

the reach of every one, conversant with the subject of engineering. The main objection to docks of this description, made sufficiently capacious for large vessels, and for the operations to be carried on in repairing them, is the unequal pressure to which their bottoms must be subjected, by the weight of the vessel upon them, and the upward pressure of the water. They are aware that by judicious shoring, much of the weight of a vessel may be distributed over the bottom, this however, although it would lessen, would not remove the objection.

Ships, although constructed in a shape, and braced in a manner calculated to render them stable, undergo, in nearly every instance, a change of form, after they are launched; to this change of form, the float in question, would be much more liable, in as much as its flat surfaces are less calculated to resist the effects of the pressure to which they are to be subjected.*

In situations where marine rail-ways can be erected, the Committee believe them to be preferable to a floating dock, howsoever well, the latter may be constructed; there are, however, many places where the soil and other circumstances would render it extremely difficult, if not impossible, to construct a rail-way: in such situations, and when the vessels to be repaired are not of the larger class, the floating dock may be found advantageous; and they believe that under such circumstances, the plan before them presents considerable advantages above those floating docks from which the water must be excluded by flood gates.

PHILADELPHIA, April 4th, 1824.

Attest,

THOMAS P. JONES, Sec'y.

Description of the Floating Dry Dock, the plan of which has been submitted to the Franklin Institute; with an engraving, and explanatory references. By EDWARD CLARK, Esq.

For sometime before, and even after I entered into engagements with the New York Dry Dock Company, in the spring of 1825, my attention was drawn to the construction of a floating dry dock. The plans proposed by Commodore Barron and Capt. Caldwell, as contained in the Franklin Journal for Jan. 1827, occurred to me, and

* The report of the Committee of Inventions, on my Floating Dock, has been shown to a very respectable ship builder of this city, who concurs in opinion, with the committee of the Franklin Institute, in respect to the difficulties and objections to the practical use of this plan, provided the ordinary mode of building be resorted to in the construction of the float; but he, nevertheless, thinks, that by increasing the depth of the frame, so as to introduce an extra quantity of timber into it, and securing it well with iron, a dock may be constructed at a reasonable expense, capable of sustaining our largest trading ships, without perceptibly yielding to the inequality of pressure which would be produced by any change of form which the superincumbent vessel had undergone; and, consequently, that such vessel would as readily resume its original form on the deck of such a float, as on the common rail-way. And further, if such should not be the case, by resorting to the ordinary mode of wedging, the keel of the vessel may be made to conform to the required line.

New York, April 25th, 1827.

EDWARD CLARK.

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were severally considered, at least in their general principles, if not in detail; and I went so far as to examine a site belonging to Saml. Leggett, esq. on Long Island, with a view of building one conformably to the latter plan. But on more mature reflection I abandoned them both; that of the Commodore, on the grounds 1st, of the unequal quantity of water, comparatively speaking, that it would be requisite to displace to accommodate vessels of different capacities; for it is evident that the dock must be freed of water, every time a vessel is admitted, in order to allow of its thorough repair, and for convenience to the workmen; and vessels of the same draught, often vary from one fourth, to one half, in the quantity of water they displace, owing to their difference of model. 2d, of the loss of buoyancy occasioned by elevating the hollow sides of the dock above the water line, or their bearing on the water, and consequently the loss of power, applied to create this buoyancy, and also to sustain the materials of which the sides of the dock may be constructed, above water, and 3d, because such docks would be dark and wet, and not sufficiently commodious for the repair of ships, &c. That of Captain Caldwell, was objected to, first, on account of the great expense required for its construction, and secondly, from the remoteness of the site from the city.

As a substitute for these contrivances, I proposed to the directors of the company, the plan of which, the enclosed print presents one view, viz: the stern of a vessel resting on a floating dock. A. representing the float. B. B. piers, forming a recess to steady and secure the float. C. C. perpendicular supports and braces, appended firmly to the piers; and D. D. also supports and braces appended firmly to the float, so as to allow, by means of the rollers e. e. e. e. of the easy and steady ascent and descent of the float, conformably to the motion of the tides and waves, and also of sinking and raising the float in the same place. F. vessel's stern. G. G. bilge blockings. H. H. braces; all for supporting, and steadying, the vessel in an upright position. I. timbers, framed into the piers, forming a bed for the support of the float, while sunk. The float A. is supplied with valves and pumps, not represented in the print; and if it be required to float the vessel F. nothing more is necessary but to open the valves, when the float, being previously ballasted, will fill with water, and sink to its bed. The vessel F. being now removed, and another made to occupy its place, by means of guides, the valves are to be closed, and the pumps put in motion; and when a quantity of water has been displaced from the float equivalent to the weight of the incumbent vessel, she will be elevated entirely above the water, without loss of power, and placed in a most favourable situation to undergo repairs. A float of this description, for use in sea water, would require to be coppered externally, and occasionally to be filled with some other saline fluid, or with fresh water, to preserve it from the worms.

After reflecting on the various plans presented, and consulting eminent engineers, the board of directors concluded to adopt the marine rail ways of Morton's invention, which have been completed

with some slight, or immaterial variations; but at the extravagant expense of between seventy and eighty thousand dollars. This company are now building others on the same plan; they will not probably cost half as much. But however cheap they may be built, where the rise and fall of the tide is trifling, they will always be found too expensive, excepting in large cities.

The plan I now offer for consideration and report, will, it appears to me, generally, answer a better purpose, than rail-ways, and perhaps, than the docks of Commodore Barron, and Captain Caldwell; but of this I must leave others to judge.

EDWARD CLARK.

New York, Feb. 25th, 1827.

FOR THE FRANKLIN JOURNAL.

Observations on an "Essay on the art of Boring the Earth for the obtainment of a spontaneous supply of water."

NEW YORK, APRIL 30, 1827.

To the Editor.

SIR—I observed in your valuable Journal, some time ago, a favourable notice of one of the most absurd* Essays that I have ever met with, "on the art of boring the earth for the obtainment of a spontaneous flow of water, &c." in which the author maintains the practicability of obtaining water above the surface, in any situation which the borer chooses. I have been looking for a refutation, or exposure, in your late numbers, but perhaps you have been too much engaged to refute it yourself, and your correspondents have thought it useless to combat the absurdity of the new theory, or have been awed by the appalling appeal to facts, which is so confidently made in support of it. It would be a laborious undertaking to review the whole pamphlet of 46 pages, and it would occupy too much of your paper; suffice it to say, there is not a *single fact* stated in it, that militates in the slightest degree from the received, or if you please, the old theory of obtaining water; but wrong *inferences* to that effect, abound. The essay commences with observing that boring "has been known in Europe for the last fifty or sixty years. It was, however, but a partial operation, being no farther practised than to ascertain the presence of coal and other minerals, and to give a greater quantity of water to wells that did not, at all times, afford a sufficient supply." Allow me to make a few extracts from Dr. Darwin's "Phytologia," (my copy of which was printed in 1800) illustrative of the true theory. "Many modern philosophers have attempted to show, that all the continents and islands of the world have been raised out of the primeval ocean by subterraneous fires; hence the strata which composed the sides of mountains, lie slanting downwards, and one, or two, or more of the

* Extract as a specimen of the absurd—"There are, no doubt, large cavities at the bottom of the sea, into which the sea would undoubtedly fall, were it not upheld by the vast columns of gases that are present," page 33.—See also last paragraph of page 34, all 35, and part of page 36.