

DELANY'S FAC-SIMILE TELEGRAPHIC TRANSMISSION.

BY PROF. EDWIN J. HOUSTON.

It will doubtless interest the readers of the JOURNAL to learn that Mr. P. B. Delany, the inventor of the first successful synchronous-multiplex telegraphic system, has fulfilled the promise he made a long time ago, and has practically applied his invention to fac-simile transmission, whereby the hand-writing of a correspondent, pen sketches, maps, plans, hieroglyphics, etc., can be sent over a telegraph wire and reproduced at the receiving station with all their distinctive characteristics.

I have had occasion, in previous articles on the synchronous-multiplex system, to call attention to the fact that the synchronous division of an ordinary telegraph wire into a number of parts, would eventually be applied to the transmission of fac-simile despatches. I have to-day received from Mr. Delany copies of the first fac-simile transmission with a crude experimental apparatus, which is herewith reproduced.

Although other systems of fac-simile transmission have been tried, and fac-simile despatches have been sent and successfully reproduced, yet when but a single wire was employed, the time required for the transmission was so protracted, and the uncertainty of correct reproduction so great, that such systems of transmission could never come into actual commercial use.

Mr. Delany's system, however, differs from the preceding in that it insures speed and certainty of correct reproduction. By means of the application of his synchronous system an area of twelve square inches can be covered in one minute by the use of a single wire.

The many uses of this system of fac-simile transmission can scarcely be properly appreciated at this time ; for, notwithstanding the comparatively coarse lines that are so evident in the specimens annexed, yet with more carefully prepared apparatus, constructed for actual use, we do not doubt but that Mr. Delany will be able to transmit portraits, and other similar work equal in fineness to the ordinary wood-cut, so that criminals may be readily intercepted in their flight by the telegraphing of their portraits ; or, in times of war, maps showing the movements of armies, sketches of fortifications and works may be trans-

mitted; or the illustrated papers may be furnished, telegraphically, with sketches of disasters, at the same time that particulars of the same are being transmitted to them.

An evident advantage of such a system of telegraphic transmission is in the readiness with which it can telegraph in any language, even Chinese, for instance.

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CORRESPONDENCE.

AN INTERESTING AND SATISFACTORY EXPERIMENT. — PUMPING MOLASSES.—The Grocers' Sugar House (proprietor George E. Bartol), situated on Passyunk road near Washington avenue, at a distance of 6,600 feet from its wharf, foot of Reed street, on the Delaware, requires in its business 130 hogsheads, or 17,500 gallons of imported molasses daily. Heretofore it has been hauled by trucks at considerable expense as well as much injury to street pavements. The great success in pumping oil long distances determined Mr. B. to make the trial on molasses, although the article to be pumped was very different in character.

He decided to lay a three-inch wrought iron pipe which, in the distance named, has an elevation of twenty-three feet and makes five right-angle bends. The operation is as follows: the hogsheads of molasses are emptied at the wharf into a large iron tank, connected with which is a Blake steam pump, having a steam cylinder of fourteen inches diameter and a pump of five inches diameter, both twelve inches stroke. This pump discharges into the three-inch wrought iron pipe before mentioned. The density of the molasses varies with the temperature of the atmosphere, and at times it is necessary to heat it to a temperature of 110 degrees, and in some cases a little water has to be added. The pressure on the pump is not allowed to go beyond 400 lbs. to the square inch, and it is rarely that it reaches that, and it does not go below 250 lbs. The average daily work—of 17,500 gallons, as before stated—requires twenty-two double strokes of the pump per minute, delivering 2,000 gallons per hour; the difference between the capacity of the pump at that velocity and the amount of molasses actually delivered is 10 per cent., showing that, owing to the density of the molasses, the pump does not fill to its full capacity.

After being in operation 18 weeks, it is demonstrated that all of the molasses emptied at Reed street wharf is delivered at the sugar house, also that no injury is done to the molasses by being pumped that distance under pressure. The pipe was laid and pump erected under the immediate supervision of Mr. Rafael Estrada, an experienced engineer, who is superintendent of the sugar house.

B. H. B.

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GENTLEMEN:—In the JOURNAL OF THE FRANKLIN INSTITUTE for December last, appeared a reprint from *Mechanics* for November, of an article