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Ocean Weather Warnings

ACCORDING to the *Standard*, a proposal for the co-operation of the leading nations of the world in the making of daily observations of weather conditions by ships at sea and their transmission to central points by wireless telegraph has been submitted to the International Radiotelegraph Conference. The author of the far-reaching scheme is Professor Willis L. Moore, chief of the United States Weather Bureau.

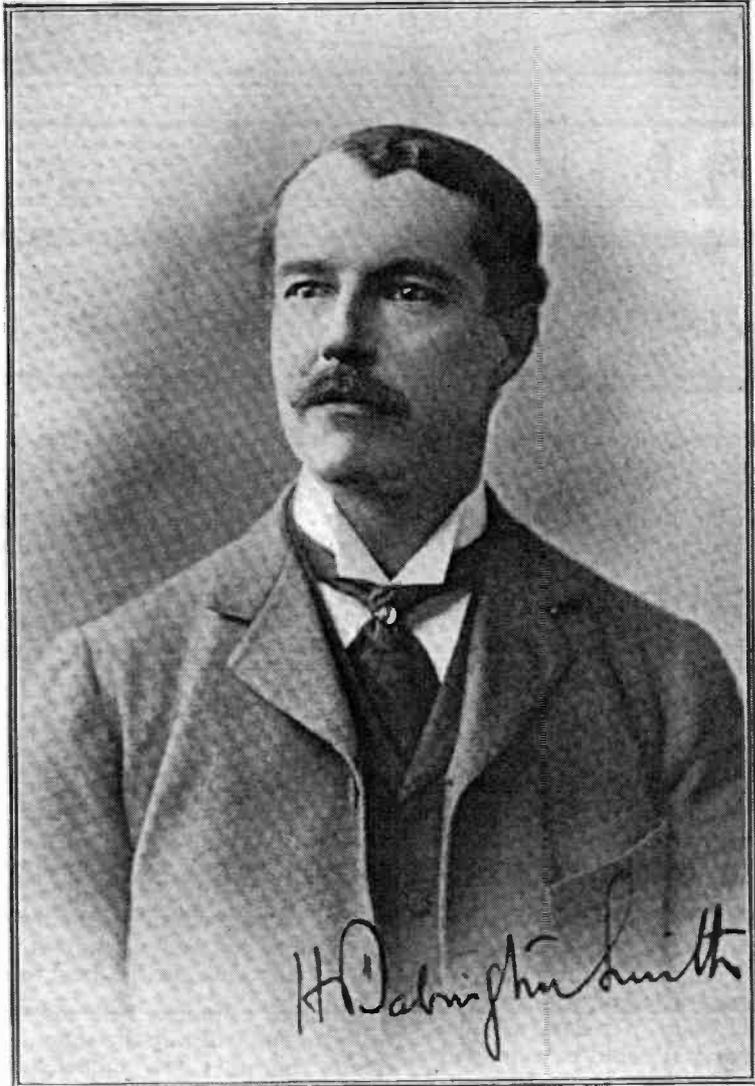
Professor Moore's project is to have all ships send daily at noon (Greenwich time) a code message of two or three words, reporting their location and observations of the weather to central stations at different points. From this information the central stations could tell the exact position of storms and other meteorological disturbances, and send out a timely warning to ships within the danger zone.

"It would be a simple matter," explained Professor Moore to a *Standard* representative, "to put this plan into operation on the Atlantic Ocean to begin with. Then, if results proved as satisfactory as expected, it could be extended to all other oceans. The advantage to commanders of ships at sea of knowing daily the exact situation of storm centres and fair weather zones is obvious. While the scheme may not be quite so simple as it looks, it is wholly practicable and feasible. Ships east of the fortieth meridian, which is the middle of the Atlantic, would have to relay all observations received from ships further west, but on the same meridian, or further east, this would not be necessary. It is only in this way that observations on the European coast could be gathered, while a reversal of the same process would operate in the western half of the ocean. All the information could then be gathered at one central point in North America and another in Europe—preferably in England.

"An international agreement, however, is all-important, in order to provide for all observations at sea being taken exactly at noon (Greenwich time). This would ensure that the observations so made would be passing through the air within the next quarter of an hour, and commanders would be on the look-out to relay them to the shore. The taking of these observations, of course, would have to be made compulsory and simultaneous to be of any value to maritime commerce. The efficiency of the service also depends largely upon the rapidity with which the information is transmitted, but I believe the commercial interests would raise no serious objection to having their business delayed for the very brief time necessary to transmit two or three code words. Wireless and shipping companies ought to be glad to co-operate in a scheme so beneficial to the world's commerce, though I fear they will not—at any rate, in the beginning."

Professor Moore believes that his own Government will put the scheme into operation within the next few months, so far as it is possible for one nation to do so, even if the conference takes no action in the matter.

"On my return to the United States," he said, "it is my intention to recommend to Congress the establishment of a service on the same lines as that which is to be put into operation on July 1st in the western part of the Atlantic. We already have 32 paid observers on vessels plying between our northern ports and the West Indies who were specially trained for this service last winter. Beginning next month, and extending through the hurricane season, they will send observations daily to Washington, and the necessary warnings and information will be immediately sent back to ships in the threatened area."



SIR H. BABINGTON SMITH.

Sir Henry Babington Smith, K.C.B., C.S.I.

Chief British Representative at the International Radio-Telegraph Conference

LAST month, in our biographical sketch, we dealt with one of the rulers of Empire—the President of the Board of Trade. This month we deal with one who has never sat in the House of Commons, but who, nevertheless, has played his part in the guidance of the destinies of our country. Sir Henry Babington Smith was from 1903 to 1909 the Secretary to the Post Office—the power behind the Throne who remains while Ministers come and go, and who ensures continuity of working despite political upheavals.

Scientific blood runs in his veins, for he is the son of the late Archibald Smith, F.R.S., having been born in 1863. He was educated at Eton and Trinity College, Cambridge, of which he is a Fellow, and during his University career he distinguished himself in the Classical Tripos, and was also the Chancellor's Medallist. After spending some four years as Examiner in the Education Department, he became in 1891 private secretary to the Chancellor of the Exchequer, Mr. Goschen, the man whom Lord Randolph Churchill "forgot" on an important occasion in his life. In the following year he became clerk to the Treasury, and acted as secretary to the British delegates to the Brussels Monetary Conference; after which he became private secretary to the Earl of Elgin, then Viceroy of India. For his services in India he was in 1897 honoured with the C.S.I. After leaving India in 1899, and a brief stay in Natal, he went to Turkey as British Representative on the Council of Administration of the Ottoman Public Debt, of which

he became President in 1901. In 1903, as already stated, he became Secretary to the Post Office, where he remained until 1909. During this time he was the British delegate at the Postal Congress in Rome in 1906, at the Telegraph Conference in Lisbon in 1908, and, what is of especial interest to us, at the International Radio-Telegraph Conference in Berlin in 1906.

Sir H. Babington Smith was also concerned in the development of the London telephone service, the utility of which was greatly increased under his able guidance. At one time he was instrumental in averting what might have been almost a national disaster—a fierce war between the Post Office and the National Telephone Company. The negotiations which Sir Henry Babington Smith conducted were successful in averting this, and by preventing ruinous competition he effected an enormous national saving.

In 1909 he returned to the scene of his earlier activities, and became Director of the National Turkish Bank. He is now the principal British delegate to the International Radio-Telegraph Conference, and is the chairman of that Conference. He is a polished orator, with an intimate knowledge of the conduct of business, and a very genial manner, all of which qualities make him a most desirable occupant of the chair. His oratory and his geniality also make him a very welcome guest on public occasions, and he is one of the few whose after-dinner speeches can be listened to with attention and interest.

The International Conference

THE International Radio-Telegraphic Conference opened in London at the Institution of Electrical Engineers, Victoria Embankment, on June 4th. Public interest in this gathering has been greatly stimulated by the discussions as to the use of wireless telegraphy in connection with maritime disasters, as well as by the fact that the present conference is the first to be held in Great Britain. Both the previous conferences were held in Berlin, the first in 1903 and the second in the autumn of 1906, when a principal list of twenty-three statutes was adopted for proposed ratification by the respective countries, representing a secondary list of three articles, and a final protocol of six articles. This constituted the main text of thirty-two articles in all, most of which were quite short, so that the main text was a comparatively compact document. This was followed, however, by an appendix of service regulations containing no fewer than forty-two articles. The primary objects of the 1906 Convention may be classified as follows:

1. The acceptance and transmission of telegrams.
2. The adoption of rules of working.
3. The provision of means of collecting charges and settling accounts between the different countries.
4. Arrangements for the publication of all information necessary for inter-communication.
5. The rules to prevent interference and confusion in working with adequate provisions for enforcement.
6. Provision that with certain exceptions inter-communication must not be refused on account of the differences in the systems of wireless telegraphy employed.

Below we give a list of the delegates attending the conference under the names of the countries which they represent.

RECEPTION COMMITTEE.

Capt. Cecil Norton, M.P.
Mr. A. B. Walkley.
Mr. H. Davies, I.S.O.
Mr. A. G. Ferard.
Mr. W. H. M. Selby, M.V.O.
Mr. I. de Wardt.
Mr. A. T. Taylor (secretary).

INTERNATIONAL BUREAU.

Herr A. Crescitz.
M. J. Homberger.
Herr Fr. Schwill.

GOVERNMENT DELEGATES.

Germany :

Herr Koehler.
Herr Wachenfeld.
Dr. Strecker.
Herr Schrader.
Herr Goetsch.
Dr. Krauss.
Capt. Fielitz.
Dr. Beggerow.
Herr Barckhausen (attaché).

United States :

Rear-Admiral John R. Edwards.
Capt. David W. Todd.
Dr. Louis W. Austin.
Major George O. Squier.
Commandant Edgar Russel.
Commandant C. McK. Saltzman.
Mr. John I. Waterbury.
Dr. Arthur G. Webster, M.R.A.S.
Mr. John Hays Hammond, jun.
Mr. W. D. Terrell.
Professor Willis L. Moore.
Mr. John Q. Walton.
Mr. F. A. Kolster (attaché).

Argentine (Republic) :

His Excellency M. J. V. Dominguez.
M. Augustin Sal.

Austria :

Dr. Wagner von Jauregg.
Dr. Rudolf Speil von Ostheim.
Herr A. Linninger (attaché).
Baron F. von Teufenstein (attaché).

Hungary :

Herr Charles Follert.
Dr. G. Hennyey de Hennyey.
Herr J. Hollós (attaché).

Bosnia-Herzegovina :

Major-General H. Goiginger.
Herr A. Daninger.
Herr J. Pranboeck.
Capt. J. Glatte.
Capt. A. Cicoli.
Lieut. Romeo Vio.

Belgium :

M. J. Banneux.
M. A. Deldime.
M. Robert Goldschmidt.
M. René Corteil (attaché).

Brazil :

M. Francisco Bhering.

Bulgaria :

M. Ivan Stoyanovitch.

- Chili :*
M. Carlos E. Rickaldes.
M. Angel C. Ramirez.
- Denmark :*
M. N. Meyer.
M. J. A. Voeltz.
M. R. N. A. Faber.
M. T. F. Krarup.
- Egypt :*
Mr. J. S. Liddell.
- Spain :*
Col. Garcia Roure.
Capt. Fernandez Quintana.
Capt. Juan Carranza.
Lieut. Jaime Janer Robinson.
M. Jacinto Labrador y Guzman.
M. Nieto y Gil.
- France :*
M. A. Frouin.
M. V. Belugou.
M. L. Poulaine.
M. Cartier.
M. Ferrié.
Capt. Fossey.
Lieut. du Paty de Clam.
M. Duchêne.
M. Morgat.
M. Michel.
Capt. Brenot.
M. de Felcourt.
M. Bouthillon.
M. Lacombrade (attaché).
- Great Britain :*
Sir H. Babington Smith, K.C.B., C.S.I.
Mr. E. W. Farnall, C.B.
Mr. R. J. Mackay.
Mr. F. W. Home.
Capt. F. G. Loring.
Capt. E. F. B. Charlton.
Capt. W. R. W. Kettlewell.
Lieut. John A. Slee.
Lieut.-Col. G. M. W. Macdonough.
Major R. H. H. Boys, D.S.O.
Mr. J. Loudon.
Mr. A. W. Cross.
Mr. J. E. Taylor.
Mr. W. B. Harris }
Mr. A. Gordon. } Joint Secretaries of the
Mr. F. Addey. } conference.
- British Colonies :*
Union of South Africa :
Sir Richard Solomon, G.C.M.G.
Mr. T. S. Nightingale.
Australia :
Mr. Charles Bright.
Canada :
Mr. G. J. Desbarats.
Mr. C. P. Edwards.
British India :
Sir H. A. Kirk, K.C.I.E.
Mr. F. E. Dempster, C.I.E.
- New Zealand :*
Mr. C. Wray Palliser.
Mr. T. E. Donne.
- Greece :*
Lieut. Constantine Dosios.
- Italy :*
Professor A. Battelli.
Commander Q. Majorana.
Dr. Chevalier Enrico Mirabelli.
Commander V. Pullino.
M. le Chevalier C. Rey di Villarez.
Professor Chevalier G. Vanni.
Chevalier G. Bardelloni.
Chevalier G. Gneme.
- Japan :*
Capt. Kenji Ide.
Lieut.-Commander Seiichi Kurose.
M. Tetsujiro Sakano.
M. Riuji Nakayama.
M. Harumichi Tanabe (attaché).
- Morocco :*
Cid Mohammed bel Abbas el Kabbaj.
M. Asensio.
- Monaco :*
His Excellency M. F. Roussel.
Baron A. Berget.
- Norway :*
M. Heftye.
M. K. A. Knudssoen.
Lieut. B. L. Gottwaldt.
Lieut. Skolem.
- Netherlands :*
M. J. P. Guépin.
M. G. J. C. A. Pop.
M. H. J. Nierstrasze (attaché).
M. J. J. Perk.
M. F. van der Goot.
- Persia :*
M. Mirza Abdul Ghaffar Khan.
M. Casey.
- Portugal :*
M. A. M. de Silva.
- Roumania :*
M. Cesar Boerescu.
M. C. Vidic (attaché).
- Russia :*
M. de Etter, C.V.O.
Professor Ossadtych.
Col. Euler.
M. Serguéievitch.
Baron de Wyneken.
Lieut.-Col. Sokoltzov.
Lieut. Schmitt.
Capt. Dmitriev.
Lieut. M. Stchastnyi.
M. Skritsky (attache).
- St. Marino :*
Commander Arturo Serena.
- Siam :*
Luang Sanpakitch Preecha.
Mr. W. J. Archer, C.M.G.

Sweden :

M. Sven Ludvig Herman Rydin.
Count Hennig Adolf Hamilton.

Turkey :

Mehmed Emin Bey.
Fahry Bey.
Lieut. Osman Saadi Bey.

Uruguay :

His Excellency M. F. R. Vidiella.

REPRESENTATIVES OF WIRELESS
TELEGRAPH COMPANIES.

Murconi's Wireless Telegraph Co., Ltd. :

Commendatore G. Marconi.
Mr. Godfrey C. Isaacs.
Mr. W. W. Bradfield.

Siemens Bros. & Co., Ltd. :

Mr. Hird.

La Compagnie Generale Radiotelegraphique :

M. Bordelongue.
M. Sins.

La Société Française Radio-électrique :

M. Girardeau.
M. E. Wormser.

*La Compagnie Française, Maritime, et Coloniale
de Telegraphie sans Fil (système Marconi) :*

Baron de la Chevrelière.

La Compagnie de Telegraphie sans Fil (Belgium) :

M. Maurice Travailleur.

Gesellschaft für drahtlose Telegraphie m. b. H. :

Count von Arco.

*Deutsche Betriebsgesellschaft für drahtlose Tele-
graphie (Deleg) :*

Mr. H. Bredow.

La Compania Nacional de Telegrafia sin Hilos :

Count Albiz.

*The Telefunken Wireless Telegraph Co. of the
United States :*

Dr. A. V. Ostheimer.
Mr. R. Pfund.

C. Lorenz Aktiengesellschaft :

Herr O. Scheller.

According to reports which have appeared in the Press, several points of public interest were to be discussed. The compulsory equipment of all passenger vessels fitted with wireless was, according to one report, to receive consideration, and from the same source we learn that the delegates would be asked to give a ruling as to whether the continuous attendance of an operator at the apparatus should be made obligatory. The proceedings were held in private, and only two official communications have been issued. The first of these gave a summary of the opening day's proceedings, when the Postmaster-General welcomed the delegates in the name of the King and the Government.

Speaking in French, Mr. Herbert Samuel said that since the Radio-Telegraphic Convention was arrived at in 1906 wireless telegraphy had increased rapidly in importance, particularly in its function of assisting and safeguarding navigation. But it was not to be supposed that a Convention, however far-seeing it might be, could be prepared for all eventualities or could anticipate the developments in the application of a young and vigorous science. It was evident that the regulations made in 1906 required to be extended, improved, and even in part recast. The recent disaster to the "Titanic" had given prominence to the need of a fuller use of wireless telegraphy at sea, and of the discovery of fresh methods to enable it to discharge more efficiently its important duty of preventing disasters and of aiding in the work of rescue. Certain measures necessary or desirable for that end lay perhaps outside the limits of the Convention which that Conference was summoned to consider. It was possible that among these would be found the measures relating to the compulsory installation of wireless telegraphy on board ships. However that might be, His Majesty's Government, so far as the United Kingdom was concerned, and, he did not doubt, the other Governments also, would welcome the opinions of that great assembly on the subject, particularly in respect of the uniformity which might be found possible in the laws that each country might enact to give effect to a wider use of wireless apparatus.

Herr Koehler (Germany) expressed the great satisfaction it was to the Conference to meet in London, the greatest metropolis of the world and the greatest centre of commerce and navigation. On behalf of the Conference he requested the Postmaster-General to convey their respectful homage to the King.

This request was supported by M. Perk, the *doyen* of the Conference.

In reply the Postmaster-General undertook to convey the message to His Majesty. He regretted that his Ministerial and Parliamentary duties would prevent him from taking part in the sittings of the Conference, and he proposed that the president's chair should be taken by Sir Henry Babington Smith, whom many of them would know as a former Secretary to the British Post Office. He wished the best success to the deliberations of the Conference.

The following official announcement was issued on June 12th :

"The International Conference for revising the rules for communicating by means of wireless telegraphy between ships at sea and the shore, and between ships themselves was opened by Mr. Herbert Samuel, the Postmaster-

General of the United Kingdom, on June 4th; and the members, who include representatives from some 30 different countries, have since been sitting almost daily in the hall of the Institution of Electrical Engineers, on the Victoria Embankment.

"The work of the Conference is to consider the proposals made by the different countries for the improvement of the International Convention made at Berlin in 1906—the first International Convention for the regulation of wireless telegraphy.

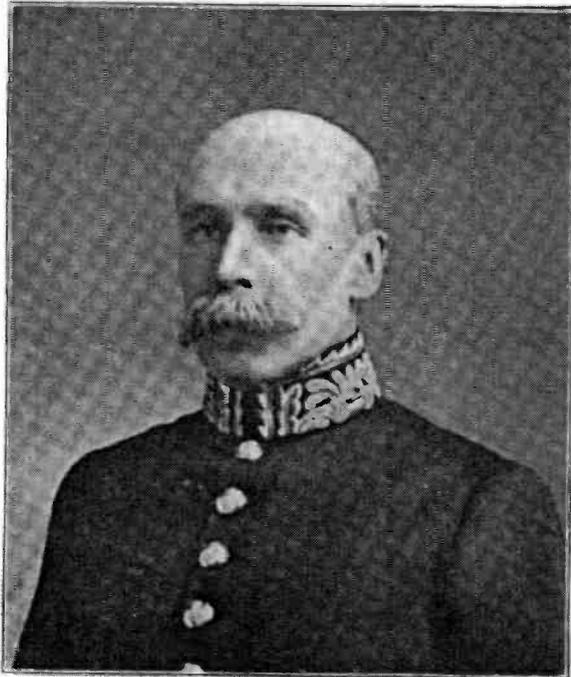
"The bulk of the proposals are being con-

sidered by committees presided over respectively by the heads of the French and German delegations. The decisions of these committees are subject to approval by the full Conference, whose President is Sir H. Babington Smith, the principal delegate of the United Kingdom.

"Apart from the inaugural meeting, the full Conference, which must necessarily await reports from the committees, has had only one sitting. At this sitting an announcement was made of the acceptance by the United Kingdom and the British Dominions, and also by Italy



Mr. Herbert Samuel, M.P., on left, Captain Cecil Norton, M.P. (centre), and Mr. Ferard (right).



Mr. E. W. Farnall, C.B.



Captain E. E. Charlton.



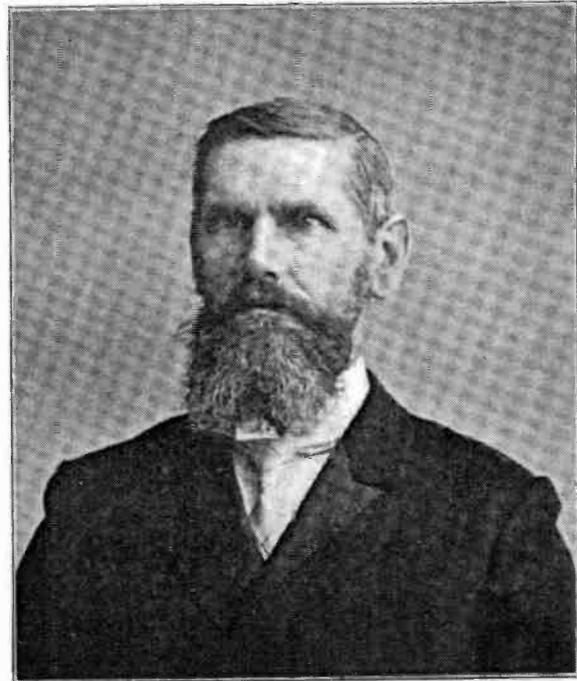
Commander F. G. Loring.



*Mr. A. Taylor
(Secretary of the Entertainments Committee).*



Dr. Hans Beggerow.



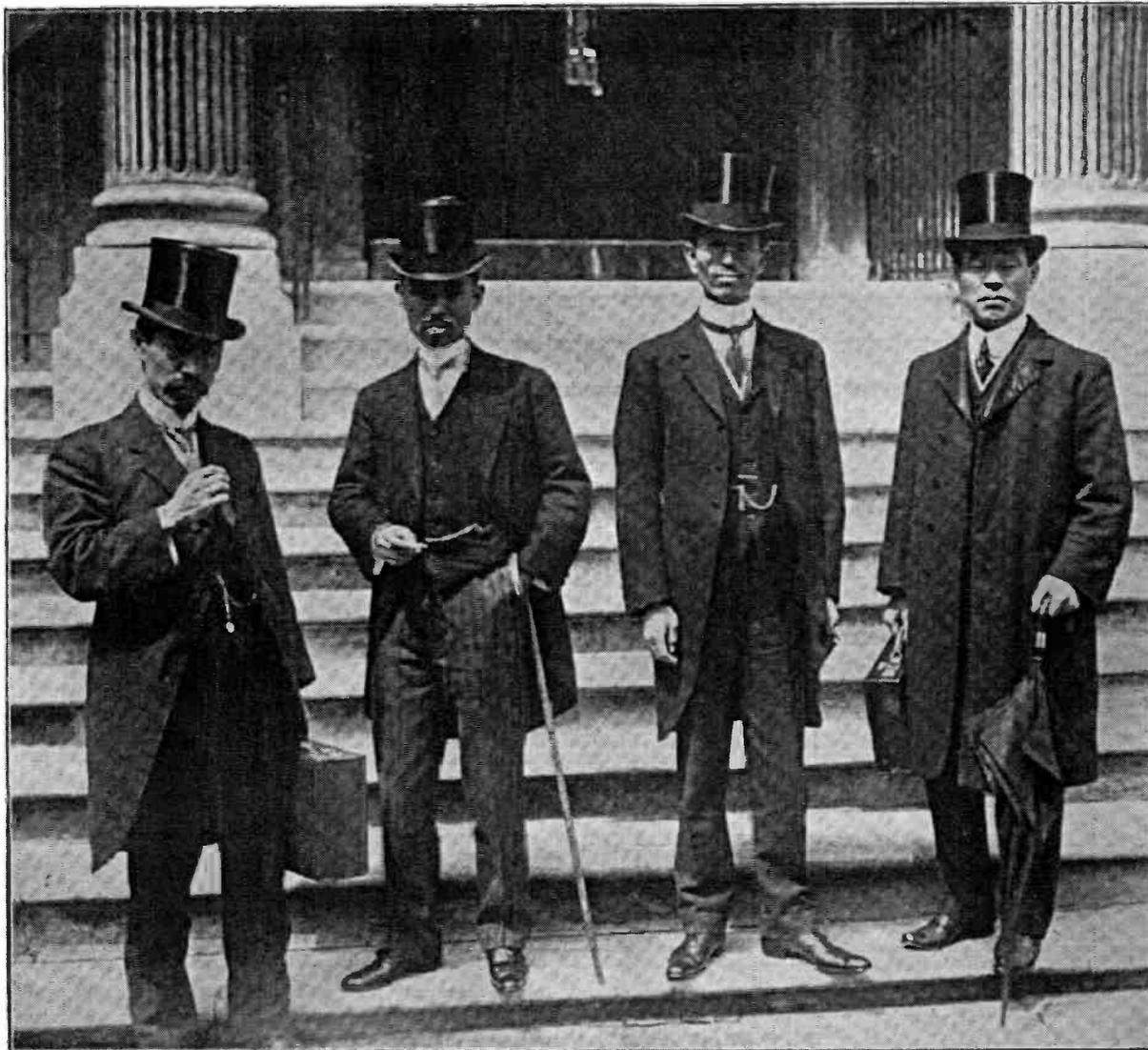
M. J. Homberger.



Luang Sanpakitch (Stam).



Dr. E. Mitrabelli.



The Japanese Representatives.

and Japan, of the principle that ships must accept messages from other ships, whether or not they use the same system of wireless telegraphy. This principle had not hitherto been accepted by the above-mentioned countries except for messages relating to cases of distress ; its general application has now been approved by practically all countries.

"Another matter of importance decided is the allocation of votes to Colonial Possessions. The *maximum* number of votes permissible for any one country and its possessions under the Convention has been allotted to the British Empire. These votes are assigned to Australia, Canada, India, New Zealand, and South Africa, in addition to the vote held by the United Kingdom itself. Votes have also been

allotted to the Colonies and dependencies of Belgium, France, Germany, Holland, Japan, and Portugal.

"It has already been announced that His Majesty's Government intend, as a result of the 'Titanic' disaster, to ask the Conference to consider what improvements can be made with a view to secure the best possible use of wireless telegraphy for the saving of life at sea and the security of navigation. It is expected that this matter—perhaps the most important which the Conference will consider—will be discussed at a full meeting.

"The rapid extension of the use of wireless telegraphy is shown by some figures in a report presented to the Conference by the German delegation. It appears from this report that in

the last four years the number of ships, excluding warships, equipped with wireless telegraphy has increased from 52 to 926, and that during the same period the number of coast stations open for general public correspondence has increased from 14 to 155. The total number of ships of all sorts equipped with wireless telegraphy is stated to be 1,577, and the total number of coast stations is 286."

An interesting and varied programme of social events was provided for the entertainment of the foreign delegates and their wives during their stay in London. Foremost was the reception of His Majesty the King, at Buckingham Palace, on June 10th. The inaugural banquet was given by the Postmaster-General on June 5th, and during the course of the evening Mr. Samuel, speaking in French, welcomed the delegates to London in the name of His Majesty's Ministers. He expressed the hope that the Conference would be the means of creating new personal ties between its members and thus binding still closer friendly international relations. Just as in the realm of science, if the ether did not exist in fact, it

would have to be invented, so if occasions for convening international conferences did not arise of themselves it would, he said, be almost necessary to make them. Ambassadors fulfilled functions very necessary to the peace of the world; the delegates of such conferences were the ambassadors of their particular services, and the nations they represented reaped from their meeting advantages wider even than the actual results of their deliberations.

Mr. Samuel then addressed to the delegates a few words of welcome in German, Italian, and Spanish, and referred to the devotion to science manifested by the Teutonic peoples, to the great share played by Italy in the development of wireless telegraphy through the genius of Mr. Marconi, and to the interest felt in England in the remarkable progress of the States of Southern America.

Among those present were Captain Norton, M.P., Assistant Postmaster-General; the Argentine and Uruguayan Ministers, M. F. Roussel, Secretary of State, Monaco, Sir Richard Solomon, the Hon. Sir William Hall Jones,



Portion of the Party Entertained to Dinner at the Savoy.



The Turkish Delegates.

the Hon. C. Wray Palliser, Sir Oliver Lodge, Sir Matthew Nathan, Sir Henry Babington Smith, Mr. E. Crabb, C.B., and Mr. A. M. J. Ogilvie, C.B.

The British delegation also entertained the visitors to dinner, and receptions were given by the Postmaster-General, the First Lord of the Admiralty, and the Goldsmiths Company. The afternoon of June 8th was passed at Hurlingham, and a visit was paid in the evening to the Royal Military Tournament. On June 15th an enjoyable afternoon was spent on the upper reaches of the Thames, and a visit paid to Sir Henry and Lady Vansittart Neale. No list of social events in June would be complete without a visit to Ascot Races, and the visit of the delegates to the course on June 18th could not possibly have been under more enjoyable conditions. On June 20th a visit was paid to the Siemens Works at Woolwich, and two days later, June 22nd, the new Marconi works at Chelmsford were visited by the delegates, the Marconi Company entertaining about four hundred guests to dinner during the evening.

Conference Portraits

COMMANDER F. G. LORING, who is a British delegate, besides being a captain in the Navy, is Inspector of Radio-telegraphy to the Post Office.

M. J. HOMBERGER, who was born in 1854 at Zurich, entered the telegraph service of the Swiss Federal Administration in 1871. After 10 years' service in various telegraph offices and in the Central Bureau at Berne, he entered the International Bureau of the Telegraph Union, where he rose step by step until he became First Secretary. M. Homberger took part, as Secretary, in the International Telegraph Conferences of Budapest (1896), London (1903), Lisbon (1908), and in the present London conference.

CAPTAIN CECIL WILLIAM NORTON, the Assistant Postmaster General, is largely responsible for the smooth running of the International Radio-Telegraphic Conference, for although he is not a delegate, he is chairman of the Entertainment Committee. He is an experienced Parliamentarian, having sat for West Newington since 1892, after unsuccessfully contesting Great Yarmouth in 1885 and 1886, and before occupying his present office he was a Junior Lord of the Treasury. Besides his political experience, he has served for some years in the 5th Royal Irish Lancers.

CAPTAIN EDWARD F. CHARLTON, A.D.C., is one of the Admiralty delegates. He is Director of Torpedoes in the Naval Ordnance Department, which position he has held for the last year. From 1909 to 1911 he was Commodore of the First Destroyer Flotilla.

DR. HANS BEGGEROW, one of the German delegates, was born on September 30th, 1874, and was educated in the Universities of Berlin and Freisburg-Breisgan, where he obtained the degree of Doctor of Philosophy. Since 1901 he has been in the German Admiralty as expert in all matters concerning wireless telegraphy, and since 1906 he has occupied a similar position in the Prussian Army. He has been a delegate at all three Radio-Telegraphic Conferences.

LUANG SANPAKITCH is the Siamese Chargé d'Affairs, and is delegate for Siam at the International Radio-Telegraphic Conference.

DR. ENRICO MIRABELLI, one of the Italian delegates, is chief of the wireless telegraph department of the Postal and Telegraph Office.

Conference Delegates Visit Marconi Works

THE visit of the delegates and their friends to the new Marconi works at Chelmsford on Saturday, June 22nd, may be summed up in the words of one of the delegates: "Of the many memorable days the delegates had spent in London in connection with the conference, that day's visit to the Chelmsford

few minutes' walk up a country lane at the newly completed works of the Marconi Company. The rapidity with which these works have been constructed and everything brought into order was generally commented upon. It was only early in this year that it was decided to erect the premises owing to the great expan-



Group of Delegates and Friends at the Marconi Works, Chelmsford, on Saturday, June 22.

works was the most memorable and instructive." Better weather could not possibly have been chosen for the visit, and the county town of Essex smiled a genial welcome upon the four hundred or so delegates and their friends. The special train for Chelmsford left Liverpool Street Station early in the afternoon, and within an hour the small army of ladies and gentlemen of all nations were landed within a

session of business which has taken place, the original factory, which was acquired by the Company in 1898 for the manufacture of the apparatus of Mr. Marconi's patents, although enlarged from time to time, having proved too small for the demands upon it. Ten acres of land alongside the railway were acquired, and the ground pegged out on February 10th last, bricklaying being commenced six days later.

Early in May the buildings, floorings, and pipings were practically completed. There was certainly little to indicate that the new works were just being opened beyond the newness of the handsome building, the freshness of the paint and woodwork, and the extraordinary cleanliness. The workmen were busily engaged in their various operations, and the visitors were afforded every facility for inspecting the processes being carried on at Chelmsford. In the grounds were to be seen complete portable wireless stations, including a motor-car station, from which an operator got into communication with Hendon Aerodrome. During the afternoon a demonstration of transmission and reception was made between Poldhu and the new works, communication being maintained by means of a 15-kw. ship set, which was installed on the showroom to the main aerial from a tubular mast. This set gave a musical note of 400 cycles per second, and by means of change-over connections on the condenser Lank and jigger primary, and the corresponding change of jigger secondary and aerial tuning inductance, allowed transmission to be effected on a range of wave-lengths from 600 to 2,800 metres.

Mounted against the north wall of the showroom was a standard 5-kw. battleship set. This had a spark note of 280 per second, and a very wide range of wave-length adjustment, which was obtained rapidly by changing over the plug condenser connections and the plug jigger primary connections. There was also shown a valve receiver, having a range from 600 to 1,600 metres, which, by means of an additional tuning-box, could be extended to 3,000 metres. Two 3-kw. sets were shown, one with a spark note of 700 per second and the other 400 per second. The feature of the second set was that it provided a quick change over by means of a suitable switch in the high-frequency primary circuit and aerial circuit from one wave-length to another. The complete transmitting plant of a 1½-kw. ship set was shown in a cabin specially designed for this class of work, and in another part of the showroom there was on view a new ¼-kw. cargo set. The latter is extremely compact, and its circuits are designed to take the smallest space permissible consistent with sufficient insulation for the power and wave-lengths used. In order to economise floor space the high-speed motor converter runs vertically with a horizontal disc on the top of its shaft extension, which provides a note of 300 cycles per second.

One of the demonstrations which attracted considerable attention was the photographic recording apparatus, which worked with complete success throughout the afternoon. The visitors returned to London by special train,

and later in the evening reassembled in the Savoy Hotel to a banquet given by the Marconi Company. The gathering that night was one of great brilliance and animation. The speeches were few and brief. Mr. Marconi, in a speech delivered in French, said that for the first time since the invention of wireless telegraphy representatives of every country in the world had assembled in London for the discussion of the revision of the international regulations governing the application of this discovery. This was for him personally a great honour, and it was a satisfaction to him to have received them at the works of the Company at Chelmsford that afternoon and to have met them during the evening. In his name and that of his colleagues he thanked the guests for their presence, and proposed the health of the delegates. Herr Kochler (Germany), Professor Battelli (Italy), Dr. A. J. Webster (United States of America), and Captain Cecil Norton, M.P., Assistant Postmaster-General, all fittingly eulogised Mr. Marconi's marvellous achievements. Mr. Bredow proposed the toast of Mr. Godfrey C. Isaacs, the managing director of the Marconi Company, who, in returning thanks, said a great deal of the success of the organisation which Mr. Bredow attributed to him was due to the great knowledge and example of that gentleman himself. The surprise of the evening was the presentation to every lady and gentleman present of a souvenir—to the ladies in the shape of a silver scent flask, and to the gentlemen a model of a Marconi disc discharger, which was the first means of producing musical notes in the transmission of wireless telegrams—the musical notes which one delegate compared to the opening notes of a symphony by Beethoven. The models were packed in handsome leather cases, and the tiny wheels, on being turned, produced sufficient spark to light a cigar or cigarette.

The question of employing ladies to act as relief operators on liners has recently been alluded to in the Press. That women have not been employed in this capacity has nothing to do with efficiency; it would be a physical impossibility for women to do such work. The life of an operator at sea is scarcely a suitable one for a woman.

◆

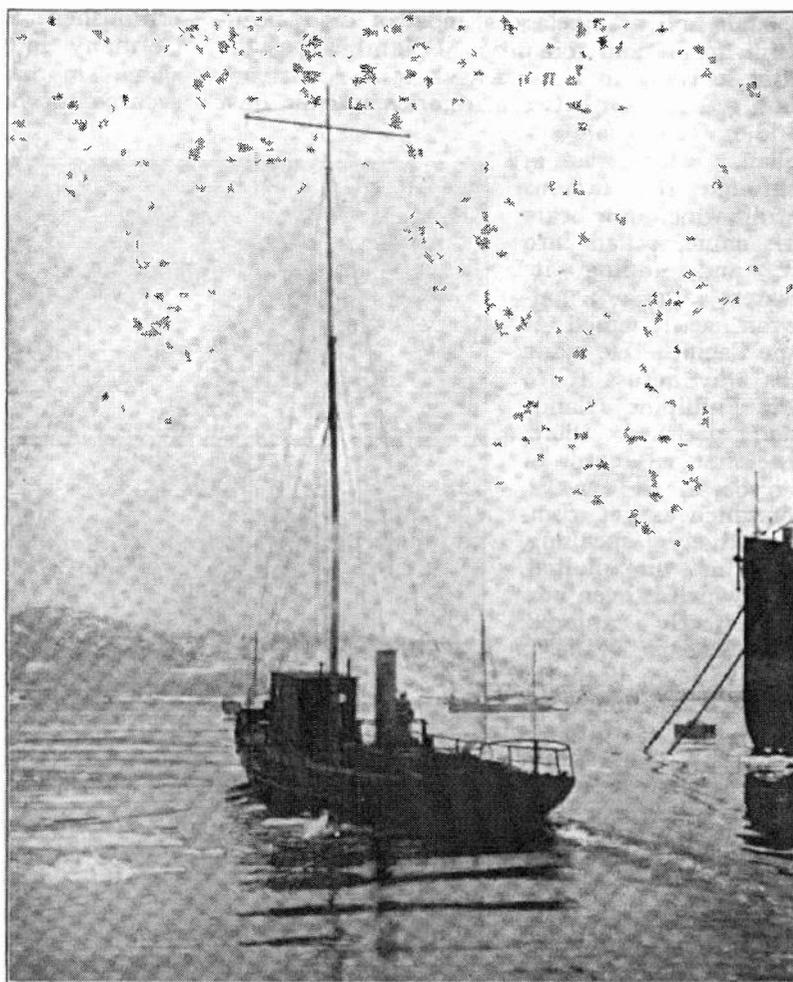
A popular novelist, in one of her latest works, states that wireless telegraphy and light rays were familiar to the Egyptian priests and to that particular sect known as the Hermetic Brethren, many of whom used "violet rays" for chemical and other purposes. Wireless telegraphy was an ordinary method of communication between them, and they had their "stations" for it in high towers on certain points of land as we have now.

Wireless on a 5-ton Motor-Boat

(From a Correspondent)

WHEN in Gothenburg, Sweden, some little time ago, a small motor-boat, named "Max," put in an appearance in the harbour. I was agreeably surprised to find that this little vessel was fitted with Marconi apparatus for wireless telegraphy. I believe that the "Max" is the smallest boat thus fitted. She is a 5-ton vessel, driven by a 35 horse-power engine, and running three miles an hour. The boat is owned by herring exporters, and her business is to follow the fishing fleet from 20 to 25 miles to sea, and to communicate to the shore news concerning "catches." When I saw the boat the Marconi apparatus was installed for the purpose of demonstrating to the owners the possibility of establishing communication between the boat and the shore at a distance of 20 miles. The only available space on board in which to install the apparatus was the wheel house. The installation consisted of a coil, condenser, and N.F. jigger, electrical energy being supplied by a battery of eight accumulators. The most difficult question to solve in connection with the installation was that of obtaining a suitable aerial, the boat having only one mast. This mast was increased approximately 16½ feet in height, but the enlarged mast was broken in the gale when the motor-boat went out on a trial trip on the day after the installation of the apparatus. Then a new and stouter mast was provided, and immediately the aerial was fitted, signals were exchanged with the Gothenburg station. The aerial was of the umbrella type, consisting of six wires—two wires leading to the fore, two aft and down to the roof insulator, and the remaining two straight down. The receiving wave-length of the Gothenburg station is 60 metres, and as the wave of the

"Max" was only 300 metres long, it was necessary to insert a condenser in series with the aerial at the Gothenburg station. Signals were exchanged with the Gothenburg station over a distance of 30 miles, these signals being



The Motor Boat "Max" Showing Wireless Aerial

declared by the telegraphist on the shore station to be strong and clear. The owners of the boat made frequent use of the wireless facilities, and the traffic during the week of demonstration reached a total of about 800 words. Here is a striking illustration of the adaptability of wireless for small craft, such as fishing vessels and tugs.

The Pacific as a Field for British "Wireless" Enterprise

By J. W. O. Hamilton, F.R.G.S.

THE Pacific Ocean is by far the largest of the water divisions of the world. Its vast area is studded in many parts with islands and archipelagoes, most of them beautiful, fertile and romantic. Columbus was the first to bring to Europe news of the existence of a great ocean between America and the East Indies. In 1520 Magellan, after passing through the famous strait which now bears his name, sailed into it, and finding its waters calm as a halcyon sea named it the Pacific. He made his way across it to the Phillipine Islands and perished there, the first navigator of an ocean the wealth of which as yet, comparatively speaking, remains unexploited, and which is even now imperfectly explored. Sir Francis Drake is said to have been the first Englishman to sail upon its waters—in 1577. For almost 300 years after its discovery very little was done by the British nation to explore the valuable lands of this part of the world. Had England fifty years ago chosen to pursue an energetic policy of annexation she might have had the whole of the Pacific territory, excepting the East Indian Islands, paying allegiance to her flag. In very recent years the whole of New Guinea, the New Hebrides and the Hawaiian Islands might have been ours, but that Britain at this time was indifferent or, perhaps, unselfish. The great commercial and strategical possibilities of the Pacific Islands

were lost sight of by our own people, and thus three other great nations—viz., the German, French and the American—have become firmly established among these scattered islands. Germany in particular has been most persistent in making her footing good, and has secured for her people the following valuable

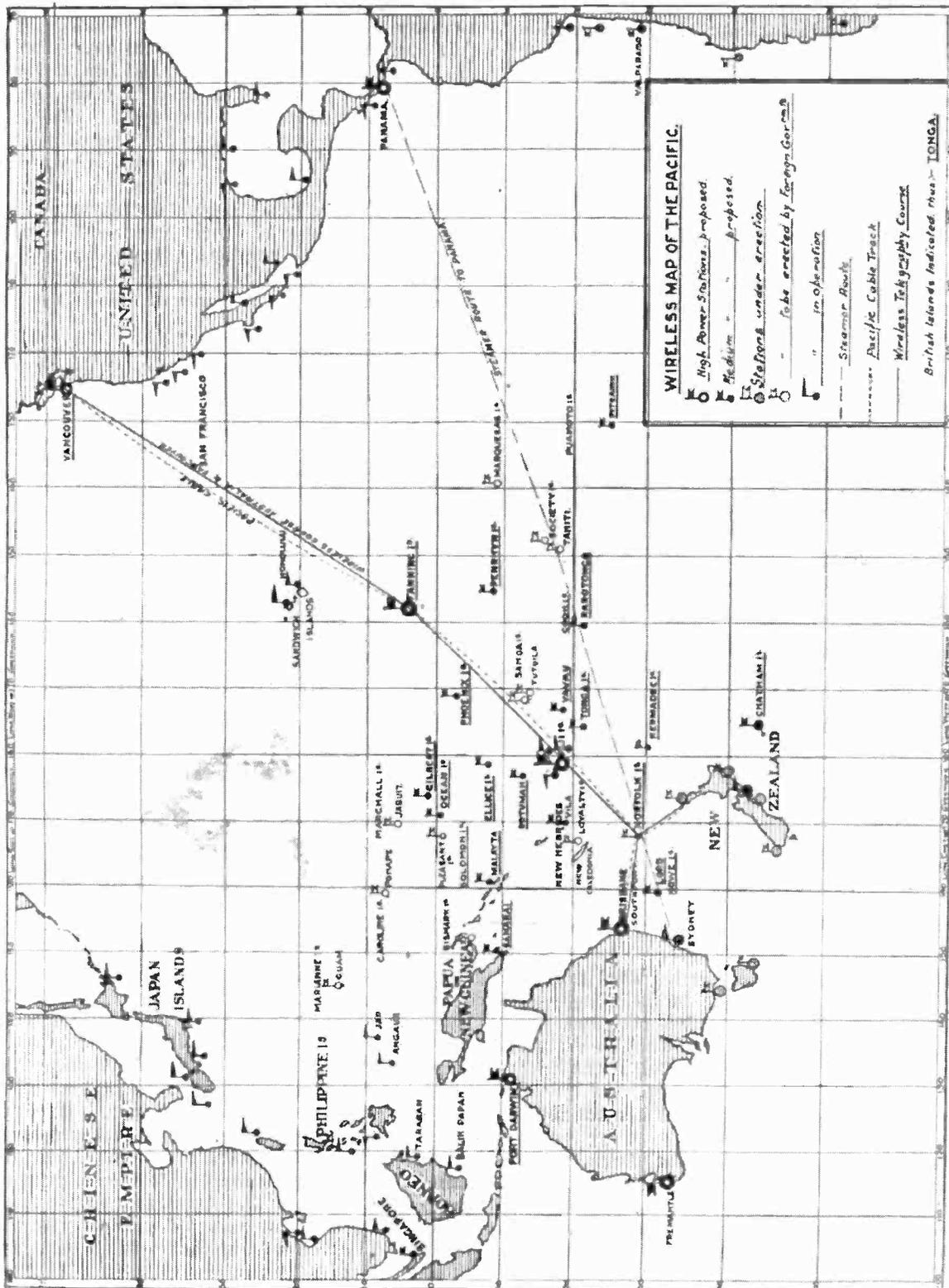
possessions—viz., Kaiser Wilhelm Land in New Guinea with its dependent islands of the Bismarck Archipelago, the largest of the Samoan Islands, the Caroline, Marshall, Pelew, and Marianne groups of islands. France comes very close to Australia in her possession of New Caledonia and the Loyalty Islands, and also shares control of the New Hebrides with Great Britain. In the Eastern Pacific France has annexed the beautiful Society Islands, the Pamotu and Gambier groups, the Leeward and Marquesas Islands. The United States in quite recent years annexed the Hawaiian or Sandwich Islands, as well as Tutuila in the Samoan group.

Public opinion has changed since the days when our isolated dependencies in the

Pacific were looked upon as an encumbrance to our nation rather than as a source of wealth. It is dimly foreseen to-day that the centre of the world's action may sometime be changed from Atlantic to Pacific waters. The awakening of the Eastern nations and the opening of new mail and trade routes by the cutting of the Panama Canal are important factors which



King George II of Tonga.



must not be lost sight of in the development and protection of the nation's interests in "Greater Britain beyond the Seas."

The British interests are chiefly centred in the Fiji group, Papua or the South-east part of New Guinea, the New Hebrides, the Solomons, the Gilberts, Norfolk and Lord Howe Islands, the Tongan and Ellice groups, the Union and Phoenix groups, Cook and Kermadec Islands, the Chatham and Auckland Islands, the Santa Cruz Islands, Ocean, Washington and Fanning Islands. Many of the Pacific Islands are famed not only for their unique beauty, but also for the richness of their resources. They are extremely fertile and well watered, and on some of them minerals and phosphates of great

probably the healthiest to be found in the tropics. The surrounding ocean and steady trade winds keep the temperature at a comfortable figure the whole year round. The quiet peacefulness which pervades everywhere, the lovely blueness of the sky and sea and the splendour of the foliage all tend to make them, as they are often called, and truly so, "Gardens of Eden." No words can paint the colouring and scenic charm of these reef-surrounding oceanic islands, whether they are of the high volcanic type or of pure coral formation. The wonderful beauty of their marine life and vegetations defies adequate description. The lagoons generally found on these islands are most fascinating. The water in them is of so



Samoa Houses.

value have been discovered. The principal exports are sugar, copra and beche-de-mer, pearls and pearl shells, nickel ore, and phosphates. Copra, the chief production of many of the islands, is the dried kernel of the coconut. It is a very profitable crop, and a coconut plantation once established is estimated to bear well for 100 years.

Beche-de-mer, called by the Chinese "tre-pang," is largely exported to China, where it is considered a great delicacy, and is worth from £80 to £100 per ton. It is found in lagoons, and has the appearance of a great slug or leech, and lives by suction upon the microscopic animalculæ so plentiful in tropical waters.

The climate of most of the Pacific Islands is

great a transparency that an object the size of a man's hand may be seen distinctly in calm weather at a depth of 60 feet. The aspect at the bottom is that of a wilderness of marine vegetation of the most wonderful form and colour. Amongst all this are to be seen great multitudes of fish of extraordinary shape and hue—gold, purple and violet, scarlet, jet black, mottled, and every shade of green. These fish can be seen on any calm day in the holes of the reefs at low tide. The Aquarium at Honolulu has a very fine collection of tropical fish, and is said to be the best in the world.

Most of the Pacific islanders are tall and handsome, of a light-brown colour, sweet-eyed, docile, hospitable, and exceedingly

courteous. Friendly to all, they are generous to the poorest and least attractive stranger; food is free to anyone, for Nature provides far more in most places than life requires.

It is hard to realise the marvellous change that has come over many of the island people through the influence of education and civilisation. Within less than a generation some of the tribes were the fiercest cannibals known. The gentle old white-haired men still to be met with in Fiji were man-eaters in their younger days. In the more remote parts of Papua, the Solomons and New Hebrides the merry, fuzzy-headed, copper-skinned, almost barbaric islanders may still be seen in their native surroundings; generally naked to the waist, and with hair combed out and dyed a glaring yellow, they present a remarkable sight to the visitor.

The future of the Pacific Islands is a British responsibility. Geographically and commercially most of Oceania in the South Pacific should look to Australia and New Zealand for its markets, but with the exception of Fiji the fund of wealth lying untouched has been almost ignored. Throughout the Great Pacific the British are regarded by the natives as their protectors, and look to us for help in developing their lands. That help could be handsomely repaid. The national and commercial importance of these islands cannot be overestimated, especially in view of the position of many of them, lying as they do on the future direct route between Australia, New Zealand and Europe, via the Panama Canal. Other nations are awakening to commercial activity. In the determination to let no opportunities slip through their hands, Germany, France and the United States have given liberal subsidies to steamship lines to encourage development of their Pacific Island trade. Germany has spent freely in establishing cable and wireless services with her chief centres of island government.

The mainspring of the trade and development of a country is quick communication. The Pacific Islands depend chiefly upon slow and infrequent communication by shipping. Local enterprise is doing much to improve matters in this respect, but it has now been found imperative that some means of telegraphic communication should be established between the outside world and the chief centres of trade and government, not only on account of the advantages which such a service must afford to the commercial interests and development of the islands, but for the preservation of life and property, the administration of government, and for protection in case of war. At the present time steamers crowded with passengers make the voyage through the Pacific, and are away from all means of com-

munication for from 14 to 28 days. Within very recent years a large mail steamer was wrecked on one of the outlying islands, and the passengers and crew suffered great hardships for months before rescue came, as there were no means of communicating with the search parties on adjacent islands.

There is one way by which efficient telegraphic communication can be rapidly and inexpensively established throughout the vast and isolated Pacific. This ocean, with its islands rising here and there as fruitful stations for man's habitation and industry, forms an almost ideal sphere for the application of "wireless" as the one practical means for communication with shipping and the chief centres of government and trade in our various possessions. Germany has already in hand a scheme for linking her own islands together with a system of wireless telegraphy which will be coupled with the telegraph system of the world through the American cable at Jap. Other countries bordering on the Pacific have established a large number of stations. Installations are now in operation in the Philippines, Hawaiian Islands, Japan, China, Dutch East Indies, and all along the coast line of America from Alaska to Terra del Fuego. Australia and New Zealand are installing a number of stations, while England has three small ones in operation in the Fiji Islands. The writer commends the accompanying chart to the notice of readers. An inspection of it will convey some idea of the importance of establishing wireless communication with our isolated possessions in the Pacific. By establishing high-power stations at Vancouver Island, Fanning Island, Fiji, New Zealand and Australia to link up with the imperial chain of wireless stations at Singapore our chief outposts in the Pacific would be brought into constant touch with the centres of administration and the markets of the world. If the medium-power stations, as indicated, were installed on the lesser islands, communication could be maintained between each and all of them as required, and also with the imperial chain and passing shipping. From the point of view of linking together the isolated parts of the Empire, in the interests of our commerce, the maintenance of our prestige in the Government of these far-off lands and seas, the preservation of life and property, and for the protection of our own people in time of war, the value of wireless telegraphy cannot be over-estimated. By its aid we should be in constant touch with the many passenger steamers and warships that traverse Pacific waters. It is not too much to say that increased settlement and commerce will surely follow in the wake of such a system of communication.



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All Editorial communications to be addressed to "The Editor, 'The Marconigraph,' Marconi House, Strand, London, W.C."

The Editor will be pleased to receive contributions; and Illustrated Articles will be particularly welcomed. All such as are accepted will be paid for.

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BINDING CASES for "The Marconigraph," Vol. I., are now on sale, price 1/6 each post free. Applications with remittance to be made to The Publisher, Marconi House, Strand, London, W.C.

PORTRAIT OF MR. PHILLIPS. The Publisher begs to announce that he has arranged to supply portraits of the heroic Marconi Officer who lost his life as a result of the "Titanic" disaster at the following prices: Cabinet size, 1/9 each; Enlargements, 10 in. by 8 in., 13/-; 12 in. by 10 in., 14/-; 15 in. by 12 in., 17/6 post free. The portrait is by Miss J. Steadman of Farncombe, and is the same as that from which the illustration in the May number of THE MARCONIGRAPH was made.

The Share Market

The market during the past month has been a very busy one. A settlement has taken place in the new issue of shares of the Marconi Wireless Telegraph Company of America. In spite of the enormous volume of business since their introduction on the London market, the settlement passed off most successfully. The market in the various issues is now a very healthy one, and there is a steady demand for all classes of shares on an investment basis. On Saturday, June 22nd, a large and distinguished gathering visited the new works at Chelmsford at the invitation of Commendatore Marconi, and witnessed a highly interesting demonstration of the transmission and reception of wireless messages. The efficiency of the system and its immense possibilities were apparent to every one present. The closing prices of the various issues on June 24th were as follows: Ordinary, 6 $\frac{1}{8}$; Preference, 5 $\frac{1}{8}$; New, 6; Canadian, 25 3; Spanish, 1 $\frac{1}{8}$; American, 1 $\frac{1}{8}$.

The Phillips Memorial Fund.

The fund which has been opened for the establishment of a memorial to the gallant Marconi operator, Mr. J. G. Phillips, who was one of the victims of the "Titanic" disaster, is meeting with a great deal of support. The promoters of the fund are the public authorities of the county of Surrey (with Viscount Midleton, the Lord Lieutenant of the county, at the head) and the Municipality of Godalming. The sum of £500 is required for the purpose of the memorial, and £300 has already been subscribed, including a donation of fifty guineas from the Marconi Company. In acknowledgment of the latter donation the Mayor of Godalming wrote as follows:

"Please convey to your directors my grateful thanks for their promised splendid donation. Up till now we have received about £300, and I am glad to be able to say that we continue to receive subscriptions daily. We shall require at least £500 to carry out our proposed scheme, and I and my colleagues will be grateful for any assistance on the lines suggested in your letter. Again expressing my grateful appreciation for your kindly interest and support.

" Yours, etc.,

" E. BRIDGER,

" Mayor."

There are many of our readers who will be glad to have the opportunity of subscribing towards this fund, and we feel sure that the appeal which is addressed to them by the Mayor of Godalming will meet with a generous response. Although more than half the amount required has already been subscribed, a great

deal is still necessary to enable a fitting memorial to be established to Phillips, whose heroism is an inspiring example to the service, and ranks with the noblest deeds of gallantry performed at sea. We appeal to all telegraphists, both in this country and abroad, as well as to our readers all over the world, to support the fund which has been opened, and any donations sent to the Editor of THE MARCONIGRAPH will be forwarded to the proper quarter.

The O'Driscoll Fund.

Mr. R. O'Driscoll, who was the operator in charge of the Clifden station, died recently at the early age of 35, leaving behind him a widow and three young children totally unprovided for. At the suggestion of several of the late Mr. O'Driscoll's colleagues, it has been decided to open a fund for the purpose of granting some relief to the widow and family in their present unfortunate circumstances, and of enabling them to make provision for their future. The case is one deserving of sympathy, and we appeal to members of the staff to accord it their generous support. Contributions may be sent to the Editor of THE MARCONIGRAPH.

	£	s.	d.
G. C. Isaacs, Esq.	5	0	0
M. F. P.	1	0	0
Captain Sankey	1	0	0
Alfonso Marconi, Esq.	1	0	0
M. Travaillieur, Esq.	1	0	0
H. W. A.	0	10	6
W. R. C.	0	10	6
Major J. E. Cochrane	1	0	0
G. E. Turnbull, Esq.	0	10	6
C. H. Taylor, Esq.	0	5	0
Andrew Gray, Esq.	0	10	6
T. E. Hobbs, Esq.	0	5	0
H. W. Corby, Esq.	0	5	0
W. J. Van Hoytema, Esq.	0	10	6
C. C. Rattray, Esq.	0	7	6
A. C.	0	5	0

Marconi Patents in America.

The Marconi Wireless Telegraph Company has received a telegram from New York advising that the Boston Court of Appeals has delivered judgment against the National Electric Signalling Company with costs.

This judgment allows of the immediate transfer of the title of the assets of the United Wireless Telegraph Company to the Marconi Company, and it is expected that the arrangements for the passing of title to the Marconi Company will be completed this week.

Extension of News Service to Canadian Vessels.

A further extension of the news service to vessels by wireless has to be recorded, this

extension involving the inclusion of Canadian vessels in the Gulf of St. Lawrence. All land stations on the Gulf receive daily a Press bulletin of some seventy or eighty words, and this message they transmit to all vessels within range. Inward bound steamers receive a message, on reaching Cape Ray or Belle Isle, of some two hundred words, comprising the last three days' bulletins, and for the rest of the voyage are in touch with one or other of the land stations. Outward bound boats receive the news daily as they pass the stations. This service, which has been inaugurated by the Marconi Wireless Telegraph Company of Canada, Ltd., is a useful extension of the Marconi news service system, and still further increases the ability of one fraction of the world to know what the remaining parts are doing.

Wireless Map of the World.

There has long been felt a need for a map showing the location of wireless stations throughout the world. The Marconi Wireless Telegraph Company have applied themselves diligently to the production of such a map, which has just been published. The map is on a large scale—40 by 24—and the stations are very clearly shown. Where a large number of stations are located within a comparatively restricted area, such as Western Europe, the Atlantic Coast of America, the South-Eastern District of Canada and the Mediterranean District, insets on a larger scale are provided.

Wireless and Industrial Unrest.

"The unrest of the national transport workers has awakened public interest in any proposal that will lead to a mitigation of the annoyances and anxieties of such a crusade in future. Wireless telegraphy seems to afford one means of alleviating the position. It has been decided by a number of shipowners trading with London and our large ports, where especially food and other urgently needed supplies are handled, that the installation of a compact wireless telegraph equipment on board ships of small tonnage will help to relieve an undesirable situation. Communication with the shore stations now available will help to divert traffic to such ports as are not disturbed by labour upheavals, which seem to arise without rhyme or reason, and would probably peter out much more rapidly if this means of communication between ship and shore were more generally adopted than at present. There can be little doubt that if this means had been available during May and the early part of June, the strike fiasco, both national and local, would have come about even earlier than it has. The installation of these small sets is a work that is now going on rapidly."—*Electrician*.

Position and Prospects of the Marconi Company

A Record Year—Future Developments Outlined

THE report for 1911 of the Directors of Marconi's Wireless Telegraph Co., Ltd., made its appearance on June 11th, and showed results very much in excess of those for 1910. Indeed, the results shown in that document may fairly be described as remarkable. So clearly are the Company's position and prospects outlined in the report that this must be our excuse for publishing the document *in extenso*, despite the widespread publicity it has gained through newspapers all over the world.

Directors' Report

The Directors, in submitting herewith the Balance Sheet, together with Profit and Loss Account for the year ending December 31st, 1911, regret that it has not been possible to complete the accounts at an earlier date, which would have enabled them to convene a General Meeting prior to June 4th. Having to devote the whole of their time during this month to the International Radio-Telegraphic Conference, they are obliged to defer the meeting until July 9th. In these circumstances their report will deal not only with the business of the year 1911, but also with the important developments of the Company for the first five months of this year.

Your Directors have great satisfaction in confirming the circular which was issued to the Shareholders on March 7th last, informing them that they had brought to a successful issue a negotiation which has proclaimed to the world the great strides made in the development of wireless telegraphy and by this Company. That circular, it will be remembered, advised that satisfactory terms had been settled between His Majesty's Postmaster-General and the Company for the construction of all the long-distance wireless stations which will be required within the next few years for the Imperial Wireless Scheme. The importance to the Company of this agreement cannot be exaggerated, and 10 per cent. of the gross receipts of so important a commercial telegraphic service must represent to this Company a very considerable revenue for many years to come.

All the stations to be erected under this Imperial scheme will be fitted with the latest duplex invention of Mr. Marconi and also with

apparatus for automatic transmission and reception, under which conditions the Company guarantees a speed of not less than 50 words per minute, which under favourable conditions should be considerably exceeded. All the long-distance commercial stations which the Company will be erecting in the future will be fitted with similar apparatus for automatic transmission and reception.

The Year's Trading

During the year 1911 the Company's business showed further satisfactory extension, the gross trading profit having amounted to £214,407 1s. 4d. as compared with the sum of £127,452 13s. 1d. for the preceding year, and the net profit carried to the balance sheet was £141,717 7s. 1d., as compared with £60,513 0s. 3d. for the year 1910. But for the fact that the Company's business completely outgrew the capacity of its Chelmsford Works, delaying the completion until this year of much of the work pertaining to 1911, the above figures would have been even more satisfactory. It will be observed with satisfaction that the amount due from the Marconi Wireless Telegraph Company of Canada, Ltd., was reduced during 1911 from £163,865 18s. 5d. to £78,588 0s. 8d. This figure, however, is likely to be increased somewhat during 1912, as it is deemed preferable that this Company should render for the present the financial assistance which is required by the Canadian Company for its development.

In the Balance Sheet "Patents and Shares in Associated Companies" are again taken into account at their cost price, with the exception of Spanish shares, which are taken at their par value. The Company's shareholdings have been reduced by the sale of 50,000 Canadian shares at 15s. per share, and the redemption by the International Company of £40,000 debentures at par, and increased by the addition of Spanish, Russian and French shares. The Company now holds shares in associated companies of a total par value of £2,074,723 11s. 9d., many of which are quoted at a premium.

On October 25th last a resolution was passed at an Extraordinary General Meeting of the Company authorising the increase of the capital by 250,000 Ordinary Shares of £1 each. These shares were issued at £1 per share premium, of

which £99,072 5s. was paid during 1911, the balance falling due on or before June 1st, 1912, thus increasing the Premium Account to the end of 1911 to £105,702 10s. 2d., which figure in the next balance sheet will be increased to the sum of £256,630 5s. 2d. In so far as it was practicable and to the extent of three-quarters of the issue these shares were offered to the shareholders; the remaining 25 per cent. were dealt with at the same price and served to guarantee the issue without cost to the Company.

The acquisition of the patents of the Lodge-Muirhead Syndicate has further strengthened the Company's patent position.

In October last the control of the Russian Company of Wireless Telegraphs and Telephones was acquired. This Company possesses extensive freehold works in St. Petersburg, and, under the able managing direction of Mr. Adrian Simpson, is conducting a very extensive and continuously increasing business. There is every reason to expect that that Company will commence to pay substantial dividends in the early future, and will take a prominent place amongst the affiliated companies.

The Compania Nacional de Telegrafia sin Hilos has completed its first chain of stations, and a further number will be erected as soon as the Spanish Government have approved of the sites selected. A considerable telegraph business is being conducted between Spain and the Canary Islands, and also with ships at sea. As soon as the necessary arrangements will have been completed it is intended to open up the service between the Canary Islands, Spain and this country, and further extensions of the service will follow.

Recently your Chairman and Managing Director paid a visit to Madrid, and were received in private audience by His Majesty the King. His Majesty bestowed the honour of the Grand Cross of the Order of Alfonso XII. upon Mr. Marconi.

The Company entered into an engagement to obtain a quotation and settlement in the shares of the Compania Nacional de Telegrafia sin Hilos. Owing, however, to the difficulties which arose through the shares of the Company being of 500 pesetas each, it was arranged that a company entitled "The Spanish and General Wireless Trust, Ltd.," should be formed, enabling those who so desired to convert their shares in the Spanish Company into shares of £1 each in the Trust Company, which would facilitate the fulfilment by the Company of its obligations. The new Company was accordingly registered in the early part of this year.

The Belgian Company has declared a dividend for the year ending December, 1911, amounting to 50 francs per capital share (10 per cent.) and 24 francs per Founder's share.

The French Company has declared a dividend

for the past year at the rate of 5 per cent. per annum.

The Marconi International Marine Communication Co., Ltd., whose business continues to show extensive development, is about to declare a dividend at an increased rate for the year ending December 31st, 1911.

The Deutsche Betriebsgesellschaft für Drahtlose Telegraphie m.b.H. (Debeg), which conducts the mercantile marine business in Germany, and in which this Company is interested through its Belgian Company, has declared its first dividend of 4 per cent. for the year ending September 30th, 1911.

The Marconi Wireless Telegraph Company of Canada continues to show satisfactory progress. Negotiations for a further contract with the Government have been pending for some time. We are informed that the terms have now been practically agreed, and the contract is likely to be executed at an early date.

Circumstances have delayed somewhat the proposed developments of the Argentine Company. A representative of this Company, however, is now in Buenos Aires with a view to making arrangements which will enable that Company to make rapid progress in the future.

Important Developments in America

Progress of the greatest importance has been made in the United States of America. For some years past the American Company was able to transact but a comparatively small business owing to the severe competition to which it was submitted by the United Wireless Telegraph Company. The business methods adopted by that Company were such as to render effective competition impossible unless business were to be conducted at a substantial loss. There was, however, no doubt that the United Wireless Company was infringing the patents of this Company, and proceedings at law were therefore commenced. Your Chairman and Managing Director proceeded to New York, accompanied by Mr. James Swinburne, F.R.S., to give evidence on behalf of the American Company, the case having been fixed by the Judge to be heard on March 25th. Following the prosecution and subsequent conviction of the Directors of the United Wireless Telegraph Company the business was being conducted by Trustees under the Court, pending the completion of the arrangements which were in course by a Shareholders' Re-organisation Committee. As a result of negotiations between the Trustees, the Shareholders' Committee and this Company, agreements were eventually entered into by which this Company acquired the whole of the tangible assets both in and out of the United States of the United Wireless Telegraph Company. These assets in so far as they related to the United States of America

were re-sold to the Marconi Wireless Telegraph Company of America. The United Wireless Telegraph Company acknowledging the validity of the Marconi patents, and admitting the infringement, judgment and a perpetual injunction were granted by the Court. The business is now being directed by the Marconi Wireless Telegraph Company of America, and for their account as and from March 31st last. Arrangements are in progress for the transfer to this Company of the property out of the United States of America possessed by the United Wireless Telegraph Company, and judgment by consent in favour of this Company will be taken in the actions pending against the United Wireless Telegraph Company in our High Courts of Justice.

Ship and Shore Business

The satisfactory ending of this litigation together with the acquisition of the tangible assets of the United Wireless Telegraph Company is deemed by your Directors to be of the greatest importance. It should at once convert the business of our American Company into one of considerable magnitude, controlling all the coast stations of importance on both the east and west coasts, besides practically the whole of the American Mercantile Marine at present fitted with wireless telegraphic installations. It may be reasonably anticipated that this business alone should prove sufficiently remunerative to enable the payment of dividends even upon the largely-increased capital. A considerable impetus, however, to the ship and shore business in the United States is to be expected from recent events by the extension of the scope of the existing law rendering wireless telegraphy compulsory upon practically all vessels.

During the visit of your Chairman and Managing Director to New York a further agreement of great significance and importance was entered into with the Western Union Telegraph Company and the Great North-Western Telegraph Company. This agreement *inter alia* furnishes the Marconi Company with some twenty-five thousand telegraph stations for the delivery and despatch of Marconigrams throughout the United States and Canada. It is no doubt well known to shareholders that in the United States of America the telegraph service is not carried on by the Government as is the case in other countries, but is in the hands of private companies, mainly of the Western Union Telegraph Company, with whom also is associated the telephone service. The American continent represents a very important proportion of the telegraph business of the world, and therefore a considerable link in the chain of stations round the world which forms the more important programme of the future of

this Company. In order to create an efficient telegraph service it was essential to this Company either to have the benefit of such an immense organisation as that of the Western Union for the purpose of the receipt and delivery of its messages, or to itself create an opposition service. One or the other was necessary before it would be possible effectively to create long-distance services between this country and New York, the Pacific coast and the East, and between North and South America. The agreement now entered into enables this Company in conjunction with the American Company immediately to embark upon the erection of the stations which will open up by wireless improved and cheaper telegraph services to all these parts of the world, fulfilling an important section of this Company's programme.

Capital Increase

The stations to be constructed by the American Company necessitate a large expenditure. It was, therefore, resolved to increase the capital of the American Company to \$10,000,000, and to split the existing shares of \$25 into shares of \$5 each. Resolutions to this effect were passed by the American Company on April 18th. By the laws of the State of New Jersey, under which the American Company is registered, any increase of capital must in the first instance be offered to shareholders. It was not contemplated that the shareholders would have taken more than a small proportion of the total number, and this Company had undertaken to place whatever number of shares there remained unsubscribed. The importance, however, of the contracts entered into with the Trustees of the United Wireless Telegraph Company and with the Western Union Telegraph Company were so well appreciated in the United States that an excited market prevailed for the old \$25 shares, which were purchased at many times their face value in order to secure the right of application for the new shares, the whole \$7,000,000 of which were applied for by the shareholders or those who had purchased rights. Thus the total sum of \$7,000,000 was subscribed in cash, and is available for the construction of a large number of stations and the development of a very extensive telegraph service.

Arrangements are now in progress, and the work will be carried out as expeditiously as possible, for the construction of stations placing this country in direct communication with New York, instead of as at present passing through our station at Glace Bay, for the construction of stations at San Francisco communicating through the Hawaiian Islands to the Philippines, China and Japan, and from New York south to Cuba, Panama, and sub.

sequently with each of the South American States. Each of these stations when completed should ensure to the American Company, as well as to ourselves, a very considerable revenue.

The United States having now adhered to the International Radio-Telegraphic Convention, the conduct of business will be greatly facilitated, and irresponsible and troublesome interference caused by amateurs and others in the past will now cease.

Contract with the Portuguese Government

An important contract has recently been entered into provisionally with the Portuguese Government, at whose invitation your Chairman and Managing Director recently paid a visit to Lisbon. Your Directors are not prepared at this moment to give fuller information in respect of these matters, but hope to be in a position to do so at the General Meeting.

The Coltano (Italy) long-distance station was opened in December of last year, and is working most satisfactorily with the Italian Colonies on the East Coast of Africa.

A number of important negotiations are pending with many foreign Governments, which it would be premature to refer to further at this juncture.

The Transatlantic service has continued to work satisfactorily. From May 1st of this year all the postal telegraph offices throughout the United Kingdom have been opened for the reception of messages "via Marconi" to any part of the United States of America and Canada. The Company has now the use of a private line from eight at night until eight in the morning, by which it is able to send its messages directly from its office in the Strand to the Clifden Station, thus materially curtailing the delays which occur on the land lines. It is hoped that the use of a private line in the daytime will be obtained shortly. There has been a considerable increase in the number of commercial messages and in Press work, many thousands of words being despatched every day from London to the New York Press.

Transatlantic Wireless

The general public are now beginning to realise that it can send its messages to America and Canada by wireless at 4d. per word less than by other systems. When the land lines were clear the *New York Times* received in their office in New York messages sent over our system from London within ten minutes of the time of their despatch. When the new stations between London and New York are complete they will be independent of the land lines and will provide a service which will not be surpassed in speed or accuracy.

The successful development of your Company has not unnaturally brought into prominence a large number of inventions and patents in connection with wireless telegraphy, most of which, if not all, are first offered to this Company. A staff of able engineers under the direction of Mr. Marconi are employed in examining carefully every patent specification which has any connection with wireless telegraphy, and a practical test is made of every device or system for which patent application is made or which is submitted to this office. The Company makes a point of keeping itself very well informed in these matters, and is at all times prepared to pay reasonably for anything new and of value which comes to its notice. It has entered into arrangements by which it obtains the sole rights of the world of a process invented by Messrs. Bellini & Tosi, and which is known as the wireless compass. This is an invention which with certain improvements introduced by the Company's engineers should prove to be of considerable value. It will be worked in conjunction with existing wireless telegraphic installations on board ships, and will define the position of an approaching ship or of land in a dense fog, thus eliminating a further danger, and perhaps one of the greatest to which navigation is subjected. Active steps are now being taken for the commercial development of this process. Since our last report further valuable patents tending to further perfect wireless telegraphy have been applied for by Mr. Marconi on behalf of this Company.

The recent terrible catastrophe upon the Atlantic Ocean has again brought prominently before the notice of peoples of all nationalities the immense value of Mr. Marconi's invention and the necessity of its more general use by ships at sea. Whether or not wireless telegraphy should have saved every soul on board the "Titanic" will probably be known when the Board of Trade inquiry will have been concluded. In the meantime, however, it is but reasonable to suppose that a number of vessels could have been called to assistance had they had a wireless installation on board, and therefore have been capable of receiving the terrible news instead of continuing on their way ignorant of the tragedy which was taking place within perhaps a short distance of them. There can be little doubt that this terrible catastrophe brings us nearer to the day when ships of every nation will be compelled to carry this greatest life-saving apparatus.

Tapping of Messages

It may not be out of place here to refer to the general fallacy of which one has heard so much in recent times respecting the so-called tapping of wireless messages, and to remind

Dr.**BALANCE SHEET,**

	£	s.	d.		£	s.	d.		£	s.	d.
To CAPITAL—											
<i>Authorised.</i>											
750,000 Ordinary Shares of £1 each	750,000	0	0								
250,000 7 per cent. Cumulative Participating Preference Shares of £1 each	250,000	0	0								
	£1,000,000	0	0								
<i>Issued.</i>											
508,266 Ordinary Shares of £1 each, fully paid	508,266	0	0								
241,734 Ordinary Shares of £1 each, partly paid	30,269	5	0								
250,000 7 per cent. Cumulative Participating Preference Shares of £1 each fully paid	250,000	0	0								
	788,535	5	0								
.. SHARE PREMIUM ACCOUNT	250,630	5	2								
<i>Deduct</i> Amount receivable in 1912	150,927	15	0								
	105,702	10	2								
.. SUNDRY CREDITORS, INCLUDING BILLS PAYABLE											
.. RESERVE FOR EXPENSES UNPAID AND PAYMENTS IN ADVANCE ON ACCOUNT OF CONTRACTS AND ROYALTY											
.. PROFIT AND LOSS ACCOUNT—											
Balance as per last account, December 31st, 1910	65,718	17	10								
<i>Add</i> Balance of Account for the year ending December 31st, 1911	141,717	7	1								
	207,435	4	11								
<i>Deduct</i> 7 per cent. Preference Dividend	£31,766	9	0								
.. Ordinary Interim Dividends for 1911	49,890	5	0								
	81,656	14	0								
<i>Less</i> Amounts paid February 1st, 1912—											
7 per cent. Preference Dividend	£8,420	5	10								
Ordinary Interim Dividend	20,562	10	0								
	34,982	15	10								
	46,679	18	8								
To Contingent Liability on Shares in Associated Companies	£66,387	10	0								
	£1,132,095	14	7								

Dr.**PROFIT AND LOSS ACCOUNT**

	£	s.	d.
To RENTS, RATES, TAXES, TRAVELLING AND GENERAL EXPENSES AND COMMISSION ...	14,455	9	10
.. SALARIES AND DIRECTORS' FEES, INCLUDING MANAGING DIRECTOR'S REMUNERATION	33,010	9	2
.. LAW CHARGES AND PATENT EXPENSES	3,230	4	4
.. DEPRECIATION OF PLANT, MACHINERY, BUILDINGS AND FURNITURE	3,469	4	1
.. FOREIGN AGENCY EXPENSES	1,042	12	0
.. INTEREST AND INCOME TAX	2,527	5	10
.. STATION EXPENSES AND EXPERIMENTAL WORK	15,780	4	3
.. BALANCE CARRIED TO BALANCE SHEET	141,717	7	1
	£215,238	17	4

Report of the Auditors to the Shareholders.

We have audited the above Balance Sheet. The items Patents and Shares in Associated Companies, as to the value Buenos Ayres, Madrid, and St. Petersburg. We have seen a letter from a Trust Company and from Solicitors stating that the Buenos Ayres we have seen a letter from the Banco de Italia y Rio de la Plata, stating that the certificates of the shares have seen a letter from the Banco de Castilla stating that the shares are held by them on behalf of the Managing Director of this shares are held by them on behalf of this Company. We have obtained all the information and explanations we have required, according to the best of our information and the explanations given to us and as shown by the books of the Company.

December 31st 1911.

	£	s.	d.		£	s.	d.
By CASH AT BANKERS and in hand					79,871	16	2
.. LOAN AGAINST SECURITIES					40,000	0	0
.. DEBTOR BALANCES					198,426	17	0
.. AMOUNT DUE FROM THE MARCONI WIRELESS TELEGRAPH COMPANY OF CANADA, LTD.					78,588	0	8
.. STOCK AT COST OR UNDER as certified by the Works Managers					52,840	5	2
.. FREEHOLD WORKS AT DALSTON				39,480	16	0	
<i>Deduct Mortgage:</i>				16,614	12	4	
					22,866	3	8
.. PLANT, MACHINERY AND BUILDINGS AT CHELMSFORD WORKS					7,737	16	5
.. LONG DISTANCE FREEHOLD STATIONS AT CLIFDEN, IRELAND, AND POLDHU, CORNWALL, AND MOVABLE PLANT AT OTHER PLACES					1,39,217	18	11
.. OFFICE FURNITURE AND FITTINGS AT HEAD OFFICE, CHELMSFORD, ROME, AND GENOA					4,020	8	7
.. PATENTS AND SHARES IN ASSOCIATED COMPANIES—							
200,290 fully-paid shares of £1 each of the Marconi International Marine Communication Co., Ltd.	200,290	0	0				
834,521 fully-paid shares of \$5 each Series "A" of Cia Marconi de Telegrafia sin hilos del Rio de la Plata (Argentine Company)	834,521	0	0				
88,250 shares of \$5 each (25 per cent. paid) Series "B" of Cia Marconi de Telegrafia sin hilos del Rio de la Plata (Argentine Company)	22,062	10	0				
34,174 fully-paid shares of \$25 each of the Marconi Wireless Telegraph Company of America	170,870	0	0				
564,855 fully-paid shares of \$5 each of the Marconi Wireless Telegraph Company of Canada, Ltd.	564,855	0	0				
250 shares of £1 each (20 per cent. paid) of the Marconi Press Agency, Ltd.	50	0	0				
4,040 fully-paid Preference shares of Pesetas 500 each of Cia Nacional de Telegrafia sin hilos	74,814	16	3		508,523	8	0
4,950 fully-paid Ordinary Shares of Pesetas 500 each of Cia Nacional de Telegrafia sin hilos	91,066	13	4				
10,800 fully-paid shares of Roubles 100 each of Société Russe de Télégraphes et Téléphones sans Fil	114,803	12	2				
175 fully-paid Ordinary Shares of Francs 100 each of Cie Francaise Maritime et Coloniale de Telegraphie sans Fil	700	0	0				
90 Bearer Shares (Parts Bénéficiaires) of no capital denomination of Cie Francaise Maritime et Coloniale de Telegraphie sans Fil	—						
100 Bearer Shares (Founders) of no capital denomination of Cie de Telegraphie sans Fil	—						
Total Par Value	£2,074,723	11	9		£1,132,095	14	7

year ending December 31st, 1911.

	£	s.	d.		£	s.	d.
By BALANCE OF CONTRACTS, SALES AND TRADING ACCOUNT					214,407	1	4
.. TRANSFER AND SHARE WARRANT FEES					831	16	0

£215,238 17 4

G. MARCONI, *Director*,
S. FLOOD PAGE, *Director*,

of which see Directors' Report, includes shares of the par value of £1,680,662 11s. 9d., which are deposited in Montreal, New York, certificates of the shares respectively in Montreal and New York are held on behalf of this Company. For the shares held at been deposited with them to the order of the President of the Argentine Company. For the shares held in Madrid we have Company, and for the shares held in St. Petersburg, we have seen a letter from the Banque de Commerce de Sibirie stating that the In our opinion such Balance Sheet is properly drawn up so as to exhibit a true and correct view of the state of the Company's affair

shareholders that, under the Berlin Convention of 1906, it was agreed by all the nations who are adherents to that convention that ships at sea must be at attention on a wave-length of 300 metres, and that conversations between ships at sea and coast stations shall be carried on by the use of wave-lengths of either 300 or 600 metres. The very object of this international law is that in case of distress or otherwise every ship at sea shall be capable of calling or being called by any other ship at sea or any coast station; thus every ship is necessarily able to overhear any other vessel or station within range. This, however, applies to ship communications only. Mr. Marconi's famous No. 7,777 patent enables stations to tune to any wave-length by simple means, and only stations tuned to the same wave-length can communicate together.

THE MARCONIGRAPH magazine, which was started by the Company in the early part of last year, has now developed into an important publication, with a continuously-increasing circulation. Its revenue already exceeds its expenditure, and it promises to become a property of value. Arrangements are in progress for its simultaneous publication in the United States of America, Russia and Spain.

Chelmsford Works

Owing to the continuous and considerable development of the Company's business, the Chelmsford factory has been kept at work night and day, but has proved totally incapable of coping with the continued increase of business. Your Directors have found it therefore incumbent upon them to purchase some 10 acres of freehold land close to the Great Eastern Railway, and erect thereon new works capable of the output which is required of them. The machinery is now in course of being installed, and it is hoped within a few days to be in full occupation.

Considerable difficulty was found in obtaining office accommodation under one roof to provide for the necessary staff in London, which has now been satisfactorily overcome by your Directors obtaining a 99 years' lease from the London County Council of what was the Gaiety Restaurant, but which is now known as Marconi House.

During last year interim dividends were declared at the end of June and the end of December amounting in all to 7 per cent. on the Preference Shares and 10 per cent. upon the Ordinary Shares. It is the intention of your Directors to recommend the payment of a final dividend of 10 per cent. for the year 1911, to which all classes of shares will be entitled. Subject to the approval by the General Meeting of the payment of this dividend it is the intention of your Directors to continue

the policy adopted last year of declaring interim dividends pending the preparation of the balance sheet, and in view of the fact that the actual business in hand at this time last year was represented by orders amounting to £254,000, whereas to-day the amount considerably exceeds £1,000,000, your Directors feel that they will be adopting a sufficiently conservative policy in declaring 7 per cent. on the Preference Shares and a first interim dividend of 10 per cent. on the Ordinary Shares as against the 5 per cent. of last year, thus leaving Preference and Ordinary Shares to participate equally in all further distributions for the current year.

The Directors retiring by rotation are Major S. Flood Page, Mr. Henry S. Saunders and Mr. S. Geoghegan, who, being eligible, offer themselves for re-election. The Auditors, Messrs. Cooper Brothers & Co., also retire and offer themselves for re-appointment.

A correspondent has communicated to the *Irish Times* a copy of the first wireless message between two vessels belonging to the Cunard line, which was sent when he was travelling home from New York in the "Lucania" in September, 1901. The following is a copy of the message published by the correspondent:

Campania : Are you there ?

Lucania : Yes, here—Lucania.

Campania : Have you anything for us ?

Lucania : Yes ; Lucania sends best wishes for a pleasant voyage. All well.

Campania : All right. Thanks. Message for Captain McKay. Captain Walker sends his respects to Captain McKay. We have experienced very bad weather since leaving Liverpool. All well.

Lucania : Message received all right. Thanks.

Campania : Have you seen any ice, or have you experienced any fog, please ?

Lucania : No ; have seen no ice or experienced any fog. We have had fine, clear weather up to the present. What is your position now, please ?

Campania : Let us have your position ; we will get ours.

Lucania : Our position—latitude 48.15 N., longitude 38.39 W.

Campania : Thanks. Our position is latitude 48.50 N., longitude 38.29 W.

Lucania : 2.45 a.m.—Good-bye. Pleasant passage.

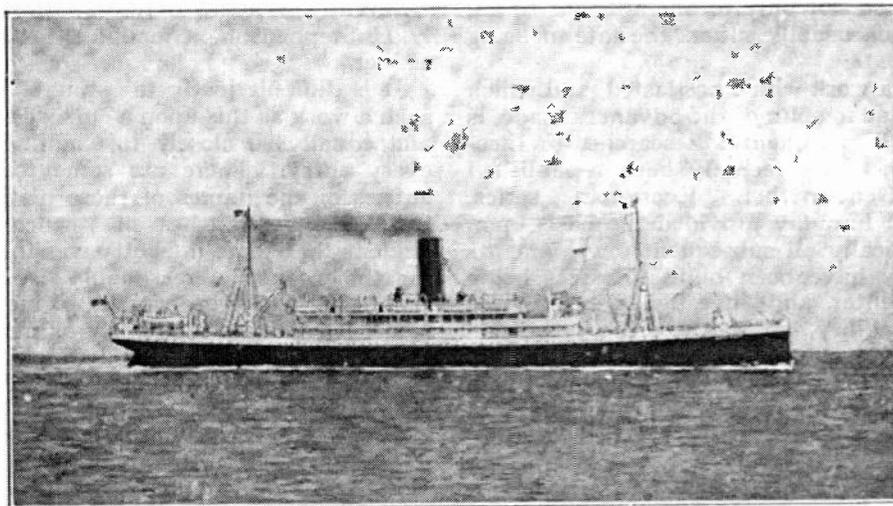
Campania, 2.50 a.m., returned the compliment. The distance approximately was thirty-six miles after being in communication about one hour.

Maritime Wireless Telegraphy

THE fitting of Messrs. Black & Co.'s s.s. "Kelvinbank," and the Anglo-American Oil Co.'s s.s. "Comanche" with the 1-kw. cargo sets described in last month's issue is a proof of the growing appreciation by owners of cargo and tramp steamers of the value of wireless communication. It may be that the London Dock strike has shown how extremely useful it would be to have been able to divert cargoes from one port to another by the use of wireless. Further orders have been received for fitting Messrs. Lamport & Holt's s.s. "Veronese," the Union Steamship Company of New Zealand's vessel "Sicamons," Messrs Yeoward Brothers'

for the Royal Mail S.P. Co., "Itatinga" for the Lage's, "Pomeranian" for the Allan Line, "Hydaspes" for the Houston Line, "La Marguerite" for the Liverpool and North Wales Co., "Pardo" for the Royal Mail S.P. Co., and the s.y. "Viking" for the Polytechnic Touring Co.

A correspondent writes to the *Dundee Advertiser* as follows: "I wish to ask two questions in view of the great loss of life during the recent storm on the North Sea. First, should not all our merchant vessels be fitted



The s.s. "Lanfranc."

s.s. "Aguila," Messrs. J. P. Corry & Co.'s s.s. "Star of Ireland," and six Union Castle liners.

The stream of orders for the fitting of vessels with wireless installations still pours into the Marconi International Marine Communication Co., Ltd. During the last month standard 1-kw. sets have been fitted to the following vessels: "El Paraguayo" for the Houlder Line, "Waimana" for the Shaw Savill and Albion, "Potaro" for the Royal Mail Steam Packet, "Sutherland Grange" for the Houlder line, "Ben-my-Chree" and "Empress Queen" for the Isle of Man S.P. Co., "Warilda" for the Adelaide S.S. Co., "Dimboola" for the Melbourne S.S. Co., "Arlanza" and "Deseado"

with the Marconi system, and all our coast-guard stations as well? Disabled vessels could then signal to the shore or to other passing craft for help. Second, should not all our steamers have much more spare sail, which, with an arrangement of telescopic masts and square yards, could be available, in case of need, transforming a steamer into a sailing ship at the will of the master, and thus prevent such disasters as have occurred in the North Sea during the recent gale?"

It is understood that the London Metropolitan Asylums Board have decided to have a wireless installation on a new seagoing tender which is being built to the order of the Board.

Reviews of Books

"EXPERIMENTAL RESEARCHES IN ELECTRICITY," by Michael Faraday. (London: J. M. Dent & Sons, Ltd., Everyman Series, 1s.)

In these days, when one is accustomed to live in an atmosphere of change, when the wonders of one day are the commonplaces of the next, the life of any book, even one of the most advanced scientific research, is apt to be brief. It is necessary, above all things, to be up to date—and what are the works of yesterday? In many cases a mere compilation of hypotheses, since found to be false, and of incomplete and inaccurate deductions. The tendency of literature is to become more and more merged into journalism—the works of to-day to be read, and then replaced by those of to-morrow. It is only occasionally that a work appears which endures, and this is nearly always one which is fundamentally a record of the events of the day. Sometimes a book is produced which is written with the intention of being suited not only to one age, but to all, and that book usually suffers the fate of being read in none.

A case of a work which has lasted, and which is still of value in spite of the advances made, is Faraday's "Experimental Researches in Electricity," which has recently been republished by Messrs. Dent in their "Everyman" series. The work of Faraday provided the basis upon which practically all subsequent developments in electricity have been built. Besides being an experimenter and investigator of almost unequalled ability, he was, by the possession of a highly developed sense of order, able to co-ordinate the work of other men, and by so doing to trace the full significance of discoveries which, individually, seemed of little importance.

A point of particular interest to our readers is that it was from Faraday's researches in electro-magnetic induction that Hertz commenced his investigation which resulted in the discovery of Hertzian waves. Yet this is only a portion of the fruits of his labours—it was from this same research in electro-magnetic induction that the principle of the dynamo was discovered.

We must not think that Faraday knew whither his investigations tended. It was not obvious that these things which have since become so important were of any more value than a hundred other investigations in voltaic and frictional electricity. It is interesting to read now his proof of the identity of frictional, voltaic, magneto, thermal, and animal electricity. It impresses one with the completeness and the method, the sense of order, displayed. Each one of his points *might* lead to important results, and each one had adequate attention. To read it will give the student an insight and a training in scientific research into unknown realms which will be invaluable

to those working in such an incompletely explored subject as wireless telegraphy.

Besides instruction, one can gain occasional amusement, for instance, as in paragraph 83, dealing with magnetically induced electricity: "Physiological effects.—A frog was convulsed in the earlier experiments on these currents. The sensation upon the tongue and the flash before the eyes, which I at first obtained only in a feeble degree, have since been exalted by more powerful apparatus, so as to become even disagreeable." One wonders how "disagreeable" Faraday would have found a 110,000 volt shock, and one is inclined to follow the example of the frog in being convulsed.

It must be said in conclusion that Messrs. Dent have done their part very well, and that, although the book contains much interesting matter printed on 336 pages, it is clear, and, like all of the "Everyman" series, of a size convenient to handle, and a price easy to pay (1s.).

"WHO'S WHO IN SCIENCE, 1912," edited by H. H. Stephenson. (London: J. & A. Churchill, 6s. net.)

It is difficult justly to estimate the value of such a work as this upon a cursory examination, and equally so closely to examine and verify every entry. There are some four thousand entries of the names of those distinguished in the various branches of science, and it is evident that some difficulty was found in keeping the work of a reasonable size, while mentioning all who were worthy of inclusion. The result is a certain inequality of treatment, and there would seem to be a distinct bias towards those distinguished in medicine. For instance, we find—

"Marconi, Guglielmo, Elec. Engrn., Watergate House, York Buildings, Adelphi, London, W.C., B. 1874. Bologna. Educ. Leghorn, Bologna Univ. Wireless Teleg."—

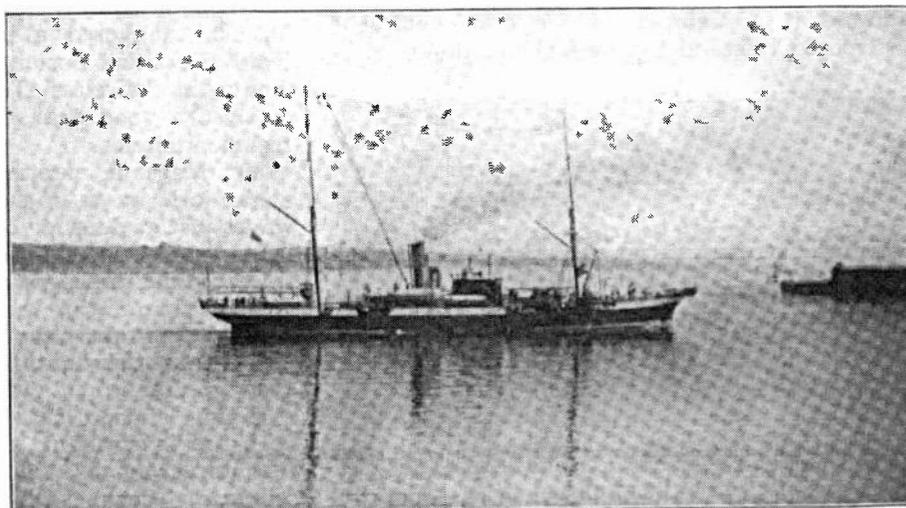
while on the same page six times the space is devoted to a gentleman whose claim to distinction rests on investigations of the "Maturation of the Egg of the Mouse." There is a list of abbreviations at the beginning of the book, which, besides giving many abbreviations inaccurately, is not adhered to in the later pages. It is difficult to understand why such an abbreviation as "Mem. Inst.E.E." should be adopted in a book where brevity is of primary importance, when "M.I.E.E." is the usual and accurate form.

The aim of the book is to give a reliable and accurate list of scientific notabilities, with such details as address, date of birth, education, published works, and claims to distinction. Absolute uniformity and perfection of treatment are alike unattainable, and perhaps the volume before us is about as near as it is possible to approach a high degree of perfection within a limited compass.

The "Titanic" Inquiry

INTEREST was lent to the later stages of the "Titanic" enquiry by the appearance on the witness stand of Mr. Marconi, who gave a general description of the working of wireless telegraphy at sea. Mr. Marconi's evidence was taken on June 19th. In reply to the Attorney-General, Mr. Marconi stated that the first installation on a large liner of the Marconi system of wireless telegraphy was fitted on the "Kaiser Wilhelm der Grosse" in 1900. In the following year the "Lucania," "Philadelphia," "Campania," "Etruria" and "La Savoie" were fitted with the Marconi system. When the first wireless installation was erected on board a ship the question of its proper administration was the object of much thought. Here was quite a new departure in shipping—a new means of communication requiring careful nursing which must needs be developed consistently with the requirements of navigation and with its own technical and commercial progress. It was recognised that such an undertaking as maritime wireless telegraphy on the stations on the ships of the various nationalities equipped with wireless should be operated not only with uniformity, but also with the proper object of cohesion between ship stations of different nationalities. A form of agreement between the Marconi Company and the shipowners embodying these principles was evolved shortly after the commencement, and remained at the present day in principle practically the same as at first drawn up. Mr. Marconi described some of the signals employed, stating that CQ was a call to all stations. Formerly the call to be given by ships in distress was CQD. Under the regulations the distress signal must not be given except by order of the captain of the ship in distress or by other vessels transmitting it. All stations were required to recognise the urgency of the call, and to make every

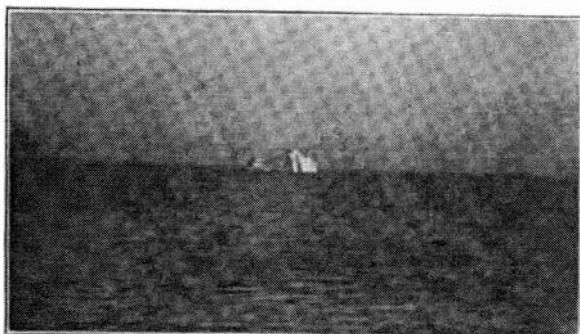
effort to establish communication with the least possible delay. In 1906 the International Radio-Telegraphic Convention laid down principles and regulations governing wireless telegraphy at sea. These came into force in July, 1908, and they were substantially the regulations now in force. At that time the distress call was altered to SOS, but CQD being so well known was used as well. Mr. Marconi stated that the installation on the "Titanic" was of a very modern type, and was guaranteed for a distance of about 350 miles, but in actual practice it carried a great deal farther. The



Cable Ship. "Mackay Bennett," which recovered bodies of "Titanic" victims and communicated names to shore by means of wireless.

apparatus was in duplicate, and there was a spare battery by means of which it could be operated in case the current from the dynamos was cut off owing to the engines being flooded. All the largest ships carried two Marconi operators so as to permit of a continuous service being maintained. In such cases one of the operators always had the telephone fixed to his ears, and could hear any call which was made. He could talk or read, however, when not actually receiving or sending a message. Where there was only one operator his duties were specified in a manner calculated to facilitate the establishing of communication with other stations. When not taking rest he must call C.Q. every two hours. Asked to explain the priority of messages, Mr. Marconi said that the message which took priority over everything was the distress signal, then came

messages of the British Admiralty and other Government departments, and messages of other Governments, messages relating to navigation, messages relating to the conduct of the radio-telegraphic service, and, lastly, ordinary correspondence. Mr. Marconi said, as far as he knew, no vessels were prevented from going to the assistance of the "Titanic" or her boats owing to messages received from the "Titanic," or owing to any erroneous messages being sent or received, nor, as far as he knew, was any vessel prevented by such message from going to the assistance of the "Titanic." The Attorney-General asked Mr. Marconi if he had considered the possibility on a ship with only one operator of a person who was not an expert in wireless telegraphy receiving a simple signal which might be devised so that he could call the operator. Mr. Marconi replied that he had considered that, and thought that if the international regulations allowed it a member of the crew could be instructed to stand by the instrument, to be in



Iceberg off Cape Race.

attendance on certain hours when the operator was off duty, and give the alarm and inform the captain in the event of a danger signal being sent. He thought that might be done. At the same time he had a certain feeling that it might not, in many cases, be altogether reliable. Another way that suggested itself to him, and to which he had given a great deal of attention since the "Titanic" disaster, was making the wireless apparatus ring a bell, and thereby give a warning that a ship in danger needed assistance. In order to make the system effective, given that the apparatus was all right, it would be necessary to alter the regulation of the International Convention so as to enable the danger signal to consist of, or be accompanied by, a long dash, as it was called, and an impulse or sequence of waves which would last for a period of fifteen, twenty, or thirty seconds. This would cause a bell to give a prolonged ring, like that which was given on shore by a fire alarm, and that would be a signal to denote that a ship required

assistance. Of course, following that signal, particulars might be given of the position of the ship and everything else. Some tests had been made with an apparatus such as he had referred to, and he had considerable confidence that it could be employed, although so far it had not been tested in actual practice. At all events, it was more feasible than the first suggestion. At present the only reliable plan was to have two men on board. Mr. Marconi expressed the opinion that the charts issued to the ships each trip were very important in regard to assisting the operator and letting him know approximately at what time he might expect to be in communication with a certain ship.

Over Land and Sea.

Lecture by Mr. Marconi.

When in the United States recently, Mr. Marconi delivered a lecture before the New York Electrical Society on "Recent Developments in Wireless Telegraphy," which has received a good deal of attention in American technical circles.

Mr. Marconi mentioned the fact that the ultra-violet rays in sunlight act on wireless waves just as does fog on light waves, the effect being greater the shorter the wave-length. On this account messages can be sent more easily at night than during the day-time and in cloudy weather than in clear sunlight. It has been noted that the damping effect of sunlight is even greater when either the sending or the receiving station is in darkness than when both are in sunlight, this result being due to the refraction of the waves at the surface separating darkness from sunlight. The fact that messages can be sent more freely over sea than over land is attributable to the greater and more uniform electrical conductivity of the surface of the ocean compared with the land surface.

In closing his lecture, Mr. Marconi stated that Nature has provided in wireless telegraph phenomena both advantages and disadvantages, the advantages always outweighing the disadvantages in connection with the most urgent communications. Under the conditions existing when communications are most desirable and difficult to obtain in any other way—namely, night-time, foggy weather, over troublesome seas, wireless telegraphy is at its very best in every respect.

On Prof. M. I. Pupin's motion, Mr. Marconi was elected an honorary member of the society, and in seconding the motion, Mr. Frank J. Sprague credited Mr. Marconi with saving the lives of those persons rescued from the ill-fated "Titanic" by means of wireless telegraphy. d

The Imperial Scheme

IN the House of Commons, recently, Mr. Herbert Samuel unfolded his annual Post Office Budget. The normal growth of the primary business of the Post Office—that of carrying letters and printed matter—was to some extent overshadowed by schemes of wider importance. With regard to the idea of a State-owned cable, Mr. Samuel firmly reiterated his conviction that it would be an unwise project for the Government to adopt, or for Parliament to sanction. A feeling reference to the "Titanic" disaster prefaced an announcement that the question of whether wireless installations should be made compulsory on ships, and how far continuous attention to the receivers could be secured was now engaging the closest attention. Mr. Samuel added that the wireless coast service round these islands, which is in the hands of the Post Office, had been greatly improved during the last few months. Its revenue showed a steady expansion; it gave a day and night service round the whole of our coasts, and was in constant touch with the coast communication service, which had been extended by the Post Office at a cost of £75,000, all round the coasts, for the purpose mainly of life saving.

Linking the Empire

Mr. Samuel next gave the House some further particulars concerning the Imperial Wireless Scheme. He said:

"In March, 1910, the Marconi Company made application for licences for eighteen stations in various parts of the Empire which were to be erected and worked by them, but on full consideration the Government thought it advisable, in view of the great strategic importance especially of those stations, that they should be State owned. The Committee of Imperial Defence was consulted on the matter, and they were of the same view. Last year at the Imperial Conference, a resolution was moved by Sir Joseph Ward on behalf of New Zealand, in favour of the establishment of a State-owned chain of wireless stations in various parts of the Empire, and on behalf of the Home Government I supported that resolution, and it was carried unanimously. Prior to that the matter had already engaged the attention of the Government, but subsequently to the meeting of the Imperial Conference a Committee was formed, over which I had the honour to preside, which included also other

representatives of the Post Office, and representatives of the India Office, the Colonial Office, the Treasury, the Admiralty, the War Office, and the High Commissioners of Australia, South Africa and New Zealand. That Committee made exhaustive inquiry into the conditions of the problem with the assistance of experts who were members of the Committee, and gave the closest examination to the proposals of the Marconi Company, and also considered other possible systems of wireless telegraphy. After prolonged negotiations with the Marconi Company, a preliminary agreement was signed some weeks ago accepting their tender for the erection of stations to be purchased and worked by the Government, and subject to the approval of Parliament.

Details of the Scheme

"It is proposed, in the first instance, six stations shall be erected: the first in England, the second and third on sites which are not yet definitely decided, but which may perhaps be in Egypt or in British East Africa, and at all events in two places on the road to India, the fourth station will be in India, and the fifth in Singapore. The sixth station will be erected within the territories of the South African Union. Other stations are contemplated in the future, but no definite provision is made with regard to them. We think it advisable to proceed cautiously at first to see how far those stations will fulfil our expectations. The Marconi Company give a guarantee that the stations will be able to communicate the distance specified—namely, 2,000 miles and more; in such cases they guarantee also a speed of twenty words a minute, duplex—that is to say, the stations will be able to send messages in one direction, and simultaneously to receive messages from two directions. They also guarantee a speed of fifty words a minute by automatic transmission after allowing for repetitions, and the service is to be continuous day and night. The contract also provides for duplicate engines in case of breakdown. There are many other provisions of the contract with regard to patents and royalties and so forth, but the whole of them will be submitted to the House formally before long, as soon as the details of the contracts and specifications have been completed. The cost in round figures per station, excluding sites and buildings, will be £60,000. There are also provisions with regard to a royalty of 10 per cent. on the gross

receipts during the period that we may have the use of the present and all future Marconi inventions and apparatus. The Indian Government will pay for the station in India; the other stations will be paid for direct by the Imperial Government, and the revenue derived from those stations will accrue, of course, to the Government which owns the stations.

Automatic Working

"Of course, wireless telegraphy, like other telegraphy, is practically instantaneous, and the method and rate of transmission must depend upon the detailed and actual working of the particular station and the way traffic is handled. The contractors will provide the stations, but they will not be really responsible for them. It will be the administration which will be concerned with the working of them. The whole of these matters may perhaps be more usefully discussed, though I do not deprecate discussion to-day, when all the facts are in black and white before the House, as they must be before the approval of the House is obtained for the contract."

As indicated by Mr. Samuel, this great scheme will in due time come before the House of Commons, but even in bare outline it makes a powerful appeal to the imagination.

Ship Installations

The Assistant Postmaster-General, Captain Norton, who took part in the discussion later, observed that one member who dealt with the question of the cables seemed to ignore altogether the fact that wireless telegraphy was bound to play a very great part in future. In the event of war, as those who had studied military matters knew, cables were likely to be cut or tapped, and it would be impossible to provide a cable which would be absolutely "war proof." The question of wireless telegraphy again cropped up in the House of Commons on a later date, when the Board of Trade estimates were discussed. Mr. Buxton asked what would have happened if the Government had suddenly and prematurely enforced compulsory wireless telegraphy on all ships. "We should have had on our ships, or many of them," he said, "inefficient operators." He found from figures that out of 850 foreign-going vessels no less than 314 of them had carried wireless equipment on board, and there was a large increase in the number of wireless operators. He thought that the feeling was now that the time was ripe for extending the system of wireless telegraphy, and he was considering at the present moment the best method by which that object could be at-

Berne Notes

The ratification of the International Convention by the United States Senate was officially communicated to the authorities at Berne by the United States Minister in Switzerland on April 15th. The Telegraph Administration of Bosnia and Herzegovina have also declared their adherence to the Convention and to the Additional Undertaking.

Mr. F. E. Dempster, having retired from the post of Director-General of Telegraphs of British India, the office has now been merged with that of the Director-General of Posts. Sir Charles Stewart-Wilson has been appointed to take charge of the department with the title of Director-General of Posts and Telegraphs.

The following call letters have been applied for by the countries named:—AUSTRIA: OLA, OLB, OLC, OLE, OLG, OIJ, OLK, OLL, OLM, OLN, OLP, OLR, OLS, OLT, OLU, OLV. CANADA: The series from CKA to CKZ. GREAT BRITAIN: QKT, QLH, RBV, RLM, SDK, SNM, VFL, VNQ, VRH. SWEDEN: All calls commencing with the following letters: GB, GD, GF, GI, GK, GL, GQ, GS, GT, GW, GX, except where such letters have already been allotted to other administrations.

Messrs. Crosby Lockwood & Son, the well-known publishers, have transferred their Technical Book Room from 121A Victoria Street, S.W., to more commodious premises at 5 Broadway, Westminster, S.W. (opposite Vickers's House), where a full representative stock of all the latest engineering and technical books may be inspected.

Captain H. Von Simson late of the German Navy, has expressed his opinion (in the course of an interview) that a Parsevel dirigible is better adapted for communicating by wireless than is an aeroplane. The antennæ, he said, had a tendency, when sent swaying by a strong wind, to influence the stability of the vessel, whereas airships were not exposed to the same disadvantage and danger. Thus a dirigible of this kind, starting, say, from Emden, could make its way across the North Sea to within sight of the English coast—its range of diametric vision at a height of 500 metres being an area of forty miles—when

Official Regulations

Fiji Islands

WE have been advised that the following interim regulations have been authorised for the Fiji Radio-Telegraphic Service, which was described in *THE MARCONIGRAPH* last month:

Communication will be carried on where practicable with all vessels trading in these waters, and shore stations fitted with wireless apparatus and conforming to the regulations laid down by the Radio-Telegraphic Convention.

CONDITIONS.—(1) The Department will expedite and facilitate as far as possible the delivery of messages, but is not responsible for their incorrect transmission or non-transmission.

(2) The following classes of special telegrams are not admitted into the radio-telegraphic service in all cases except inter-island traffic:

- (A) Reply paid.
- (B) Money orders.
- (C) Collated.
- (D) Acknowledgment of receipt.
- (E) "To be forwarded."
- (F) Paid services except regarding transmission over land lines.
- (G) "Urgents" except on land lines.
- (H) Delivered by express or post.

"Reply Paid," "Collect," and "Express" messages are permissible in the inter-island service.

(3) The address of radio-telegrams for ships at sea should be as complete as possible. It must contain the following:

- (A) Name of addressee.
- (B) Name of ship.
- (C) Name of coast station (not charged for).

(4) Senders may expect advice of non-delivery of radio-telegrams. On receipt of such advice senders may intimate by paid service at the rate of 6d. per message to the transmitting station that he desires the message held until the ship is within range, provided that such extension of time does not exceed 30 days.

(5) The charges for radio-telegrams must in every case be prepaid in full by the sender, with the exception of "Collect" messages in inter-island traffic above mentioned.

(6) Reimbursements may be claimed under the following conditions:

- (A) When a radio-telegram written in plain language has been rendered useless

by inaccurate transmission the whole amount will be refunded. Under no circumstances is the charge for a code of cypher radio-telegram returned on account of an error in transmission, unless such error leads to non-delivery or delay due to negligence on the part of operators.

(B) When a radio-telegram fails to reach its destination through an error on the part of the telegraphic or radio-telegraphic service the whole of the amount will be refunded.

(C) When one or more words have been omitted in transmission, the cost of such word or words will be refunded, provided that it is not less than 10d.

CHARGES.—The total charge for radio-telegrams comprises:

(1) Charge proper for oversea transmission.

(A) "Coast charge," which belongs to the Government.

(B) "Ship Charge," which belongs to the ship station.

(2) Charge for transmission on overland lines. A flat rate of 10d. per word between ship and shore, and 3d. per word for inter-island traffic has been adopted, address and signature included.

Radio-telegrams to be transmitted by cable are charged the cable rates in addition to the above. Radio-telegrams addressed to vessels out of range of the station at which the message originated, but within range of any other island station, will be retransmitted free of charge. Press news of a limited number of words of general interest will be supplied to passing vessels free of charge. Incoming press news to be charged at the rate of 10s. per 100 words or fraction thereof.

DELIVERY FEES AT TAVIUNI ARE AS FOLLOWS:

Radius of 1 mile or under free			
..	over	1 mile to 5 or under	1s.
..	..	5 ..	10 .. 2s.
..	..	10 ..	15 .. 3s.
..	..	15 ..	20 .. 4s.
..	..	20 ..	25 .. 5s.

These charges may be paid by the sender at once, or on receipt of advice as to the actual cost incurred, or they may be guaranteed and collected. Failing this collection from the addressee, the sender will be held responsible.

Certified copies of radio-telegrams may be procured if satisfactory evidence of the identity of the applicant is established, and a payment of 1s. is made. Messages are retained by the department for purposes of reference for a period of 12 months. Such application and

other correspondence should be directed to the Colonial Postmaster.

All radio-telegrams from Suva should be handed in at the Pacific Cable Board, and receipts demanded for all cash deposited. At Taviuni the messages should be handed to the officer in charge, and stamps to the value of each message affixed by the sender to the same. The Agents of shipping companies whose vessels equipped with wireless apparatus trade in these waters will be held responsible for charges due to the Government by ship stations.

Telegrams should be presented before the vessels are a greater distance than 300 and 200 miles from Suva and Taviuni stations respectively. Until further notice the hours of attendance at the respective offices will be as follows :

	SUVA.	10 A.M. to 4 P.M. 8 P.M. to 2 A.M.
	TAVIUNI.	10 A.M. to 4 P.M. 8 P.M. to Clear.
		<i>Sundays.</i>
	SUVA.	10 A.M. to 10.30 A.M. 8 P.M. to 2 A.M.
	TAVIUNI.	10 A.M. to 10.30 A.M. 8 P.M. to 8.30 P.M.

CHARGES.—(1) Ordinary :

(A) Ship to Suva wireless station—10d. per word flat rate, address and signature included. Cr. 6d. to Fiji and 4d. to ship.

(B) Ship to Taviuni or Labasa wireless station—10d. per word plus delivery charges at rate of first mile free, over 1 to 5 miles, 1s. ; 5 to 10, 2s. ; 10 to 15, 3s., etc.

(C) Ship to land stations (only Levuka at present)—10d. per word plus land rate of 1s. per 10 words, and 1½d. every additional word.

(D) Ship to cable—10d. per word plus cable charges. Cr. 6d. plus cable charges to Fiji and 4d. to ship.

(2) Press news of general character—10s. per 100 words or fraction thereof.

Limited number of words of extraordinary news supplied free of charge.

CALLS.—Suva	...	SVA.
Taviuni	...	TAV.
Labasa	...	LAB.

POSITIONS.—SVA.	Long. 178.27E.	Lat. 18.8S.
TAV.	Long. 179.59W.	Lat. 16.26S.
LAB.	Long. 179.22E.	Lat. 16.26S.

RANGE.—SVA.	300 miles daylight.
TAV.	200
LAB.	300

WAVE LENGTH.—SVA. 300 to 1200 metres
normal 600 metres.

TAV. 300 to 600 metres
normal 600 metres.

LAB. 300 to 600 metres
normal 600 metres.

Falkland Islands.

An Ordinance (No. 3 of 1912), dated March 15th, 1912, has been published, which provides for the regulation of wireless telegraphy in the Falkland Islands. It is provided that no person shall establish any wireless telegraph station or instal any apparatus for wireless telegraphy in any place or on board any British ship registered in the Colony, except under and in accordance with a license granted in that behalf by the Governor in Council. No person shall work any apparatus for wireless telegraphy installed on any merchant ship (whether British or foreign) whilst that ship is in the territorial waters of the Colony, otherwise than in accordance with prescribed regulations. The Wireless Telegraphy Ordinance of 1903 is repealed.

Australian Notes.

The wireless operator of an Australian Inter-Colonial steamer reports having received signals from the s.s. "Turakina" for ten consecutive days. Communication was maintained for nine days, but on the tenth night the Inter-Colonial steamer's apparatus was not sufficiently powerful to be heard by the "Turakina," the intervening distance being over 3,000 miles. The "Turakina" is fitted with standard Marconi 1½-kw. ship installation.

* * *

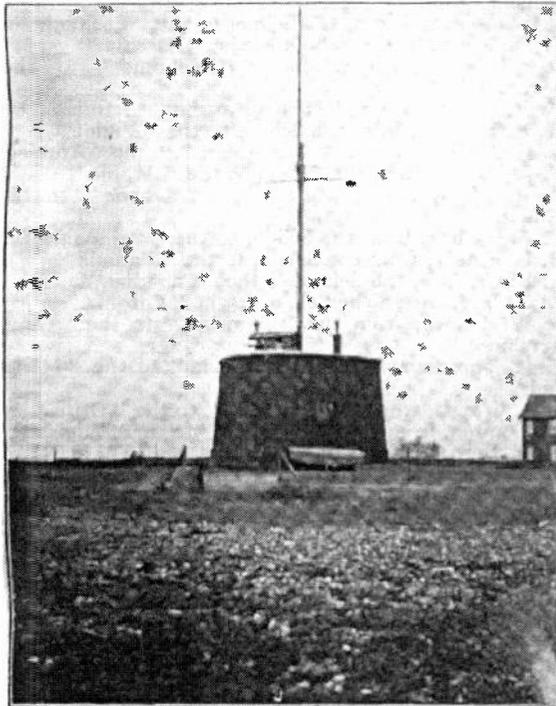
The Technical College at Ultimo has opened a course in wireless telegraphy, under the charge of Mr. R. C. Simpson, A.K.C., A.M.Inst.C.E. The students include 90 men and one girl.

* * *

Messrs. Burns, Philp & Co.'s passenger steamer "Mataram" has been fitted with wireless, the range being 1,500 miles. The same company's s.s. "Montoro" is already fitted; and the installation of wireless on these liners directs attention to the urgent need for more land stations on the North Queensland coast. The Dutch Government has commenced to link up the islands of the Dutch Archipelago.

Old Martello Towers.

Dotted round the English coast are relics of a bygone civilisation which have been pressed into modern service. An example of this is the conversion of the Martello tower on the beach at Felixstowe into a wireless telegraph and coastguard station. This juxtaposition of ancient and modern means of coast defence is a striking reminder to visitors to this well-known Suffolk seaside resort that wireless telegraphy has developed into an implement of immense importance in naval affairs.



Old Martello Tower at Felixstowe fitted with Wireless.

The Martello tower was introduced into England in consequence of an incident in the French revolutionary wars in the year 1793, and the strong resistance offered by these towers led to the conclusion that they were specially formidable. Martello towers were built in large numbers, and at heavy expense, along the shores of England, especially on the Southern and Eastern coasts, which in certain places were lined with these towers at short intervals. They are structures of solid masonry, containing vaulted rooms for the garrison, and providing a platform at the top for two or three guns.

The "P" Martello tower on the beach at Felixstowe has been used as a coastguard station for some years, but was later fitted up with Marconi telegraph apparatus for the use of the Eastern District sub-station. The

main and top masts are of Oregon pine, and the former is believed to be the largest ever cut from one tree, being about 90 feet long and 2 feet in diameter, the masts themselves being kept in position by wires fixed to four massive iron chain plates fixed into the ground with solid concrete blocks.

There were originally several of these old towers hereabout, but two or three of them have now been demolished, the old "Q" tower on the cliff being the last to share this fate early last year.

In the course of a lecture on the "Emission of Waves," delivered at the Birmingham University, Sir Oliver Lodge said the whole world had recently had its attention called to the subject of wireless telegraphy by one of those catastrophes which occurred from time to time—in this case eclipsing all the others. Without wireless telegraphy we should have known very little, perhaps nothing, about the loss of the "Titanic." It would have been one of those cases where a ship disappeared on the high seas, was heard of no more, and concerning the manner of whose loss there would be merely speculation. That was what happened in the southern seas in the case of the "Waratah," about which uncertainty prevailed for months. The certainty we had about the "Titanic" was painful enough, but it seemed preferable to a mere condition of uncertainty. The persons rescued, though few, owed their safety, so to speak, to the achievement of wireless telegraphy.

The Rev. H. V. Gill delivered a lecture on "Wireless Telegraphy" at the Belvedere College, Dublin, on May 6th. The lecturer stated that it was fitting that they who had charge of the education of boys should demonstrate to them the progress of science, and show what it had accomplished. There was no doubt that the recent disaster was one of the most momentous in the history of the world, and but for the use of wireless telegraphy it would ever have remained a mystery. The occurrence showed that as science progressed and as dangers increased, so also the means of obviating them increased. The lecturer explained how electric sparks were generated and how ether waves were produced. He dealt exhaustively with the mechanism of a wireless installation, and showed by actual demonstration how wireless messages were transmitted and received. He expressed the belief that the Marconi system would soon reach even a more perfect stage than it had now attained. In conclusion, the lecturer showed a number of slides illustrating some of the instruments used in connection with the Marconi system.

Personal

The honours list on the occasion of the King's birthday, issued on June 14th, contained but few names connected with physical science or engineering. The honour of knighthood was conferred upon Mr. C. A. King, C.B., who has long been connected with the Post Office service in various capacities, and is now controller and accountant-general. Mr. S. K. L. Yeats, the accountant-general of posts and telegraphs in India, had conferred upon him the honour of C.I.E., while the C.M.G. was conferred upon Mr. D. Robertson, the secretary of the Post Office and Telegraph Department of New Zealand.

Dr. W. H. Eccles, head of the Department of Mathematics at the South-Western Polytechnic Institute, has been appointed to the new University readership in graphics tenable at University College. This post carries with it the status of a teacher appointed by the Senate of the university, and is the result of a division of the work of the department of applied mathematics and mechanism, the chair of which was recently resigned by Professor Karl Pearson. That part of the mathematical work which deals especially with the requirements of the engineering student will now devolve upon the Reader in Graphics.

Athletics

Twice in the course of the season the Marconi Cricket Clubs representing the head office in London and the works at Chelmsford engage each other in battle royal. The first of these matches was played on the ground of the London club at Acton Town on Saturday, June 15th. From the beginning of the game it was evident that the teams were very evenly matched, and a keen fight terminated in a victory for the home team by the narrow margin of six runs. After the match tea was served in a marquee erected on the ground, followed by a Bohemian concert, a very good programme being provided by members of the staff of the London office. On Saturday, June 22nd, the club met and were defeated by Fulham Palace by 31 runs, the Palace, batting first, making a total of 107, leaving the Athletic Club to get 108 to win. This they proceeded to do, and the score read 64 for 4 wickets, when a rot set in, and the rest of the side were out for an additional 12 runs, the final score being 76 (Bates, 32; Smith, 11; Burden, 10). The fielding of the Marconi Club left a lot to be desired, no less than fourteen catches being missed.

Movements of Operators

A. Johnson, from the School to the "Ben-my-Chree."
G. R. Tyler, from the "Empress of Ireland" to the "Corsican."
A. Gibson, from the "Oceanic" to the "Cretic."
K. S. Cawhey, from the "Hilary" to the "Elmina."
A. E. Baker, from the "Francis" to the "Buccaneer."
C. C. Goulding, from the "Celtic" to the "Lake Manitoba."
A. C. Arnold, from the "Winifredian" to the "Hilary."
J. R. Kingsford, from the "Mauretania" to the "Laurentic."
T. J. Chapman, from the "Gloucestershire" to the "Leicestershire."
W. Davies, from the "Carmania" to the "Mauretania."
R. H. Mountain, from the "Merion" to the "Mauretania."

H. K. Gibsons, from the "Anselm" to the "Merion."
F. N. Calver, from the "Cedric" to the "Oropesa."
W. J. Wing, from the "Corsican" to the "Runic."
J. E. Davies, from the "Carmania" to the "Stephen."
J. Biggins, from the "Laurentic" to the "Vandyck."
P. Greaves, from the "Victorian" to the "Winifredian."
H. Sequeira, from the School to the "Adriatic."
J. Boudella, from the "Canadian" to the "Anselm."
C. W. Pain, from the School to the "Celtic."
L. Smith, from the "Lusitania" to the "Christopher."
C. J. Lawrence, from the School to the "Dominion."
H. Matthews, from the School to the "Empress of Britain."
R. Chitham, from the School to the "Laurentic."
G. McCormack, from the "Connaught" to the "Leinster."
J. D. Lavelock, from the School to the "Lusitania."
L. Taylor, from the School to the "Laconia."
C. J. Alford, from the "Hildebrand" to the "Devoaian."
H. E. Wright, from the School to the "Victorian."
H. R. Beynon, from the School to the "Viking."
V. F. Evans, from the "Corinthian" to the "Arabic."
F. J. Lovett, from the School to the "Arabic."
P. L. Brownfield, from the "Navahoe" to the "Aeneas."
F. E. Garlick, from the School to the "Campania."
B. F. Emery, from the School to the "Canada."
A. Birch, from the School to the "Canadian."
A. G. Dicks, from the School to the "Caronia."
S. W. Brown, from the "Tunisian" to the "Gloucestershire."
J. R. Thomson, from the "Oravia" to the "Hildebrand."
J. A. Craigie, from the "Canada" to the "Orita."
W. Condon, from the "Armenian" to the "Tunisian."
R. A. Bernard, from the School to the "Tunisian."
H. D. Humphries, from the "Tritonia" to the "Cassandra."
J. T. Williams, from the "Sardinian" to the "Tritonia."
C. E. Rookes, from the "Viking" to the "Pomeranian."
T. Horne, from the "Dunluce Castle" to the "Mantua."
C. A. Hill, from the "Orama" to the "Demosthenes."
R. Harding, from the "Galway Castle" to the "Intaba."

Movements of Engineers

H. Dobell, transferred from Imperial Stations work to Broomfield, in charge of Instructional Department, to relieve.
R. G. Kindersley on leave.
Lt. A. Loveband, transferred from Chelmsford Test Room to the Field Station Department.
G. H. Major, Poldhu, from Clifden, assisting.
B. S. Benning, Poldhu, from London Drawing Office, assisting.
S. F. Kos and D. H. Jones on passage to England from Borneo, the stations at Balikpapan and Tarakan having been taken over.
H. M. McCullough, S. R. Groser, S. L. Dashwood, R. R. Cooke, and J. D. White on leave, after completion of India Government stations.
C. James on leave, after completion of Constantinople station.
E. Ichino, returned from Coltano, Italy, now attached to the London office assisting on the work of the Imperial scheme.
A. G. Savill, returned from Clifden, now attached to London office on ship work.
C. J. Robb, special experimental work at Chelmsford.