

WIRELESS TELEGRAPHY.

"Necessity is the mother of invention," says the proverb. And one of the most prolific sources of inventions has been the necessity of communicating with persons at a distance, when the use of the voice is ineffectual. To supply this need the telephone, the telegraph, the semaphore, the heliograph, and numerous codes of signals given by flags, lights and other means, have come into existence. But all these still left much to be desired. The heliograph is useless in cloudy weather; and signals are not seen at a very great distance, nor in a fog. The telegraph establishes almost perfect communication; but then, its usefulness is limited by the necessity of using wires over which the message is sent.

It has long been the ambition of scientists and inventors to telegraph without wires; but their efforts were for the most part futile, or the distance to which their instruments could transmit messages was so small, that wireless telegraphy came to be looked upon as a utopian dream. One of the most successful in his efforts was Mr. W. H. Preece, who telegraphed across the estuary of the Severn between the Island of Flatholm and Lavernock Point, a distance of nearly three and a half miles. He used two large wires which he placed parallel to each other in a horizontal position, one at each station. A strong current in one wire induced a corresponding current in the other. According to the *Electrical Industry*, Mr. Preece's telegraph was still in use in 1898. But the man who has brought the subject of wireless telegraphy again prominently before the public, is Mr. Marconi. By the wonders that he has performed with his apparatus, during the last three years, Mr. Marconi has shown that he has given a practical solution to this problem of telegraphing without wires.

The principles of which Mr. Marconi's system is an application, form one of the latest steps in the progress of science. English scientists have generally discarded the idea of action at a distance, and, in treating of physical phenomena, have attached great importance to the action of the medium. Newton held that even universal gravitation acted through a medium. Faraday and Maxwell, in 1864, proposed a theory according to which electricity is transmitted through the same medium, that is the lumin-