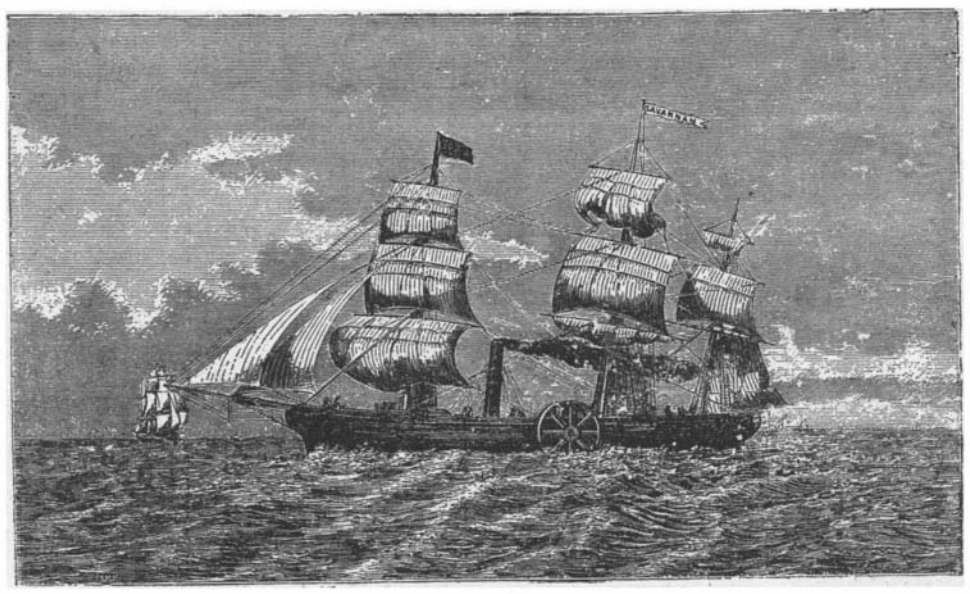
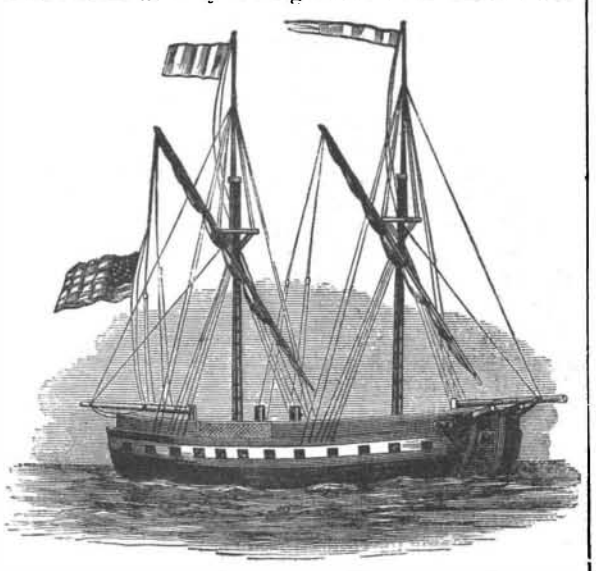
THE EARLY HISTORY OF OCEAN STEAM NAVIGATION.

Although the paddle wheel antedates the Christian era, the earliest recorded attempt to utilize steam to turn the paddle wheel was made by Blasco de Garay, in 1543. Denis Papin experimented on the Fulda at Cassel in 1707, and various other experiments were tried by Jonathan Hulls, the Count d'Auxiron and the Marquis de Jouffroy, but these experiments were of little importance when compared with those of the Americans, William Henry, of Chester County, Pa., James Rumsey, John Fitch and Robert Fulton. After studying the subject of steam navigation abroad, Fulton returned to the United States in 1806, and with Chancellor R. Livingston had a boat named the Clermont built at New York by Charles Brown. The hull was of wood and was 133 feet long, the breadth of beam was 18 feet, and depth of the hold was 7 feet, and the vessel was of 160 tons burden. The engines were built in England by Boulton & Watt; the diameter of the cylinder was 24 inches, and the piston had a 4 foot stroke. The boiler, which was made of copper, was 20 feet long, 8 feet wide and 7 feet high, and was only adapted for low pressures. The engine drove paddle wheels situated amidships; these wheels were 15 feet in diameter, and there were 8 buckets to each wheel, 4 feet long, and the dip was 2 feet.



THE SAVANNAH.

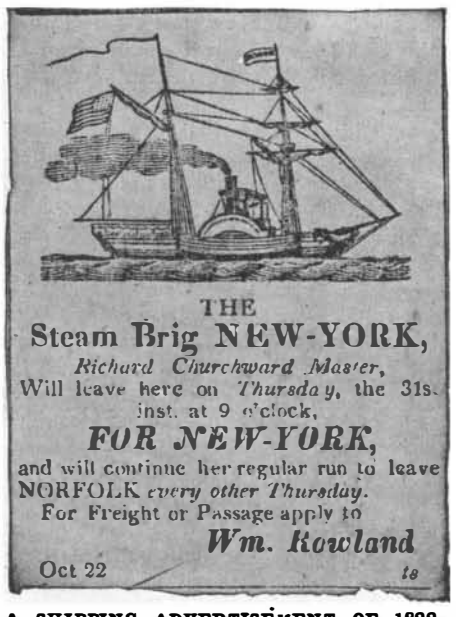
The Clermont may be regarded as the world's first successful steamboat. The first trip was made on August 7, 1807, from New York to Albany. Her speed nearly averaged 5 miles per hour. The next year the Clermont was enlarged, and the name of the vessel was changed to the North River.



THE WAR STEAMER FULTON THE FIRST.

The first sea voyage ever made by a steam vessel was made by the Phœnix, a side wheel steamer with engines designed by Colonel John Stevens, built in 1807. The steamer could not ply on the Hudson, as Fulton and Livingston held the monopoly of the navigation of that river. The Phœnix was taken by sea around to the Delaware River. This was the first sea voyage of a steamer, and after this time the evolution of the steamboat was rapid.

The first war steamer was built at New York by Robert Fulton. During the war of 1812, when our navy was making a glorious record at sea, the subject of the defense of cities and harbors was agitated, and Fulton was called upon to design a steamship of war, which was called the Demologos, or Fulton the First. The hull, which was of wood, was constructed by Adam and Noah Brown in the Eastern District of Brooklyn. She was launched on October 29, 1814. As launched she was considerably modified from the original plans. She was 156 feet long, 20 feet deep and 56 feet broad. Instead of a small well for the paddle wheel, a long channel, 13 feet wide and 66 feet long,-was provided for it. On one side of the hull was a copper boiler, 22 feet long, 8 feet deep and 12 feet wide. On the other side was the engine, with one cylinder, 48 inches in diameter and 5 feet stroke. The paddle wheel was 16 feet in diameter and 14 feet wide, giving a clearance of 6 inches from the sides of the channel. It dipped 4 feet. Her tonnage was computed at 2,475 tons—a very large vessel for that period. Her hull was designed by Samuel Humphreys, of New York, and cost $144,949. The boilers and engines were designed by C. W. Copeland. The engine cost $40,199 and the boiler $93,396. Great difficulty was experienced by the commissioners in getting men to work on her. It was war times. Many of the New York shipbuilders were gone up the lakes. Material was very difficult to supply; guns were transported by land from Philadelphia, over the "miry roads of New Jersey," as the commissioners described them. Twenty heavy cannon were thus brought to New York. As completed she was to carry thirty long 32-pounders and two Columbiad 100-pounders. In June, 1815, her engine was in a condition to be tried and on July 1 she went down New York Bay to the Narrows on her first trial trip, and on July 4 of the same year she made a 53 mile passage out on the ocean and back in 8 hours and 20 minutes. The war terminating, she was moored on the flats abreast of the navy yard in Brooklyn, where she was used as a receiving ship. On June 4, 1829, she blew up, killing and wounding a number of people.

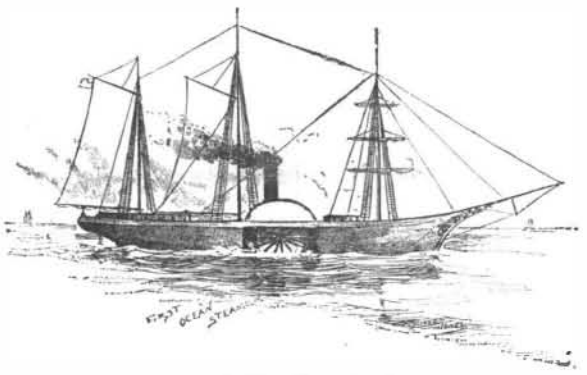


A SHIPPING ADVERTISEMENT OF 1822.

To America belongs the glory of building the pioneer transatlantic steamship. This was the steamer Savannah, which was built at Corlaers Hook on the East River, New York City. She was launched August 22, 1818.

She was built by Francis Tickett for Daniel Dodd. Her engines were made in America. She was intended to be used as a sailing packet between New York and Liverpool, but was purchased before being finished by William Scarborough & Company, of Savannah, Ga., and fitted with machinery.

It is a curious fact that the paddles were so constructed as to be folded up and placed on deck in stormy weather; the wheel was inclosed in canvas supported by an iron frame. She could carry only seventy-five tons of coal and twenty-five cords of wood. Commanded by Captain Moses Rogers and navigated by Stephen Rogers, both natives of New London, Conn., the Savannah sailed from Savannah, Georgia, on the 25th day of May, 1819, bound for St. Petersburg, via Liverpool. She reached the latter port on January 25, having used steam eighteen days out of twenty-six, and thus demonstrated the feasibility of transatlantic steam navigation. The machinery was afterward taken out of the Savannah and she was turned into a sailing packet. For some time she ran between New York and Savannah and was finally wrecked on the Long Island coast. For interesting details of the first transatlantic trip from the log book see the SCIENTIFIC AMERICAN SUPPLEMENT, No. 636.



THE ROYAL WILLIAM.

The second ocean steam vessel was the steam brig New York, built at the foot of Newcastle Street, Norfolk, Va., in 1821, by William F. Hunter, ship joiner. She was of 281 tons burden and 50 horse power. Her owners were George Rowland (father of Mr. Thomas B. Rowland, through whose courtesy we are indebted for the advertisement from the Norfolk Beacon of October 28, 1822, which we reproduce), Charles N. S. Rowland, John Allmand, Captain Richard Churchward, and William F. Hunter. The motion of the machinery was steadied by a large flywheel. The trip from Norfolk to New York was made in fifty hours.

THE STEAM BRIG NEW YORK.

The engraving of the steam brig New York was made from a photograph taken from the original oil painting, which is the property of the Old Dominion Steamship Company, and is now deposited in Sailors' Snug Harbor, at Staten Island. The sailmakers' boy who helped rig the New York is still living in Norfolk, at the age of ninety-five, and states that the rough cut in the old advertisement was made by local artists

direct from the ship. Next to the Savannah and the New York comes the Royal William, which it is said was the first sea-going steamer that ever crossed the ocean, propelled all the way by steam. It was built in 1830-1831 at Quebec, Canada, and was of 1,645 tons burden and was intended as a packet ship between Quebec and Halifax. In 1833 she was sent to London. She arrived after a prosperous trip of twenty-five days; she was afterward sold to the Spanish government.

The following were her dimensions: Length of deck, 169 feet; length of keel, 159 feet; extreme breadth, 47 feet; depth of hold, 19 feet; rake of post, 2 feet; rake of stern, 13 feet; draught of water, 14 feet.

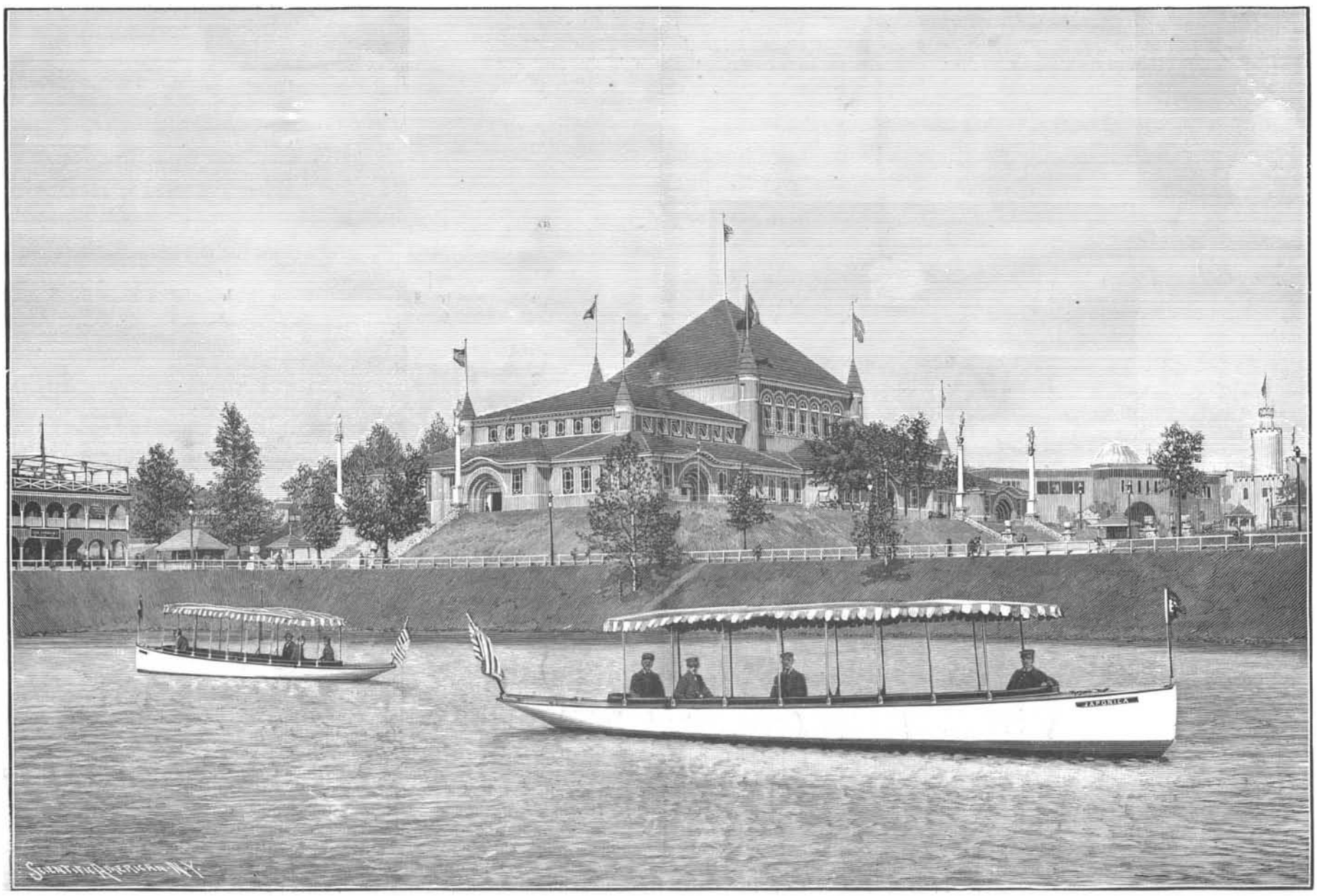
For detailed account of this vessel see SUPPLEMENT, No. 801.

THE ATLANTA EXPOSITION.

In our issue of November 30 we presented an interior view of the Fine Arts building at the Exposition grounds. We show herewith a portion of the exterior, the view being taken from a point to best bring out the details of ornamentation. The edifice, designed as a permanent structure, stands upon the highest part of the grounds between the Government and New York State buildings, and has a frontage of 245 feet, including the two side wings, one of which shows in our view as projecting beyond the main building. The depth of main structure is 100 feet and the height of the center façade is 50 feet. The building is classical in design, with a portico roof supported by a single row of Corinthian columns. A highly ornamented frieze enriches an otherwise plain but beautifully proportioned front, and the broad steps are flanked on either side by life-sized figures of lions in bronze.

We also show in another view the Agricultural building, as seen from the bank across the Clara Meer. This structure is 304 feet long, 150 feet wide, and is 110 feet high. The contributions from the various States of the South, of the soil products of farm and plantation, is of exceeding interest. All of the

THE ATLANTA EXPOSITION—THE FINE ARTS BUILDING.



THE ATLANTA EXPOSITION—THE AGRICULTURAL BUILDING.