THE GALVESTON (TEXAS) STEEL WAGON BRIDGE.

The great steel wagon bridge of Galveston, Texas, which connects the island of Galveston with the mainland of Texas, has recently been completed.

The bridge is notable not only for its great length, but for the economy of construction and the rapidity with which it was built and finished.

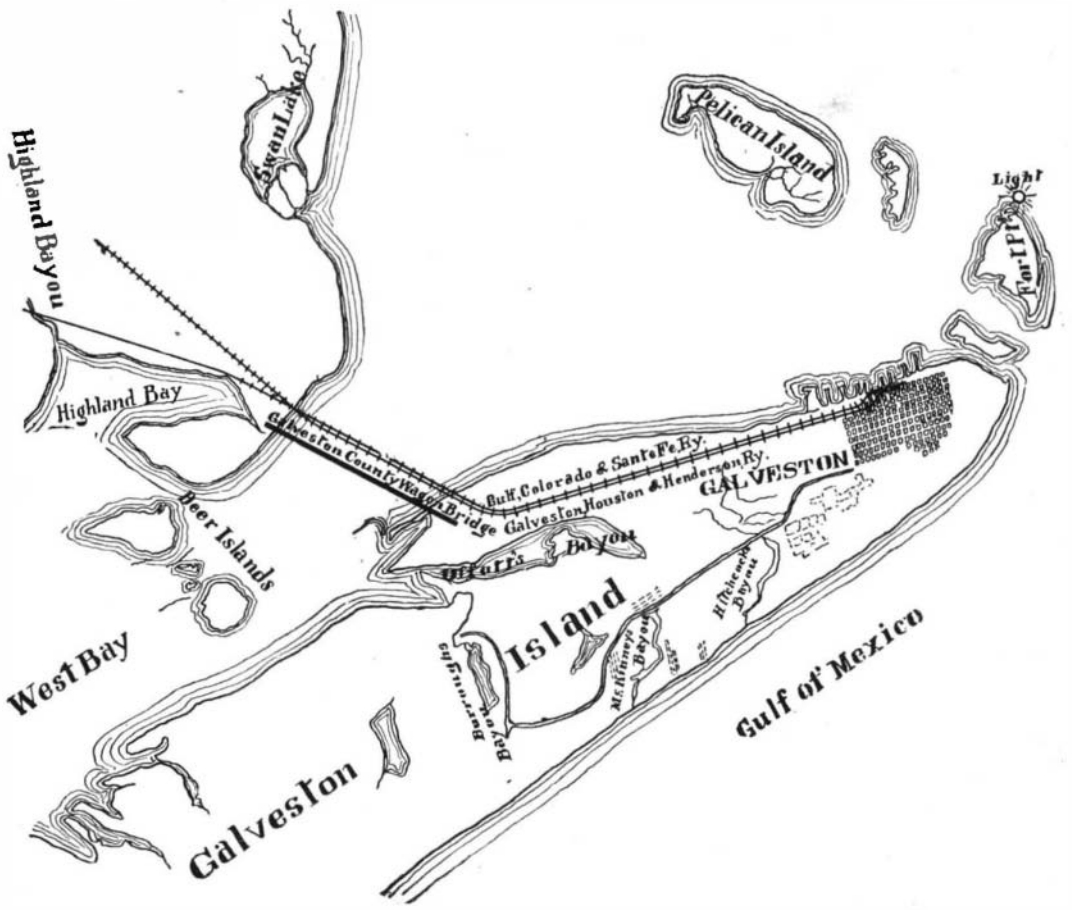
We are indebted to Mr. H. C. Ripley, C.E., under whose immediate direction this excellent work was done, for the following particulars, and to Mr. Chester Haile for photographs.

The contract was let to Mr. A. J. Tullock, proprietor of the Missouri Valley Bridge and Iron Works, of Leavenworth, Kansas, to construct the bridge complete for the sum of $183,500. Afterward some extension of the trestle approach and extras brought the total cost up to $191,896.75.

The accompanying map shows the location of the bridge. We also give an engraving, from a photograph, showing the general appearance of the superstructure.

The bridge consists of 89 fixed spans 81 feet long and one draw span 226¼ feet long, of steel, resting upon 92 concrete piers, making a length of steel structure of 7,432½ feet, and 3,877 feet of pile trestle approach, which added to the steel structure gives a total length of 11,309½ feet. The elevation of the floor is $13\frac{3}{10}$ feet above the plane of mean low tide. The piers rest upon a pile foundation, with or without grillage, which was constructed in the following manner: An iron caisson extending from the bottom to the water surface, and somewhat larger than the base of the pier, was first put down at the site of the proposed pier and the material of the bottom dredged out to a depth of two or more feet, and, if hard bottom were found at that depth, no grillage was used, and the piling was driven to a firm bearing at a uniform level of about two feet below the bottom of the bay, except the center row, which was allowed to project five feet above the rest, and which extended into the mass of concrete comprising the pier. Where the nature of the bottom was such that too much dredging was required to reach solid bottom, a grillage was used which was composed of pine timber twelve inches thick (made in two layers of six inches each, the pieces in each layer being placed at right angles to each other and drift-bolted together) placed on top of the piling, which in this case were all driven to uniform level. The number of piles used for the foundation of the ordinary pier varied from 17 to 24. The pivot pier, which supports the draw, rests upon 63 piles. The mould for the pier was then placed in position and filled with concrete. This mould was in two sections, the first extending just above the water surface and the second to the top of the pier. The second section was not placed until the first section had been filled. Where grillage was used the first section of the mould was fastened to the grillage by means of wood screws and could be released when the concrete had become set and sufficiently hardened to permit its removal without injury to the pier.

The concrete was composed of imported Portland cement (Gillingham brand), good, sharp sand, and a good quality of broken sandstone, in proportions of one of cement, three of sand, and five of broken stone.



MAP SHOWING THE LOCATION OF THE STEEL BRIDGE, GALVESTON.

THE NEW STEEL BRIDGE, GALVESTON, TEXAS, 2⅛ MILES IN LENGTH.

The ordinary steel spans were floated into position on a barge, and fixed by means of anchor bolts which had previously been embedded in the concrete of the pier. The draw span was erected in position.

The trestle approach, where exposed to teredo action, was built with creosoted piling. Where it was not so exposed, cedar piling was used.

The center or pivot pier is 21 feet in diameter at the top and has a batter of ½ inch to the foot. It is octagonal in plan. The other piers are 3 feet wide across the top surface or coping and 23 feet long on the same surface. The coping projects over the main body of the pier 3 inches in all directions, so that these piers at their narrowest points under the coping are 2⅛ feet in thickness and 22⅛ feet in length. The ends are circular in form, and both sides and ends have a batter of ½ inch to the foot. The draw is operated by means of gearing. The pinion is attached to the draw and works in the spur, which is attached to the pier and is worked by a crank located in the watchman's house above.

The approximate cost of the work in detail was as follows: Cedar pile approach, $6 per linear foot; creosoted pile approach, $6.75 per linear foot; steel spans, including foundations, $15 per cubic yard.

A Remarkable Meteor at Candelaria, Nevada.

Mr. F. Corkell, writing to the *Mining and Scientific Press*, says: On the night of Feb. 1, at 10:7 o'clock a brilliant meteor appeared, coming from the southwest. It made a tremendous illumination, suddenly, as if a great flash light were thrown in well-lighted rooms, wherever a corner of window curtain or shade was not tightly drawn. So intense was it in brilliancy that those who were out of doors were dazed, and but a few could tell whence it came or whither it went. It was of a dazzling electric blue, like many arc lights had suddenly shot into existence. The illumination lasted about four seconds, disappearing in the northeast. The illumination brought all who were awake to their doors, awe-stricken, thinking some slumbering crater had burst into flame.

Thirty seconds later a terrific explosion occurred, like tons of dynamite suddenly exploded, shaking the hills and echoing through the rocky caverns.

It was like a huge bombshell had been hurled in our midst. There followed a boiling and sizzling roar, like an immense mass of red hot iron cooling in water. The sound grew fainter and gradually died away. This lasted about fifteen seconds.

Those who were sleeping and did not see the illumination were aroused and rushed out of doors, supposing it to be an earthquake or that the crack of doom had come.

When the snow melts and the focus of the explosion is definitely located, a search will be made for the meteorite.

None who saw or heard this meteor will forget it, and they will relate it in future years as a great event; nor will any one here desire to be nearer to those celestial bombs than he was this night. Some ducked their heads to let it go by and considered it a very close shot for a star.

EVERY pontoon used in the French army weighs 1,658 pounds and has a buoyancy of 18,675 pounds.

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