

AN ELECTRIC DREDGE.

The Revista de Obras Publicas, a Spanish journal published in Madrid, gives a description of a dredge on the system Bunau-Vailla, for the purpose of dredging railway ballast from the river Esla, and delivering it in a washed state into barges. It is claimed for the electrical dredge: That the numerous interruptions of work usual with a steam-driven dredger are done away with, and many chains and anchors are abolished. Production is continuous without any interruption. The work of the dredge can be so arranged as to give almost the theoretical output. Ability to attack ground above the water level. That the management and direction of the dredge can be soon learned by any person, reducing to one man the numerous crew needed in an ordinary machine. That the motive power employed is only that produced under the best conditions in an independent installation quite apart from the dredge, and not subject moreover to the perturbations and limitations usual when intimately connected with the dredge. The force and power of the dredge can be augmented considerably without increase of size of dredge—a result impossible in the ordinary machine. The generating station installed on the bank consists of a boiler, a motor, and an electrical generator, established on a hulk or platform on concrete, and guarded by a wooden house.

The boiler is tubular, 4.70 metres long and 1.20 metres diameter, with tubes of 56 millimetres diameter, and 56 square metres of heating surface. The engine is a compound of 150 h. p., able to run with or without condenser, and with cylinders of 0.38 and 0.67 metres diameter. The engine is rope geared to a triphase alternator with fixed armature and revolving fields on the system of C. E. L. Brown, producing a high tension current of 2,000 volts, which after passing the switchboard on which are mounted the interruptor, lightning conductor, and meters, passes out by a 6 millimetre copper wire carried overhead to the dredge, which it enters by a perfectly insulated cable. The hull of the dredge is 25 metres long, 6 metres wide, and 2.40 metres deep. The ladder opening in the front of the vessel is 14 metre long and 2.4 metres wide. In the rear of the vessel is placed the transformer gear for reducing the current to 200 volts, with switchboard and suitable switches for working the various motors. In the same hold is a motor of 45 h.p. at 600 revolutions, also on the system Brown.

This actuates the upper arbor of the bucket chain and another motor of 10 h. p., working a centrifugal pump for washing the dredged stuff. There are also two 25 h. p. motors to work twin screws of 1 metre diameter. They are placed in the front part of the hull on either side of the ladder well, and serve to work the ship. The bucket ladder is 19 metres long, and is able to dredge 7 metres deep. The ladder windlass is fitted with a 15 h. p. motor at 800 revolutions. There are 32 buckets each of 200 litres capacity, and they travel at 14 buckets per minute, giving a theoretical output of 168 cubic metres per hour. The elevators to take the dredged ballast from the barges to

the land are also electrically worked, and it is considered that the dredge is a great success.

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