AN IMPRESSION OF MARCONI.

Only five years have passed since the general public first heard of Marconi. Scientists, to be sure, had known of him as a young man who was carrying on the work of Hertz and his immediate successors. When, however, Marconi made his first successful experiments in transmitting messages for short distances without wires, the newspaper men scented a good "story," and proceeded to write him up for a sensation-loving world in their best and most flaring style. He is now one of the most "interviewed" of public men. Reporters hunt him; and when they drive him to cover, they haunt him. Hardly a day passes but he is talked at, questioned as to his work, and begged to give some exclusive bit of information. He has been photographed in all possible positions. He has been interviewed at all possible times, and sometimes at impossible times. Clearly Marconi has learnt that fame is its own punishment; and that he must submit to the delicate torments of the inquisition instituted by the modern press. No wonder that he leaves the impression of being intensely wearied by interviewers. At best he is but pleasantly unhappy with them.

When you meet him for the first time, you know that he is not a cordial man; and yet you feel that he will not rebuff you, that he will probably do for you what he can. His manner is that of chilly reserve. In the press he is referred to as "the young Anglo-Italian" who has done some startling things which are not very clearly explained. "Anglo-Italian" may be a designation accurate enough politically; it is hardly characteristic of the man as he appears in the flesh. Italian blood flows in his veins, it is true; but he is English for all that—English in his bearing, English in his dress, English in his speech, save for the least perceptible foreign intonation. Not the faintest spark of southern fire ever flares up within him. A cool, calculating man of the North, is this so-called Anglo-Italian.

For a successful inventor Marconi appears the least joyous of men. His features are melancholy in expression. They are those of a man fast approaching forty—not those of a man of twenty-eight. His face is impassive, his eye almost cold. When he smiles he half shuts his eyes, wrinkles the muscles of his cheek, and draws up the corners of his mouth. It is not a pleasant smile.

If you visit Marconi with the expectation that he will do the most of the talking, you will find that you are grievously mistaken. You must do the talking yourself. To be sure, he answers questions frankly and fully; but he will not converse voluntarily. You discover quickly enough that his reticence is the reticence of modesty. When he discusses the Marconi system of wireless telegraphy, he refers to it as "our" system, not as "my" system. He praises where praise is due, recognizing fully that it is not given to any one man to learn all the secrets of science, and that great results are attained usually by the co-operation of many minds working to a common end. He acknowledges fully and openly how important to himself has been the work of his predecessors, and even that of some of his contemporaries. "The success of the experiments with which I have been engaged is the logical result of the work of myself and of my assistants in the last few years, and of scientific investigations of the latter part of the century," he himself says. "Revolutionize" is a word not included in the vocabulary which he uses to describe the possibilities of his invention. He frankly admits that it is not his purpose to render submarine cables useless; he is satisfied if he can successfully compete with them; or if he can only make them cut down their present rates.

And yet, he talks of his system with a certain air of easy confidence, which leads you to infer that if any man will ever succeed in outdoing the submarine cables, it is Guglielmo Marconi. It is not often that he prophesies; and when he does, you feel that he knows; or as he himself puts it, "It is not my policy to make a statement before I am absolutely sure of the facts." When he told the representative of the Scientific American that in a few months a regular transatlantic wireless telegraph service would be established, he said it in a way that left no doubt of the thing.

Although he is modest, he does not wrong himself by belittling his own work. He talks of his magnetic receiver almost objectively, as if it were the production of some other inventor's mind, which is all the more noteworthy because the instrument in question is, probably, the most valuable contribution to wireless telegraphic apparatus made since the invention of the coherer. He admits his receiver's great speed and its general merit, and expresses his opinion of its recent remarkable performance at Cape Cod in terms of mild approval, which are, however, not utterly devoid of a tinge of pleasure. It is difficult to picture Marconi's waxing enthusiastic even over a very great achievement. It is significant that the newspaper men who saw him after his wonderful feat at Cape Cod merely reported him to be in exceptionally good humor.

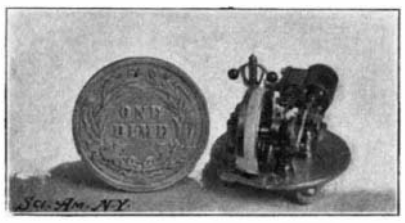
He has had unusual obstacles to contend with in the development of his ideas. There have been technical difficulties, of which he is now fortunately able to speak as things of the past. The reason for these difficulties he describes in a simple way without a trace of the pride that he probably feels in having overcome them. "Any other machine," he says, "enables the inventor to shut himself up in a room and announce results when it is wise for him to do so. Wireless telegraphy is different, especially in the way that we labor. It is not a case of one machine here and one in England; but of half a machine here, and another half in England. And each of these machines must be adjusted, the one to the other."

More formidable even than the inherent technical difficulties of space telegraphy itself was the opposition of the British telegraph and cable companies, who thought that their vested interests of $400,000,000 were endangered by the new means of communication. Officials of the telegraph and cable companies have blocked Marconi's onward course wherever they could. Subject to government control as the telegraph systems are, the authorities have been discourteously slow to grant privileges to Marconi. They allowed him to send messages to ships three miles from land, but when the vessels came within the two and one-half mile limit, communication was forbidden. When he is asked to tell something of these trials, he answers, not bitterly as one might expect in a man who has been sometimes balked, but smilingly, in amused toleration, as if the experience was to have been foreseen. He does not gloat over the failure of the companies; he simply says: "I think this opposition has at least been ineffective." If you question him as to the commercial success of his invention, he points for an answer to the sixty English warships, twenty-five Italian warships, and a score of Atlantic liners equipped with his apparatus.

Nice distinctions in giving credit for the purely scientific steps by which results in transoceanic communication without wires have been attained, are here out of place. It is pleasing to note, however, that the resolution of Senator Hoar, of Massachusetts, tendering the thanks of Congress to Marconi for the good he has done mankind, shows that our own government is keenly alive to the permanent benefit which has accrued to it as well as to the world from Marconi's work. As he himself recognizes the merit of the labors of those who went before him, it is fitting that others should recognize the fact that his organizing talent has brought together a hundred contributory speculations and detached discoveries into harmonious relation, and has given us a system of wireless telegraphy, still susceptible of improvement in many respects, no doubt, but practical in the attainment of results scarcely deemed possible by present agencies.

AN OPERATIVE ENGINE THE SIZE OF A DIME.

A number of tiny engines have been constructed at different times, but doubtless the smallest which has yet



AN OPERATIVE ENGINE THE SIZE OF A DIME.

been built which is actually operated was recently completed by Mr. A. G. Root, of Danbury, Conn. As the photograph shows, it stands on a piece of metal just the size of an American ten-cent piece, the materials of which it is made being gold, silver, brass, and steel. The largest part of the engine is less than a half-inch in length, the flywheel being but 7-64 of an inch in diameter, while the main shaft of steel is but 5-16 of an inch in length. The band of the flywheel is of gold. The total weight of the engine without the base is but three pennyweights, and its total height is less than a half-inch. In making the various parts and putting them together it was necessary to use a magnifying glass on account of the delicacy of the work, yet the engine runs perfectly, compressed air being used for power applied through a tiny tube. As long as the air supply is maintained, it continues in motion. The horse power developed is so small that it cannot be estimated.

Improvement in the Braun System of Wireless Telegraphy.

Prof. Ferdinand Braun, of Strasburg University, announced before the Strasburg Scientific Society that he has discovered a method of producing electrical energy of unlimited volume and projecting it into space in the form of electric waves to any desired distance. Prof. Braun claims that his new method secures greater accuracy of transmission in wireless telegraphy and that he attains a more perfect attunement of transmitting and receiving instruments.

Engineering Notes.

It is safe to say that none of the industries have been so substantially benefited by the present era of prosperity as that of locomotive and railroad rolling stock construction. It was announced a few weeks ago that the Canadian Pacific Company was compelled to send an order for locomotives to Scotland, for the reason that it could not be placed in this country except for delivery in the remote future. This order involved twelve ten-wheeled modern locomotives.

Mr. Matthews, the engineer-in-chief of the Trinity House, England, has been carrying out a series of experiments with the Kitson incandescent oil vapor burner, for the purpose of introducing it into the lighthouses around the English coasts in the place of the oil and wick burners now generally employed. He has introduced several modifications in the arrangement of the burner to adapt it to the special requirements of lighthouse illumination. The principal improvement is a considerable increase in the intensity of the incandescent mantle by more effectually mixing the air with the oil vapor; reducing the interference of the associated tubes to the minimum; and also rendering the pressure of the oil vapor more constant and uniform. In the course of his experiments, the engineer has also found it possible to use an oil having a flashing point of 160 deg. F., thus adding very considerably to the safety of using this form of burner for lighthouses. A practical trial of this improved burner has been made at the lighthouse at Lowestoft on the east coast for some months past, and it has proved to be simple and safe in manipulation, the light produced being of very high power, steady, and dispensing with trimming or frequent adjustment of the draught. The consumption of oil for the incandescent burner is estimated to be about one-fifth of the quantity expended with an ordinary lighthouse burner consuming oil with concentric wicks, while the increased luminous intensity produced by the former as compared with the latter is claimed to be no less than ten times greater. Under the circumstances this incandescent oil burner is likely to prove a great success for lighthouse work. Its application is just at present limited to optical apparatus of small size, the large lens arrangement now set up in many lighthouses being adapted for oil flames of much larger diameter than that of the incandescent mantle. A system of somewhat similar kind has been in experimental use in some lighthouses in France, and the officials of the French lighthouse service are so impressed with the possibilities of the system and its simplicity of working that they propose to extend its application. The Trinity House authorities are also contemplating the introduction of this type of burner in the light house recently constructed on the foreshore below Beachy Head.

The Death of James Wimshurst.

On January 3 James Wimshurst, F.R.S., passed away at the age of seventy years. He was the second son of Henry Wimshurst, who introduced the screw propeller. After receiving an education at Stebonheath House, London, he entered into business with his father. Later he joined the professional staff of Lloyd's Register, remaining there for some eight years. After occupying the chief position with the Liverpool Register of Shipping for a considerable period, he received an appointment to a principal position in the Consultative Branch of the Board of Trade.

In his spare time, Wimshurst devoted himself to scientific pursuit. Twenty years ago he published the particulars of a large and very powerful influence machine which he had designed and made. These machines are now well known throughout the world by his name. In 1893 he designed and exhibited a system for connecting lightships electrically with the shore stations. Wimshurst's work was notable for his steady and persistent refusal to accept anything in the way of money for his labors.

The Current Supplement.

The current Supplement, No. 1414, is largely devoted to naval matters. Lieut. Spear discusses at length the strategical value of submarine boats in modern warfare. For the purpose of illustrating Lieut. Spear's discussion many engravings of the various types of submarine boats have been provided. Fred. T. Jane continues his interesting naval war game articles. The electrical department of the number contains articles on "Atmospheric Electricity and Earth Currents," by E. O. Walker; "Fishing by Electric Light," and "Electricity Works in Switzerland and Water Power." The Dutuit collection of valuable archæological curios is fully described and illustrated. Some account of the origin of terrestrial plants will be of interest. The Trade Suggestions from United States Consuls and Trade Notes and Recipes are also published. E. O. Hovey concludes his *resumé* of the proceedings of the annual meeting of the Geological Society of America.