SCIENCE

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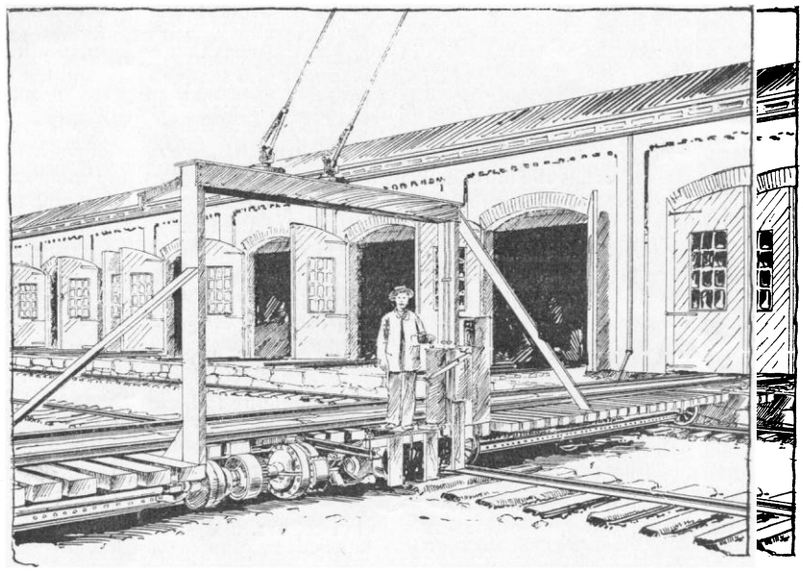
AN ELECTRIC TRANSFER-TABLE.

THE accompanying cut represents the new transfer-table at the Fitchburg car repair shops at Fitchburg, Mass., just built by the Fitchburg Railroad Company. The table or car is moved by the Union Electric Car Company's system. The motor, gears, clutches, etc., are all on the front axle of the car. The motor is geared to the axle, and the gears run in an enclosed bath of oil. They are brass cut gears, and work with the least possible amount of friction and consequent loss of power. The switch which governs the motor and controls the car is just above the motor, on a platform built out from the front of the car, as are also the reversing bar and the handle throwing in and out the clutch by which the motor is used either to propel the car in the desired direction or to draw off and on the cars to be changed from one track to another.



ELECTRIC TRANSFER-TABLE AT FITCHBURG, MASS.

The two shops are each five hundred feet long, and face each other. Each shop is divided into three divisions, separated by brick walls running through the roof. In each division there are eight tracks, making twenty-four in each shop. Between these shops, which are seventy-five feet apart, is the pit in which the table or car moves. The car is ten feet long and seventy feet wide, and runs on four rails laid in the pit. The track on the car, running from side to side, matches the tracks in the shops. The control of the table is so perfect, by the use of the switch, that it can be put and matched to any track desired without the least trouble or hitch; the same power that moved the car forward, stops or slows it. The table is run by the dynamo which lights the shops at night, and is connected by two overhead wires, on which run two trolleys, the trolley-poles being on the top of the house built over the front platform at the front of the table. Three men, one being at the dynamo, now run the table and draw on and off the cars, which work formerly required twelve men and a shifting locomotive and its men, and some four times the amount of work can be done by these three men.

The Union Electric Car Company will use this same system on the Beverly and Danvers Railroad, which is being equipped by the company, and will be running this month. These cars will use storage batteries in place of the overhead wires for the propelling power. The storage batteries are placed under the seats, with two sets to each car. They are charged by a steam and electrical plant in the car-house. Each set runs the car forty miles. It takes eight hours to charge. The batteries are changed by the conductor and driver in from three to ten minutes, and each car makes a run of eighty miles per day.

THE SOFTENING OF HARD WATERS FOR DOMESTIC USE.

SINCE waters possessing an inconvenient degree of hardness are very common in many localities, owing to the almost universal prevalence of calcareous soils and geological deposits, it is of no little interest to have some simple means of doing away with this property, so as to render such waters more convenient for domestic uses. This is the more important, as in some cases the presence of a large proportion of magnesia tends to cause serious, even though usually only temporary, gastric disturbance with persons unused to such waters, whereby quite frequently an unfounded prejudice against the general health-conditions of perfectly healthful localities is created. This subject has been heretofore discussed in many places, especially in California, but its continued importance and the frequent demand for information in the prem-