MAMMOTH DREDGER USED FOR RECLAMATION WORK IN CALIFORNIA.

BY WILLIAM A. LAWSON.

What is said to be the largest dredger in the United States is now engaged in reclamation work along the Sacramento River, in California. It was recently constructed for that purpose, and far exceeds in size and capacity any other dredger built in that State, where for years past such machines have been used for levee building.

The hull of the dredger "Yolo" here illustrated is 53 feet wide by 115 feet in length, with a depth of 11 feet. The boom is 145 feet in length and its greatest diameter is two feet. The capacity of the bucket, level full, is 4½ cubic yards, but it has been known to lift as many as ten cubic yards at a time, in favorable soil. The weight of the empty bucket is 16,000 pounds.

The dredger is anchored or held in place while working by means of the four "spuds" shown in the picture, of which two are at the sides and two at the stern. They are round logs or timbers from 9 to 12 inches in diameter and 70 feet long.

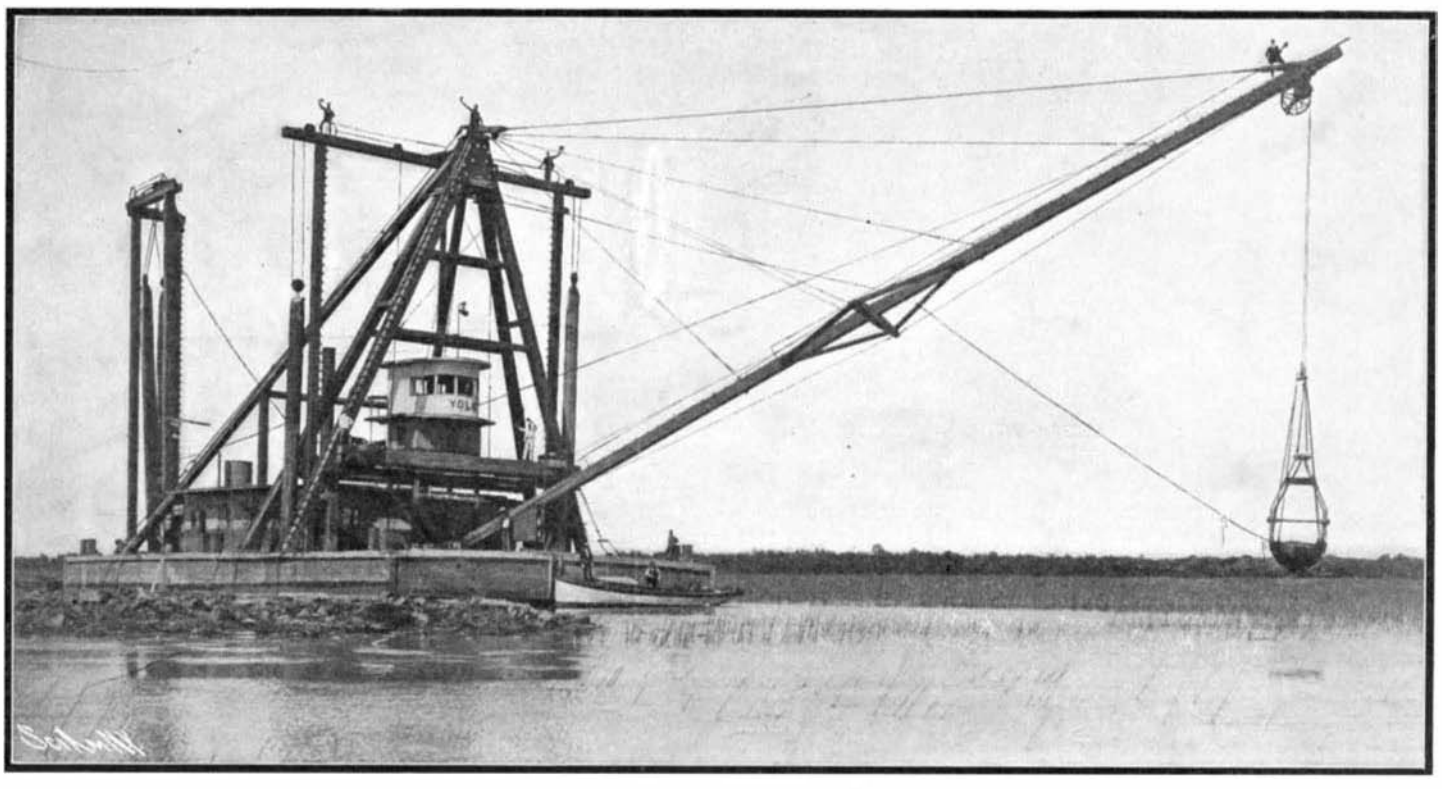
The fuel used is oil. The boiler is of the Scotch marine type, with a working pressure of 150 pounds to the square inch. The two main engines are of the tandem compound horizontal type, with high-pressure cylinders 14 inches in diameter and low-pressure cylinders 24 inches in diameter, and with a 20-inch stroke. There is an electrical plant for lighting purposes, the dredger being operated day and night, with two shifts of men each working twelve hours a day.

The bucket has a lift of 40 feet above the water level, and is swung into any desired position by means of the boom. The dredger can build a levee 18 feet high and 10 feet wide on top, with a slope of one in three, at the rate of half a mile a month.

Along the Sacramento and San Joaquin rivers and in the islands at their delta are about 750,000 acres of land naturally subject to overflow during seasons of high water. The rivers flow on ridges of their own creation, through the deposit of sediment on their banks in the course of ages. The bank lands, stretching back half a mile or more from the streams on either side, were not subject to inundation, but lying between them and the higher lands of the valleys are basins all of which were originally swamp or tule lands, but about 150,000 acres have been reclaimed by means of levees. These reclaimed lands are among the righest in the world, producing enormous crops of vegetables, alfalfa, fruit, grain, and seeds.

The cost of reclamation by means of levees and pumping plants, with canals and ditches, varies greatly according to conditions, and in some instances has been as high as $100 per acre. When reclaimed the land is worth from $100 to $300 per acre. The soil is a sandy or peaty loam, very rich in vegetable matter.

Reclamation has so far been confined to private districts, organized under a State law which allows the taxation of the lands of each district to defray the cost of levee building and other expenses. But at a late "river convention" in San Francisco it was decided that systematic reclamation should proceed under the direction and control of the State, and that three eminent engineers, non-residents of California, should be called in consultation with a State engineer and the Federal engineer in charge of the navigable streams in the State, for the purpose of forming a general plan of river improvement and reclamation. The object is to convert to fertility and productiveness more than 500,000 acres now almost useless. The cost is estimated at from $10,000,000 to $20,000,000, but it is expected that the lands reclaimed will be worth from $60,000,000 to $100,000,000.



THE GREAT DREDGER AT WORK.

The Muir Glacier of Alaska was formerly one of the points in greatest favor with the tourist, and for many years the boats loaded with excursionists were run directly up to the great ice mass. Such as were inclined to do so, were permitted to land and make photographs and other observations of the ice field. Occasionally enormous pieces of the ice would fall

THE BUCKET OF THE DREDGER.

from the front of the glacier, and with a mighty roar drop into the water. The mass would be lost to sight for a space of time which seemed to be several minutes, but eventually would come to the surface, roll over, and settle itself for its journey to the open water. Of more recent years, however, this great iceberg factory has been so active that it has been impossible for the boats to get within several miles of the glacier, and this feature of the trip had to be abandoned. In order to make some investigation of the matter, Mr. C. L. Andrews, of Skagway, a member of the National Geographic Society, made a trip of 150 miles in an open boat, and he announces that the glacier has lost its size and grandeur, and is receding at a very rapid rate. The face has moved back about three miles in four years, and in that time the glacier has lost about ten square miles of area. This rapid recession is said to have dated from the fall of 1899, when the vicinity was visited by an earthquake. Mr. Andrews is of the opinion that the end of the Muir as a tidewater glacier is near at hand.

Rubber Paving in London.

The following particulars regarding the rubber paving of the two roads under the hotel at Euston station may be of interest:

This paving was laid down in 1881 by Kirk & Randall, the contractors for the extension of the hotel. Its cost per square yard was as follows: Concrete foundation work, $5.60; rubber paving, supplied by Messrs. Macintosh & Co., $27.10; total approximate cost, $32.70.

When the rubber was laid down in 1881 it was 2 inches in thickness. In May, 1902, after twenty-one years' wear, the portion on the incoming road into the station was taken up and carefully examined, when it was found to have worn down to about five-eighths of an inch in the thinnest place, namely, at the incoming end, where horses first step on to it from the macadamized road. Other parts of the rubber were worn down to 1 inch and 1¼ inches, these places in each case being near the center of the roadway. Renewal was therefore considered necessary.

In recent years the price of India rubber has largely increased, and its quality varies. Tenders were invited in August, 1902, from four firms, and the prices received varied from £5 11s. 4d. ($27.09) to £17 10s. 3d. ($86.22) per square yard, Messrs. Macintosh & Co.'s price being £10 2s. 6d. ($49.26). The lowest price was accepted, namely, the tender from the India Rubber, Gutta-Percha and Telegraph Works Company, of £5 11s. 4d. ($27.09) per square yard. The material to be used is not, however, supposed to be pure India rubber, but appears suitable for the purpose, and is vulcanized. Rubber of a similar quality was laid in the year 1895 in Wellington Court 42, Albert Gate, Knightsbridge, London, and it was ascertained that "it had worn most excellently and given every satisfaction" at that place.

The total cost of the renewal in 1902 of the paving on the incoming road was £5 18s. 2d. ($28.75) per square yard, including laying, after credit had been given for the old rubber taken up. Since the paving was laid down in 1881 the average cost of general maintenance and examination has been slightly under 3¼d. (6½ cents) per square yard per annum.

At the recent addition to the Savoy Hotel, London, the courtyard was paved with rubber. The contractors, Messrs. James Stewart & Co., courteously supplied the following particulars concerning this pavement:

"The amount of rubber used in the Savoy courtyard is 2,195 feet, 2 inches thick, and the weight of the rubber is 15¼ pounds a square foot. It is laid on a concrete foundation, finished with cement floating to make it smooth.

"The cost of this material laid is 18s. 8d. ($4.54) per square foot, and it may be added that the cost for the same quality of material varies in direct proportion to the thickness.

"We have had no actual experience with this rubber paving for any length of time, but we investigated it pretty thoroughly at the time it was decided to lay it here, and found that the small piece at the entrance to the station at Euston was laid some twenty years ago. The traffic there has been very heavy.

"We think there is no doubt that the results of rubber paving will be entirely satisfactory, but the cost will undoubtedly make the adoption of it for general use prohibitive."

The court measures 75 feet by 50, and the cost of paving was £2,000 ($9,733).—H. Clay Evans, Consul-General.

In order to remove from lamp globes the unsightly grease spots frequently met with and to restore the handsome matt appearance of polished glass, pour two spoonfuls of a slightly heated solution of potash into the globe, moisten the whole surface with it and rub the stains with a fine linen rag; rinse the globe with clean water and carefully dry it off with a fine, soft cloth.—Neueste Erfindungen und Erfahrungen.