PUMPS FOR ABERDEEN GRAVING DOCK.

We illustrate a very fine pair of centrifugal pumps lately erected by Messrs. Drysdale & Co., of Glasgow, at the new graving dock at Aberdeen. The water enters at one side of each pump by a pipe 24 in. in diameter. The blades measure 60 in. across and have a circumferential velocity of 2514 ft. a minute. The engines have cylinders 17 in. in diameter by 16 in. stroke, and are capable of running at 160 revolutions per minute. The crankshafts are coupled together, uniting both engines and pumps, but either engine and pump can be thrown out of action. The pumps were specified to lift 350,000 cubic feet of water out of the dock in three hours from high tide, but the engineer's certificate states that they threw 564,000 cubic feet in that time, and thus greatly exceeded the guarantee.

The dock was opened on July 8, and is 500 ft. long on the floor, the width at the top being 74 ft., and at the bottom 48 ft. ; the depth from the coping level to the main invert is 25 ft., and from the high-water level to the main inverts 20 ft. The floor and west end of the dock are built of concrete and the ten alter steps along each side of solid granite. The entrance is closed by one of Kinipple's shifting caissons. A leakage pump, similar in construction to the large pumps, is used to completely drain the dock, the suction and delivery pipes being 8 in. in diameter. The four large sluice valves for regulating the admission of water to the dock are 4 ft. in diameter with gun metal faces. The hydraulic machinery for the dock gates was supplied by Messrs. Tannett, Walker, & Co., of Leeds, Mr. William Smith is the resident harbour engineer.—*Eng.*

BRICK-MAKING MACHINE.

Messrs. Bradley & Craven, Westgate Common Foundry, Wakefield, exhibited one of their standard brick-making machines, which we illustrate. There is nothing novel about this machine ; indeed, it has been for a number of years the standard type made by Messrs. Bradley & Craven, who are probably the oldest manufacturers of this class of machinery. The machine exhibited was a single one, weighing 10½ tons, and having a capacity of from 10,000 to 12,000 bricks per day of ten hours, which are produced without any skilled labour. The speciality of the machine is that it produces from the plastic clay delivered from a mixer into a pug mill, and by a continuous process, a dense and perfectly formed brick ready for immediate kniling without any preliminary drying process. The illustration gives a very good idea of the machine. The clay, either crude from the ground, if it is in suitable condition, or after preliminary treatment in a roller mill, is delivered to a platform at the back of the machine, and thence to a mixing apparatus which prepares it for entering the pug mill. This part of the machine is shown on the right-hand side of the engraving ; it is driven, as will be seen, by powerful bevel gear from the second motion shaft. As will be seen, on the further end of this shaft is a bevel pinion, driving a vertical shaft, on the bottom of which is the large cam that controls the intermittent motion of the revolving table of the machine that contains the moulds, and which sweep beneath the bottom of the pug mill. When at each movement of this table sufficient clay is fed into the mould beneath the pug mill to form a brick, pressure is exerted from beneath to force the clay into the mould, and give it a considerable compactness. During the pause made to fill the mould, another mould, which had previously been charged, delivers its partly formed brick to the powerful press shown in the front of the engraving. This press is worked off the first horizontal shaft, and it will be seen that this pressing portion of the machine stands in advance of the main frame. The whole process, which is practically continuous, and entirely automatic, is very simple, and the bricks produced are of a very high quality, which indeed is the necessary consequence of the perfection to which the machine has been carried. We may mention that Messrs. Bradley & Craven are makers of these pressed bricks on an extensive scale, as well as manufacturers of brickmaking machinery.

The naval board appointed to examine plans and specifications for the proposed cruisers has adjourned subject to the call of Commodore Walker, the president. The acceptable portions of the various plans examined were placed in the hands of Commander Goodrich and Naval-Constructors Bowles and Gatewood, with instructions to embody them in one plan.

USE OF OPIUM.

A writer of the New York *Sun* publishes an article on the increase of the habit of opium smoking, in which an attempt is made to prove by the official returns showing the importations of opium prepared for smoking, that the increase in the rate of duty from $6 to $10 per pound had the effect to cheapen the price of opium, and therefore to increase the importations and the habit of smoking that article. The writer in the *Sun* says : The attention of Congress was called to the fact that in 1880 the importations of opium for smoking purposes were 77,196 pounds, and those for 1883 were 288,153 pounds. Congress then attempted to check the traffic, and the duty of $6 per pound was, in July, 1883, increased to $10. The imports for 1884 fell to 1,066 pounds, and for the first six months of this year, they were practically nothing. Now, continues the writer, has Congress checked opium smoking by this big duty ? No. The practice was never more prevalent and it is spreading all over the country. The action of Congress had the effect of advancing the duty and cheapening article.

The figures used in this statement are correct, but the use the writer makes of them is misleading. The attention of Congress may have been called to the fact that over 77,000 pounds were imported in the year ending June 30, 1880, but the attention of the body could not have been directed to the fact that 288,153 pounds were imported during the year ending June 30, 1883, because the act by which the duty was increased to $10 per pound was passed March 3 of that year, four months before the close of the fiscal year, and at least six months before before the official figures for that year were made up. The large increase in the importations in 1883 of opium for smoking were due, not in the increase in the smoking habit, but to the fact that it was proposed to add $4 per pound to the rate of duty then existing. In anticipation of the large increase to the rate of duty importers bought in unusually large quantities of opium for smoking in the interval between March 3, the date of the passage of the act, and July, the date when it became operative. This is shown by the official returns. Of the 288,153 pounds imported during the fiscal year of 1883 the entries for the last quarter of that year—April, May, and June—were 169,583 pounds, which exceeds the entire quantity imported during the preceeding nine months of that year. As the proposed increase was known at least two months prior to the passage of the act it is fair to assume that importations for part of February and all of March were in consequence unusually large. It will thus be seen that the increased importation of opium for smoking in 1883 was not owing to the increase of the opium habit, as alleged, but to the fact that advantage was taken by importers of the four months' time intervening between the date of the passage and the date fixed for the operation of the act increasing the rate of duty to lay in large supplies of smoking opium.

THE IMPORTS.

The annexed table shows the number of pounds of green or gum opium and opium prepared for smoking imported into the United States during the fiscal indicated, the figures for 1885 being for the nine months ending March 31 last :

	Gum. opium	Smoking opium
1879	278,554	60,648
1880	245,211	77,196
1881	385,059	76,446
1682.	227,126	106,241
1883	229,011	288,153
1884	264,746	1,066
1885	243,434	21,403

Estimating the entire importation of smoking opium for 1886 at 30,000, would give a total importation for the past three fiscal years of 319,219 pounds, an annual average of 106,416, which is about the quantity imported in 1882.

In explanation of this theory that the increased rate of duty on smoking opium has reduced the revenue receipts about $1,000,000 per annum, without checking the opium habit, the writer in the *Sun* says : "The imports of crude opium, which is used to manufacture morphine and quinine and other drugs, are daily becoming larger. The duty on that kind of opium is only $1 per pound. * * * Since this duty of $10 was imposed a new industry has sprung up on the Pacific coast. It is the manufacture of smoking opium from the crude article. This industry is carried on very extensively in California."