

**THE PROPOSED ATLANTIC COASTWISE AND CAPE COD CANALS.**

When the history of civil engineering in this nineteenth century comes to be written, it is certain that the closing ten years will be called the decade of canal building. The Corinth Canal, in Eastern Europe; the Manchester Canal, in England; and the Kiel Canal, in Germany, are but just completed; and, in the Western Hemisphere, we have the great Nicaraguan Canal fully surveyed and large initial works in progress. Following close upon this we have now before us in the United States a proposal for the construction of two important inland waterways near the Atlantic seaboard; one of eight miles length, near Cape Cod; the other, and larger scheme, involving the construction of 31.4 miles of canal proper, and the deepening of 39 miles of navigable waterway between Philadelphia and New York.

It is proposed to utilize the Delaware River as far as Bordentown, dredging the channel to a depth of 28 feet. At this point the canal commences with a series of three locks, having a lift of 20 feet each, and giving a total rise of 60 feet.

The canal will be level at this elevation for its total length of 31.4 miles. It follows a natural topographical depression that runs across this part of New Jersey, at an average elevation of 60 to 100 feet above mean sea level. There will be another series of three locks, with a total fall of 60 feet, into the Raritan River, near Sayreville. Here again dredging will be necessary to secure a 28-foot channel up to the New York locks.

The preliminary borings are decidedly favorable to the cost of the undertaking. Between Delaware and Princeton, sand, gravel and clay are indicated, and beyond the latter point there is found only a comparatively small amount of red shales or sandstone. Upon these borings and surveys an estimate has been made of \$14,574,100 for a 20-foot, and \$24,124,700 for a 28-foot canal.

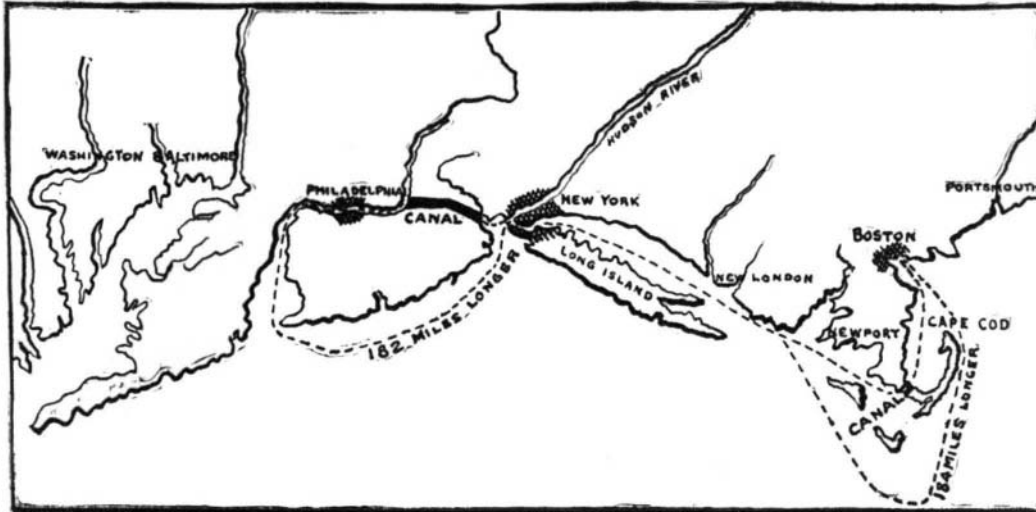
In consideration of the present cheapness of labor and materials, and the fact that a 15 per cent item for contingencies is included, this estimate would seem to be conservative; though it should be borne in mind that recent canals have cost from 30 to 50 per cent in excess of the preliminary estimate.

The commercial advantages are claimed to be:

1. A saving of 24 hours in the round trip to New York over the coastwise route.
2. The diminished risk in transportation.
3. The fact that a cheaper class of vessel can be used for this inland navigation.
4. There is a large coastwise trading done in barges in tow of separate tugs. An inland route would naturally attract a large portion of this somewhat risky system of deep water transportation. It is estimated that some 3,000,000 of tonnage that is at present towed in barges would seek this canal.

Not the least value of the scheme would lie in its strategic importance in time of war. Taken in connection with the Cape Cod Canal, it would shorten the distance between Philadelphia and Boston by some 450 miles, or about a day and a half's steaming

It is proposed to cut through Cape Cod peninsula, entering at the mouth of Bass River and terminating in Barnstable Bay. The scheme would utilize the existing waterway known as Bass River, which has an average L. W. depth of 6 to 7 feet. This will necessitate 16 feet of dredging to secure the desired 23 feet depth of canal. The survey follows the river for 5½ miles, and then shows a cut through easy material for 2½ miles to tidewater in Barnstable Bay. There will be training walls at each outlet. The canal will be tidal; the 40 minutes difference in H. T. at each end creating a flow that will exert a beneficial scouring action on the channel.

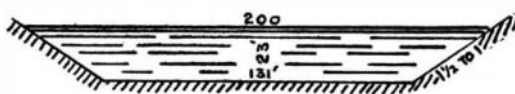


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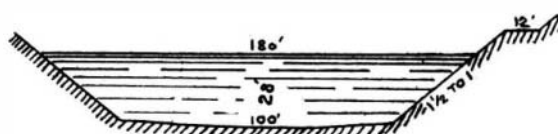
The cutting of the canal will shorten the journey from New York and the South to Boston by 184 miles, and it will enable shipping to avoid the dangerous shoals of Nantucket and the notoriously stormy weather off Cape Cod.

It is estimated that 50,000 vessels, averaging 500 tons each, go round the cape yearly. On the reasonable supposition that 60 per cent of this traffic would use the canal, there will be carried through the latter dur-

**Cape Cod Canal, 23 ft.**



**ATLANTIC COASTWISE CANAL CROSS SECTION THROUGH 28 FOOT CANAL**



ing the year over 12,000,000 tons. By charging less than one-half the present estimated cost of 25c. to 40c. per ton round the cape, or say only 10c. per ton, a revenue of \$1,200,000 would be assured.

A strong and representative company, bearing the name of the Massachusetts Canal Company, has been formed for the prosecution of this work, with an authorized capital of \$7,500,000 in shares and an equal

**Labor's Triumphs.**

The Stone Trade News makes mention of what are considered as the ten most remarkable works of human labor:

1. The Pyramids of Egypt, the largest of which, near Cairo, known as the Great Pyramid, built by Cheops, King of Egypt, took 350,000 men twenty years to build.
2. The artificial reservoir—Lake Moeris—built by Amenemha of the twelfth dynasty, which served to store up the waters of the Nile during the season of floods, and distribute them by canals over the land during the dry season. Its circumference was 3,600 furlongs, and on its being allowed to fall into ruin, the fertility of the region became, to a serious extent, a thing of the past.
3. The Taj Mahal, a tomb erected at Agra, in Hindostan, by Shah Jehan, over his Queen, Noor Jehan. It is built of the purest white marble, and yet seems so airy that when seen from a distance, it is so like a fabric of mist and sunbeams, with its great dome soaring up, a silvery bubble about to burst in the sun, that even after you have touched it and climbed to its summit you almost doubt its reality. It cost over three million pounds.
4. The Temple of Baalbec, in the erection of which stones 62 feet long, 20 feet broad, and 15 feet thick have been used—more

prodigious masses than have ever elsewhere been moved by human power, and much exceeding in size the stones used in the Pyramids.

5. The Temple of Karnak, described by Fergusson as the noblest work of architectural magnificence ever produced by the hand of man. It covers twice the area of St. Peter's at Rome, and undoubtedly is one of the finest buildings in the world.

6. The Great Wall of China, 1,230 miles in length. It is 20 feet in height, and in thickness 25 feet at the base and 15 feet at the top.

7. The Eiffel Tower, erected in the grounds of the 1889 Paris Exhibition, 984 feet high.

8. The Suez Canal, with 88 miles of waterway connecting the Mediterranean and Red Sea, and forming the principal route to India. It cost more than 17 millions sterling, and 172,602 out of the 399,677 shares were purchased by and belong to the British government.

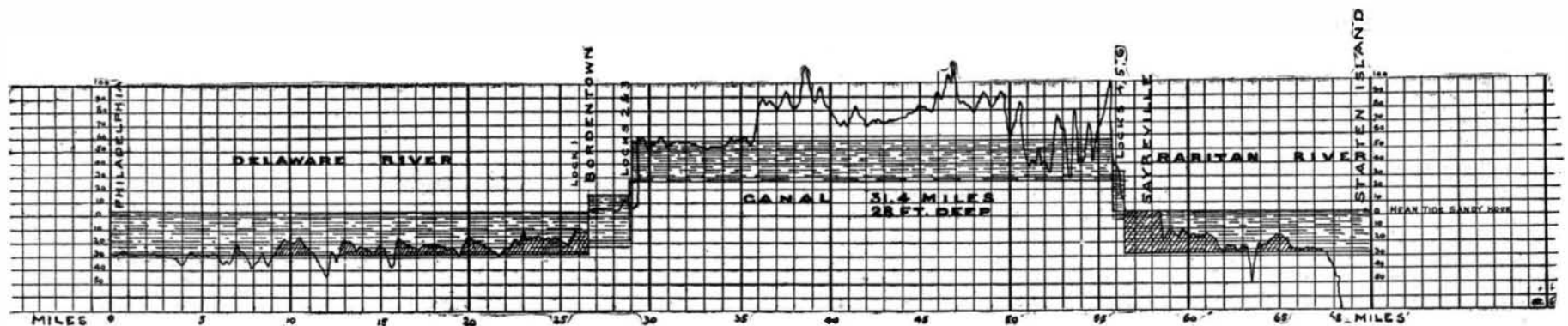
9. The railway bridge (the largest cantilever bridge in the world) over the Forth, with two spans each of 1,700 feet, erected at a cost of nearly four millions.

10. The leaning Tower of Pisa, which deviates 13 feet from the perpendicular.

The following works were by the ancients esteemed the seven wonders of the world: The Pyramids; the Tomb of Mausoleus; the Temple of Diana; the Hanging Gardens of Babylon; the Colossus of Rhodes; the ivory and golden statue of Jupiter Olympus; and the Pharos or Watch Tower of Egypt.

**India Rubber in Jamaica.**

One result of the persistent efforts of those having in charge the Royal Botanic Garden, at Trinidad, to inaugurate the India rubber industry in Jamaica has



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for an average warship of today. In view of the scarcity of our warships in comparison to the extent of our coast line, such a reduction of distance would be of the highest strategic value.

The above facts in fuller detail are embodied in the report of the Canal Commission of Philadelphia to the Select and Common Councils of the city. The commission is thoroughly representative and embodies the most notable names in the locality, with N. H. Hutton as consulting engineer and Lewis M. Haupt as engineer in charge of surveys.

The Cape Cod Canal is less costly and of less magnitude, but scarcely of less importance than the above.

amount in bonds. The details of the scheme are set forth in a voluminous report, which is enriched with several excellent half-tone prints showing the suitable topography of the route surveyed and adopted for the canal.

That these two schemes will prove financially profitable seems certain, for the reason that they merely present a swifter, safer and cheaper water route for an enormous water-borne traffic which already exists.

JAPANESE workmen wear, both on their caps and on their backs, an inscription stating their business and the name of their employer.

been to establish the fact that a rubber-yielding plant likely to prove of value is indigenous to that island. It is the *Forsteronia floribunda* (Don.), known locally as the "milk withe." According to the Bulletin of the Botanical Department (Jamaica), this climber is found generally as thick as a man's wrist, and sometimes much thicker, and it reaches to the tops of the tallest trees, though often growing over rocks, fully exposed to the sun. The sap coagulates simply on exposure to a dry atmosphere.

NEARLY all the glass eyes used in the world are made in Thuringia, Germany.