FULTON'S TORPEDO.

The torpedo, that formidable modern maritime weapon of war, did not meet with great success at its advent, and it required more than sixty years, during which it was completely abandoned, for people to take it into their heads to see in it one of the most efficient means of attack, and especially of defense, against a naval force. Its inventor was not this person or that person, but simply Robert Fulton, who also invented the first submarine boats, and it is harsh to state that the sole glory that surrounds his memory comes to him from the application of steam to navigation—an application that he merely improved and in which he had been anticipated by the Marquis of Jouffroy in 1783.

Fulton wrote a very remarkable book, in which he describes his apparatus and makes judicious remarks upon the advantages that might be derived therefrom from a military, political and humanitarian point of view. But let us allow the eminent mechanician to speak for himself:

"In order to convince Mr. Pitt and Lord Melville that a ship can be destroyed by the explosion of a torpedo under its bottom, the Dorothea, a strongly constructed Danish brig of 200 tons burden, was, on the 14th of October, 1805, anchored in the roadstead of Walmer, near Deal, at a mile from Walmer Castle, which was then the residence of Mr. Pitt.

"There were put at my disposal and under my orders two longboats with a crew of eight men, commanded by Lieutenant Robinson. I prepared two empty torpedoes having a specific gravity of only two or three pounds more than thatof salt water, and suspended them in such a way that they sunk to a depth of fifteen feet in the water. They were afterward made fast separately to the two ends of a slender rope 80 feet in length. The brig drew 12 feet of water.

"Each boat, with a torpedo in its stern, started from the shore at about a mile from the place where the brig lay and in front of the vessel. The rope that connected the two torpedoes was taut, and the boats were thus situated at 80 feet from each other. They then approached in such a way that one of them kept to the starboard and the other to the port side of the brig.

"As soon as the rope had passed beneath the buoy of the brig,* the torpedoes were thrown into the water and were soon carried along by the tide until the rope touched the cable of the brig's anchor, while the current carried the torpedoes under the ship.

"This experiment, thus repeated several times, taught the men in the boats how it was necessary to go to work, and proved to me indubitably that when the torpedoes are properly placed with respect to the current of the tide, they will go of themselves under the ship.

"I then filled one of the torpedoes with 180 pounds of powder and timed it for eighteen minutes."†

Fulton melancholily adds:

"Everything was ready, when it was announced that the experiment was postponed until the next day (the 15th), at five o'clock in the afternoon, because pressing business had called Mr. Pitt and Lord Melville to London.

"On the 15th Admiral Holloway, Baron Sidney Smith, Captains Owen and Kingston, Colonel Congreve and the majority of the officers of the fleet, under the command of Lord Keath, were present.

"At forty minutes past four, the longboats stood for the brig and the torpedoes were thrown into the water. The current of the tide carried them unimpeded under the keel of the brig which, at the expiration of eighteen minutes, appeared to rise about six feet through the effect of the explosion. It broke in two in the middle and the two parts sank. In the space of twenty seconds there was nothing more to be seen of the vessel except a few debris that were floating here and there."

After congratulating himself over the result obtained, Fulton adds:

"I consider it a fortunate circumstance for America, my country, that this experiment was made in England, and in the presence of more than a hundred respectable witnesses and brave officers of the royal navy, for, if Congress adopts the torpedo as a part of its means of defense, these high English personages know perfectly the effects and have preserved an impression of the results that it has been possible to reach."

Fulton, speaking in a note of an interview that he had with Count de Saint Vincent, gives us an account of a jocose remark that the latter made:

"In the first place, in the morning, the count was very communicative. I entered into all the details of the mechanism and use of the torpedoes with him and gave him an account of the experiment made with the Dorothea.

"After a few moments of reflection, the count said to me: 'Pitt is the biggest fool that ever existed to encourage a species of warfare useless to those who are the masters of the sea, and which, if it succeeds, will deprive them of this superiority.'"

After succeeding, at least partially, in alarming the British power, it only remained to Fulton to try to reassure his compatriots by showing them the efficiency of his new weapon. Consequently, in August, 1807, he rebegan his experiment in the port of New York. There were two fruitless experiments. One of them failed in consequence of a false maneuver and the other through the defective position of the fire locks in which the pr ming powder was placed. But, the third time, the experiment fully succeeded, and the vessel, which was this time again a 200 ton brig, was blown up under the same conditions that the Dorothea had been. In the following chapters, Fulton explains the methods of employing his torpedoes with advantage and with the least risk to the assailants. The first of these chapters treats of the torpedo at anchor, placed at the entrance to roadsteads and ports in such a way as to blow up ships coming into contact with it (Fig. 1).

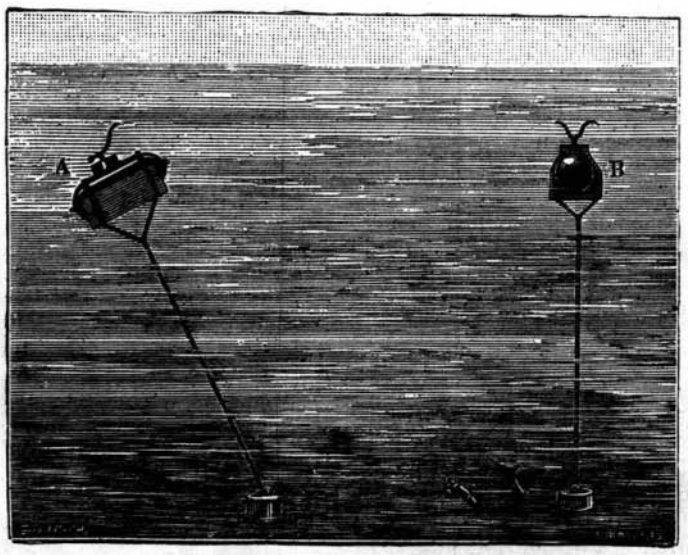


Fig. 1.—TORPEDO AT ANCHOR AND PLACED IN SUCH A WAY AS TO BLOW UP A SHIP COMING INTO CONTACT WITH IT.
A, inclination under influence of current. B, projection in direction of length.

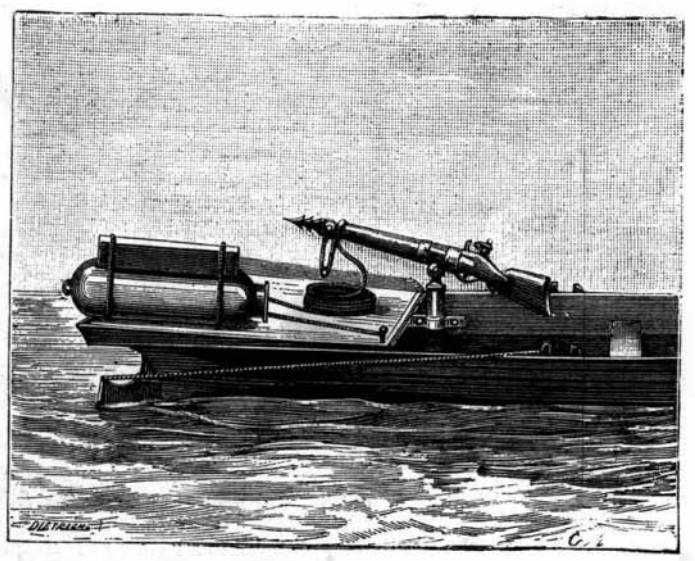


Fig. 2.—A TORPEDO BOAT PREPARED FOR AN ATTACK.

We shall not reproduce the description of this weapon, which is of no interest to us henceforth; but, in studying its working, we perceive that we are here in presence of the first blockade torpedoes, that is to say, one of the submarine defenses now rightly considered as the most formidable, or at least the most efficient and the most reliable, as physicians say of a remedy whose effect is certain.

There is nothing, up to the possibility of causing the torpedoes to return to the surface, that did not attract Fulton's attention and receive a satisfactory solution. The following, in fact, is what he says:

"In order to render it easy to remove the torpedoes from the channel, I have devised a very simple mechanism that will hold them under water at a given depth and for any number of days whatever. The movement of it can be regulated for a day, a week, a month, or a year, and, at the appointed time, the torpedoes will emerge. At the same instant each will automatically put its lever at rest, so that it will no longer be able to explode. And it will therefore be possible to handle them with safety. Having no time to have this improvement engraved, I am having a model of it made that I shall present to Congress, and which will facilitate the understanding of it."

Finally, Fulton finishes this

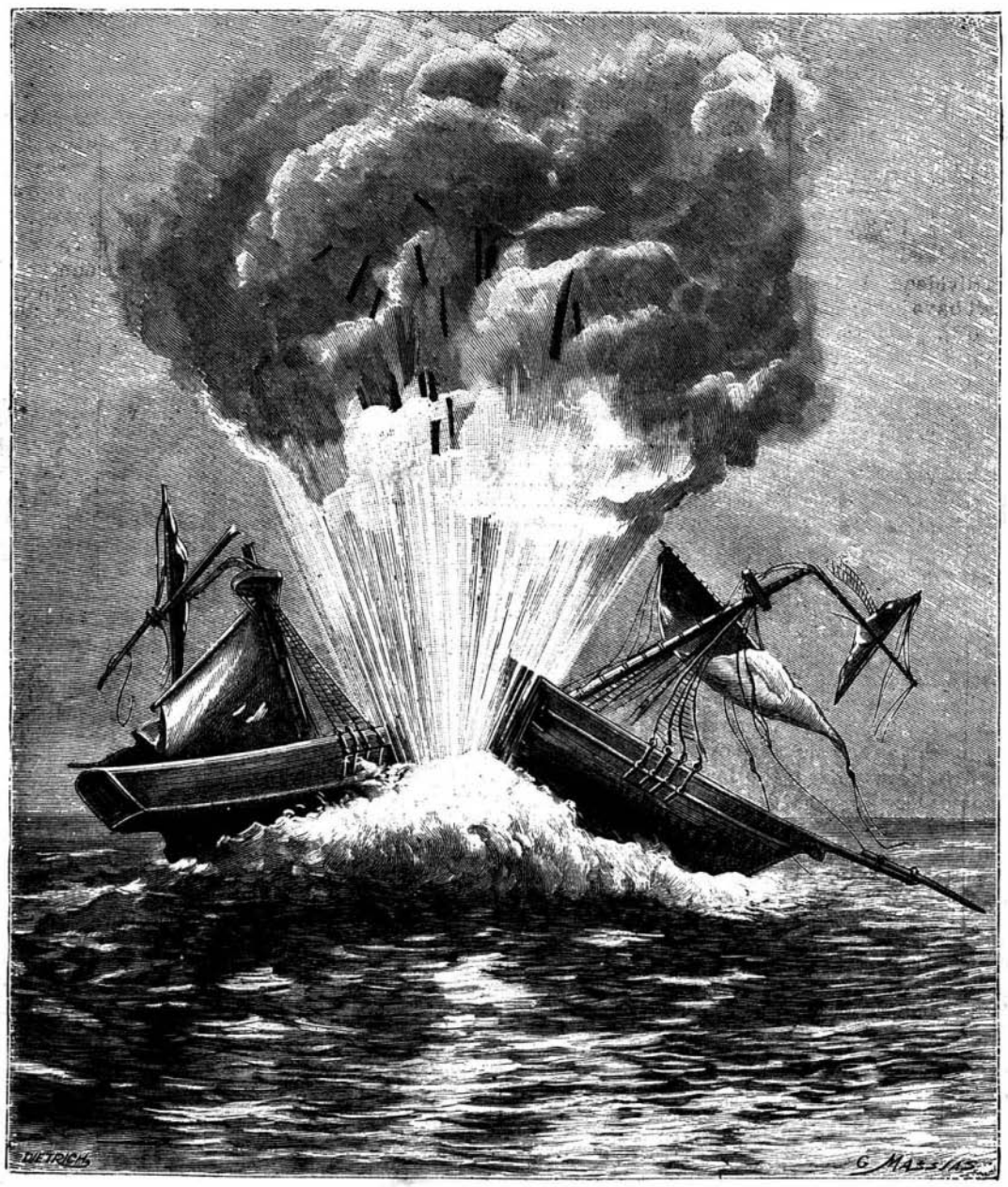


Fig. 3.—BLOWING UP OF THE BRIG DOROTHEA WITH A FULTON TORPEDO.

* In former times, a buoy was always stationed over the anchor, to the flukes of which it was attached by a rope.

†The torpedo was wound up by means of a clockwork movement.

chapter with some very judicious observations, not a word of which is to be changed, even to-day.

"Upon considering this subject under all its relations. I remain persuaded that it would be impossible for any enemy whatever to enter a port in which torpedoes are used without exposing himself to a danger that all the courage possible could neither avoid nor surmount. Prudence and reason would make him abandon such an undertaking. It is even probable that, knowing us to be thus prepared, he would never attempt it, or that, if he did, the catastrophe of one vessel would suffice to guarantee us in the future against new hostilities."

In the following chapter Fulton describes a system of harpoon thrown by means of a small cannon or a blunderbuss, to which the torpedo is attached by a rope of variable length (Fig. 2).

It is unnecessary to say that this system is not utilizable to-day with our vessels all armored with iron; so we shall not dwell upon it. We cannot terminate this short retrospective review without citing the proposition that Fulton made to the government of his country and which figures in his book. We give it in order to show that this ingenious inventor was also a patriot and a man of noble heart:

"Moreover, in proposing this new plan of attack and defense, I do not pretend to abandon to others the care of executing it. If it is adopted in all its extent, with the proper number of men skilled in this maneuver, and if it is judged proper to put these men under my orders, and an enemy then enters our ports, I will satisfy my fellow citizens with the courage necessary to assure the success of the operation.

"But in proposing this, I wish to be well understood, in order that I may not be accused of aiming at a situation or command in a public station.

"My views are constantly directed toward an independence too dear to my feelings to allow me to desire to sacrifice them to ideas of any ambition whatever.

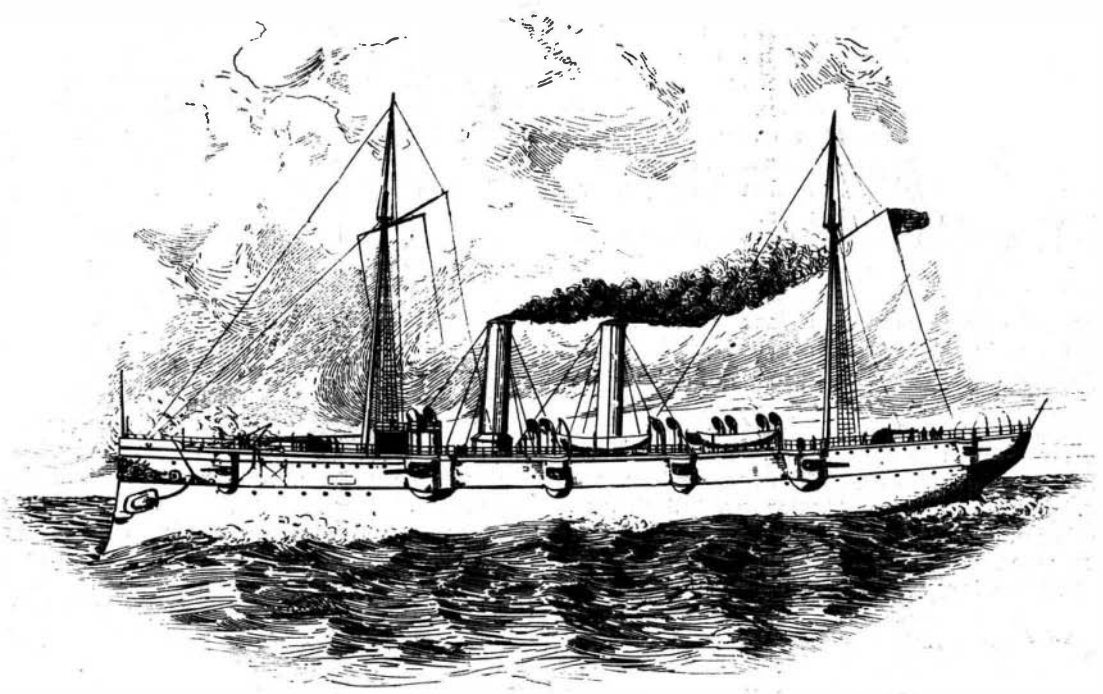
"I see here only a useful and, at the same time, honorable occupation, and it is to me a happiness to think that I can serve my country without any other motive than that of discharging the debt of a good citizen."

At our epoch, when torpedoes are adopted by all navies, it has appeared to us of interest to recall the labors of Fulton.—*La Nature.*

THE NEW UNITED STATES CRUISER MONTGOMERY.

The Montgomery, a sister ship of the Detroit, which we illustrated in our issue of September 2, 1893, succeeded in making 18·85 knots per hour over the entire course, thus demonstrating that she was the finest cruiser of her class. The Montgomery is known as a partially protected cruiser, a class of vessels which are now considered as very important adjuncts to the armored cruisers. After the tidal correction was made the speed was found to be 19 knots, so that the contractors (the Columbian Iron Works) will receive $200,000 in addition to the contract price, which was $612,500. The test was conducted with a steam pressure of 166 pounds, and the average number of revolutions was 180. The engines worked without any mishap, but the steering device was injured, or the speed would have been even greater.

The Montgomery is 257 feet long; 37 feet wide; draught, 14½ feet; displacement, 2,000 tons. Two vertical, three cylinder, triple expansion engines drive the two four-bladed propellers. The indicated horse power is 5,400. A protective deck varying from 0·43 to 0·3 inch thick is provided. The battery is composed of eight 5-inch guns and two 6-inch rapid-fire guns. There are also three torpedo-launching outfits and a secondary battery composed of six 6 pounders, two 1-pounders and two machine guns. For our illustration of the Montgomery we are indebted to *Marine and Railway.*

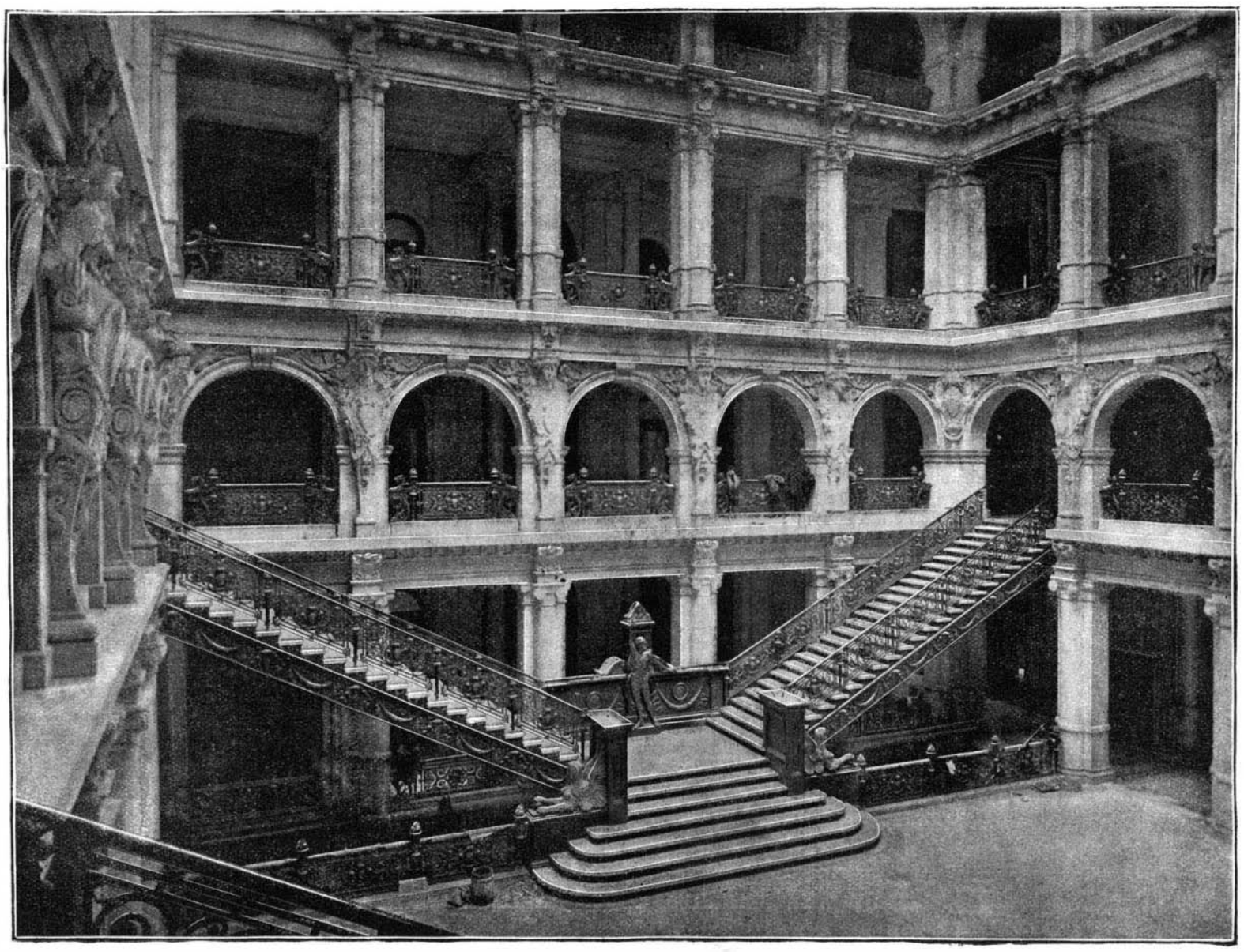


THE NEW UNITED STATES CRUISER MONTGOMERY.

THE CRIMINAL COURT BUILDING OF NEW YORK.

For many years the criminal courts of New York and the Grand Jury have been housed in a miserable fire-trap which should have been condemned long ago as unsanitary. In this rickety old building, ill-lighted, worse ventilated and reeking with sewer gas, other city offices were quartered, so that the space devoted to the criminal courts was totally inadequate, while the District Attorney has been obliged to occupy rented offices. At length the city fathers awoke from their lethargy, and on October 25, 1890, the corner stone was laid of a large and imposing edifice. The site is an historic one, being part of what was known in colonial times as "The Commons." The building occupies the block bounded by Center, Elm, White and Franklin Streets, and is connected with the city prison, usually called the "Tombs," by a bridge, which will probably be known as a "Bridge of Sighs." This bridge, which crosses Franklin Street, will enable accused persons to pass directly from the prison to the courts without being exposed to the gaze of the curious. The new building is 115 feet in height, and measures 188 by 190 feet, and in its plan allowance has been made for the widening of Elm Street.

The style adopted by the architects, Messrs. Thorn, Wilson & Schaarschmidt, is a modernized Renaissance, and the effect of the exterior is imposing. The edifice is constructed of light red pressed brick with trimmings of terra cotta and Belleville stone, and the



THE NEW CRIMINAL COURT BUILDING, NEW YORK.