is made. The harbor entrance is also deepened by the removal of the excavated material from between the jetties, which extend 5 miles out into the sea, and which were constructed by the government at a cost of $8,000,000.

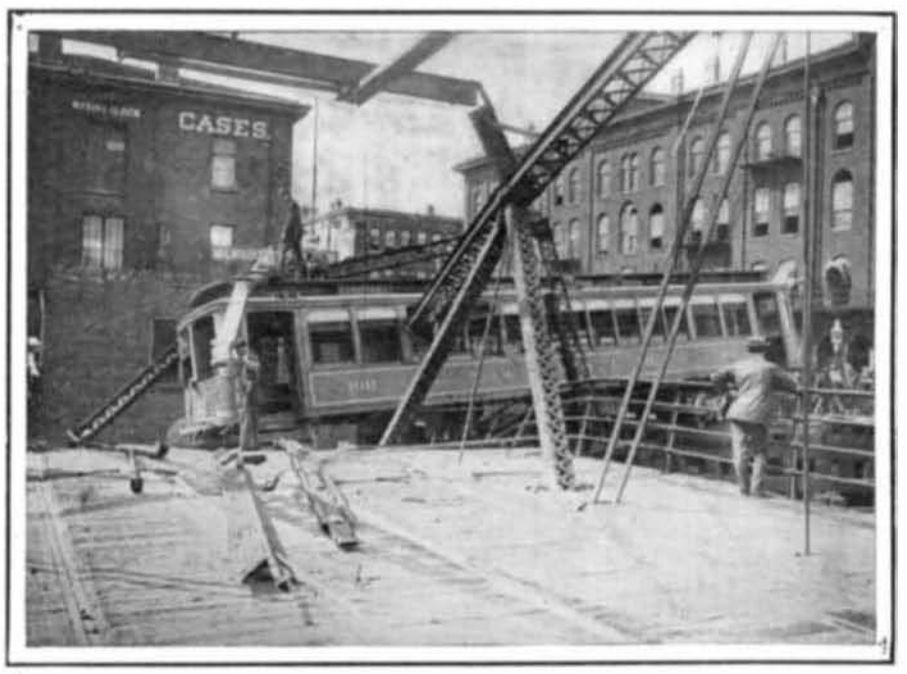
When the grade-raising is completed the dredges will back out of the canal, filling it up firmly as they go, and the houses removed therefrom will be restored.

The grade-raising necessitates the raising of 2,156 houses. The territory raised embraces private property as well as streets, sidewalks, and alleys, and there is no special tax or charge made against the private property for the filling placed thereon, although the expense of raising the houses is borne by individuals.

When the grade-raising is completed to the level of the top of the wall, the top of the embankment for about 50 feet from the sea wall will be protected by a pavement, and 40 feet further by soil and Bermuda grass. Thus a fine driveway will be the result, 50 feet in width, which, added to the available part of the top of the sea wall after an iron railing has been placed upon it will give a sidewalk 9 feet in width overlooking the Gulf of Mexico.

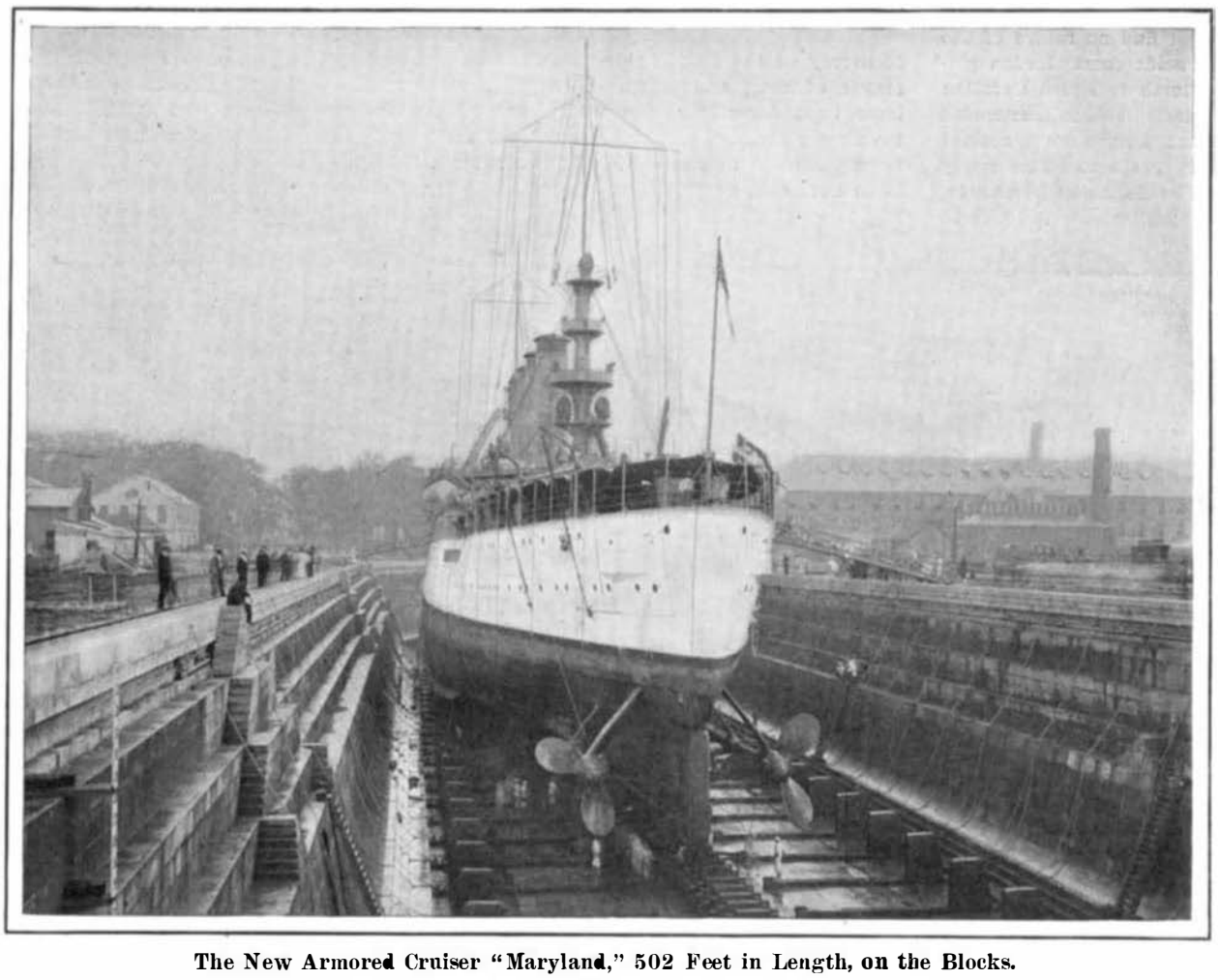


View Showing the Point at Which the Bridge was Rammed by a Steamer.



After the Collision; the Car is Resting Partly on the Bridge and Partly on the Street.

A CURIOUS DRAWBRIDGE ACCIDENT AT MILWAUKEE.



The New Armored Cruiser "Maryland," 502 Feet in Length, on the Blocks.

OPENING OF THE BOSTON NAVY YARD DRYDOCK.

A CURIOUS BRIDGE ACCIDENT.

An unusual combination of circumstances rendered an accident that recently occurred on a street car on one of the bridges of the Milwaukee River of very special interest. A large and heavy street car had just crossed the bridge, which was of the ordinary draw-span type, and its forward trucks were already on the abutment, when a steamer, through some misunderstanding, ran into the opposite half of the draw span, causing it to turn on its turntable and twisting the street car into the perilous position shown in our engraving. As the bridge swung round the side of the car carried away the end of the panel of the truss, and the floor of the bridge, having no support, sagged down, leaving the outer end of the car suspended in the perilous position shown. The street railway company immediately made the necessary arrangements to place the car back on the track, and this they did by floating a scow beneath the car and building up a mass of blocking, by means of which the car was jacked up and run on to the tracks on shore. A fortunate feature of the accident was that no lives were lost, and that all the passengers made their immediate escape. The forward set of trucks remained on the abutment, but the after set fell into the river when the floor of the bridge collapsed.

OPENING OF THE STONE DRYDOCK AT THE BOSTON NAVY YARD.

Time was when all the drydocks of this country, including those built for the government, were constructed of timber. Considerations of economy of first cost alone determined this selection, for the timber drydock has proved in many cases to be a troublesome