

CUPOLAS

FOUNDRY EQUIPMENT

CRANES

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electrically driven machine tools is very complete. The power station consists of five generating sets, the total horsepower being 1,250, and the electrical capacity 750 kilowatts, but in the engineering and gun-mounting department the power plant is of 2,500 h.p. and 1,500 kilowatts capacity, and electrical connection is established between the two departments. These stations are utilized both for power and lighting purposes, the voltage of the direct current being 210, with 3,570 amperes, in the shipyard department and 7,150 amperes in the engineering works. As to the economy of the electrical system, the coal consumption over a given period of average working conditions is only one-third what it was for steam driving, but the interest and depreciation of the electrical equipment must be taken into consideration. This, however, is not likely to equal the coal economy, while there is the advantage of direct control over the motors.

Where the tools are conveniently situated for driving from shafting—as a rule where belt drive was formerly adopted—the shaft has been retained and a large electric motor conveniently placed for running it. This secures any advantage from stored-up power in the pulleys to assist in starting drills and cutting tools generally, while at the same time a less power of motor is possible, since all the machines are not likely to be simultaneously doing their maximum duty. In the machine shed, however, the majority of the tools have independent motors, the largest being 45 h.p., operating plate-bending rolls 30 feet long to

take in armor deck-plates, while there are several cases of from 30 to 20 h.p. motors.

Many of the motors drive their machine tools by belting, with belt-striking gear for reversing. Some of the punching and shearing machines, however, are driven by spur gearing, the pinion on the motor spindle being of soft material, to deaden the shock and reduce the vibration. In such cases the motor is itself reversible. In a few instances, for large mangle rolls, angle shears and angle beveling machine, a chain belt covered by a gear case is used.

As to the speed of the motors, all above five h.p. run at 600 revolutions per minute, the interposition of belt pulleys enabling the speed of the various machine tools to be reduced to the required rate of rotation. Motors of three h.p., which are used for drilling, countersinking, joiner's saws, etc., are run at 850 revolutions. The two h.p. motors, of which there are three or four, run at 1,200 revolutions per minute, 2 one and $\frac{1}{2}$ h.p. motors make 1,100 revolutions per minute, while several one h.p. motors, used for grinding, for saws and for several portable tools, make 1,300 revolutions per minute.—Electrical Review.

ELECTRIC PUMPING.—A striking comparison between electric and steam pumping is to hand from a Scotch colliery. The plant is run eight hours a day, only three attendants, consumes $2\frac{1}{2}$ tons of coal a day, and the total working costs came out at £565 per annum, in-

stead of £4,000 by the old method—a striking difference.

IRON MAKING AT SYDNEY, N.S.—The steamer Northwestern, which made the experimental trip from Chicago through the lakes and St. Lawrence to Hamburg, is now engaged in the Newfoundland iron ore trade. She is carrying cargoes of ore from Wabana to Sydney, N.S., to be smelted. Wabana is the name of the mine on Bell Island, eighteen miles from St. John's, N.F., which has the most remarkable deposit of its kind in the world. It is an open quarry of the mineral, containing 34,000,000 tons, laid in almost horizontal strata, the material being in the form of small cubes, which only require a charge of dynamite to shatter into millions of fragments. These are shoveled up into wagons, carried over an endless cable to the piers and dumped into the steamers' hold. Vessels are loaded at the rate of 1,000 tons an hour, and the largest freighters that ply there, which have a capacity of 7,000 tons, secure their cargoes within a day. It is a thirty-six hour run to Sydney, and discharge is effected within a day also. Two round trips can almost be made within a week. The mine is accessible from April to December, during the remainder of the year access to it is prevented by ice. But during the open period enough ore is got out to last the whole year through, and to accomplish this extra steamers are now being put on and the mine is being worked to its utmost capacity.

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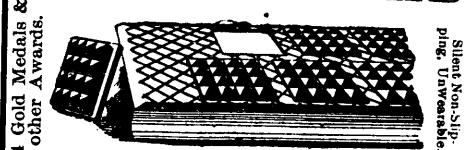
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