Wireless Telegraphy.

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INTRODUCTION.

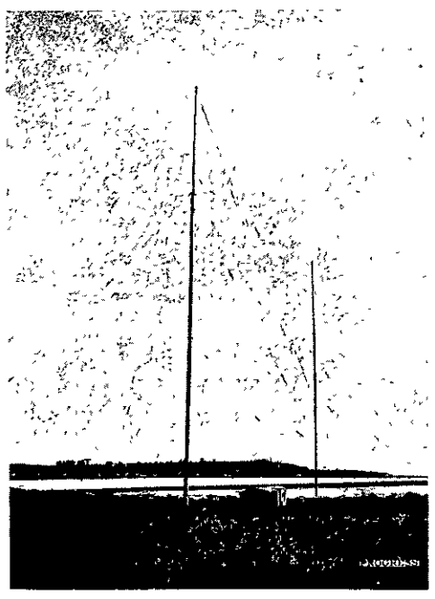
THIS is pre-eminently an age of science. In literature the firmament is apparently without stars of the first magnitude. Art can but claim a general raising of public taste. But the recent achievements of science defy the imagination of mankind to keep pace with them.

The scientific record of the early Victorian period has been eclipsed. Recent years have witnessed an output of dazzling discoveries. X rays, wireless telegraphy, liquid air, radium—how they have staggered human credulity! Latter-day science has taken to itself a magician's wand and performed unthinkable miracles. What the average citizen would have characterised as downright hare-brained impossibilities have become—facts The fancies of Jules Verne proceed on lines of more sober probability than the achievements of present-day electricians and chemists. And note how recent revelations have the quality of the unexpected; while certain discoveries, for which the world long has waited, are still deferred. After centuries of sanguine expectancy, with the precedent of the bird daily before our eyes, we are still without a reliable flying machine. Not yet are we able to put the nitrogen of the air to commercial use. But it is permitted us to pry into opaque bodies—nay, the very word "opaque" has lost its meaning. While our forefathers were instructed that Fahrenheit zero was the lowest degree of cold, we have lived to see ice used as a furnace for thawing frozen oxygen. After all the assurances that combustion involved consumption, and that perpetual motion was a contradiction in terms, here comes radium to throw doubts on the text-books. Just when "wire" was establishing itself as another word for "telegram," behold Mr. Marconi, and the synonym must be hastily erased from our dictionaries.

But a few years ago the man in the street would have staked his life on the proposition that a connecting wire was no less essential than electricity in modern telegraphy.

BIRTH OF WIRELESS TELEGRAPHY.

It has been said that wireless telegraphy came upon the world as a bewildering surprise. That is to represent matters from the point of view of the man in the street, for as far back as 1844—when telegraphy with wires was still in its infancy, and ocean cables had not been heard of—Professor Samuel Morse telegraphed without wires under the Susquehanna river. Nor was this an accidental phenomenon. He deliberately laid his plans to secure the result he achieved, and a full account of the experiment was published. Moreover, his success stimulated others to follow his footsteps.



THE AERIALS AND ANTENNÆ AT DEVONPORT, TAS

Nevertheless, as we know, the subsequent history of telegraphy was identified with wires, and the world knew nothing of an alternative possibility. In a word, Morse's discovery proved to have no practical value.

A further fact concerning Morse's achievement must be noticed. Save that no wire connection was employed, it had nothing in common with wireless telegraphy as we know it to-day. Paradoxical as the statement may seem, Morse's method of communication was more nearly allied to post office telegraphy with wires than to Marconi telegraphy without wires. Marconi telegraphy rests

GUGLIELMO MARCONI BORN APRIL 28TH, 1874.

on knowledge that is only seventeen years old.

In 1888 Professor Heinrich Hertz demonstrated that a disruptive electrical discharge causes electromagnetic waves to radiate through the ether, travelling with the velocity of light. In 1895 Marconi devised and subsequently patented the application of Hertzian waves to telegraphy.

Between "Puffing Billy" and a modern Great Northern engine there is a world of difference both as regards appearance and power, but the former is nothing less, and the latter nothing more, than a steam locomotive. One is a crude original; the other a gradual development.

Like all great practical inventions, Marconi telegraphy began in the "Puffing Billy" stage. But it has been the fortune of few such inventions to develop so rapidly as Marconi telegraphy has developed. The velocipede was an unconscionably long time in becoming a safety bicycle For a number of years electric light remained in the halfway stage of flickering unreliability. And so with the telephone—how long the interval separating practical performance from promise!

GUGLIELMO MARCONI AND HIS EARLY ATTEMPTS

Guglielmo Marconi was born at Bologna on April 28th, 1874, and was educated at Leghorn and Bologna University. When quite young he took a keen interest in electricity, and at the age of twenty-one commenced his work, which was destined to develop into such marvellous results and achievements; and some time before he left Italy for England, in May 1896, he had succeeded in telegraphing wirelessly between two stations situated at a distance of a mile or more apart This was the beginning he had made his discovery and had invented the means by which at the present day, he can communicate thousands of miles through the air

Soon after arriving in England he made the acquaintance of Sir W H Preece, and, at the latter's request, made some experiments for him and the post-office officials between the post office and the Thames Embankment, which were highly successful, and Mr. Marconi was requested to make further trials on Salisbury Plain, which also proved satisfactory to the post office and to officers of the army and navy who witnessed them.

In the year 1897, at the invitation of the Italian government, Mr. Marconi went to Rome, and gave a series of exhibitions of his system at the Quirinal before the King and Queen of Italy and high Italian government officials, and he subsequently went to Spezzia, where his system was put to practical test on board two Italian battleships. The Italian government, recognising the great value of Mr. Marconi's invention, conferred upon him the honour of knighthood (chevalier), and are now using his system extensively and exclusively. The Italians have recently renewed the contract after several years' experience, and entered into an agreement last October with the Marconi Company for fourteen years, the terms of which give the Marconi Company the sole right to supply the government with wireless apparatus the Italian government pledging itself also not to communicate with any other system

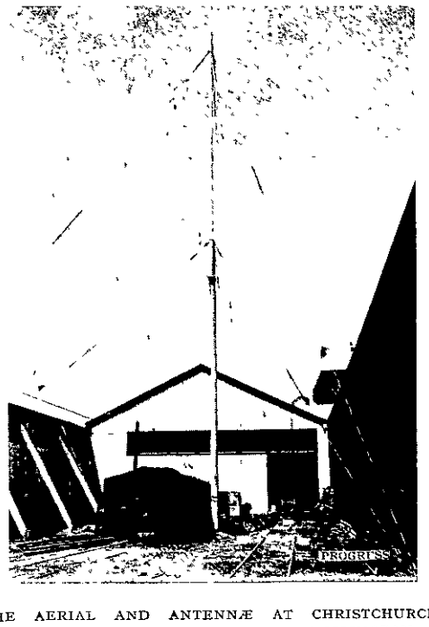
In the year 1897, the Wireless Telegraph and Signal Company, Ltd. was established with a capital of £100,000, and two permanent stations were put up, and in July, 1898, the *Dublin Express* gave, day by day, a wireless telegraphic report of the yacht races during Kingstown regatta week, and proved the system's usefulness and facility with which it can be applied to commercial purposes.

Later Mr Marconi established communication between the late Queen's residence, Osborne House, Isle of Wight, and the Royal yacht *Osborne* lying in Cowes Roads, and her late Majesty was kept constantly apprised of the progress made by the King during the process of recovery from a serious accident

Mr. Marconi became a member of the Institution of Electrical Engineers, and read a paper on "Wireless Telegraphy" before the members in February, 1898, and lectured at the School of Military Engineering, Chatham, in March, 1899. In the same year he journeyed to the United States in connection with the America Cup yacht race between *Columbia* and *Shamrock I* During that year (1899) a number of the ships of the British navy were equipped with Marconi apparatus. Early in 1901, telegraphic communication was established between two points more than 250 miles distant, and, at the end of that year, Mr. Marconi transmitted signals from Poldhu, in Cornwall, to St. Johns, Newfoundland.

THE VALUE OF WIRELESS TELEGRAPHY.

Marconi installations are now working commercially on practically the whole fleet of liners crossing the Atlantic, including vessels of foreign nations, German, French, Italian, Dutch, American, etc. The following are amongst the better-known companies which have adopted the Marconi system, viz.: Cunard, Norddeutscher Lloyd, Hamburg-American Line, American Line, Anchor Line, White Star, Red Star, Compagnie Generale Transatlantique, Holland-American Line, Allan Line, etc. There are many incidents recorded of the extreme usefulness of wireless telegraphy on board ships, of which the following are specimens:—



THE AERIAL AND ANTENNÆ AT CHRISTCHURCH EXHIBITION, COMMUNICATING WITH ISLINGTON.