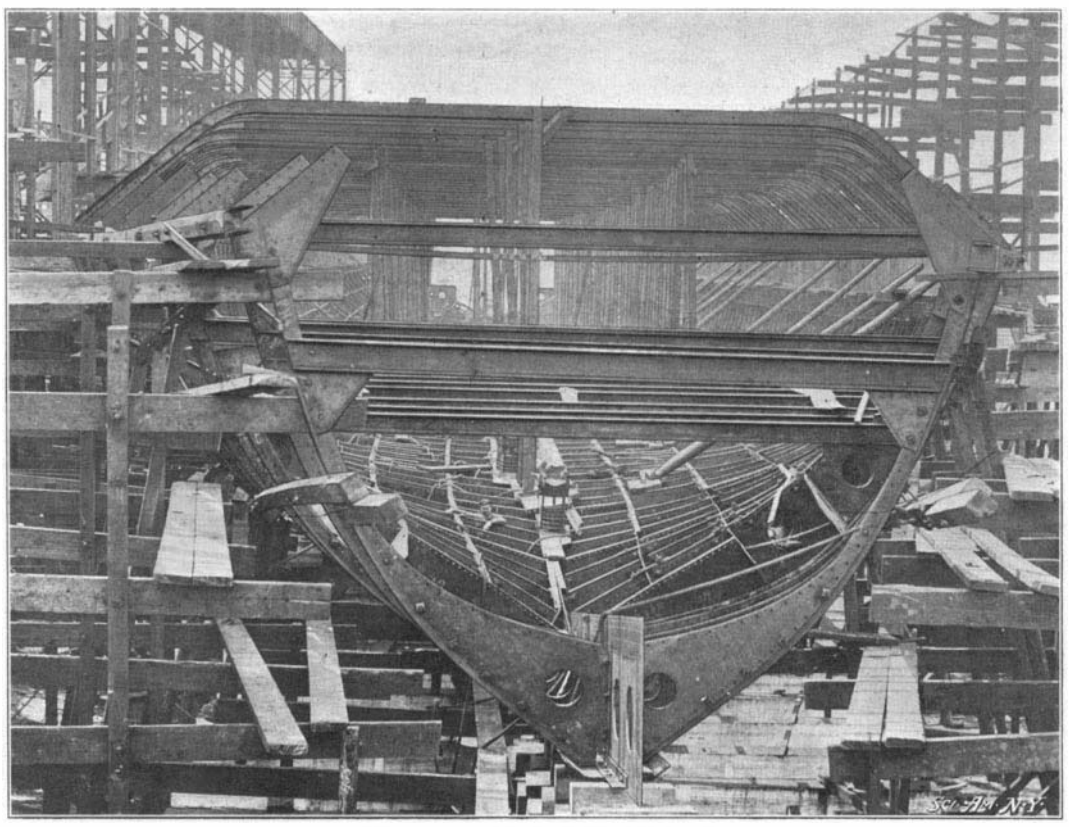
RAPID CONSTRUCTION OF THE BATTLESHIP "LOUISIANA."

When the last Congress passed a law recognizing the principle that part of the warships of the United States navy should be constructed at the government yards, the SCIENTIFIC AMERICAN was doubly pleased with the result; in the first place because we believed that the measure would prove to be of the very greatest value to the interests of the navy at large; and in the second, because it was a recognition by Congress of a principle for which this journal, for many years past, had earnestly pleaded. In advocating this measure we took the ground that a great deal of the delay in the construction of warships was due to the fact that there was no competition to act as a spur to the few private firms that were equal to the task of building battleships and cruisers; and we urged that if the United States followed the practice so successfully initiated by foreign governments, of building a certain proportion of naval vessels in private yards, a spirit of rivalry would be provoked which would undoubtedly accelerate the speed of construction in these yards. The last Congress, in making appropriations for the two great battleships of 16,000 tons displacement, decided that one of these ships should be built in a private yard and one at a government navy yard. The "Louisiana" was awarded to the Newport News Shipbuilding Company, while the task of building the "Connecticut" was intrusted to the New York navy yard, at Brooklyn.

We present a photograph of the "Louisiana" taken on the first of April, which shows the advanced condition of this vessel on that date, when she was about one month ahead of the contract time of forty-two months. This contract was let on October 15, 1902, and had her construction proceeded at the rate which has marked some of the battleships of our navy yard, there would have been practically nothing to show on the ways at the date of this photograph. Indeed, the contractors themselves admit that the vessel is already about six months ahead of the ordinary rate of progress under normal conditions. Although this satisfactory showing is to be attributed largely to the natural spirit of rivalry provoked by the placing of a sister ship at the navy yard—a new departure which was bitterly opposed by all the shipbuilding interests that have been accustomed to undertake naval contracts—there is no question that much of the credit for the rapidity of construction is due to the fact that the Bureau of Construction and Repair have been granted sufficient time for working out the designs of these two ships, not merely in general outline, but also to the fullest details, and that they have been enabled to draw up most exhaustive specifications, drawings, and standing instructions to the superintending constructors. In a recent issue we commented editorially upon the report of the Chief Constructor of the Navy on the subject of the great delay in the completion of warships, in which it was shown that this delay might be largely attributed to the incompleteness of plans, which were prepared in great haste with a view to starting contracts for vessels as soon as possible after their authorization by Congress. A further cause of delay was the changes in the disposition of armor and armament, or in the details of designs after awarding the contract—changes which were the inevitable result of the haste with which the preliminary plans, upon which the contracts were based, were drawn up. The specifications for building these two ships, however, are so elaborate and exhaustive that they make a printed volume of 251 pages, in which details of the ship's construction are specified with great minuteness. As a consequence, the contractors are able to make out their bills for material, and order the same, without the uncertainty and fear of possible changes which have been such a drawback upon ships already constructed.

A photograph of the sister ship "Connecticut" at the navy yard would show that her keel is laid, and a large amount of her framing and general construction material is on the ground ready for erection. While the ship would make no such showing as is seen in the accompanying photograph, it must be borne in mind that before beginning the construction of the "Connecticut," it was necessary to build huge ways, some 500 feet in length and 70 or 80 feet in width, and to erect a great steel traveler with which to handle the material in building the vessel; so that the "Connecticut" has been handicapped to this extent. After allowing for this delay, it will be found that the progress upon the navy-built ship is quite satisfactory.



SPEED IN BUILDING WARSHIPS.

Photograph of the 16,000-Ton Battleship "Louisiana," Showing Her Advanced Condition on April 1st—Six Months After the Signing of the Contract.

"LOOPING THE LOOP" IN 1846.

The Coney Island centrifugal railway, which goes by the winning name "Looping the Loop," has found its way to Paris. Two music halls of the lively French metropolis are at present entertaining their patrons with exciting journeys on this astonishing piece of apparatus. In the effort to outdo his rival, the proprietor of one of these music halls claimed that his "*boucler la boucle*" is under the direction of the only true and genuine inventor.

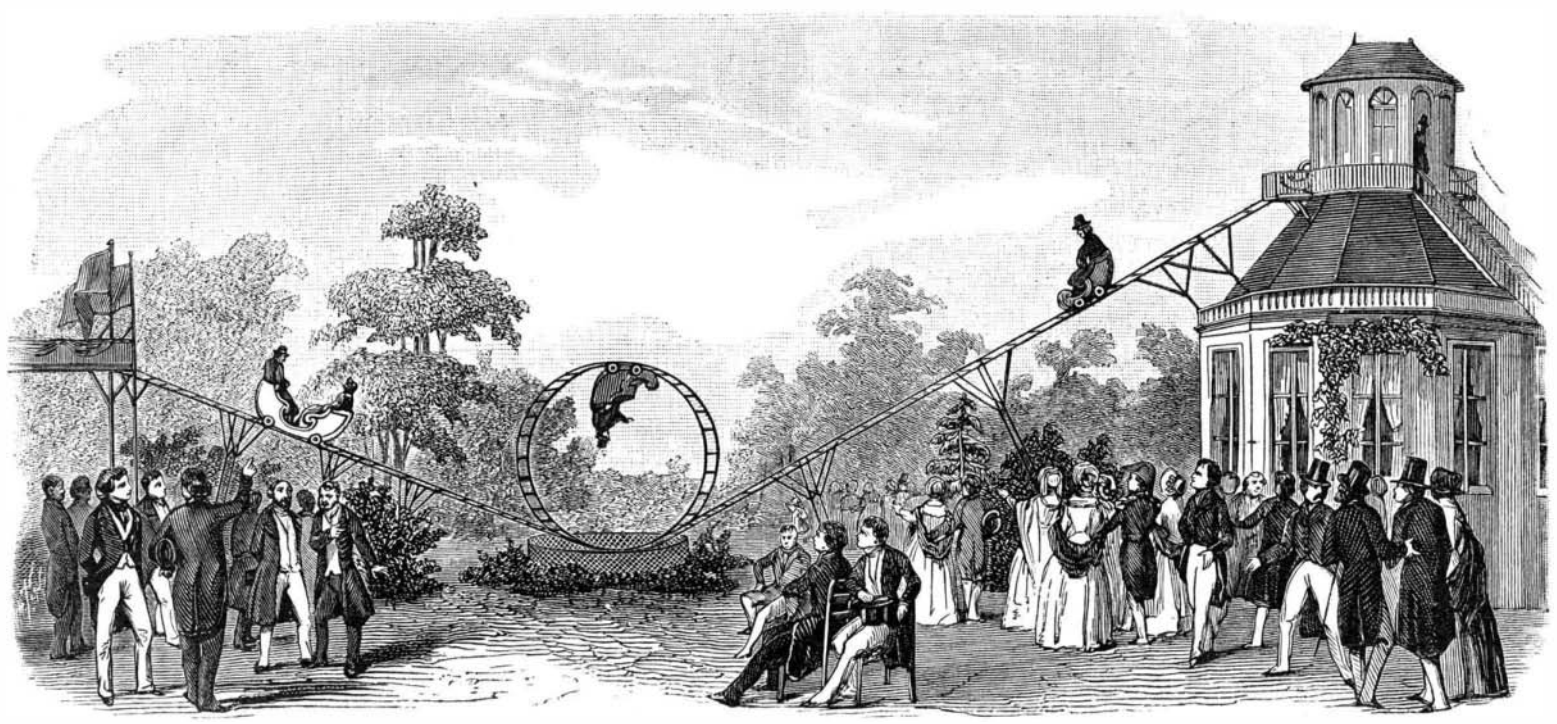
This claim of originality to the invention aroused the suspicion of one of the staff of the French weekly L'Illustration. Searching through the files of his paper, he found in the issue of September 12, 1846, the picture of which we herewith publish a reproduction. J. F. Gall in La Nature has carried out a similar and more exhaustive investigation, and proved that a certain Clavières was the inventor of the centrifugal railway.

It seems that as far back as 1833 the idea had been discussed; but it was not until thirteen years later that it was finally realized by Clavières, who was then an engineer at the Parisian Hippodrome. Daguin in his excellent "Traité de Physique" gives an illustrated account of Clavières' railway. So popular did "looping the loop" become that other countries soon adopted the contrivance. According to Clavières' plan, the track, after a sharp descent, was curved into a circular loop and then extended into an upward incline. The car, in traveling on the two rails constituting the track, plunged down the first incline at a terrific speed, whirled around the loop and ascended the second incline. In those days people were more fearful than the modern New Yorkers who visit Coney Island and boldly seat themselves in the car, utterly regardless whether or not they will come out uninjured.

In order to convince people how safe his railway was, Clavières filled the car with monkeys. It was not until the safety of "looping the loop" was thus conclusively demonstrated that men and women were willing to enjoy its doubtful pleasures for two sous.

In 1846 Clavières' aerial centrifugal railway (or as he dubbed it, *chemin de fer aérien à force centrifuge*) found its way to the Frascati Gardens of Havre, Bordeaux, Lyons, and other towns. Our picture shows the "Looping the Loop" arrangement of the Frascati Gardens, Havre.

In describing this fearful and wonderful construction in 1846, Le Journal du Havre states: "At 11 o'clock this morning the aerial railway was tested. We call it an aerial railway, since its starting point is 9 meters above the ground. For a distance of 32 meters the road drops 44 centimeters per meter. At the end of the downward incline, the car enters a circle 4 meters in height, about which it is whirled at incredible speed, thereupon traveling 18 meters up an



"LOOPING THE LOOP" IN 1846. FROM A CONTEMPORARY WOODCUT.