

ning, so frequent and vivid in this climate, without serious derangement of the delicate machinery. The telegraph generally in use is the patent of Mr. Morse, whose invention combines the power of printing a message simultaneously with its transmission. As the magnetic force becomes extremely feeble when conducted through a great length of wire, Morse employs it simply to make a needle vibrate, and so open and close the galvanic circuit placed in each office, where a local battery is set in motion, which works the printing machine. The long wires, therefore, may be compared to slender trains of gunpowder, which are made to fire a distant cannon or mine. It is not the battery in Philadelphia which works the instrument in Washington, but a battery in the Washington office. This contrivance is obviously nothing more than a new adaptation of the method specified by Mr. Wheatstone, in his patent of June, 1837, for ringing an alarum bell in each station by means of a local battery, of which I saw him exhibit experiments in 1837.

In September of the same year Mr. Morse invented an ingenious mode of printing messages, by causing an endless scroll of paper to roll off one cylinder on to another by means of clock-work, the paper being made to pass under a steel pen, which is moved by electro-magnetism.

An agent of Mr. Morse explained to me the manner in which the steel pen was made to indent the paper, which is not pierced, but appears as if it had been pressed on by a blunted point, the under surface being raised as in books printed for the blind. If the contact of the pen be continued instead of making a dot, it produces a short or a long line, according to the time of contact. The following is a specimen :—

$\overline{\text{T}}$ $\overline{\text{h}}$ $\overline{\text{e}}$ $\overline{\text{E}}$ $\overline{\text{l}}$ $\overline{\text{e}}$ $\overline{\text{c}}$ $\overline{\text{t}}$ $\overline{\text{r}}$ $\overline{\text{o}}$ $\overline{\text{M}}$ $\overline{\text{a}}$ $\overline{\text{g}}$ $\overline{\text{n}}$ $\overline{\text{e}}$ $\overline{\text{t}}$ $\overline{\text{i}}$ $\overline{\text{c}}$
 $\overline{\text{T}}$ $\overline{\text{e}}$ $\overline{\text{l}}$ $\overline{\text{e}}$ $\overline{\text{g}}$ $\overline{\text{r}}$ $\overline{\text{a}}$ $\overline{\text{p}}$ $\overline{\text{h}}$.

In the latest improvements of the telegraph in England, the magnetic force has been so multiplied by means of several thousand coils of wire, that they can send it direct, so as to move the