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## WORK ON THE CORINTH CANAL.

For centuries the Isthmus of Corinth, separating the Gulf of Corinth, which is about in the center of Greece, from the Gulf of Ægina, has attracted particular attention because of the barrier it presented to navigation between the Black and Adriatic Seas and the intermediate ports. A canal cutting the isthmus at its narrowest part was commenced by the Roman Emperor Nero, and the canal now being excavated is on a line nearly identical with the one adopted at that time. Three attempts, previous to Nero, had been made to build the canal, and at the Ægina end there is a depression about 130 feet wide at the bottom, and about 5,000 feet long, while at the west side the work can be traced for 6,500 feet from the shore. At intervals along the line are square shafts, the walls of which are perfectly preserved.

The route extends in a perfectly straight line, is 20,800 feet long, and the most formidable ridge encountered is 256 feet high. The canal will have the same width as that at Suez, 75 feet, and will shorten the voyage from the Adriatic Sea to Turkey and Asia Minor by 185 miles. Work was begun in May, 1882, under a contract with a firm for the total sum of \$5,280,000. French capital is invested in the project.

The general plan of working is as follows: The approaches—about 600 feet on each side—will be deepened by the aid of land excavators, dredges, and pumps, the amount of material being about 3,330,000 cubic yards. The dredges are provided with both buckets and claws, so as to be operated in both mud and loose rock, and each will raise from 500 to 600 tons per day of twelve hours. The pump will raise from

2,300 to 2,600 cubic yards of sand per day. To open the main cut, a tunnel wide enough for a double line of rails is first driven through at an elevation of 154 feet above the sea level, after which vertical shafts will be sunk to the level of the tunnel.

The tops of the shafts will be widened out on the line of the axis of the canal, the excavated material being thrown down the shafts to the tunnel, where trains remove it to the valleys adjoining the canal. That section remaining below the tunnel will be removed by drills and dynamite, working it in benches. Holes will be drilled about 160 feet deep and 4 inches in diameter—reaching to the bottom of the canal—and will be spaced from 6 to 13 feet apart, according to the nature of the material. The rock will be broken into small pieces and cast down into the bed of the canal, where it will be raised by powerful dredges and discharged into barges, which will carry it to sea and dump it. The total mass to be removed in the entire canal is 9,730,000 cubic yards, and it is estimated that 2,460,850 pounds of dynamite will be required.

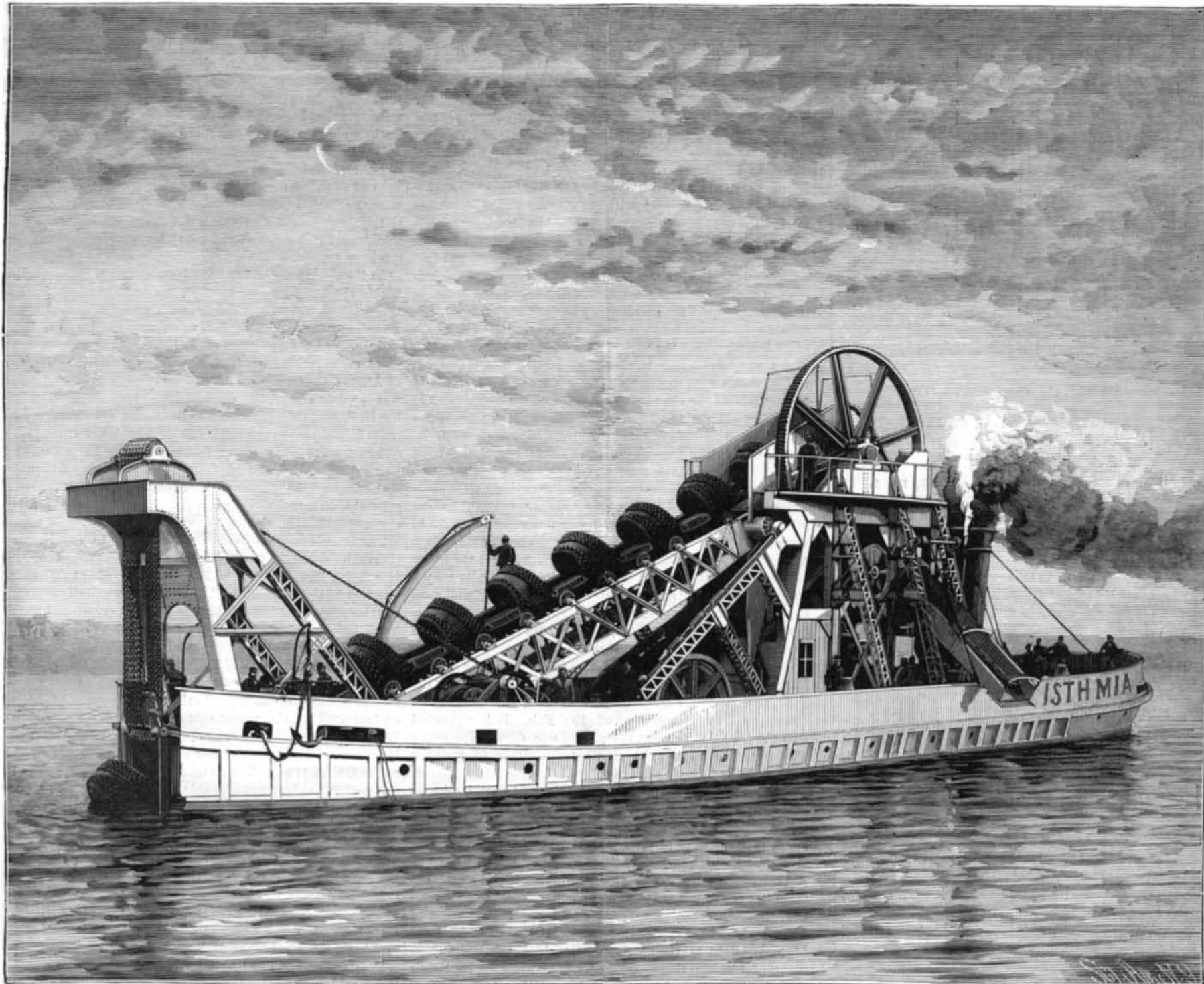
Two 300 horse power marine dredges (one of which is illustrated upon this page), built by Demenge & Satre, of Lyons, France, are now at work upon the canal. The hull of the dredge is of iron, and is 129 feet long by 31.16 feet wide. The normal running speed of the buckets is fourteen per minute, or during a day of ten hours 8,400 bucket loads will be raised, this being equivalent to 7,560 cubic yards, since each bucket has a capacity of nine-tenths of a yard; but the average work for ten hours in gravel, in the Soane, was 6,500 cubic yards. The machinery is driven by two

coupled engines of 150 horse power each. All the frame work and bracing are of iron. The bow of the hull is divided to permit the entrance of the bucket arm and the chain of buckets, and at each outer end is a frame, both of which are united at the top by a crosspiece that supports the pulleys carrying the chain by which the free end of the arm is raised or lowered. The excavated material is diverted by a central apron and chutes to either side of the dredge, where it is received by barges which are towed to sea as fast as filled.

The total population now connected with the work is 2,300. According to the present progress, it is expected that it will be completed in 1886. The total expenditure up to June 28 last was \$1,700,000.

For the loan of the photograph from which our engraving was made, and for notes concerning the dredge, we are indebted to the courtesy of Mr. C. Colne, of the Interoceanic Canal Co.

The project of cutting a ship canal across the province of Holstein, connecting the North Sea with the Baltic, is now being taken up by the German authorities in earnest. The canal is to run from near the mouth of the Elbe to the harbor of Kiel, Germany's chief naval port on the "Ostsee." It is to be constructed of such dimensions as to permit the largest ironclads in the German navy steaming from the Baltic to the German Ocean, or *vice versa*, thus avoiding the necessity of making, as at present, the long voyage round the peninsula of Jutland. Detailed drawings of on the subject are to be submitted to the new Reichstag.



THE CORINTH CANAL.—THE THREE HUNDRED HORSE POWER MARINE DREDGE ISTH MIA.