JULY, 1898.

The monthly meeting of the Royal Society of Tasmania was held on Monday, July 11, in the Art Gallery, Macquarie-street. The Hon. C. H. Grant, M.E.C., C.E., presided, and there was a crowded attendance of ladies and gentlemen. Apologies were received from the following Vice-Presidents :—The Hon. Sir James Agnew, K.C.M.G., M.D., M.E.C., His Lordship the Bishop of Tasmania, and Mr. Thos. Stephens, M.A., F.G.S.

ELECTION OF MEMBERS.

Mr. Malcolm Harrison and Mr. W. A. Kermode were elected members of the Society.

PAPERS.

"ON THE GENUS KRAUSSINA IN TASMANIA." By Messrs. W. H. Twelvetrees, F.G.S., and W. F. Petterd, C.M.Z.S.

Mr. ALEXANDER MORTON, secretary and librarian of the Society, read a paper entitled "On the Genus Kraussina in Tasmania," by Messrs. W. H. Twelvetrees, F.G.S., and W. F. Petterd, C.M.Z.S. The paper dealt with an interesting group of mollusca found chiefly at the mouth of the River Tamar and in Long Bay at low water mark.

Mr. R. M. JOHNSTON spoke in praise of the important work in which the writers of the paper were engaged.

"TELEGRAPHY WITHOUT WIRES." By Thos. Self.

Mr. THOMAS SELF read a paper on "Telegraphy without wires," and made some interesting experiments in the presence of the audience. There were two transmitters—one before the lecturer and the other entirely outside the room—and it was shown by the continual ringing of a bell in the apparatus in front of the lecturer that there was continual connection between the two, though the connection was invisible. When the door of the room was shut the connection continued. Mr. R. M. Johnston left the room and sent a message to Mr. Self, congratulating the Royal Society on the success of telegraphy without wires. Mr. Self promised that on some future occasion he would repeat his experiments, when he would open up communication between the Museum in Argyle-street and the Government Technical School in Bathurst-street.

The following is a condensation of Mr. Self's paper :—I am going to do my best this evening to introduce to you one of those unknown mysteries of the Great Master. By means of an electric spark we set in motion ethereal or magnetic waves, called the Hertzian waves, by which we are able to signal across space. It is often said that we do not know what this unknown, silent, unseen, and powerful thing called electricity is, and there is a considerable amount of truth in the statement. The more we learn the less we know about it. It is not so true, however, as it was some 20 years ago. Some things are beginning to be known about it ; and though modern views are tentative, and may well require modification, nevertheless great progress has been made. I shall endeavour to explain the means employed to control and use this unknown thing called the Hertzian waves —one of those hidden mysteries brought to light by Signor Marconi. There can be no doubt that Marconi is the true inventor. He was the originator of the elevated electrodes on the receiver and transmitter, and this detail appears to have contributed more to extend the possible distance of telegraphy by electric waves than anything that has been discovered since the time of Hertz and Branly. The term elevated electrodes in connection with wireless telegraphy is not a happy one. It does not convey a clear idea of the apparatus used for long distances. Signor Marconi attaches a vertical wire to one of the terminals of his instrument at each station, by means of a kite made of aluminium, or a balloon which is covered with tinfoil, or it may be a sheet of copper hung on a high pole to which a vertical wire is attached, and brought to one of the terminals of the instrument at each station, the other being put to earth. The wire is surmounted by a metal shape to give additional capacity, and experiments seem to show that slightly better results are obtained with the capacity than without it. However that may be, there is no doubt whatever that the vertical wire is the essential feature. To obtain good results the wire must be vertical, as may be seen from the following extracts from notes on actual experiments that have been carried out. 1. Vertical wire. 100ft. in height, earthed at transmitter and receiver, distance signalled 4 miles. 2. Same wire placed horizontally—150yds. 3. Vertical wire 100ft. at transmitter and copper strips at receiver—30yds. 4. Same wire fixed at receiver and transmitter fitted with spherical electrodes only — 40yds. 5. Vertical wire 50ft. at both stations gave 3 miles. 6. Same wires placed horizontally about 50yds. 7. Vertical wires 50ft. at both stations earthed at transmitter only — 1,100yds. 8. Same wires ; earth at receiver only — 2 miles. 9. Copper strips substituted at both ends—30yds. 10. A horizontal wire, 350ft. long, was erected 12ft. from the ground at each station. The transmitter was placed one mile from the receiver. No signals were observed, even with the most

sensitive receiver. The horizontal portion of the wire was then cut off, leaving a 12in. vertical wire at each instrument. Perfect signals were received on a much less sensitive receiver. Experiments seem to indicate that the section of the vertical wire is unimportant, which I may state is in accordance with theory. The distance to which signals can be transmitted and received varies with the square of the height of the vertical wires, which is the mathematical theory, and has been verified beyond a doubt by actual experiments. The transmitter is an induction coil and gives sparks which are delivered between two spheres, one of which is to earth, the other in space. These sparks set in motion the Hertzian waves. These waves radiate in all directions, but can be controlled in any direction by means of a parabolic reflector. At the receiver there is a kite or balloon which collects the waves, and they are then sent to a Branly coherer, which has been improved upon by Marconi. The coherer which I am using to-night is simply a glass tube loosely filled with coarse brass filings, and closed up with corks, through each of which a copper wire projects into the filings. This tube is connected in circuit with a relay and a source of current, so that each time a spark occurs the tube becomes a conductor, the relay closes the local circuits and the tapper. The latter is thereby caused to strike lightly on one of the springs, and shakes the coherer, when the relay returns to its initial position, and is ready to receive a new signal. There had been no serious attempts made at signalling through space over considerable distances till Marconi went to England and gave a practical demonstration of how it was done; and if anyone else who claims priority had thought they were so near such striking results they would have been unceasing in their efforts to carry the experiments a little further than they did. At the same time, whatever may be the commercial future of systems of signalling across space, its development may be said to be the minds of many, although Signor Marconi, as I have said before, was the true inventor of the elevated electrodes, by means of which he brought to light the signalling across space to a considerable distance.

The CHAIRMAN spoke of experiments made in telegraphy without wires by Mr. W. H. Preece, Electrical Engineer to the British Government, by whom messages were sent across rivers and lakes, and to a distance of 12 miles. This was up-to-date electricity, and this mysterious force was progressing by such leaps and bounds that probably a few years hence we should know a great deal more about this mysterious agent.

Mr. SELF said he looked upon Mr. Preece as the father of signalling through space. The system had been handed over to the military for war purposes, and they might be sure this would not be done if the system was not already a success.

Mr. R. M. JOHNSTON offered some observations on the paper.

"EXCAVATIONS IN EGYPT."

By Rev. C. R. Pollock, F.R.G.S.

Rev. C. R. POLLOCK, F.R.G.S., delivered an address on "Excavations in Egypt," illustrated by 50 lantern slides, Mr. N. Oldham manipulating the lantern. The lecturer said that the antiquities of Egypt brought them back to the very horizon of time, yet to a civilisation and culture, artistic and domestic—to examples of engineering and architecture and work in metals—of which there were no examples in modern times. Although, nominally, Egypt was as large as two-thirds of Russia, it really shrank to the size of Belgium. It simply meant the Nile—the rest was arid desert and rock. The Egyptian periods were dynasties extending back 7,000 years or 5,004 years before Christ, though the marginal note of the Bible gave the date of creation much later than that. But the marginal note was no part of the sacred text. He showed a variety of views of modern Egypt, and also a number of pictures of the pyramids, and of statues and carvings excavated in our own day, as well as a photograph of the celebrated stone in three sets of characters which gave the key to all Egyptian inscriptions brought to light. He described in detail many of the Egyptian marvels in architecture and sculpture; and speaking of mummies, said he looked upon the very face of Rameses II., with whom Moses conversed in the ages long ago. This face was thrown upon the screen. The address was throughout of a highly interesting and instructive character, and was manifestly appreciated by those present.

Votes of thanks were accorded Messrs. Twelvetrees, Petterd, Self, the Rev. Mr. Pollock, and Mr. H. V. Bayly, Secretary of the G.P.O. and the Telegraph Department, Mr. W. F. Ward, Government Analyst, also to Mr. A. J. Taylor for granting the use of his Röntgen Coil.