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THE OBSTRUCTIONS IN THE DELAWARE.

The constantly growing commerce of the port of Philadelphia has, in recent years, forcibly attracted the attention of the national State, and municipal governments, and the various commercial bodies of the city, to the limited facilities for docking vessels and the fact that the condition of the harbor was becoming worse, instead of improving.

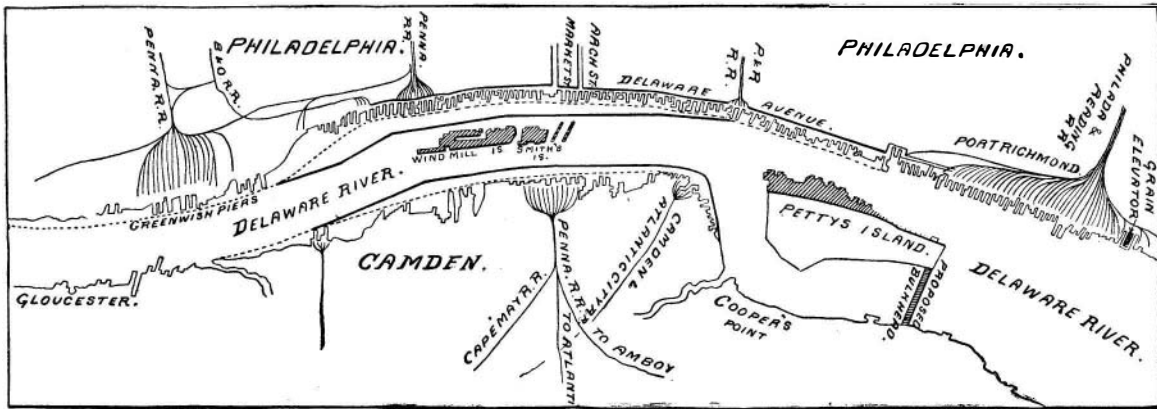
The obstructions to navigation in the Delaware River, opposite the city, are well known to those who have occasion to use the river, and the many attempts to improve the channel have met with little or no success. The greatest obstruction exists at Smith's and Windmill Islands, yet the real cause of all the trouble lies further up the river, at Petty's Island, the northern extremity of which serves to direct the full force of the ebb tide toward the Jersey shore at that point, and coursing down around

Cooper's Point, and across the river from this abutment, makes a very deep but narrow channel contiguous to the Philadelphia piers; and the strength of this rush of water serves to build up the bars north of Smith's and Windmill Islands to a most serious extent, and these bars are most rapidly growing with the daily action of the ebb tide.

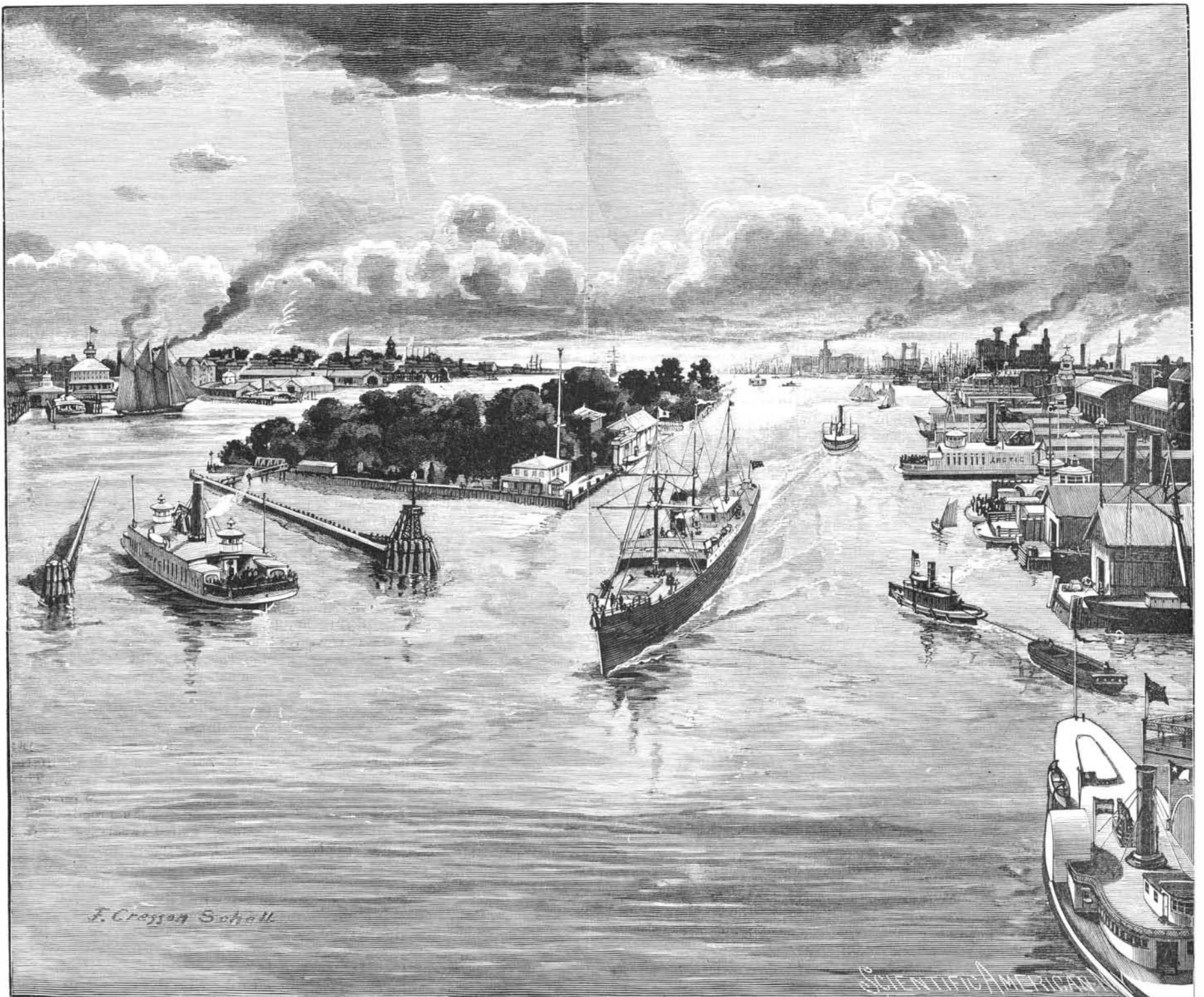
Some years ago, a dike was built at Petty's Island to change the course of the tide, but the result was di-

rectly opposite to that desired, and in consequence the island extended rapidly to an alarming degree. The new channel built at the same time for the Market Street ferries was another failure, and can be kept open only by means of constant dredging. It is only a question of time when Petty's and Smith's Islands would be joined into one, so rapid is the growth of the bars between them, and this fact is so patent that all parties interested joined in a petition to the United States government to buy and remove the two lower islands.

"The removal of the islands is not the only question involved in the matter. In order to prevent the formation of new shoals, it will be necessary to remove the cause of the trouble. The real remedy lies in the prevention of the funnel action of Petty's Island in driving the ebb tide toward the Jersey shore. This can only be effected by constructing a breakwater from the



IMPROVEMENTS IN THE DELAWARE RIVER.



WINDMILL AND SMITH'S ISLANDS, TO BE REMOVED TO OPEN CHANNEL IN DELAWARE RIVER.

upper end of Petty's Island across to the New Jersey side, completely closing the upper end of the eastern channel and compelling the entire current to pass down on the Philadelphia side.

"There is another matter of much importance also connected with the improvement of the river, viz., the extension of the port warden's line out into the river, narrowing the channel and giving increased length of piers.

"Even if the harbor permitted the arrival of ocean steamers," says Mechanics in a recent article, "there are no piers of sufficient length to receive them. Vessels are constantly increasing in length and the piers should be lengthened in proportion, and, if the obstructions are removed, as indicated above, the extension of the line on both sides of the river would produce a channel of sufficient width and reasonable uniform depth.

A number of gentlemen representing the city councils, the various railroads, the Chamber of Commerce, Board of Trade, Maritime Exchange, harbor commissioners, port wardens, and elevator companies, made several visits to Washington and conferred with the House Committee on Rivers and Harbors.

In addition to the money appropriated by the general government, considerable sums are about to be given by the States of Pennsylvania and New Jersey and the cities of Philadelphia and Camden.

Perpetual Motion Again.

Until a few days ago, the inventors of perpetual motion have been prevented from completing their application for letters patent in the United States by the skillful manipulation of one of the rules of the office.

Our excellent British contemporary is usually very correct, but has somehow fallen into several little errors in the above item. There is no such officer as the Receiver-General connected with the American Patent Office.

Thick Mortar in Brickwork.

G. D. Dempsey, in the Architect, London, says: One important rule has to be observed in order to produce good brickwork, viz., that the mortar should be as thick as it may be, or as nearly approaching the solid form as is consistent with the degree of plasticity essential for its proper distribution and penetration into the joints.

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NAVAL AND MARITIME PROSPECTS UNDER THE NEW ADMINISTRATION.

On the 4th of March the official term of Grover Cleveland as President expired, and the new President, Benjamin Harrison, of Indiana, was inaugurated. He is fifty-six years of age, a man of marked ability and the highest probity. It is gratifying to know that the improvement of the navy, which was so vigorously prosecuted during President Cleveland's administration, is to be continued under the new regime. In his inaugural address, President Harrison says:

"The construction of a sufficient number of modern war ships and of their necessary armament should progress as rapidly as is consistent with care and perfection in plans and workmanship. The spirit, courage, and skill of our naval officers and seamen have many times in our history given to weakships and inefficient guns a rating greatly beyond that of the naval list. That they will again do so upon occasion I do not doubt, but they ought not by premeditation or neglect to be left to the risks and exigences of an unequal combat.

"We should encourage the establishment of American steamship lines. The exchanges of commerce demand stated, reliable, and rapid means of communication, and, until these are provided, the development of our trade with the States lying south of us is impossible."

NAVAL WAR OF THE FUTURE.

In his second paper on "The Naval War of the Future," Admiral Porter, for purposes of illustration, imagines a war as existing between Great Britain and France, and a great expeditionary force on the French coast only waiting a successful issue of a combat between the Channel fleets of the two powers to set out for the invasion of England. Into this combat the Admiral brings what are thought to be the best ships of both sides, and other types of war engines which European authorities incline to look upon as most effective. If the behavior of these monsters is fairly drawn, those who believe we are poorly off without them will have been properly answered; it will appear that these and other powers have for years been wasting energy and money, and indeed some may even be so bold as to see in the picture which the Admiral himself gives us, good circumstantial evidence of how unreasonable is that regret, which he expresses more than once, that we have not been similarly occupied.

Instead of making for the Frenchman as of old, the British are portrayed as waiting for him to come up, a sort of pounding match ensuing in which those engaged are not more likely to hit the enemy than to run foul of their neighbors, so awkward are the ships in the Channel's rolling seas, so uncertain the aim of their ponderous guns. While the opposing monsters are struggling to keep their spirits up, several speedy little craft flying the English flag run athwart the advancing French line, and then disappear in the cloud of powder smoke that hangs upon the waters. The French do not know what to make of the maneuver till a number of their ships drift helplessly here and there, their screws tied fast in the mesh of iron wires left buoyed up by the mysterious little vessels. Then a mite of a torpedo boat jams a spar torpedo against the biggest of the enemy's ships and blows her up. She was prepared to pierce 20 inches of steel armor, but not for the mouse gnawing a match in her magazine. The only effective work is done by the torpedo boats and similar mischievous craft, the result of the contest being the withdrawal of both fleets.

Curiously enough, the Admiral, after a lengthy description of his supposititious sea fight—the impotency of the modern line-of-battle ship becoming more evident as he proceeds—when, indeed, he has fairly demonstrated that the smaller and more quickly handled gun is more effective than the really heavy gun, he suddenly turns about to declare: "We could, if we would, soon be equal to the best of European navies in line-of-battle ships and heavy guns." His subsequent allegation that "there is not one perfect line-of-battle ship in any navy" would seem to do as little to recommend the new type he presumably has in mind as that now in vogue, for of what value would his "perfect" line-of-battle ship be to us, if only to "make us equal" to that European ship which, if the picture he draws for us may be relied on, is manifestly impotent? He says:

"In the naval wars of the future, the United States will not, probably, play a conspicuous part. This country seems to possess none of that fitness for naval power of which her early history gave promise. The United States government waited twenty years after the close of the civil war before commencing to rehabilitate the navy, on the plea that 'it was desirable to see what the powers of Europe were going to do,' apparently not remembering that the best steam and sail vessels of the world were the results of American genius in the days when it took the initiative. Americans have abdicated the position which their vast resources entitle them to hold."

Then he goes on to describe the operations of the British fleet under Admiral Seymour against the defenses of Alexandria, and thus concludes: "Every