

From 1913 Edition Year Book Wireless T.E.T.

Complete

BIOGRAPHICAL NOTICES

ARCO, GRAF, GEORG VON.—Born at Grossgorschütz, Germany.

Educated at Berlin University and the Technical High School, Charlottenburg. In 1898 he was appointed assistant to Professor Slaby in the department of Wireless Telegraphy; later he joined the Allgemeine Elektrizitäts Gesellschaft, Berlin, and in 1903 was appointed manager of Gesellschaft für Drahtlose Telegraphie. He is also a director of the Deutsche Betriebs Gesellschaft für Drahtlose Telegraphie.

AUSTIN, LOUIS WINSLOW, Ph.D.—Was for a time assistant professor of physics at the University of Wisconsin, and later on the staff of Physikalisch-Technische Reichsanstalt at Berlin. It was at this time that he became seriously interested in Wireless Telegraphy, and on his return to America in 1904 he followed up his work begun at Berlin on high temperatures and the discharge of electricity through gases. His early work was specially connected with detectors. One of the most important investigations undertaken by him has been in connection with the development of a method of quantitative measurement of electrical oscillations in the recent antenna. He was recently sent on a mission to study wireless conditions in Europe, and in June, 1912, represented the United States at the International Radiotelegraphic Congress in London. He is at present chief of the United States Radiotelegraphic Laboratory in Washington.

BAKER, T. THORNE.—Born March 19th, 1881. Educated at Mercers' School, London, and passed Intermediate Science examination at the University of London. After five years' work as research chemist he went to Paris in 1907 for the *Daily Mirror* to take up Prof. Korn's system of photo-telegraphy, and superintended the operation of the system between Manchester, Paris, and London. Mr. Baker has since associated himself with work in Wireless Telegraphy and Telephony.

BANTI, PROF. ANGELO.—Born in Orbetello, Grosseto, Italy, in 1859. After a course of scientific study in Paris he entered the Rome University, where he took the degree of Doctor in Physics. He practises as a consulting electrical engineer and expert, and acts as scientific adviser to many electrical companies, municipalities, etc. In 1902 he issued various

- publications on Wireless Telegraphy; in 1903 he published an article relating to his investigations on the singing arc.
- BEGGEROW, DR. HANS.—Born September 30th, 1874. Educated at the University of Berlin and Freiburg-breisgau, where he obtained his Doctorate. 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.
- BELLINI, DR. ETTORRE.—Born at Foligno, Italy, on April 13th, 1876, and educated at Naples University. In 1901 he was appointed Electrical Engineer to the Royal Italian Navy, and in 1906 he became chief of the naval Electrical Laboratory at Venice, in which latter capacity he was responsible for carrying out research work dealing with the employment of Wireless Telegraphy on warships and submarines. Later, in conjunction with Capt. Tosi, he invented the Radiogoniometer, an apparatus for directive Wireless Telegraphy. In 1910 the Bellini-Tosi system was installed at the Boulogne-sur-Mer station of the French Post Office, and in 1912 Dr. Bellini joined the staff of Marconi's Wireless Telegraph Company, Ltd., which acquired the patent rights for the construction and commercial development of the wireless compass.
- BLONDEL, ANDRÉ E.—Born in Chaumont, France, in 1863, and graduated at the Paris University. He has taken part in notable movements in lighting methods and apparatus, and has been a frequent contributor to learned societies and technical journals on several subjects, including Wireless Telegraphy, in connection with which he invented a new apparatus which opened a fresh field for the study of alternate currents.
- BRANLY, EDOUARD.—Born at Amiens on October 23rd, 1844. He studied at the St. Quentin College, afterwards at Henry IV. College, Paris. He is a Fellow of the University, Doctor of Physical Science, and Doctor of Medicine. Some of his works relate to the electrical conductivity of radio-conductors, and in 1900 the International Jury of Superior Precept Instruction awarded him a *grand prix* for his exhibition of radio-conductors, and the French Minister of Public Instruction made him a "Chevalier of the Legion of Honour" in recognition of the part he has played in connection with the discovery of "Wireless Telegraphy." He has constructed

various independent distributing apparatus for producing tele-mechanical effects without wires. In January, 1911, he was elected a member of the Academy of Science, Paris.

BRAUN, PROF. FERDINAND.—Born at Fulda on June 6th, 1850, and studied at Marbourg and Berlin. He has held several academic appointments, and in recent years has devoted his attention to Wireless Telegraphy. In December, 1910, he received (with Mr. Marconi) the Nobel Prize for Physics.

BROWN, SYDNEY GEORGE.—Born in 1873 in Chicago, U.S.A., and brought to England at an early age. He received his education at Harrogate and University, London. He took up the study of submarine telegraphy, and among his important inventions is the well-known drum cable relay and the magnetic shunt. He has also devoted attention to Wireless Telegraphy.

BURSTYN, DR. W.—Born in Austria in 1877, and educated at the University of Vienna. He started his career as an electrical engineer with the Siemens-Schuckert Werke at Charlottenburg, and with the Gesellschaft für Drahtlose Telegraphie.

CABLE, BENJAMIN STICKNEY.—Born at Roch Island, Illinois, on September 24th, 1872. He graduated B.A. at Yale University in 1895, and LL.B. at Columbia University Law School in 1898. After two years of private practice, he entered the Law Department of the Chicago, Roch Island & Pacific Railway, and rose from the station of Law Clerk to that of General Attorney. He was recently appointed Assistant Secretary at Department of Commerce and Labour, and is responsible for administration of the United States Wireless Laws affecting shipping.

CHARLTON, CAPTAIN E. F. B.—Is Assistant Director of Torpedoes at the Admiralty, which position carries with it the responsibilities in all matters connected with the design, working, and development of wireless telegraphy at the Admiralty.

CROOKES, SIR WILLIAM, O.M., F.R.S.—Born in London June 17th, 1832, and in 1854 was appointed superintendent of the Meteorological department of the Radcliff Observatory, Oxford. He has carried out a long series of original investigations, and has also published some interesting articles on Wireless Telegraphy.

DE FOREST, DR. LEE.—Born in the United States of America, and graduated at Yale College. He has been identified with Wireless Telegraphy since 1896.

DUBILIER, WILLIAM.—Born at Seattle, U.S.A., on July 25th, 1888. In 1904 he made one of the first amateur Wireless Telegraph apparatus in the United States, and he has since devoted himself to Wireless Telegraphy and electricity. During recent years he has mainly occupied himself with experiments in Wireless Telephony.

DUDELL, W., F.R.S.—Born in London in 1872 and educated privately in this country and in France. He carried out research work at the Central Technical College, London, between 1893 and 1900. In 1908 he read, in conjunction with Dr. E. W. Marchant, a paper on "Experiments on Alternate Current Arcs by the Aid of Oscillographs" before the Institution of Electrical Engineers, and in 1900 he read a paper on "Rapid Variations of Current through the Direct Current Arc." He received a gold medal for oscillographs at the Paris Exhibition of 1900, and at St. Louis in 1904. He is President of the Institution of Electrical Engineers for 1912-1913. He is also a member of the technical committee appointed by the Government in 1912 to consider the question of long-distance wireless telegraphy.

ECCLES, W. H., D.Sc., A.R.C.S.—Born in Furness, Lancs., in 1875, and entered the Royal College of Science, South Kensington, in 1894. Three years later he was appointed demonstrator in the Physics Laboratory at the College, and in 1898 he graduated at the London University with first-class honours in Physics. In 1899 he entered Mr. Marconi's laboratory at Chelmsford and spent a great part of his time in the investigation of electrical oscillations of air wires and in "jiggers." He also devised a laboratory method for testing and classifying coherers, and results of a later study of coherers were presented as his D.Sc. thesis. In 1901 Dr. Eccles was appointed head of the department of mathematics and physics at the South Western Polytechnic, Chelsea, and he is now University Reader in Graphics at University, London. He is a member of the Council of the Physical Society and examiner in mathematics at the London University, and secretary of the British Association Committee on Radiotelegraphic Investigations.

EICHHORN, GUSTAV, Ph.D.—Born at Düsseldorf (Germany) on December 1st, 1867. After leaving the Realgymnasium he took up the study of physics, but this was interrupted by the death of his father, whose paper mills he then entered. For ten

years he devoted himself to a business career; then he returned to the profession of his choice and continued his interrupted studies. After three years at Berlin, Munich, and Zürich, he took the degree in physics (Phil. Dr.) at the last-named University. He was about to enter upon an academical career when unforeseen circumstances again intervened and he was compelled to follow practical pursuits. He entered a wireless telegraph laboratory, and soon after he was appointed manager of experimental stations on the Baltic, where, for about eighteen months he conducted a number of investigations. The results of these are incorporated in a book which was published in England and Germany. He has contributed to various technical journals and has invented a device which is used in connection with wave meters and other instruments. He returned to Zürich in 1905 and introduced wireless telegraphy to the Swiss Military Authorities. Two years later he launched the *Jahrbuch de drahtlosen Telegraphie und Telephonie*, which is now a well-known publication. He is still engaged in practical and theoretical work in wireless telegraphy and telephony.

ERSKINE-MURRAY, DR. JAMES.—Born in Edinburgh on October 24th, 1868, and after a course of six years' study under the late Lord Kelvin at Glasgow University he entered Trinity College, Cambridge, as a research student. In 1898 he was appointed experimental assistant to Mr. Marconi. In 1900 he took up the post of lecturer and demonstrator in physics and electrical engineering at the University College, Nottingham, and in 1905 he was appointed to the lectureship in electrical engineering at the George Coates' Technical College, Paisley. In 1905 he took up consulting work in radiotelegraphy, and he now holds the lectureship in radiotelegraphy at the Northampton Institute.

FERRIÉ, COMMANDANT.—He is attached to the department of the Ministry for War, France, and is in charge of the installation at the Eiffel Tower, Paris.

FESSENDEN, REGINALD AUBREY.—Born at Milton, Canada, on October 6th, 1866. Educated at New York and Port Hope, Ontario. In 1886 he was appointed inspecting engineer to the Edison Company, N.Y. In 1892 he took up teaching work and conducted classes in physics and electrical engineering at Western University, and in 1893 he was appointed Professor of Electrical Engineering at Western University of Phila-

delphia. He has associated himself with the development of Wireless Telegraphy and Wireless Telephony.

FLEMING, DR. JOHN AMBROSE, F.R.S.—Born in Lancaster on November 29th, 1849. Educated at University College School, London; University College; the Royal School of Mines; and St. John's College, Cambridge; Hughes Gold Medallist of the Royal Society. He was appointed demonstrator in mechanics and applied science to the University of Cambridge, and when University College, Nottingham, was opened in 1881 Dr. Fleming was selected as first occupant of the chair of mathematics and physics. He resigned this professorship shortly afterwards to remove to London. In 1885 the Council of the University College, London, created a chair of electrical engineering, and they appointed Dr. Fleming as the first occupant of that chair. Later the bulk of the funds subscribed towards the Sir John Pender memorial was employed to endow the chair of electrical engineering at University College and for the maintenance of the electrical laboratory, subject to the condition that the laboratory should henceforth be known as the Pender Laboratory, and the chair occupied by Dr. Fleming as the Pender Chair of Electrical Engineering. After the incorporation of the University College with the University of London the title of Dr. Fleming's chair was changed to that of Pender Professor in the University of London. In 1912 Dr. Fleming was appointed University Professor of Electrical Engineering in the University of London. He is the author of numerous well-known text-books, amongst which may be mentioned particularly his books on Wireless Telegraphy. He has given many courses of lectures at the Royal Society of Arts and the Royal Institution on Wireless Telegraphy and kindred subjects.

FLOOD-PAGE, MAJOR SAMUEL.—He has served in military campaigns in India, and besides active service he was occupied with administrative work. On retiring from the Army he devoted himself to business, and one of his achievements which may be mentioned is the introduction of the first incandescent electric lamps into Australia. He joined Marconi's Wireless Co., Ltd., in 1899, as managing director, and still remains a director of the company. Many movements—national, commercial and philanthropic—have found in him an earnest supporter.

FROUIN, M.—He is Director of the French Telegraphs and was one of his country's representatives at the International Radiotelegraphic Conference held in London in 1912.

GEOGHEGAN, SAMUEL.—Apprenticed to a firm of mechanical engineers in Birmingham, he has had considerable experience in railway and bridge work in England and various parts of the world. In 1875 he was appointed Chief Mechanical Engineer to Messrs. Arthur Guinness & Co., of Dublin, in whose service he spent 30 years. While with that firm he laid out a system of tram lines in which there was a spiral incline of 120 feet diameter for $2\frac{1}{2}$ turns and a gradient 1 in 40. He is a member of the Institution of Mechanical Engineers, the Midland Institution of Mining, Civil and Mechanical Engineers, the Institution of Civil Engineers of Ireland, and a member of the Council of the Royal Dublin Society. Director Marconi's Wireless Telegraph Co., Ltd.

GLAZEBROOK, DR. R. T., F.R.S.—Born at Liverpool, September 18th, 1854. Educated at Trinity College, Cambridge, where, after taking his degree, he commenced a study of physics at the Cavendish Laboratories under Clerk Maxwell. In 1899 he was appointed by the Royal Society as the first director of the National Physical Laboratory, which position he still holds. He is a member of the technical committee enquiring into the Imperial Wireless Scheme.

HOWE, PROF. GEORGE WILLIAM OSBORN.—Born December 4th, 1875, at Charlton, Kent. Educated at Roan School, Greenwich, and at Woolwich Polytechnic. After some industrial experience he joined the teaching staff of the City and Guilds Engineering College, and was later appointed Assistant Professor of Electrical Engineering at the College. He has read several papers on radiotelegraphy before the British Association and the Physical Society, and in 1912 he was awarded the silver medal by the Royal Society of Arts for his paper on "Some Recent Developments in Wireless Telegraphy."

ISAACS, GODFREY C.—Educated in England, France and Germany. He began life in his father's business and at 18 years of age he was manager of the great concern which he had entered as a lad. Young as he was, he not only mastered all the difficult questions connected with the foreign trade, with which his father was chiefly concerned, but as manager he was able to carry on the important correspondence of the business of the firm in the various languages of the leading

customers. Added to this, and while at an early age, he, in the course of his extensive travels in all parts of Europe, exhibited great ability in dealing with leading business men of nearly all nationalities. In 1910 he was appointed Managing Director of Marconi's Wireless Telegraph Co., Ltd., and the Marconi International Marine Communication Co., Ltd.

KENNEDY, SIR A. W. B., F.R.S.—Born in London, March 17th, 1847. He has had great mechanical engineering experience and has been President of the Institution of Civil Engineers and the Institution of Mechanical Engineers. He has designed electric lighting and power stations for many Corporations, and has also been engaged in traction work. He received the honour of knighthood in 1905 on account of his services to the Admiralty. He is a member of the technical committee considering the Imperial Wireless scheme.

KORN, PROFESSOR ARTHUR.—Born at Breslau, Germany, 1870. He is best known as the inventor of a system of telegraphic transmission of photographs, and has published various books on this subject.

LODGE, SIR OLIVER, F.R.S.—Born at Penkhall, Staffs., on June 12th, 1851. He was educated at the Newport (Salop) Grammar School, and was intended for a business career, but being attracted to science he entered University College, London, in 1872, and graduated D.Sc. five years later. He was reader in natural philosophy at Bedford College for Women, then Professor of Physics in University College, Liverpool, before being appointed, in 1900, the first Principal of the new Birmingham University. He was knighted in 1902. He has distinguished himself in various spheres of thought, and his original work includes investigations on lightning, the seat of the electromotive force in the voltaic cell, the phenomena of electrolysis and the speed of the ion, the motion of the ether near the earth, and electromagnetic waves and wireless telegraphy. His patent for syntonic wireless telegraphy has been acquired by the Marconi Co. He presided over the mathematical and physical section of the British Association in 1891 and is President-Elect of the British Association for the ensuing year. He has also served as President of the Physical Society and the Society for Psychical Research. He has made many important contributions to the literature of science and has written various books and papers of a metaphysical and theological character.

LORING, COMMANDER F. G.—Is a Captain in the British Navy and is Inspector of Radio-telegraphy to the Post Office.

MADGE, HENRY ASHLEY, B.A., A.M.I.E.E.—Born February, 1879. Educated at Peterhouse, Cambridge (1898-1902), where he took honours in Mathematics and Mechanical Science (Engineering). July, 1902, to September, 1903, Junior Engineer with Marconi's Wireless Telegraph Co., Ltd.; October, 1903, to January, 1904, Royal Naval College, Greenwich; February, 1904, to March, 1905, Naval Instructor in H.M.S. *Vernon*; April, 1905, Expert in Wireless Telegraphy in H.M.S. *Vernon*.

MANDELSTAN, LEONID.—Born May 5th, 1879, in Mogilew, Russia, he studied mathematics and physics at the University of Strassburg under Professor Braun, and in 1902 he was appointed Dr. r.e.r. of Physics at that University.

MARCONI, ALFONSO.—Born at Bologna in 1865, he is about eight years older than his distinguished brother. He was educated at the Bedford Grammar School in England and later at Technical Colleges in Florence and Leghorn. He joined the board of Marconi's Wireless Telegraph Company and the Marconi International Marine Communication Co., Ltd., in July, 1909.

MARCONI, COMMENDATORE GUGLIELMO, LL.D., D.Sc.—Born at Bologna, in Italy, on April 25th, 1874, he is Irish on his mother's side. He was educated at Leghorn and Bologna University, and first began to interest himself in the problem of Wireless Telegraphy in 1895. In the following year he came to England, and took out the first patent ever granted for a practical system of Wireless Telegraphy by the use of electric waves. His first experiments in England were made at Westbourne Park. Shortly afterwards Mr. Marconi saw Sir W. H. Preece, and at his request made some experiments for him and the Post Office officials, between the Post Office and the Thames Embankment. These experiments were highly successful, and Mr. Marconi was requested to make further trials on Salisbury Plain, which also proved satisfactory to the Post Office and to officers of the Army and Navy who witnessed them. Mr. Preece, in December, 1896, delivered a lecture at Toynbee Hall on the subject of "Telegraphy Without Wires," and Mr. Marconi was present and conducted the experiments. Some further experiments were

made in May, 1897, in the Bristol Channel, when Lavernock and Flatholm were successfully connected, and afterwards Lavernock and Brean Down, across the Channel, a distance of nine miles. A full report of Mr. Preece's lecture, in which these experiments were dealt with, was given before the Royal Institution on June 4th, 1897. On the invitation of the Italian Government, Mr. Marconi went to Rome and gave a series of exhibitions of the Marconi system at the Quirinal before the King and Queen of Italy and high Italian Government officials, and he subsequently went to Spezia, where his system was put to practical test on board two Italian battle-ships. A station was erected on land at the arsenal, and the ships were kept in constant telegraphic communication with the shore up to 12 miles from the spot where the apparatus was fixed. The Italian Government, recognising the great value of Mr. Marconi's invention, conferred upon him the honour of knighthood, and are now using his system extensively. On his subsequent return to England Mr. Marconi conducted further experiments at Salisbury (between Salisbury and Bath, a distance of thirty-four miles), and signals were successfully received by Captain Kennedy, who himself erected a set of Marconi instruments at Bath for this installation. On July 20th, 1897, the Wireless Telegraph and Signal Co. Ltd.—now known as Marconi's Wireless Telegraph Co., Ltd.—was established, and two permanent stations were put up—the first at Alum Bay, Isle of Wight. A small steamer was chartered in connection with the experiment here carried out, and fitted with the necessary instruments, the steamer cruising round the coast about Christmas time for several weeks. Although tempestuous weather was experienced no break in telegraphic communication with the station took place. At the beginning of 1898 another permanent land station was put up at Bournemouth and subsequently removed to Poole. The first station was $14\frac{1}{2}$ miles distant across the sea, and the removal to Poole increased this distance to 18 miles. By the aid of these stations great progress was made in developing Wireless Telegraphy. In May, 1898, an exhibition of Wireless Telegraph apparatus was made in the House of Commons and at St. Thomas's Hospital. A number of social and other messages had been sent over the Wireless Telegraph Co.'s service under various conditions and in several languages, and these messages had been transmitted without mutilation to their destination. In July, 1898,

the *Dublin Express* gave day by day a Wireless Telegraphic report of the yacht races during Kingstown Regatta week, and proved the usefulness and facility with which the system can be applied to commercial purposes. Later Mr. Marconi established communication between the late Queen's residence at Osborne House, Isle of Wight, and the Royal yacht *Osborne*, and Her late Majesty was kept apprised of the progress made by the King during the process of recovery from a serious accident. No difficulty has been experienced in transmitting or receiving messages from the established land stations, and in the week ending December 24th, 1898, Mr. Marconi was engaged in installing apparatus to provide communication between a lighthouse and a lightship on the South Coast, the Trinity House authorities having placed a room at the South Foreland lighthouse at Mr. Marconi's disposal for the purpose. Mr. Marconi is a member of the Institution of Electrical Engineers, and read a paper on "Wireless Telegraphy" before the members in February, and lectured at the School of Military Engineering, Chatham, in March, 1899. He journeyed to the United States in connection with the America Cup Yacht racing for 1899, between *Columbia* and *Shamrock I.* In the same year a number of the ships of the British Navy were equipped with Marconi apparatus. Early in 1901 telegraphic communication was established between two points more than 250 miles distant, and at the end of that year Mr. Marconi transmitted signals from Poldhu, in Cornwall, to St. John's, Newfoundland. Marconi apparatus is working commercially on board most of the largest passenger steamers afloat, including the ships of the famous shipping lines in England, France, Germany, Italy, America, Canada, etc. A demonstration of the Marconi system was made for the French Government in the early part of 1901, when communication was established and maintained for some time between Antibes, near Nice, and Calvi, Corsica. At the same time the yacht of the Prince of Monaco was fitted with Marconi apparatus. The international yacht races were reported for the American Associated Press by the Marconi system. An important agreement was made during 1901 between the Marconi International Marine Communication Co. and Lloyd's, by which the latter corporation adopts exclusively the Marconi system, and agrees to fit up its stations with Marconi apparatus. Mr. Marconi's system is the only means of telegraphic communication throughout the

Sandwich Islands, the islands in this group having been fitted with the apparatus during 1901. In February, 1902, Mr. Marconi received on board the s.s. *Philadelphia*, in the presence of the officers, good messages on the tape when at a distance of over 1,500 miles from the transmitting station, and signals at over 2,000 miles. In December, 1902, the station established at Cape Breton, Nova Scotia, under a contract with the Canadian Government, for transatlantic Wireless Telegraphy, was put into communication with the Cornwall station at Poldhu, and inaugural messages were transmitted to H.M. the King of England, H.M. the King of Italy, and others, and to *The Times* newspaper, this message for purposes of verification being transmitted in the presence of *The Times* correspondent at Cape Breton, and of the officers of the Italian warship *Carlo Alberto*. In October, 1903, during the voyage of the R.M.S. *Lucania*, Mr. Marconi established communication between this ship and the Marconi stations at Glace Bay, Canada, and Poldhu, Cornwall, England; communication was continued throughout the voyage, messages received, and a bulletin published and issued daily to each passenger. At the end of October, 1903, Mr. Marconi, at the invitation of the British Admiralty, sailed on board H.M.S. *Duncan* from Portsmouth to Gibraltar, and throughout the voyage messages were received on board from the Marconi station at Poldhu. Communication was also carried on between the Marconi station on the Rock of Gibraltar and that at Poldhu. In February, 1904, Marconi Wireless Telegraph stations were opened at Broomfield, in Essex, England, and at Amsterdam, in Holland, for the transmission between the two countries of Press messages and Stock Exchange quotations, these messages being transmitted in Dutch by English operators, having no knowledge of that language, at a speed of from 25 to 30 words per minute, and afterwards published in a leading Dutch newspaper, the *Handelsblad*. On June 4th, 1904, a daily service of wireless news messages all the way across the Atlantic was inaugurated on board the Cunard R.M.S. *Lucania*, and a newspaper, entitled *The Cunard Daily Bulletin*, is now regularly published on this vessel, as well as on all the important vessels belonging to this line. Similar journals are published on the ships of the American Line, on the *New Amsterdam* (Holland-American), and on others. On August, 3rd, 1904, Marconi Wireless Telegraph stations were opened at Bari,

in Italy, and Antivari, in Montenegro, for the purpose of carrying on a public telegraph service between Italy and the Balkan States. The Messina Railways have adopted the Marconi system for intercommunication between their stations. During 1905 a contract was entered into with the Board of Trade for the establishment of Marconi Wireless Telegraphy on the lighthouses and lightships round the coast of the United Kingdom. Practically the whole of the ships belonging to the British and Italian navies have been equipped with Marconi Wireless Telegraphy, and the system is now extensively used by those two countries. During 1905 many more additional stations were erected to the order of the Canadian and Newfoundland Governments, and at the present time all the important points about the Gulf of St. Lawrence are linked together by a chain of short-range wireless stations. A powerful station at Clifden, on the West Coast of Ireland, was opened early in 1907, by means of which communication with the American Continent (Glace Bay) has been established, and daily service was maintained until a fire occurred at Glace Bay station on August 21st, 1909. 1908 and 1909 were periods of great activity with Mr. Marconi. Owing to the fire at Glace Bay the service between that station and Clifden had been suspended, but the work of restoring the installation of new plant, which was superintended by Mr. Marconi, was completed on the 23rd April, 1910, and since that date the service has been working satisfactorily, the messages being distributed thence to all parts of the European and American continents. Mr. Marconi's work has been recognised by many governments and seats of learning; he has been decorated by the King of Italy and the Czar of Russia, is an honorary doctor of many universities, including Oxford, Glasgow, Aberdeen, Liverpool, and Pennsylvania, besides having received the freedom of the principal Italian cities. In 1909 he was accorded what is perhaps the highest distinction that can be obtained by any scientist—the Nobel Prize for Physics.

PREECE, LLEWELLYN.—Son of Sir William H. Preece. In 1889 he combined with his father, his brother Arthur Henry Preece, and the late Major Phillip Cardew as consulting engineers. He is now one of the principal partners in the firm of Preece, Cardew & Snell, Consulting Engineers to the Crown Agents to the Colonies, and to the High Commissioners of New Zealand and South Africa. During the last thirteen years

he has been largely responsible for the wireless telegraph work in connection with the Crown Colonies, which has been placed in the hands of his firm.

PREECE, SIR WILLIAM H., F.R.S.—Born in 1834 near Carnarvon. An electrical and telegraph engineer of great eminence, who was appointed Engineer-in-Chief and Electrician to the Post Office in 1892, and Consulting Engineer to the Post Office in 1899, from which he retired in 1904. He is a Past-President of the Institute of Civil Engineers, and was President of the Society of Telegraph Engineers, first in 1880, and again in 1893. The latter Society is now called The Institution of Electrical Engineers. He has various inventions relating to telegraphy to his credit, and is one of the pioneers of wireless telegraphy.

RAYLEIGH, THE RT. HON. LORD.—Born on November 12th, 1842. Educated at Torquay and at Trinity College, Cambridge. In 1865 he graduated in the Mathematical Tripos as Senior Wrangler, and was awarded the first "Smith's Prize." His work in Physics has been of a varied and thorough character. He has contributed to the Royal Society some important communications on the "Propagation of Electrical Waves Round the Bend of the Earth."

RIGHI, PROFESSOR AUGUSTO.—Born at Bologna in 1850, and educated at the University there. He was Professor of Physics from 1873 to 1880 at the Bologna Technical Institute; 1880 to 1885 at the Palermo University; from 1885 to 1889 at the Padua University; and since 1890 at the Bologna University. Mr. Marconi is one of the most eminent of this distinguished Professor's old students. Professor Righi has published many important papers on physics, among which may be mentioned "Hertzian Waves," in 1900; "Telegraphy Without Wires" (in collaboration with B. Dasseau), in 1902, etc.

SANKEY, CAPTAIN M. H. P. RIAL.—Born at Nenagh in Ireland in 1853 and educated in Switzerland and at the Royal Military Academy, Woolwich, and the School of Military Engineering, Chatham. He had a distinguished career in the Royal Engineers before retiring to devote himself entirely to engineering work. He is a director of Marconi's Wireless Telegraph Co., Ltd.

SALTZMAN, MAJOR C. MCK.—He is a native of the State of Iowa, and graduated at the United States Military Academy at West Point in 1896. As a Cavalry officer he participated in

the battles near Santiago de Cuba of the Spanish-American War of 1898, and later as a Signal Officer participated in the Philippine Insurrection in the Philippine Islands. In 1901 he was transferred to the Signal Corps of the U.S. Army, and has since been identified with the electrical, cable and radio work of the U.S. Army. Major Saltzman for several years has been in charge of the Electrical Laboratory of the Signal Corps in Washington, where radio equipment of the U.S. Army is designed and tested. He represented the United States at the International Radiotelegraphic Conference in London in June, 1912.

SAUNDERS, HENRY SPEARMAN.—Born April, 1841, he is the son of the Hon. Frederick Saunders, who was Treasurer of Ceylon, to which office the latter was succeeded by his eldest son, Sir Frederick Richard Saunders, K.C.M.G. Mr. Henry S. Saunders joined his parents in Ceylon at the age of 18, and he devoted himself with conspicuous ability and success to the public and commercial life of the colony. He was for two years Chairman of the Planters' Association. He was also instrumental in carrying through important schemes of railway extension and the construction of roads, and his services in the latter respect gained for him the appreciation of the Director of Public Works. On returning to England about thirteen years ago Mr. Saunders joined the board of Marconi's Wireless Telegraph Co. He accompanied Mr. Marconi to America on board the ss. *Philadelphia* in 1902, and he was one of the first directors of the Marconi International Marine Communication Co., Ltd.

SWINBURNE, JAMES, F.R.S.—Born at Inverness on February 28th, 1858, and educated at Clifton College. He has had a wide experience, and as far back as 1881 he was employed by Messrs. J. W. Swan & Co. to organise their lamp factory in Paris; later he went on a similar mission to America. He has practised as a consulting engineer since 1894, and has attained considerable eminence in various branches of science. As an expert on wireless telegraphy his fame has been recognised by the Government, who in 1912 appointed him a member of the Technical Committee considering the Imperial Wireless Scheme. He is also a member of various scientific societies, and is on the Council of some. In 1902-3 he was President of the Institution of Electrical Engineers.

SWINTON, ALAN A. CAMPBELL.—Born in 1863, he commenced his career in 1882 in the famous Elswick Works of Armstrong,

Whitworth & Co., and two years later succeeded to the position of Electrical Engineer to the Company. He has devoted considerable attention to scientific research, including wireless telegraphy.

THYS, COLONEL ALBERT.—He has been intimately associated with wireless telegraphy ever since its inception as a commercial possibility, and is a director of Marconi's Wireless Telegraph Co., Ltd., La Compagnie de Télégraphie Sans Fil and the Deutsche Betriebs Gesellschaft für Drahtlose Telegraphie m.b.H.

TRAVAILLEUR, MAURICE.—Born at Brussels in 1871 and graduated as engineer at Brussels University in 1893. At the age of 26 he was appointed electrical engineer to the late King of the Belgians. He was one of the founders of La Compagnie de Télégraphie Sans Fil in 1901, of which he is now managing director, besides being on the Boards of Marconi's Wireless Telegraph Co., Ltd., and the Deutsche Betriebs Gesellschaft für Drahtlose Telegraphie, and other companies.

WEIN, PROFESSOR MAX.—Born at Königsberg in 1866. He made a special study of the subject of physics under Helmholtz and others and assisted Rontgen from 1891 to 1893. He is at present at the University of Jena and has devoted considerable attention to the study of electromagnetic waves and their propagation.

ZENNECK, PROFESSOR J.—Born April 15th, 1871, in Wurtemberg. The son of a clergyman, he was intended for a similar career, and studied for four years in a Theological College at Tübingen. While at Tübingen he studied mathematics and natural history, particularly zoology, from 1889 to 1894, and in the latter year he passed the State examination in these subjects; he obtained his doctorate in 1894. After a course of natural history studies in London and elsewhere he devoted himself entirely to physics and from 1895 to 1899 he was an assistant in the Physical Institute in Strassburg. In 1899 to 1900 he was engaged in making tests with Wireless Telegraphy in the North Sea. Five years later he became lecturer and assistant professor of Physics in the Technical College, Dantzig, and in 1906 he was appointed professor of Physics at the Technical College, Brunswick. This position he vacated in 1909, when he joined one of the largest mechanical works in Germany, and in 1911 he returned to Dantzig as professor of the Technical College, a position which he still holds with distinction.