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**SEPTEMBER 1911**

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# THE MARCONI GRAPH

No. 6.

September, 1911.

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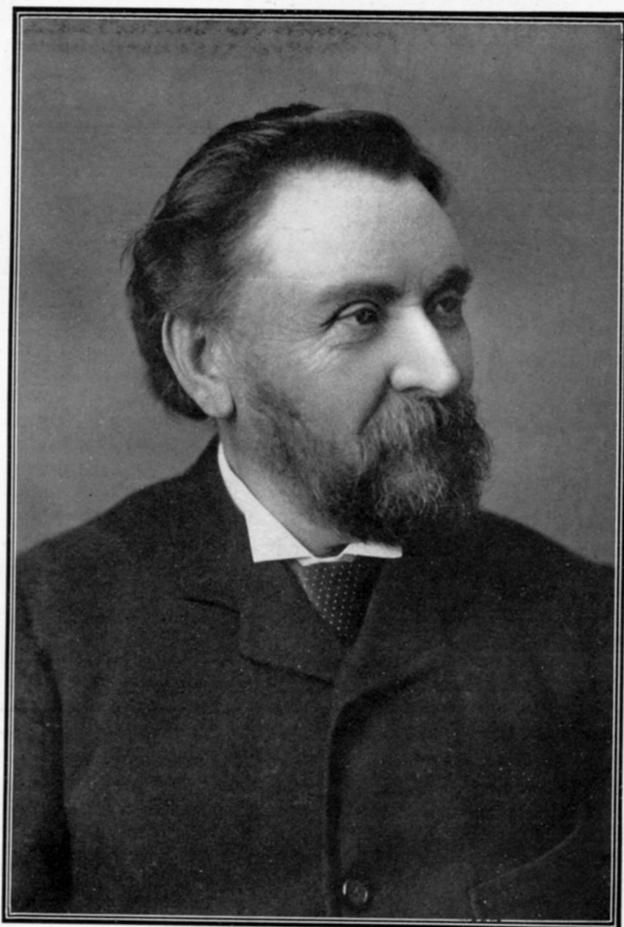
## Wireless Telegraphy in Ceylon

TO the contracts entered into by Marconi's Wireless Telegraph Co., Ltd., of which particulars are given on this page monthly, must now be added one with the Crown Agents for the Colonies for the establishment of a radio-telegraph station in Ceylon. The station will be capable normally of sending a wave length 600 metres in length. In addition, however, with any wave between 1,000 and 2,000 metres, the station will maintain communication with any ship off Madras or with any ship up to a distance of 450 miles over sea (except during periods of severe atmospheric disturbances), provided the ship is fitted with an aerial having a mean height of not less than 100 feet, and suitable receiving apparatus.

The generator will consist of a 10-h.p. S.P. motor, taking power (alternating current at 100 volts, 60 cycles) from mains, direct coupled to a 5-k.w. alternator and exciter. The motor, alternator and exciter will be protected against injurious induced effects from the high-frequency circuit by special shunting resistances. One 5-k.w. iron core low-frequency primary inductance will be provided for tuning the low-frequency circuit to the disc frequency. A high-tension transformer will be provided for stepping up the alternating current supplied by the generator to the voltage required by the battery of condensers. The latter will comprise eight whole glass plate condensers in galvanised iron oil-tight tanks, with the necessary insulating stands, busbars, high-tension bushed terminals, and other fittings. The busbars and connectors will be designed to provide for minimum inductance and damping, and with suitable arrangements for coupling up as required for the production of the various waves specified. In conjunction with the condenser battery, a high-frequency tuning inductance of the continuously adjustable type will be provided for tuning the high-frequency

primary circuit to the aerial circuit. The discharger will be of the disc type direct coupled to the motor alternator, and designed to produce a musical spark enabling the transmitted signals to be distinguished from atmospheric disturbances when received in the telephone by a corresponding station.

Two aerial tuning inductances will be provided, each consisting of a multiple solenoid winding of stranded conductor, similar to that of the jigger secondary. The manipulating gear will consist of a Morse key to be placed in the operating room to electrically actuate a relay key in the transformer primary circuit, the supply being taken for this purpose from the exciter of the alternator. One part of the receiving apparatus will consist of a magnetic detector in combination with a multiple tuner which will be constructed to provide a highly syntonised circuit for all waves between 100 and 2,500 metres, and will be furnished with a change switch to permit of the instantaneous change from "tuned" position to an "untuned" stand-by position, for the purpose of picking up signals of a widely different wave length without variation in adjustment. The other receiver will be of the valve type; the valve detector will be used in place of the magnetic detector, and the wave length in reception from 1,600 to 4,000 metres. Two masts will be provided, each of sectional type tubular steel with wooden mast, 270 feet in height over all. They will have a factor of safety of 4, assuming a wind pressure of 40 lbs. per square foot. One earth system will be provided for the use of all waves, consisting of galvanised iron plates arranged in a circle with radial conductors to the central apparatus. The earth plates will be supplemented by additional radial wires underneath the transmitting aerial for the purpose of better providing for the electric oscillation between the aerial and the earth.



MAJOR SAMUEL FLOOD-PAGE

## Major Samuel Flood-Page

Director of Marconi's Wireless Telegraph Co., Ltd., etc.

IN considering a man's personality, it is difficult to estimate justly the various causes which combine to build up what we will call "character"; what is due to hereditary descent, what to early surroundings, what to the circumstances and influences of later life, and what to the power of will which controls and directs these causes and moulds a man's career. Major S. Flood-Page, who well merits inclusion in our portrait gallery of "wireless" notabilities, inherits to a peculiar degree certain ancestral traits. His father was the Rev. S. Flood-Page and his mother was a daughter of Colonel Shaw, who saw considerable military service, and while in the 60th Rifles was wounded at the taking of Quebec in 1759. Major Flood-Page became a cadet in 1854 and in the following year was gazetted to the Second Madras European Light Infantry. He served in India and Burmah and was first adjutant of the Queen's Own Edinburgh Rifle Brigade and then for twelve years adjutant of the London Scottish. His services were largely sought by the military authorities for administrative purposes, and as a proof of the regard in which his great capacity for organisation was recognised it may be mentioned that he was the first executive officer of the National Rifle Association, remaining on the council of that body for 40 years: and is now a vice-president.

Important as were his military achievements, in the conduct of which he was eminently successful, it is his association with business enterprises that have given the gallant major a position of prominence in financial and commercial circles. He was at one time secretary and manager of the Crystal Palace, from which position he retired in 1882. We next find him interested in electric lighting, and we venture to predict that when the commercial history of electric lighting comes to be recorded Major Flood-Page will hold a noteworthy and honourable position in that record.

The 'eighties were remarkable indeed for the outburst of activity in electric lighting, so soon as sound engineering construction had been applied to the magneto-electric

generator and the mechanical production of electric currents had thus been assured, electric lighting was bound to progress. Already the arc-lamp was in limited use. The year 1878 had seen the Avenue de l'Opéra in Paris lit with Jablochhoff's now historic "candles," and a little later Swan and Edison had brought the carbon glow lamp into precarious existence. About that time Sir Joseph W. (then Mr.) Swan and his friends in Newcastle formed a company for the manufacture of the Swan glow-lamp. Major Flood-Page was instrumental in introducing the first incandescent electric light into Australia, and then became secretary and manager of the Edison and Swan United Electric Light Company, Limited.

The advent of wireless telegraphy brought many scientific and commercial observers into its fold. One of these was the subject of our present sketch. Major Flood-Page joined Marconi's Wireless Telegraph Co., Ltd., as managing director in 1899, and has remained from those early days, and still remains, a director of the company. He has been for some twenty years a member of the Council of the London Chamber of Commerce and was largely instrumental in forming the electrical section of the Chamber. The Church Army also finds in him an earnest supporter.

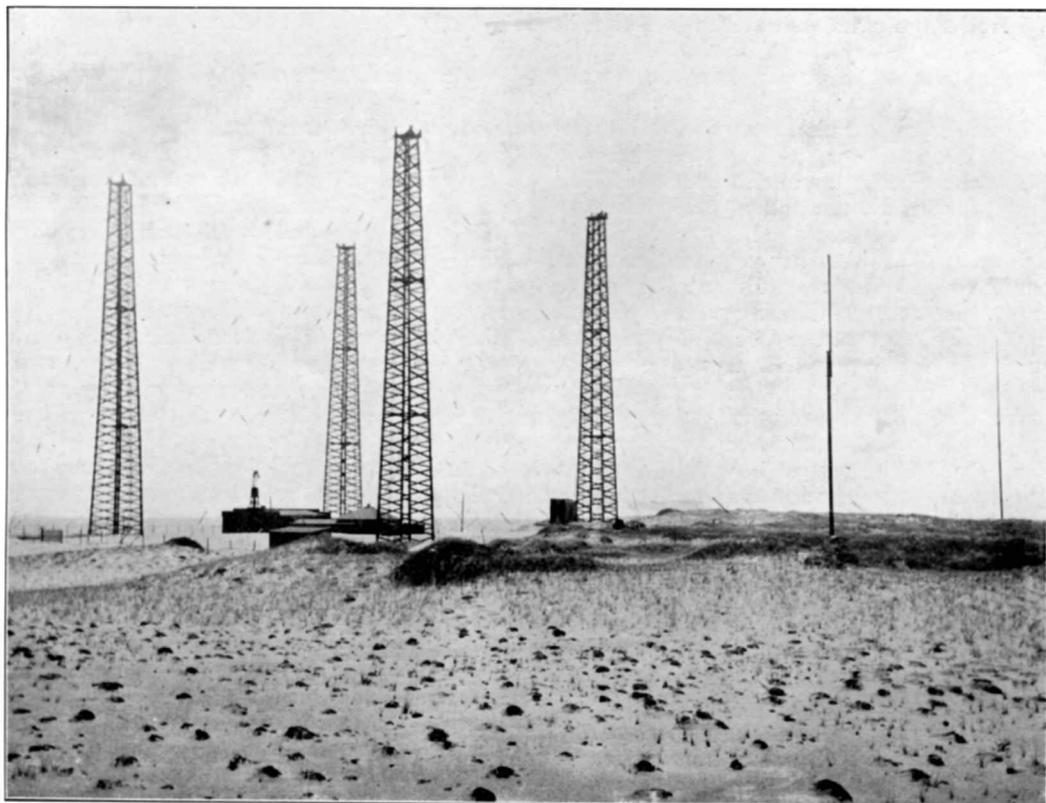
In the case of a man of so active and varied a career it would be an interesting study to depict features, trace lineages and realise how character has been affected by circumstances. Such a task is beyond the scope of the present article, however. Though by no means in the first flush of youth, Major Flood-Page is possessed of a vigour, a clarity of vision, firmness of resolution and steadfastness of purpose which many a man, younger than he in years, has passed. Not to him can be applied the lament of the Greek historian: "I am too old, O King, and slow to stir; so bid thou one of the younger men here to do these things." There is much work still to be done in the field of wireless, and we hope that for many years yet Major Flood-Page will be able to take the same honoured part that he does at present.

## Journalism at Sea

### The Cape Cod Station

**B**EFORE the invention of the electric telegraph some sixty odd years ago the news of the world travelled very slowly and events became history almost as soon as they were universally known. The papers of that day had to content themselves with the news of

when a man was worn and nervous from the strain of his business, it was customary for his physician to recommend an ocean voyage for his rest and refreshment. During his trip he could enjoy absolute immunity from his business worries. Nowadays, however, there is no such



*Fig. 1.—High Power Marconi Station at Cape Cod.*

their locality and long-delayed reports of doings in the world at large. It required weeks and months for one half of the world to learn what the other half had been engaged in doing. By the development of vast telegraph systems in this and foreign countries the man of to-day may pick up his newspaper at the breakfast-table and read of the very latest happenings at home and abroad. With what scorn he would refuse yesterday's paper! A few years ago,

thing as freedom from business for the man of affairs. Each morning on his journey across the ocean he finds beside his plate at the breakfast-table a newspaper printed on board containing the latest news of the day. While he may have resolved to forget entirely the things left behind, it is more than human nature can resist to leave untouched the little newspaper, and he is soon eagerly perusing the happenings of yesterday or glancing at the quotations of his favourite stocks.



*Fig. 2.—View of the Buildings at Cape Cod.*

The machinery necessary to make possible the publication of a daily paper in mid-Atlantic is very much the same as that required for any of the great city newspapers, except, of course, on a much smaller scale. There is, however, one marked point of difference and that is in the manner in which the news is transmitted to the editorial room. Every day in the year at 8.30 p.m. a special despatch is prepared at the Associated Press office in New York and telegraphed direct to the Marconi Station at Cape Cod, South Wellfleet, Mass. From here, by means of wireless telegraphy, the world's news is sent out to vessels hundreds of miles distant on the broad Atlantic. The aerial wires supported by the masts of each steamer intercept a sufficient number of the ether vibrations sent out by the Cape Cod transmitter to operate the sensitive receiving apparatus, the operator records the message, and in the morning the traveller finds the news that has come so far and has been printed while he slept.

Perhaps it might be interesting to say something of the station at Cape Cod, the methods by which the news is transmitted, and the little company of men who form the working force. The plant is about two miles from the railway station at South Wellfleet, Massachusetts, and is situated directly on a huge sand bluff that overlooks the Atlantic Ocean. There is little here but sand, the kind that stays awhile and then moves on. In fact, it is not uncommon for some of the buildings to be almost buried during a single storm. A species of coarse grass alone succeeds in drawing nourishment from the sand, and to this vegetation Cape Cod owes its existence, for without it the Cape would long since have blown away. A few years ago the wireless station was in charge of an engineer who determined that he would have a garden and who worked with persistence and desperation in order to make a few plants grow. When, by dint of much effort, he had succeeded

in coaxing a few green shrubs to survive, a superannuated horse, belonging to the station, which had outlived its usefulness and was kept solely out of kindness, crushed them all by choosing the garden as its resting-place.

Four huge towers, each two hundred and fifteen feet high, support a great network of copper wires, the lower ends of which lead into the transmitting room (fig. 1). These wires, when charged, set in vibration the ether for fifteen hundred miles around. Under the shade of these towers nestle the several buildings containing the plant. A low brick structure houses the great engines and humming dynamos that furnish the necessary power

for the transmission of messages to great distances. Under the same roof is also located a storage battery of colossal size and a machine-shop. Connected to this building by a long corridor are the transmitting and operating rooms (fig. 2), in which occur the wonderful display of electrical pyrotechnics that has caused the plant to be dubbed "Marconi's thunder factory."

About a thousand feet from the plant is situated the comfortable little bungalow (fig. 3) that shelters the men employed at the station. There is a plank walk from the plant to the house and many are the tales told of trying to keep to the path on a stormy night when the ground is covered with snow and the air full of blinding sleet, or of endeavouring to reach the bungalow when a fierce wind is blowing that drives the loose sand against the men's faces with such force as almost to draw blood. On one occasion during a heavy storm the manager became confused in attempting to make the passage from the house to the plant and only succeeded in reaching his destination by following the wire fence which encloses the grounds for its entire length.

The bungalow in which the men live is as pleasant and cosy as one could wish for. There is a huge living room, furnished with comfortable chairs and couches, the walls are hung with pictures and on the tables are scattered books and magazines. Most of the men endeavour to play some musical instrument and, whatever the result may be, there are no neighbours to raise complaints. They have a phonograph and a great number of records. It is worth mentioning that anyone guilty of using profane language has to pay a fine for each offence; the money so raised is used to buy records; or if any of the men go to Boston for a short vacation they have to buy a half-dozen records for the privilege. Each man has a bedroom to himself; there are two guest rooms; the manager has his larger

room and office, and there is a very pleasant dining-room.

The happy family, for it is a happy family, consists of a manager, two telegraph operators, two engineers and two old salts as riggers, a chef and steward, and two dogs, Missy and Mike. The manager is the technical man and wireless engineer of the plant, in addition to his position as head of the family. The two telegraph operators take shifts in working the land lines and wireless circuits, for this station is also used for communication with Boston shipping. The engineers stand watch on alternate nights to start the main engines and to keep them running smoothly. There are also a thousand and one things for them to do during the day—some repairing, improvements to be made or experiments for the engineer at the head office in New York. The riggers keep the towers and stays in ship shape. They may be seen almost any day perched far aloft, tightening a rope here, replacing a fouled wire of the antennæ there, putting in their time wherever it may be most needed. Painting the towers is a job that keeps them busy for many weeks at a time with extra men to help. The chef or steward is the one man who has it in his power to make the family either happy or miserable, and misery is little known here. It requires considerable foresight and good management to keep the larder well supplied at this out-of-the-way place, and many of the provisions must come from Boston. With some help from the town store, the wares of local fishermen and an occasional mess of flounders caught from the bank by the men when off duty, the commissariat department is kept well supplied. The chef had a unique experience a short time ago. He was standing by the kitchen boiler during a storm and was rather roughly handled by a stroke of lightning. The men chaffed him a good deal over the fact that he could have received a fifty-thousand-volt shock at the plant any day without doing anything so commonplace as to be struck by lightning in his own kitchen.

There are two members of the family who cannot be depended upon for any work—unless you consider hunting moles and rabbits as such—but who are always ready to join in any sport, and who are always happy and free from care. These are the two dogs Missy and Mike. Missy, a fox terrier by courtesy, makes up in intelligence whatever she may lack in pedigree; and Mike, a bull terrier of equally mysterious ancestry, is always ready for a frolic. These two dogs are firm friends—even if Mike does

lack some of the essentials of gallantry. The dogs are ever ready for a stroll on the beach with the men, and if one chanced to forget that Missy's favourite pastime is bringing a stick or a stone that has been thrown into the breakers, he is gently reminded of it in the best of dog language. Missy will plunge in, swim out and lug in the stick or dive for the stone that is thrown. Mike obligingly waits on the beach until she gets almost to shore and then wads in, just getting his toes wet, takes the prize from her mouth and walks up to the one who threw it and expects all the glory.

On one occasion, Missy went off on a hunting trip by herself and failed to return. The men became worried after two days had passed and organised a search party for her, taking the valiant Mike along. The search continued for the better part of a day without result, but just as failure seemed evident, Mike pricked up his ears and with joyful yelps led the party into the brush where he had heard a feeble call from his playmate. There was Missy with one little paw firmly clamped in a murderous steel trap which some law breaker had set for catching game. The injured paw was released from the trap and Missy carried back to the station, where kind hands ministered to her. Though a part of her foot is missing, she still has enough left to enjoy the good times with the men.

The family gather for a late breakfast in the morning, for some have been up until 2 o'clock on duty, and then starts the business of the day. There are various tasks to engage the men during the daytime, but it is at night that the real work of the station begins. At 8.30 p.m. the operator on duty hears a call on the land line, and he is at once busy copying on his typewriter the news despatch from the Associated Press. He then takes his copy down to the plant and starts punching the strip. This opera-



Fig. 3.—Operators' Quarters.

tion is one recently added to the daily régime, and is the means by which the entire news message is sent automatically in perfect Morse characters without the operator touching a key. In order to ensure the receiving of the message by the ships at sea, many of which are at distances too great to ask for repetitions of certain words they may have missed, the entire news despatch is repeated several times. In the days when the operator must needs send this long message four times by means of a huge tele-

three great flaming torches, in order to heat the ignition balls of the kerosene engines. Oil engines are used in this plant because of the high cost of coal and the difficulty of delivering it at the station. By 9.50 o'clock all is in readiness—the engines are running and the recording instruments are inspected to note whether the current value is correct. When the clock points exactly at ten a red signal light flashes in the engine room, the operator releases the catch on the automatic transmitter and the

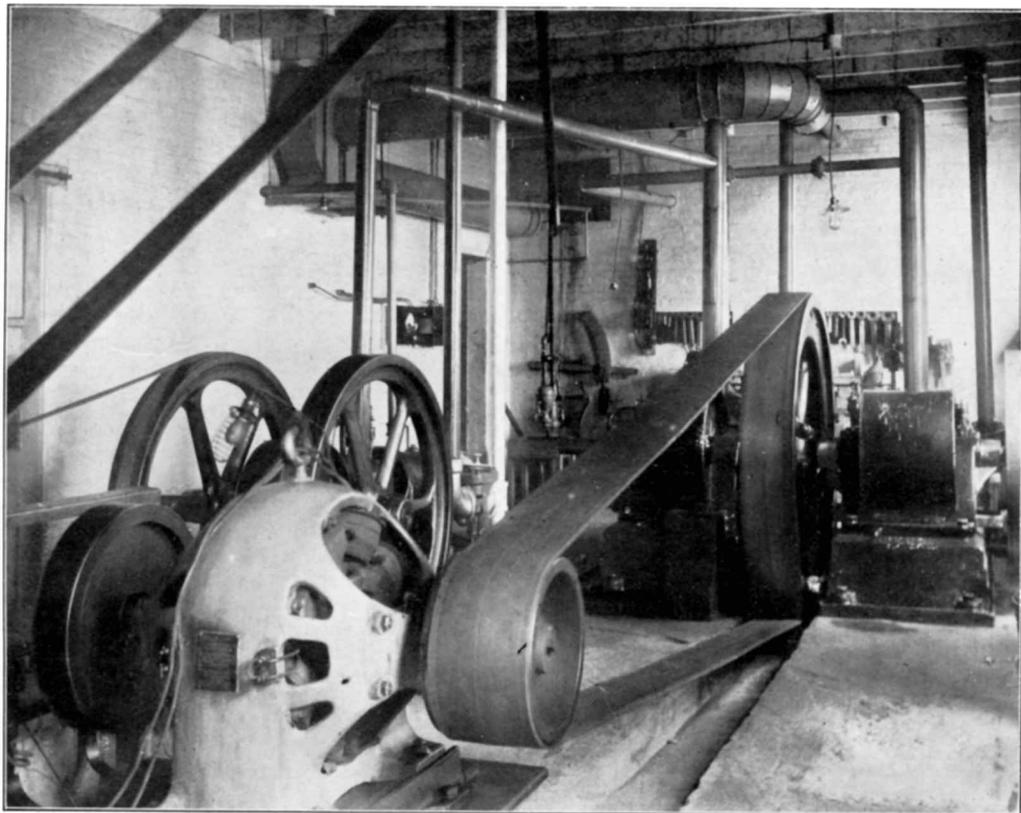


Fig. 4.—Engine Room, showing Plant.

graph key, in addition to receiving it from New York over the land line, the news became rather a bore, especially when the hours of the morning were small and the man's eyes heavy for sleep. The message having been punched on the paper, the strip is then wound on a reel attached to the motor-driven automatic transmitter, and is then ready for the programme, which starts at 10 o'clock each night and continues until completed.

At 9.30 the engineer on watch hastens down from the dwelling house to the plant and starts

crashing noise of the spark is immediately heard in the adjoining room. Here in the transmitting room great streams of fire a foot long are thrown out by powerful blowers and the tremendous noise of the spark, though musical, is terrifying. Very few persons have seen this plant in operation, for visitors are strictly prohibited from entering upon the premises, but one may hear the high-pitched note of the powerful spark for several miles if the night be quiet or the wind favourable. Through the windows of the station the spark has been seen for fifteen miles

at sea. Viewed from the exterior, the intense white flash showing through the ground glass windows of the instrument room and the deafening crash of the spark would cause one to believe that here is the home of the evil one. In this way the great plant is calling to ships near and far and sending them the news of the day. The ships may be fifteen hundred miles or only one hundred miles away and, unless the vessel is at the greater distance, the operator usually copies the complete despatch correctly the first time without recourse to the repetitions that follow.

While the operator at Cape Cod is busy sending out the day's despatch, on each one of the numerous ships on the broad Atlantic there listens an attentive ear.

Between the masts of each vessel are strung horizontally several stranded copper wires about the diameter of a pencil. These wires are separated by wooden spreaders and carefully insulated by special hard rubber insulators from the masts and their attendant stays. Several vertical wires are connected at the centre of the horizontal ones, and these lead directly through an insulator into the wireless cabin, usually located on the upper deck.

The modern Marconi cabin aboard ship is divided into several sections. There is usually an inside companion way for the convenience of passengers, and this leads into a reception room where messages may be filed for transmission. Directly adjoining this reception room is the main portion of the wireless cabin, where the man on watch answers the thousand and one questions propounded to him by fair passengers, while those not so fair must content themselves with a somewhat more brief description of the wizardry of wireless. A sample of the efficacy of explaining wireless to a passenger is well illustrated by the story of an operator who, in the days in which the received signals were recorded on a paper strip, had particularly prided himself upon an especially lucid description of the *modus operandi* of wireless telegraphy to a fair passenger. Upon thanking him for his courtesy, the lady remarked that she understood it all perfectly, but would he tell her how the paper tape reached the ships from shore without getting wet. Next to the main room is the living room of the two operators, and it is as comfortable a little cabin as there is on the ship. There are two berths, a writing desk, a chair or two, and, in fact, all the comforts of bachelor life. At meal time the men repair to the main saloon and dine with the passengers, or, if business be heavy, as it often is on the larger vessels, the meals may be served by the steward in the Marconi cabin. There are two other and much smaller rooms opening from the main cabin—the first contains the entire wireless equipment used for transmitting, while in

the latter is located the receiving apparatus. Here are the special and sensitive instruments in which we are particularly interested. This room is especially constructed with sound-proof walls, several inches thick, and lined with cork. These more modern accommodations are in marked contrast to the quarters on the older vessels with which the operators had to content themselves. They were limited to one small room, which contained the wireless apparatus and a berth. There was barely room to turn around in, and, if perchance, the Marconi man was of the long variety the chances were his feet extended under the instrument table when he turned in for a few hours' sleep.

Each night, a few minutes before ten, the operator in charge shuts himself in the little sound-proof room, provides himself with pad and pencil, adjusts the pair of telephone receivers to his head and awaits the stroke of ten. Exactly on the minute, the faintest little whisper is heard in the telephones. The giant spark at Cape Cod is saying, "Good evening, ships, good evening, ships." These signals, though somewhat faint, are quite distinct, and may be likened to the gentle purring of a contented kitten, though they are not so loud. Quite recently it has been discovered that the human ear is more sensitive to a higher musical note than that which was produced by the spark formerly in use, which was at the rate of four thousand sparks per minute. The new musical spark has a frequency of thirty-six thousand impulses per minute, and is readable at considerably greater distances with the same power. In the meanwhile, with receivers tightly pressed against his ears, the operator is rapidly writing down pages of news. This continues for about an hour, at the end of which time the despatch is complete. The copy is then quickly transcribed on the typewriter and hurried down to the "editor on board" of the *Atlantic Daily News*.

When the copy is ready it is turned over to the typesetter, who prepares the type in the good old way in vogue in newspaper offices before the advent of the linotype machine. By long practice he has become very deft, and in a short time all is complete and passed over to the printer for his part of the work. The formes are rapidly adjusted to the motor-driven press.

The first wireless newspaper to be published on board a vessel crossing the Atlantic was a little sheet known as the *Transatlantic Times*. It appeared November 15th, 1899, and was published on board the American line steamer "St. Paul," en route for England. On this voyage the St. Paul carried Mr. Marconi and two of his engineers, returning from America, where they had been carrying on experiments with a new kind of telegraphy. The particular object of their visit had been to report the yacht races for the Associated Press, and as success

had crowned their efforts, they were looking for new worlds to conquer. They decided to publish a newspaper on board ship, and obtained the latest news of interest from the Marconi station at the Needles. The papers were neatly printed, and were sold at a dollar a copy for the benefit of the Seamen's Fund. From this small beginning the idea gradually grew until the erection of high power stations at Cape Cod and Poldhu made possible the constant reception of news from land and a daily issue.

The *Atlantic Daily News* is a paper of from eight to ten pages, and is printed in the form of a magazine. On the outside cover there is a copy of some famous painting, a photograph of some prominent man, or an illustration of some article within. There are many items of interest in the paper, news from all parts of the globe, the quotations of the Stock Exchange, the latest gossip of the sporting world.

The papers are most eagerly sought after by the passengers, and they are scanned with absorbing interest. It is the great event of the day on shipboard, and conversation turns to the facts that have been made known by the advent of the little sheet. Of course, the barest facts are all that can appear in news despatches that aim to send as much information as possible in as short a form as is commensurate with making sense. The whys and wherefores that brought about a certain event are talked over in the smoking room and as the passengers pace the deck for their morning constitutional.

The bulletin board that is posted each day with the news of the steamer is the centre of a great deal of interest, and sometimes of amusement. The day's run is always noted down. Sometimes with good weather and favouring winds the vessel may have made unusually good time, or it may be that with a head wind and other bad conditions she may have not been able to make her usual number of knots. The names of the steamers with whom the wireless operator has been in touch are noted down, with any news of importance that he may have received from any of them. The passengers scan the horizon with great interest for a sight of the wonderful icebergs or enormous school of whales that are reported as having been seen by a nearby steamer. There is a feeling of pity, not unmixed with awe, when there is reported a derelict near at hand, and the man on watch does not cease for a minute his close scrutiny of the waters ahead until he feels that his vessel is out of danger from these perils of the sea.

For the last five years newspapers have been published daily on the Atlantic liners. From the individual efforts of the steamship companies, each of which printed its own paper with its own title, has developed a publication with an issue of several thousand copies daily, with a single management for all the lines.

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## Diary of Events.

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*[Under this heading we give a monthly record of the progress of Marconi wireless telegraphy. Apart from the general and historical interest which attaches to such a compilation, we have reason to believe, from the number of inquiries that constantly reach us, that it will be of much service to lecturers, tutors and others who may be professionally interested in the subject. Appended are some notable events that have occurred in September of preceding years.]*

1897.

*September 30th.*—Experiments on Salisbury Plain and at Dover successfully carried out for the British Post Office on this and preceding days.

1898.

*September 19th.*—Installation at Madeira House, Bournemouth, removed to Poole Harbour, Dorset.

1899.

*September 21st.*—Stations established at Chelmsford and Dovercourt.

International Yacht Races between the "Shamrock" and the "Columbia" reported by wireless telegraphy for the *New York Herald*.

1901.

*September 20th.*—Masts at Poldhu wrecked during a heavy gale and subsequently replaced by four towers 210 ft. high.

School for training commercial staff opened at Frinton-on-Sea.

*September 21st.*—R.M.S. "Campania," belonging to the Cunard Line, left Liverpool on her first voyage fitted with Marconi apparatus.

*September 26th.*—Agreement entered into with Lloyd's for the installation of Marconi apparatus at Lloyd's stations throughout the world.

*September 28th.*—Cunard liner R.M.S. "Umbria" left Liverpool on her first voyage fitted with Marconi apparatus.

1902.

*September 10th.*—Mr. Marconi received wireless messages on the Italian battleship "Carlo Alberto" at Gibraltar, Spezia, and throughout Mediterranean voyage.

1908.

*September 18th.*—Agreement made with the Brazilian Government for installation of Marconi apparatus on ten destroyers.

*September 18th.*—Agreement made with Anglo-American Oil Co. for the equipment of "Tamarac" and "Narragansett," the first of such vessels to be fitted.

1909.

*September 29th.* Sale to the Postmaster-General of certain land stations in Great Britain, and grant to the Postmaster-General of a licence for the limited use of the Company's patents.

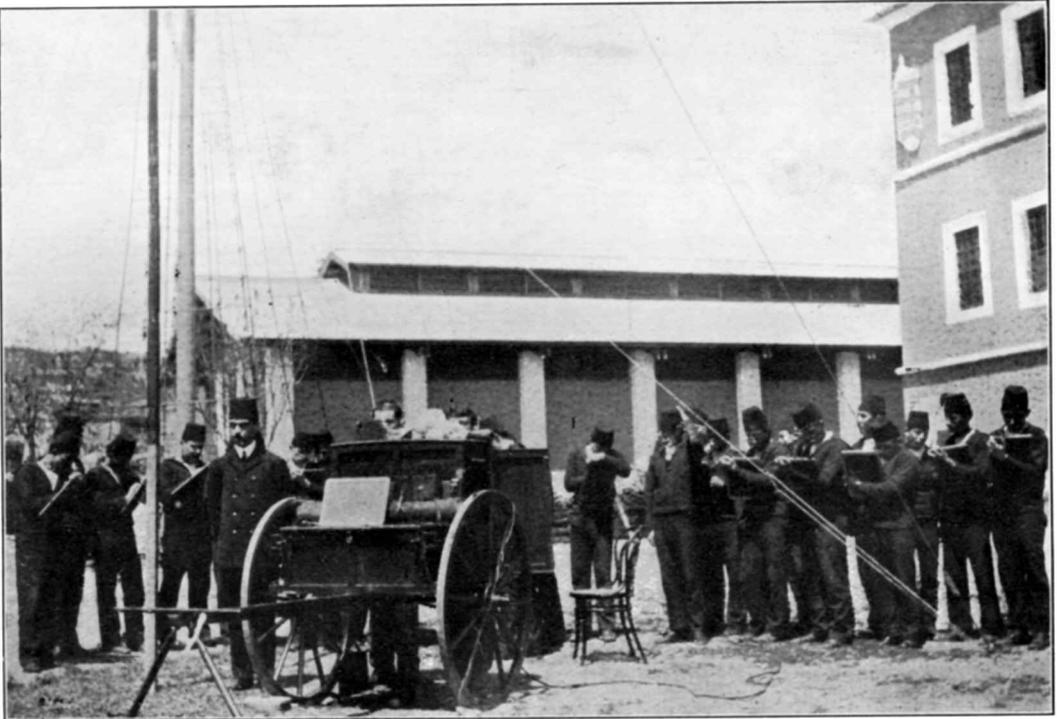
## Field Station Work

### Some Trials in Turkey

THE value of wireless telegraphy in military operations has been considerably enhanced by the development which the Marconi Company have effected in their apparatus for use in cavalry and infantry field telegraphy. At all events, such apparatus is now largely and increasingly used in various

field wireless telegraphy—by a brief description of the apparatus.

The cavalry set is designed to be carried on four horses or mules. One horse carries the engine and electric generator, which are mounted on opposite sides of the saddle. Each side of the saddle also carries a 2-gallon tank of



*Naval Operators Reading from Spark and Writing the Message on Slates.*

countries, and it is gratifying to note that there is no tendency on the part of Britain to lag behind other countries in this respect, for during recent summer camps of the Territorial Corps wireless field telegraphy formed an important part of the training. It is not intended in this article to deal exhaustively with the apparatus used in cavalry and infantry field wireless telegraphy, as this is a task which may appropriately be deferred until another occasion, when it will be possible to devote adequate space to the subject. But it might be as well to preface our account of some trials recently made in Turkey—one of the latest countries to take up

petrol, and a 1-quart tank of lubricating oil. A small tool-bag is also carried, containing tools and spare parts. The telescopic driving shaft is carried in clips on the top of the frame. A second horse carries on one side a wooden case containing the transformer, and on the other side a wooden case containing the receiver with all accessories, spares, and the aerial circuit of the transmitter. A third horse carries the mast sections, spreaders, and earth net, all of which are kept in place by straps, which are tightened by a simple lever-clamping device. The fourth horse carries on one side a fibre case containing the mast stays, halyards, anchor



*Commission in Mosque at Guebseh.*

pegs, etc., and on the other side a fibre case containing the aerial wires on winding drums, with their standards, in addition to a wooden case containing the primary oscillating circuit as transmitter. The engine is of  $2\frac{3}{4}$ -h.p. air-cooled, with opposed cylinders, and the dynamo has an output of about half a kilowatt, and is coupled to the engine by means of a flexible shaft. The transformer is of open circuit type and connection is made to the primary oscillating circuit by means of spring nipples. The transmitter has three wave-lengths which ensures secrecy and freedom from interruption. The receiver is the latest pattern of valve receiver, and provision is also made for the use of a carborundum crystal. To arrange the instruments for working it is only necessary to put them one on the top of the other: first the transformer on the ground, then the transmitter, and the receiver-box on the top of all. The front is divided, the bottom part forming a table at a convenient height for working, the top and canvas sides forming protection against wind and rain. The two masts are 30 ft. high, and are built of wooden sections, all of which are interchangeable and can easily be erected by two men. With the full complement of six men the whole station can be set up in less than ten minutes. The infantry and cavalry sets are identical, except that in the case of the infantry station the instruments, etc., are carried on a light limbered cart drawn by one horse or by men. With two gallons of petrol and lubricating oil the set weighs 600 lb. or 700 lb., and will work well over distances of thirty miles.

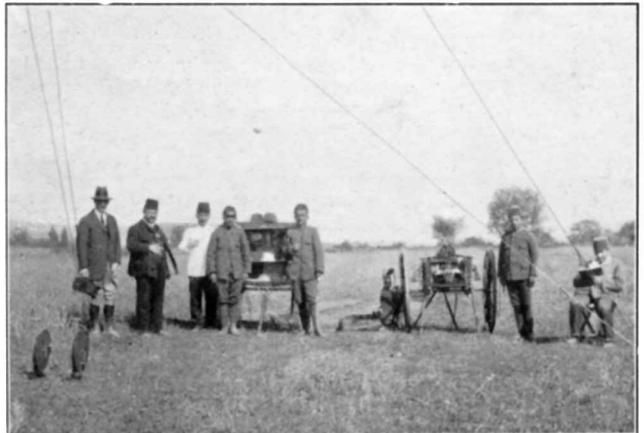
A series of trials with cavalry and

infantry field stations have recently been carried out in Turkey, and so successful were these that the Turkish Government have placed a substantial order with the Marconi Company for these types of station.

A Government Commission, consisting of six members, chosen from the army, navy and posts and telegraphs, sat to select the best system of "wireless" for military purposes. The Commission were from the commencement favourably impressed with the portability, speed of erection and ease of manipulation of the Marconi stations. At first it was necessary to teach the soldiers how to erect and work the stations, the essentials of which they quickly grasped, in spite of the difficulty of explaining them through an interpreter. Later, one of the stations was

moved to the Naval Barracks at Kassim Pacha, and another was erected at the Military Barracks at Selimieh, the stations being respectively worked by the sailors and soldiers. The Sultan held a review at Selimieh Barracks while the stations were in operation, and he took a lively interest in the wireless.

The installation was then removed from Kassim Pacha to Guebseh in Anatolia, forty-five kilometres from Selimieh, where the other station remained. Half the Commission accompanied the out-station, the other half staying at Selimieh. Communication was at once established, the signals being very strong. The intervening country was undulating and largely cultivated, the greatest height being 1,000 ft. Two other systems were tried in addition to the Marconi, but they had great difficulty in communicating with their stations at Selimieh, one



*Portable Station Erected. The Commission.*

being unable to get messages through for two days, and the other being unable to get any through at all. Those who went out from England in charge of the apparatus were living all this time in native inns, generally cooking their own food over a charcoal fire and often eating it with their fingers. The Commission lost a considerable part of their interest in "wireless" when meal-time approached and cooking operations were due to begin.

The site of the station was close to the railway at Guebseh, about two miles from the village of that name.

The last stage in the trials was from Derindjé, at the head of the Gulf of Ismid, to Geuz-tepé, a distance of seventy-five kilometres, the district from Guebseh to Derindjé being over very rocky country with considerably higher hills. Signals were good and a number of messages were transmitted and received by Turkish operators.

The different systems were here worked alternately for the sake of comparison, also a speed test of erection was carried out, the result being greatly in favour of the Marconi system. These latter tests lasted a week.

The report of the Commission was very favourable. Marconi "wireless" is being installed on most of the ships of the Turkish navy, and there is a great field for this means of communication in the country.



A Turkish Operator.

## An Incident in the History of Wireless

### The First Message Received from a Liner

ALTHOUGH young, wireless telegraphy has already a history from which a chapter may be culled as being specially applicable to the present time. In November, 1899, Mr. Marconi cabled from New York that he would communicate with his wireless station at the Needles from the SS. "St. Paul" as the vessel was approaching the English shore. Major Flood-Page and Mr. Jameson Davis went to the Isle of Wight (assistants were already there); the success was complete, and is described in the following letter from Major Flood-Page which appeared in *The Times* on November 15th, 1899. There is no reason for adding anything to that letter, depicting, as it does, Mr. Marconi's initial success from a liner steaming at about 20 knots an hour, which success had in it all the wondrous promise which has followed, and is following it, so that it is known and appreciated on all the seas of the world.

The incident is further interesting inasmuch as it gave rise to the publication of the humble *Transatlantic Times*, a copy of which is reproduced, which was printed on board the "St. Paul," eighty-five copies of which were sold on board at a dollar apiece—and sold in an hour. For this little *Transatlantic Times* is the progenitor not only of the daily wireless newspapers on board so many liners, but of *The Marconigraph* itself, which has already obtained a circulation of some thousands a month.

What follows is a copy of Major Flood-Page's letter:

"As Mr. Marconi left New York he cabled to the office of his company in London that he would speak to the Needles from the SS. 'St. Paul' on their arrival in English waters. Having ascertained that the 'St. Paul' was expected at Southampton on Wednesday, Mr. Jameson Davis and I met at Yarmouth on

Tuesday afternoon and arrived at the Needles about 5 p.m. We had an assistant with us and set to work at once to speak to the Haven. Even in these days the arrival of the Atlantic steamers could not be timed to an hour, but those whom we consulted seemed to agree that the 'St. Paul' would pass up about 10 to 11 o'clock on Wednesday morning. To make assurance doubly sure one of the assistants passed the night in the instrument room, but

ship would be all right with Mr. Marconi himself on board.

"Yet, as may be easily imagined, we—or, speaking for myself, I, at any rate—felt in a state of nervous tension. Waiting is ever tedious, but to wait for hours for the first liner that has ever approached these (or any other) shores with Marconi apparatus on board, and to wait from 10 to 11, when the steamer was expected, on to 12, to 1, to 2—it was not

## THE TRANSATLANTIC TIMES.

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VOLUME I.                      NUMBER I.

THE TRANSATLANTIC TIMES

Published on board the "ST. PAUL," at Sea, en route for England, November 15th, 1899.

One Dollar per Copy in aid of the Seamen's Fund.

Mr. W. W. Bradfield, Editor-in-Chief. Mr. T. Bowdler, Assistant Editor. Miss J. B. Holman, Treasurer. Mr. H. H. McClure, Managing Editor.

Through the courtesy of Mr. G. Marconi, the passengers on board the "St. Paul," are accorded a rare privilege, that of receiving news several hours before landing. Mr. Marconi and his assistants have arranged for work the apparatus used in reporting the "Yacht Race" in New York, and are now receiving dispatches from their station at the Needles. War news from South Africa and home messages from London and Paris are being received.

The most important dispatches are published on the opposite page. As all know, this is the first time that such a venture as this has been undertaken. A newspaper published at Sea with Wireless Telegraph messages received and printed on a ship going twenty knots an hour!

This is the 52nd voyage eastward of the "St. Paul." There are 375 passengers on board, counting the distinguished and extinguished.

The days' runs have been as follows:—

Nov. 9th	435
.. 10th	436
.. 11th	425
.. 12th	424
.. 13th	431
.. 14th	444
.. 15th	442

97 miles to Needles at 12 o'clock, Nov. 15th.

BULLETINS

1.50 p.m. . . . . First Signal received, 66 miles from Needles

2.40 "Was that you "St. Paul"? 50 miles from Needles.

2.50 Hurrah! Welcome Home! Where are you?

3.30 40 miles, Ladysmith, Kimberley and Mafeking holding out well. No big battle. 15,000 men recently landed.

3.40 "At Ladysmith no more killed. Bombardment at Kimberley effected the destruction of ONE TIN POT. It was auctioned for £200. It is felt that period of anxiety and strain is over, and that our turn has come."

4.00 Sorry to say the U. S. A. Cruiser "Charleston" is lost. All hands saved

The thanks of the Editors are given to Captain Jamison, who grants us the privilege of this issue

his night was not disturbed by the ringing of his bell, and we were all left to sleep in peace. Between 6 and 7 a.m. I was down; everything was in order, the Needles resembled pillars of salt as one after the other they were lighted up by the brilliant sunrise. There was a thick haze over the sea, and it would have been possible for the liner to pass the Needles without our catching a sight of her. We chatted away pleasantly with Haven—a mere bagatelle of about eighty miles. Breakfast over, the sun was delicious as we paced on the lawn, but at sea the haze increased to fog; no ordinary signals could have been read from any ship passing the place at which we were.

"The idea of failure never entered into our minds. So far as we were concerned, we were ready, and we felt complete confidence that the

anxiety, it was certainly not doubt, not lack of confidence, but it was waiting.

"We sent out our signals over and over again, when, in the most natural and ordinary way, our bell rang. It was 2.45 p.m.

"'Is that you, "St. Paul"?' 'Yes.' 'Where are you?' 'Sixty-six nautical miles away.'

"Need I confess that delight, joy, satisfaction swept away all nervous tension, and in a few minutes we were transcribing, as if it were our daily occupation, four cablegrams for New York, and many telegrams for many parts of England and France, which had been sent fifty, forty-five, forty miles by 'wireless,' to be despatched from the Totland Bay Post Office."

## An Operator's Nightmare

By Harold Watterson

[AUTHOR'S NOTE: "Wet Nelly" is the technical term which is employed on board ship to designate a peculiar variety of adamantine pastry, the composition of which is a trade secret. It is of peripteral form, and consists of two slabs of the composition welded under pressure by ship's currants. When removed from the dish it makes a squidgy noise. A large dose is fatal.]

ALTHOUGH I could no longer see him, I knew that the ship's doctor sat by the side of my bed and that the end was drawing near, yet I received my sentence with indifference. "There is no hope," said the doctor; "he will pass away before night."

That ship's doctor knew his business well! He adopted different tones of speech for the first, second and third class passengers. The steerage manner was curt and cold, to the second cabin he was matter-of-fact, but for wealthy saloon passengers was reserved a sympathetic bedside manner attained only by long and constant practice. On this occasion I noted subconsciously the use of the second cabin speech.

Fragments of conversation reached my ears, among which I could distinguish ". . . great pity that the Board of Trade make us carry those wet nellys . . ." then the sounds faded, and I was awakened by a voice at my elbow saying—

"You might be careful where you put your feet!" and behold, it was an Angel holding a drawn sword, upon whose bare foot I had inadvertently trodden.

We were in a lift together, descending with rapid speed. A gale blew upwards, walls streaked past, and the lift rocked as if in a heavy sea.

"Lowest platform," commanded the Angel to the person who served in the capacity of lift attendant; and turning to me, remarked plaintively, "You wireless people have given us a great deal of trouble; we've had to start on new excavations." All sense of time disappeared, and I found myself being led by my angelic guide along a narrow passage of wet and slimy rock through which a damp and acrid wind was blowing. Before us, clad in white and bearing keys, walked a clerk from the office.

Presently appeared a dim and shadowy square, about which wandered aimlessly a number of men, clad, alas, in a familiar uniform.

My companion no longer walked, but rather

floated, with sword held aloft. In clarion tones he chanted forth, "These are they upon whom sentence hath been passed. Contention for Power is that for which they suffer." Even as he spoke, a violent quarrel broke out between a group of the prisoners. "You are only plain aerial," shouted one, "but as for me I am Power." "Power!" jeered another; "yes, 1½ kilowatt; why, I am five kilowatts, with a disc, too. But O"—here his voice broke and he sobbed bitterly, "I cannot get a spark."

We moved onward and came to a battery of cavern cells, and the holder of the keys unlocked the first. In this sat one who in a ship at sea had mocked a painstaking German Marconi man for his quaint English. Now for all time the captive spoke as such himself. "How are weather in ocean?" he stammered. "Is he good, don't it? Not comes never no signals of you." At a sign the jailer closed the cell and we passed down the aisle of caverns until we came to a door from which issued a frightful commotion.

"Before thee," vouchsafed my winged friend. "are they on whom time hung heavily and that wearied of ships of slow speed, comfortable withal, and with little work. Now they ever voyage upon vessels having sixteen red funnels, and so fast speed they that the days and the nights are as flickerings of black and of white." We stood before a door sealed and barred. "Therein," said the Angel, "is a Marconi engineer who equipped ships with apparatus and left behind him bad connections. So he seeks for ever in inky darkness amid projections and sharp corners for the wires which he will never find."

The ground shelved sharply before us and a sulphurous smell was borne upon the cold, dank wind. From a crevice came a sound as of one feebly singing.

"Black guilt," chanted the Angel. "The prisoner read the works of one Omar Khayyám when he should have been standing at his instrument. Now hammereth he the butterfly and must ever sing aloud the poems which he himself composeth."

At that a husky voice commenced :—

I was walking in the ocean  
On a Sunday afternoon,  
When I met a lobster salad,  
But I hadn't got a spoon;  
So I asked him if he'd mind it,  
Just to make a little talk,  
If I ate him with a solid silver  
Nickel-plated fork.  
And the lobster said he didn't mind a bit!

The voice swallowed painfully once or twice,  
then droned on :—

So we went into a garden,  
And we sat upon a bench,  
And he told me that his father  
And his mother were both French.  
When I questioned his veracity,  
He fixed me with his gaze,  
And said, "Well, just to prove it,  
I'll sing a mayonnaise."  
But the lobster couldn't sing a bit!

So I went into a barber's  
And there I met a hare,  
Who said, "I've lost my whiskers,  
And such a lovely pair."  
I said, "Are you a rabbit?"  
He said, "O no, I ain't,  
I'm a hare without my whiskers,"  
Which I thought was rather quaint.  
But the rabbit didn't think it quaint a bit!

We then passed along a gallery in which  
paced the victim of Sinful Pride, for ever con-  
demned to parade before lovely ladies in boots  
down at heel, a uniform coat that wrinkled at the  
shoulders, and a week-old collar. The agony  
upon his face was awful.

Attracted by a swarm of flies and a smell of  
garlic, I found a hole in the ground from which  
issued a blast of heat, and was told that below  
was the model of a wireless cabin on a foreign  
steamer, designed for miscreants who grumble  
at British vessels. I was not impressed, for my  
trumpet-voiced guardian showed signs of  
asperity. I apologised, and remarked that I  
had sailed for a year on the "Nevermore."  
"That explains matters," said he, and smiled,  
but his voice hardened as he went on, "The  
'Derelict' was not, as has been said, broken  
with hammers, plate by plate, beam by beam,  
and little rivet by little rivet. She voyages once  
in every moon upon the lake here below in  
perpetual tempest." Beads of perspiration  
rolled down my forehead, and I shuddered.

Turning to my floating guide, I was struck by  
his queer appearance. At close quarters his robes  
were patched and soiled, and the feathers of his  
wings tarnished. My eye caught an inscription  
on his sword. It ran :—

"Best rolled gold. Warranted to wear 5  
aeons."

He saw that I was curious, and dropping sur-  
prisingly into the vernacular, said, as he pointed  
to the sword, "Doesn't wear: tarnishes like  
billyho," and noting my perplexity, added,  
"Fallen angel: got the job of inspector down  
here!"

The slope of the narrow path became rockier  
and more precipitous, the foul wind sucked and  
roared in the crevices. I could scarce keep my  
foothold, and sought anxiously in my mind how  
I might convey to my extraordinary companion  
my desire to end the journey. But words would  
not come and I was strangely nervous.

"Well," I blurted out at last, as I slid  
and scrambled down the rocks, "it's been good of  
you, you know, to take all this trouble to show  
your station to a visitor."

"But you are *not* a visitor," he thundered,  
while his presence grew vague and immense, and  
a blinding light shone in my eyes. And I heard a  
curious flat voice saying, "What about those  
faked long-distance messages?" "And who  
jammed the ocean on the 'Caronia'?" And it  
seemed that the voice spoke in Morse with a  
noise like that of a Clifden spark, but the dots  
missed and the spacing was bad, and I had lost  
my pencil, and must needs write all down with  
fingers that were swollen beyond belief and miles  
in length.

"Do you know anything about burning out a  
coil with an electrolytic break?" shrieked the  
voice in signals that ran together and reversed  
at the same time. The volume of sound grew  
unbearable. Blinded and deafened I turned to  
flee, but the ground opened and I collapsed into  
a bottomless pit, enveloped in dense smoke and  
suffocated by an overpowering stench of burning  
ebonite. Down, down, I crashed from rock to  
rock, and then I heard my steward say respect-  
fully, as he poked me, "Wake up, sir. Your  
tea is on the table."

And I looked, and behold upon the plate were  
two wet nellys, the syren was blowing for fog,  
and the captain paced the bridge.

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Lord Provost M'Innes Shaw, of Glasgow, has  
had the unique experience of receiving a  
message of thanks to the Corporation by means  
of wireless telegraphy. It came from Captain  
Rolfsen, of the Norwegian gunboat "Frithjof,"  
which left the Clyde recently after a brief visit,  
and the officers and crew of which were enter-  
tained by the Corporation. The message was  
dated from Malin Head.



An Illustrated Magazine for all interested in WIRELESS TELEGRAPHY, published monthly by MARCONI'S WIRELESS TELEGRAPH COMPANY, LIMITED. Watergate House, York Buildings, Adelphi, London, W.C.

Telegraphic Address ..... "Expense, London."  
Telephone No. .... Central 14340 (Three Lines).  
Codes used ..... Marconi, A.B.C. (4th edition), Western Union.

Subscription rate ..... 3s. per annum, post free.  
Single Copies ..... 2d. each, by post 3d.

All communications relating to Subscriptions, Advertisements, and other business matters, to be addressed to "The Publisher, 'The Marconigraph,' Watergate House, York Buildings, Adelphi, London, W.C."

All Editorial communications to be addressed to "The Editor, 'The Marconigraph,' Watergate House, York Buildings, Adelphi, 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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The Share Market.

Marconi shares have been active during the past month, notwithstanding the excitement caused on the London Stock Exchange by the industrial troubles. The closing prices on August 25 (the date we went to press) were as under:—  
Ordinary ..... 45s. 6d. 46s. 6d.  
Preference ..... 30s. 3d. 38s. 9d.

"The Marconigraph."

Since the publication of the first issue of *The Marconigraph* in April of this year we have effected various improvements in the literary pages, and it may now be asserted that *The Marconigraph* has taken a permanent place in the ranks of monthly journals. The reception accorded to the journal by the public and by the Press has more than justified expectations. The April and May issues have been completely exhausted, and since then we have been obliged to print increasing issues in order to satisfy the public demand. We have also reprinted the April and May issues, and the many readers who have from time to time asked for back numbers of *The Marconigraph* will be pleased to learn that they can now obtain them from the publisher.

Wireless Telegraphists.

Mr. Remnant, the Conservative Member for Holborn, recently asked the First Lord of the Admiralty in the House of Commons if orders had been issued, by circular or otherwise, to officers in command of His Majesty's ships that for the present no wireless telegraphists were to be allowed to leave His Majesty's service by purchasing their discharges in the ordinary way.

Mr. McKenna replied that the discharge by purchase of telegraphist ratings was not prohibited altogether, but orders were in force that all applications for such discharge should be carefully scrutinised and allowed only in really urgent cases. With the growing requirements of wireless telegraphy in the Fleet, it was desirable, he added, that the expansion of this new branch of the naval service should not be checked more than was necessary.

Wireless in the West.

At a recent meeting of the Bristol Docks Committee correspondence with the Postmaster-General relating to the establishment of a Marconi station at Avonmouth was submitted, and a letter was read from the Secretary of the General Post Office stating that so far as the public service of wireless telegraphy was concerned, the Postmaster-General was proposing to establish wireless telegraph stations at Land's End and Fishguard, which he "considers will enable a good service of wireless telegraph communication to be maintained between the port of Bristol and ships in the Bristol Channel." The letter added that the Postmaster-General did not think that an additional station at Avonmouth would be of public service. The matter is apparently not to be allowed to remain where it has been left by this letter, for we understand that the Board's officers are making further inquiries into the matter with a view of framing a reply to the Postmaster-General.

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## Convention Notes

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**I**N the communication issued from the office of the International Radio-telegraphic Convention at Berne it is announced that the Moroccan Government have signified their adherence to the Radio-telegraphic Convention.

Two appointments are notified. Mr. Justinian Oxenham, assistant secretary, has been promoted to the position of Secretary of the Department of Posts and Telegraphs of the Commonwealth of Australia in place of Sir Robert Townley Scott, who retired from the position on account of advancing years. Mr. C. C. P. Vigelius has been appointed to the post of Director-General of Posts, Telegraphs and Telephones in the Dutch Indies, in place of Mr. B. van Vianen. Mr. Vigelius has been authorised to sign letters and other documents in the name of the Inspector-General.

Particulars are given regarding the Montenegro Coast station in Antivari. The geographical position of the station is  $19^{\circ} 07' 00''$  E,  $42^{\circ} 08' 00''$  N (Greenwich Meridian). The call letters are M A N. The system used is the Marconi, and the wave length is 500 metres. The station will be open for public service and for marine communications. The rate for ordinary messages from Montenegro to Italy is 0.15 fr. per word, and from Italy to Montenegro, 1 fr. plus 0.09 per word.

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## Wireless and Derelicts

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**S**PECIAL arrangements have been made by the Postmaster-General for the transmission of radio-telegraphs between ships fitted with wireless telegraphic apparatus, and British coast stations in regard to the position of derelicts dangerous to navigation and weather and meteorological reports.

Whenever a derelict is observed lying in the track of ships and dangerous to navigation its position must be notified by means of wireless telegraphy to the nearest British coast station, which will immediately notify the Admiralty, Lloyd's, and the Meteorological Office, and forward the particulars by wireless telegraphy to ships proceeding on the North Atlantic, South Atlantic, and North Sea routes, as the case may be, for a period of four days after the receipt of the information. No shore station or inland charge will be made for this service.

Reports in regard to the local weather conditions prevailing at the Post Office wireless coast stations at Caister, Seaforth, North Foreland, Malin Head, Niton, Rosslare, Bolt Head,

Crookhaven (Brow Head), and Lizard; or Lloyd's signal stations at Southend, Dover, Dungeness, Beachy Head, Horse Sand Fort, Portland Bill, Prawle Point, Scilly, Lundy Island, Barry Island, Smalls, Tuskar, Roche Point, Old Head of Kinsale, Fastnet, Inishtrahull, Torr Head, Kildonan, Butt of Lewis, Cape Wrath, Dunnet Head, St. Abb's Head, Tynemouth, Flamboro Head, Spurn Head, and Aldeburgh, can be obtained by sending a radio-telegraph to the nearest wireless station in the following form:—"Indicate weather at . . . Captain . . . ." The shore station charge for the radio-telegraph and its reply will be 5s. If the inquiry necessitates the transmission of a telegraph to another station an additional charge will be made at the ordinary inland rate for the telegraph and the reply.

Information as to (1) the state of the weather in various parts of the Eastern Atlantic, the United Kingdom and the Continent; (2) weather forecasts for any part of the British coasts or ice in the Atlantic can be obtained by wireless telegraphy through the Post Office coast stations from the Meteorological Office. The radio-telegraph of inquiry should be worded as follows:—"Indicate (1) weather or (2) forecast, or (3) ice at . . . Meteorological, Captain . . . ." The shore station and meteorological charge for the radio-telegraph and the reply will be 5s. 6d., in addition to the cost of the inland telegraph to the Meteorological Office and of the reply. All radio-telegraphs sent to the coast stations in connection with these services must be forwarded in the name of the captain of the ship, and the shipowner will be held responsible for the charge incurred under sections 2 and 3. Forecasts are prepared at 10 a.m. and 7 p.m. daily and during the summer months at 2 p.m. also. In order to furnish the information in the most convenient form the reply message will, if no special particulars are required, be sent as in the following examples:—(1) S.W. 7 b c q, sea 5, fog 0. (2) Calm b, sea 0, fog 1. These would indicate south-west wind, strong, 7 blue sky, detached clouds, squally, rough sea, no fog or mist. (2) Calm, blue sky, sea calm, mist. The abbreviations denoting the state of weather will be as follows:—(b) blue sky, (c) clouds (detached), (d) drizzling rain, (e) wet air without rain, (f) fog, (g) gloom, (h) hail, (l) lightning, (m) mist, (o) overcast sky, (p) passing showers, (q) squalls, (r) rain, (s) snow, (t) thunder, (u) ugly, threatening sky, (v) visibility, objects at a distance unusually visible, (w) dew, (z) haze. A figure preceding these letters shows how many hours that kind of weather had prevailed since last observed—4 r, means four hours rain,  $2\frac{1}{2}$  l, means two and a half hours of vivid lightning. It is well to bear in mind that (w) means dew, but (d) drizzle; and (e) wet without rain, (p) passing showers of rain, and (q) squalls, but (s) snow; (h) hail, but (z) haze.

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## Book Notices

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"IMPERIAL TELEGRAPHIC COMMUNICATION," by Charles Bright, F.R.S.E. (P. S. King & Son, London: 3s. 6d. net.)

Few are so well entitled to be heard on the important subject of Imperial telegraphic communication as Mr. Charles Bright, the distinguished son of the promoter of the Atlantic cable in 1856, Sir Charles T. Bright, of whom the late Lord Kelvin said in 1889, "He was the engineer of this great undertaking [the first Atlantic cable], full of vigour, full of enthusiasm . . . to whom was due the laying of the cable." In the little book which lies on our table for review, Mr. Bright shows how much can be done towards Imperial unity and fostering trade betwixt the scattered units of the Empire by direct, efficient, and cheap telegraphic communication. He is in favour of leaving international cables completely in the hands of private enterprise, but he recommends that the State should take over what he calls existing "All-British" cables, and he considers further that the establishment of strategic lines comes within legitimate Government scope.

Mr. Bright's book is made up, in the main, of reproductions of certain papers, addresses and articles contributed at different periods, and may be said to form something like a history of the movement for extended and cheaper Imperial telegraphy. What concerns us chiefly is the position which Mr. Bright assigns to wireless in this respect. The wheels of time gradually but surely grind down the obstacles which many believed they saw in the possibilities in wireless telegraphy, and we welcome the friendly attitude which Mr. Bright now displays. He admits that there is great scope for wireless in the development of our Imperial telegraphic communications, but on an auxiliary basis. Why Mr. Bright should still believe in only a limited application of wireless after the splendid achievements of the Marconi system it is difficult to understand, and the only reason we can give is that the lecture in which the suggestion was made was delivered in 1902, although that forms no excuse for not bringing his book up-to-date as regards the possibilities opened out by later developments in wireless. He advocates wireless for a complete system of telegraphic communication round the entire coast of Great Britain and Ireland, in communication with various inland centres and military stations. Another radio-telegraphic installation which he recommends is that from the Philippines to Australia by way of either New Guinea or Borneo, whilst he considers that wireless telegraphy would be particularly well adapted for a news

service between the various West Indian islands. "Wireless telegraphy," as Mr. Bright admits, "has now sufficiently proved the utility of its application to be recommended both as an auxiliary and reserve means of communication to the different parts of the Empire, and for establishing communication where, owing to prevailing conditions communication by cable is impossible or difficult to maintain. Wireless telegraphy should further be established on all the trade shipping routes throughout the Empire." This is an excellent piece of advice so far as it goes, but it is being shown daily that wireless is destined to play a far greater part in the world's and in the Empire's communications than Mr. Bright is at present disposed to acknowledge. However, it is something to have gained from him the approval which he pays in his book. This book is one which we can heartily recommend to anybody who desires to understand the important question of the telegraphic communications of the Empire.

"SCIENCE AND THE CRIMINAL," by C. Ainsworth Mitchell. (Sir Isaac Pitman & Sons, London: 6s. net.)

Contemporary reports show how scientific discovery is being utilised in the struggle between Society and the criminal. Mr. Mitchell has woven a complete account of these developments, and his book not only makes interesting reading but furnishes much food for thought. Apart from the undoubted scientific interest for which this book should be read, the author has brought human interest into his work, which should assure it a hearty reception. Space does not permit us to go as fully into Mr. Mitchell's fascinating book as we should like to indicate the various scientific means of detection and capture, identification, etc., which form the sixteen chapters of the book. A recent criminal case in which wireless telegraphy played a part of enormous importance is recalled, although the original details have scarcely had time to fade from memory. This indicates how up-to-date the book is. Of the event itself it is unnecessary to add anything here, but it made an unmistakable impression upon the public mind of the possibilities of wireless.

We have received some copies of recent issues of the *English Mechanic*, which is essentially a practical paper. As its name implies, all branches of mechanical science and engineering practice are treated in its columns. At present our contemporary is publishing a series of interesting articles on wireless telegraphy by Mr. W. J. Shaw, which will be found very instructive.

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## Water Analogy of the Electrical Phenomena Occurring in the Circuits Employed for Wireless Telegraphy

By J. ST. VINCENT PLETTS

*In the accompanying diagram the water and electrical circuits are made to correspond as nearly as possible, the analogous parts being marked with the same letters, but the two cases being distinguished by capital and small letters respectively.*

### The Apparatus.

**T**HE generator consists in the water case of the propeller "G" enclosed in a cylinder, and in the electrical case of the dynamo "g." When the propeller is rotated a pressure or head or "hydromotive force" is created, which is measured in units called pounds per square inch. Whether any water flows or not the pressure is there. Similarly, when the armature of the dynamo is rotated a voltage, or potential, or electromotive force is created which is measured in units called volts. Whether any current flows or not the voltage is there.

The condenser consists in the water case of an elastic diaphragm "C" stretched across a cylinder, and in the electrical case of two conducting surfaces separated by a layer of insulating material "c." When a difference of pressure is created water is sucked out from one side and forced into the other side of the condenser, bending the diaphragm "C" to an amount depending upon the pressure and the elasticity of the diaphragm "C." If any path be provided for the water to get from one side to the other of the diaphragm "C" it will return to its normal position. Similarly, when a difference of potential is created, electricity flows out of one side and into the other side of the condenser "c," which becomes charged to an amount depending upon the voltage and the capacity of the condenser "c." If a conductor be connected to the two sides of the condenser "c" it will discharge itself.

The discharger consists in the water case of a sticky valve "D," and in the electrical case of a spark gap "d." When the pressure reaches a certain amount the valve "D" flies open (allowing free passage to the water), remains open a short time, and then falls back into its seat, where it sticks until the pressure is again sufficient to force it up. Similarly, when the

voltage reaches a certain amount, the spark gap "d" breaks down (allowing a free passage to the current), remains conductive for a short time, and then becomes non-conductive until the pressure is again sufficient to break it down.

The primary inductance consists in the water case of a heavy piston "P" running in a cylinder, and in the electrical case of a coil of wire "p." When water flows it moves the heavy piston "P" which, owing to its inertia, is difficult to set in motion, or when in motion to stop. Similarly, when a current flows it creates in the coil "p" a magnetic field which is difficult to create, or if created is difficult to stop.

The secondary inductance "S" and "s" is similar in construction and function to the above.

The transformer or jigger consists in the water case of the two heavy pistons "P" and "S" joined by the spring "M," and in the electrical case of the two coils "p" and "s" joined by their common magnetic field "m." When the piston "P" moves, it compresses or extends the spring "M," which tends to move the piston "S." Similarly, when a current flows in the coil "p," it creates a magnetic field "m" which tends to produce a current in "s."

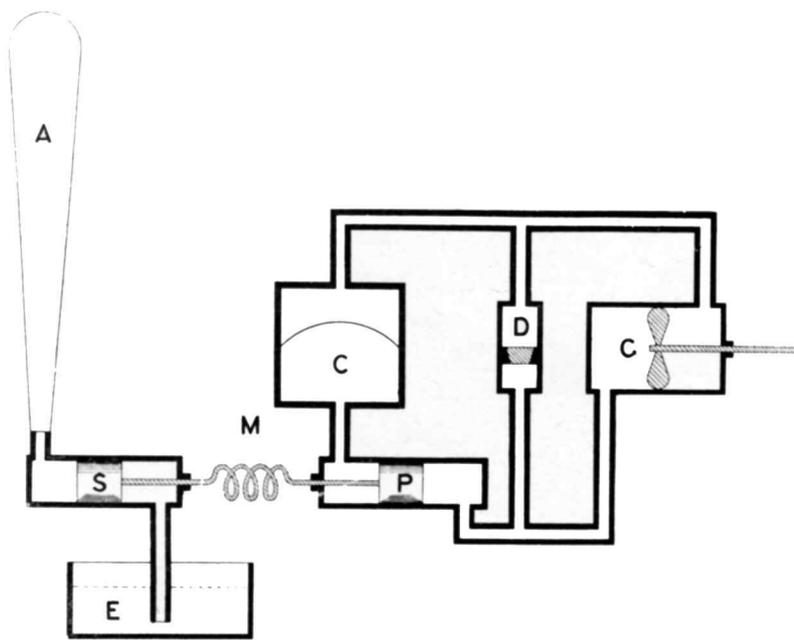
The aerial consists in the water case of a long elastic bulb "A," and in the electrical case of an elevated wire "a." When water flows into the bulb "A" it expands, producing a pressure tending to cause the water to rush out again. Similarly, when a current flows into the aerial "a," it becomes charged, producing a voltage tending to discharge it again.

The earth consists in the water case of a reservoir "E," and in the electrical case of the earth "e." The water flowing in and out of the bulb "A" is taken from or given to the reservoir "E," just as the current flowing in and out of the aerial "a" is taken from or given to the earth "e."

### The Action.

**Primary Circuit.**—The propeller "G" produces a pressure tending to move the water which, being unable to pass the valve "D,"

moves the piston "P" and deflects the diaphragm "C." The more the diaphragm "C" is deflected the greater becomes the difference of pressure between the water on the two sides, until at last it is sufficient to force the valve "D" open. When the valve "D" is open the water rushes through, allowing the diaphragm "C" to return to its normal position, but this rush of water has set the piston "P" in motion, and, owing to its inertia, it does not stop at its normal position, but passes it, pushing the water through the valve "D" and deflecting the diaphragm "C" in the opposite direction. Now the diaphragm "C" returns again to its normal position, setting the piston "P" in motion in the opposite direction, which in turn deflects the diaphragm "C" in the same direction as before. Everything is then exactly where it was when first the valve "D" was forced open, and this cycle of operations is therefore repeated again and again, causing an alternating flow of water and an oscillation of the piston "P." But, owing partly to friction in the pipes and mainly to the energy transmitted through the spring "M" to the other circuit (as will be further explained later), each oscillation is smaller than the previous one, and as soon as the water has become comparatively still the valve "D" falls back into its seat and sticks there until the propeller "G" again produces sufficient pressure to force it open.



Similarly the generator "g" produces a voltage tending to cause a current which, as it cannot pass the spark gap "d," charges up the condenser "c" and creates a magnetic field at "p." When the voltage becomes sufficient a spark jumps across the gap "d" and this path becomes conductive. When the spark gap "d" becomes conductive the condenser discharges through it, but the inductance at "p" causes the condenser "c" to charge up again in the opposite direction. Now the condenser "c" again discharges through the spark gap "d," causing a current to flow in the opposite direction through the inductance "p," which, in turn, charges up the condenser "c" in the same direction as before. Everything is then exactly as it was when the spark first occurred, and this cycle of operations is therefore repeated

again and again, causing an alternating current and an oscillation of the magnetic field at "p." But, owing partly to the resistance of the circuit and mainly to the energy transmitted to the other circuit, each oscillation is smaller than the previous one, and as soon as the current has become comparatively small the spark gap "d" ceases to be conductive until the generator "g" again produces sufficient voltage to break it down.

The most important point to consider is the frequency of the oscillations. It is obvious that the more elastic the diaphragm "C"—the more easily it bends—the less forcibly will it set the water in motion. It is equally obvious that the greater the inertia of the piston "P" the

less easily will it be set in motion. Hence increase of the elasticity of "C" or increase of the mass of "P" decreases the frequency of the oscillations of the water. Similarly, in the electrical case increase of the capacity "c," or of the inductance "p," decreases the natural frequency of the oscillating current in that circuit, or, in other words, increases the natural time period and wave length, the latter being actually proportional to the square root of the product of the capacity and the inductance.

*Aerial Circuit.*—If the piston "S" be moved along so as to cause a pressure in the elastic bulb "A," and if the piston "S" be then released, it is obvious from the foregoing that an oscillation will take place, the extra water being taken from or given to the reservoir "E." It is equally obvious that the frequency of the

oscillations will depend upon the elasticity of the bulb "A" and the mass of the piston "S." Now, however, we encounter a new phenomenon. In the primary circuit the whole of the water was confined within pipes which were almost, if not quite, rigid, but in this aerial circuit we have an expanding and contracting bulb which affects the air around it. If the oscillations are sufficiently rapid a musical sound will be produced by the bulb, and conveyed by the air to a distant receiver such as the ear. The damping or dying down of the oscillations in this circuit, therefore, depends partly upon the friction in the pipes, but mainly upon the energy radiated or carried away by the surrounding air.

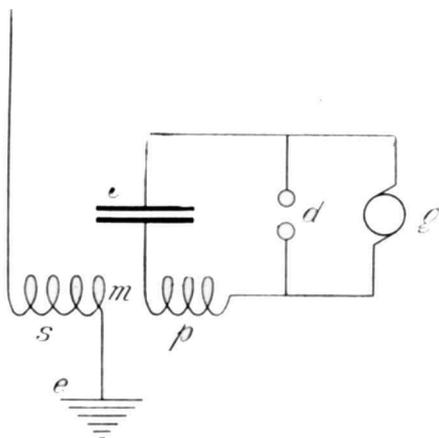
Similarly in the electrical case if the aerial "a" can be charged and left to itself, it will oscillate (taking its charge from the earth "e"), with a natural frequency depending upon the capacity of "a" and the inductance of "s," and the oscillations will rapidly die down owing to the energy radiated or carried away by the surrounding ether.

**Coupling and Tuning.**—The primary circuit with small internal losses and consequent persistent oscillations, and the aerial circuit with large radiation and consequent high damping, have so far been separately treated, and the effect of the one upon the other must now be considered. If the pistons "P" and "S" are coupled together by the spring "M," the oscillations of the piston "P" will tend to produce similar oscillations of the piston "S." If the natural frequencies of the two circuits are the same, the piston "S" will oscillate freely, but if the natural frequencies are different the piston "S" will scarcely oscillate at all. The reason for this is not far to seek. If the natural frequencies are the same, each impulse given by the piston "P" to the piston "S" will coincide with its natural movement, and therefore increase its swing until the energy radiated from the bulb "A" equals the energy supplied from the piston "P." If, on the other hand (to take an extreme case), the frequency of the primary circuit is double the frequency of the secondary circuit, then the first impulse given by the piston "P" to the piston "S" causes it to oscillate, but just as it is on its return stroke the second impulse comes, stopping it and destroying the work done by the first impulse.

In the electrical case, if the aerial inductance "s" is put so close to the primary inductance "p" as to be within its magnetic field, the oscillations in "p" will tend to produce similar oscillations in "s." If the natural frequencies of the two circuits are the same, the aerial circuit will oscillate freely, but if they are different the aerial circuit will scarcely oscillate at all. The process of making the natural frequencies of the two circuits the same consists of adjusting the inductance or capacity

of either circuit until their product is the same as the product of the inductance and capacity of the other circuit. This process is called tuning.

**The Object.**—If two piano strings are strung up so as to have different notes, and both are subjected to a sudden gust of wind, both will



vibrate. But if both are subjected to a musical sound coming through the air from a distant transmitter only, the string having the same natural frequency as or being in tune with the received note will vibrate.

Before 1900 no primary circuit was employed. The only circuit of the transmitter was the aerial circuit, just as illustrated in the diagram, except that the valve "D" or spark gap "d" was in this aerial circuit. It has already been explained that this circuit has very great damping, consequently when the valve "D" flew open one violent impulse was transmitted to the surrounding air, followed by a few weak and rapidly dying down impulses. This gust affected all receivers almost equally, and in order to affect only one receiver (or, in other words, to obtain selectivity) it was necessary to replace this gust by a more sustained vibration.

A closed oscillation circuit is a persistent oscillator, but is not a good radiator, and Mr. Marconi's great invention consisted of coupling such a circuit to his old aerial circuit, which was a good radiator but a bad oscillator, and thus producing a system which radiated much more sustained oscillations. Further, he realised that the one essential for the satisfactory operation of this system was the employment of two circuits, having the same natural time period when oscillating independently.

Before this invention wireless messages had been sent, with difficulty, over a distance of 70 or 80 miles. Within a year of its introduction the Atlantic was bridged, and three messages were sent simultaneously from one station to another.

## The Human Element at a Wireless Station

### Life at Crookhaven

By H. W. LEACH

**I**N a remote corner of County Cork, Crookhaven has suddenly sprung into an animated existence. This Irish village has no more than two hundred inhabitants, whose principal means of subsistence is fishing. The distance from Schull, which is the nearest point of



H. W. Leach.

approach to Crookhaven, is almost thirteen miles, but the surrounding country is wild and picturesque. Schull is some thirty miles from Skibbereen and is reached from the last-named place by means of a boat across the harbour, then a jaunting-car, which carries the traveller through some of the wildest, most rocky, and sparsely inhabited portions of south-west Ireland. Boating and fishing are available in the harbour, and provide the chief relaxations of the operators who are on duty at the Crookhaven Station. When this station was first erected in 1902 it was worked with a coherer receiver.

There were at that date few sea-going vessels fitted with wireless apparatus, and the comparatively easy life of the operator on duty there in those days may be gauged from the fact that fifty messages from in-going and out-going steamers was considered a great feat. The actual telegraphic work was hardly sufficient to keep the operators busy at all times, but in following the developments in wireless telegraphy these operators were kept constantly interested. A change has, however, come over the place. The magnetic detector has been introduced, and Crookhaven has sprung into prominence as a wireless station. By reason of its geographical situation, all ships coming from the west and bound for a European port enter into communication with Crookhaven, and that station is busily employed, night and day, in sending and receiving messages. The life lived by the operators at this station is now a strenuous, albeit an interesting one. One incident, although it occurred nearly seven years ago, may be recalled as serving to show what was in the

early days regarded as a welcome relief from the monotony of life in a station not busily employed. In 1904 an Atlantic liner, equipped with Marconi apparatus, broke one of her shafts some eighty miles out. Communication was at once set up between the station and the disabled liner, and over one hundred messages were cleared, the majority being to friends of the passengers in different parts of the world, and others summoning assistance, which was speedily rendered. For twenty-four hours the operators were busily engaged, and with the aid of wireless telegraphy the liner was ultimately enabled to continue upon her voyage. But times have changed; Crookhaven Station no longer waits for a chance event to stimulate activity, for the regular passage to and fro of steamers keeps the station incessantly engaged in receiving commercial and personal messages from those on board.

The life of an operator at Crookhaven differs greatly from the life of an operator at sea. There is little variety or excitement in the life, but the experience gained is both novel and interesting. The first impression on arriving at the village of Crookhaven is that the "end of everywhere" has been reached. But all sense of solitude vanishes before the pleasant and cheerful welcome received from one's colleagues, and the newcomer finds himself—for some time, at any rate—the centre of local interest.

There are usually six operators at this



The Village Square at Crookhaven

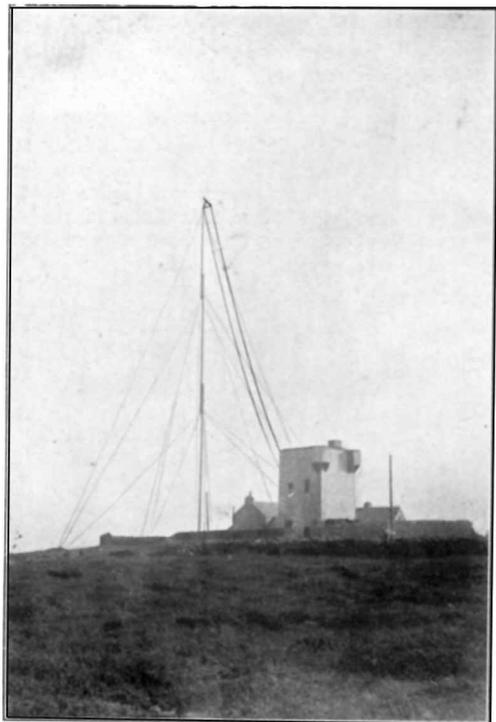
station. The day is divided into three watches, viz., midnight to 8 a.m., 8 a.m. to 4 p.m., and 4 p.m. to midnight, two operators being required on each watch. The daily routine proceeds with but little change. Every evening at about eleven o'clock the operators on the midnight to 8 a.m. watch prepare for their tramp to the station, which is a little over two miles from the village. The station stands on Brow Head, the most south-westerly point of Ireland, at an altitude of over 300 ft. The road from the village runs for some distance along the shore, then rises abruptly along the edge of the cliffs to the top of Brow Head. The absence of any signs of life on this road accentuates the encircling gloom. Rarely, if ever, is the solitude of the traveller broken by the chance meeting of a fellow creature; no light save that figuratively derived from the stars softens the blackness of the night, which is intermittently penetrated by the rays from the Fastnet Lighthouse, situated about seven miles off the mainland. At the station, however, the operator feels that he is again swept into the busy world. He will probably find that a dozen or more ships are in communication with the station, and will be kept busy sending and receiving messages from these ships. As Crookhaven is the first station



*Road leading to the Village and Station.*

with which the homeward bound American liners communicate it is naturally a busy station. By the aid of wireless all arrangements are made for the arrival of the ships, the landing and entraining of the passengers and mails, whilst hundreds of private messages to and from passengers are dealt with. Messages are also received from the Fastnet Lighthouse, which is fitted with wireless, reporting the passing of sailing ships and steamers. These messages are sent by vessels not fitted with wireless by means of signals to the Fastnet, thence by wireless to Crookhaven, whence they are forwarded to Lloyd's and to the owners of the vessels.

The tremendous advance made in wireless during the past few years is strikingly illustrated by a comparison of the present-day working at Crookhaven with that of earlier days. Some six or seven years ago it was quite unusual to be in communication with more than one ship at a time, and occasionally periods of one and even two days passed without any communications being handled. Today, Crookhaven is always in communication



*The Old Station at Crookhaven.*



*Crookhaven Harbour viewed from the Old Station.*

with at least six ships, and sometimes with as many as twenty. The operating is now carried on at over twice the speed and the distance of communication is greatly increased. Under these conditions the operator is kept busily engaged throughout his watch.

Although Crookhaven is a very quiet place, the life of an operator there is by no means uncongenial, and one's leisure can be spent in many enjoyable ways. The village is situated on a narrow peninsula, which forms a

splendid natural harbour. In the summer this harbour provides good swimming and boating, whilst excellent surf bathing may be obtained in the many coves and on the strands along the shore. The inhabitants of the little village are genial, "homely" people, and are ever willing to lend their boats or to allow the operators to accompany them in their fishing-boats. In the winter, however, continuous bad weather frequently entails the cessation of all outdoor sport; the life then becomes somewhat monotonous and the daily journey to the station very trying. At such times any slight diversion is eagerly welcomed. The

arrival of a wind-bound sailing vessel, a change in the staff, or other trivial occurrences are treated as matters of great importance and create much interest and excitement. It is essentially a simple but healthy life that is lived at Crookhaven. Many of the conveniences and luxuries of the city are greatly missed; yet, withal, it is often with a feeling of regret that the operator leaves, and he generally takes with him many recollections of happy times spent at Crookhaven.

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## Wireless in the Italian Army and Navy

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THE Italian Government have recently approved the establishment of the Royal School of Wireless Telegraphy. Senator Di Brochetti, who formed one of the Commission appointed to give effect to the Government's decision, in the course of an address, declared that wireless telegraphy had made remarkable progress during the last few years, especially in the matter of long-distance communication. In that progress, he added, honour had been shed upon his illustrious countryman, Signor Marconi, who had succeeded in solving the great problem of maintaining continual communication between ships at sea and land.

It was not so easy to understand the underlying principles and the application of wireless, which had become more complicated by the long ranges now obtained and the high powers used for this purpose, and which made it somewhat dangerous for operators who had not a perfect knowledge of the subject. To remedy this the Italian Government have been giving consideration to a Bill for the establishment of a Military Institute of Radio-telegraphy.

The principal objects of the Institute are : (1)

Organisation of the radio-telegraphic service of the army and navy; (2) to afford the necessary general and special education to military and naval officers in order to familiarise them with the plant at radio-telegraphic stations; (3) to afford the means of making theoretical researches and experiments as regards the various systems of wireless transmission; and (4) to furnish to inventors, also to those who do not belong to the army, the opportunity of making experiments regarding inventions, provided that these experiments are considered by the permanent commission for wireless as being worthy of consideration for eventual improvement in the wireless service for the national defence.

The expense in connection with such an Institute will be divided between the army and navy in equal parts.

The sum of 25,000 lire will be devoted annually for the purposes of the Institute.

The administration and technical control of the Institute will be vested in a Commission consisting of a member of the Ministry, the Director-General of Artillery and Armaments, the Chief of the Institute, the Commander of the special battalion of Engineers, a Professor of Physics at the Royal Technical Academy, the Chief of the Wireless Departments of the Admiralty and Army, and an officer from each of these departments.

## Maritime Wireless Telegraphy

NOTWITHSTANDING the fact that August is generally regarded as a quiet month for business, some important orders have been received by the various Marconi companies for the equipment of sea-going vessels. The French Company have received instructions from the Compagnie Generale Transatlantique to equip the SS. "Rochambeau." Our American friends, the Marconi Wireless Telegraph Co. of America, have just secured a notable order for the equipment of the cable-ship "Restorer" for the Commercial Pacific Cable Company.

The Marconi International Marine Communication Co., Ltd., have received instructions

from the Compania sud Americana de Vapores to equip the SS.

"Aysen,"

"Lemari,"

"Huasco,"

and "Palina." In-

structions

have also

been received

from the

Union Steam-

ship Com-

pany of New

Zealand to

equip nine

passenger

vessels and

two cargo

boats, among

which are the

SS. "Marama"

and "Makura,"

and from George

Thompson

and Co. to equip

the SS. "Demosthenes"

and the SS. "Norseman." Among other orders

received by the

Company for 1½-k.w. and

emergency plant

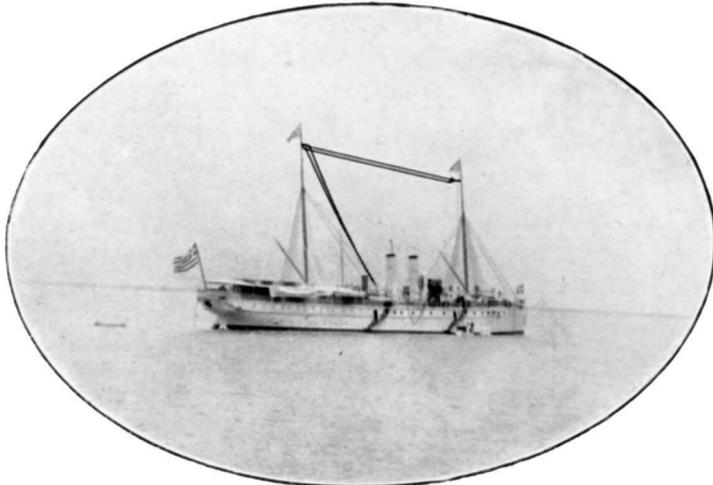
up to August 17

were the follow-

ing: The "Herefordshire"

and the "Derby-

shire" for Bibby



*The King of Greece's Yacht "Amphitrate."*

and "Makura," and from George Thompson and Co. to equip the SS. "Demosthenes" and the SS. "Norseman." Among other orders received by the Company for 1½-k.w. and emergency plant up to August 17 were the following: The "Herefordshire" and the "Derbyshire" for Bibby Brothers; the "Princess Alice" for the Canadian Pacific Railway; the "Mendi" for Elder Dempster and Co.; "Panaras" and "Antony" for the Booth Steamship Co.; "Empress Queen" for the Isle of Man Steam Packet Co.; "Maloja" for the Peninsular and Oriental Co., and "Rotura" for the New Zealand Steamship Co.

The new Royal Mail steamer "Bayardo,"

which has been built by Earle's Shipbuilding and Engineering Co. for the Wilson line, was recently taken on her trial trip from the Hull Roads to within a short distance of Flamborough Head. The vessel is under the command of Captain Soulsby, and is intended for the Swedish mail service between Hull and Gothenburg. Her gross tonnage is 3,570 tons, and her horse-power 3,600, and she will be the fastest as well as the most sumptuously fitted vessel in Hull. Wireless telegraphy is fitted on the vessel.

To the lists of vessels in the course of equipment with Marconi apparatus given in previous issues of *The Marconigraph*, must be added the

following:

"Arethusa,"

boys' training

ship lying off

Greenhithe,

"Remuera"

(New Zealand

Steamship Co.),

"Vandyck"

(Lampport &

Holt), "Lac-

conia" (Cun-

ard Steam-

ship Co.),

"Rohilla"

and "Rewa"

(The British

India Co.),

"Somali,"

"Dongola,"

"Plassy,"

"Medina,"

"Ballarat," and "Bendigo" (The Peninsular

and Oriental Steamship Co.), "Panama,"

"Victoria," "Mexico," "California," and two

unnamed vessels, for the Pacific Steam Naviga-

tion Co.

A new record has been established by the Man-

chester Ship Canal, when the largest boat that

has yet navigated the canal was berthed at

Salford Docks. The steamer, which is named

the "Argyllshire," arrived from Avonmouth,

and is one of the Federal-Holder-Shire liners.

The vessel is 547 feet long and 61 feet in breadth,

and she has a displacement of 19,350 tons. She

is to have a wireless telegraph installation.

King George's journey to India next Novem-

ber for the Durbar will be made on the

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"Medina," a vessel which will be then on its maiden voyage.

The P. and O. Company have been called upon to make special travelling arrangements for the Indian Durbar. Although the sailings do not take place until November, the work of fitting out the two special ships is well in hand.

The "Medina" and the "Maloja" are both new vessels, and the former has been retained by the Admiralty for the Royal voyage to and from India. The "Maloja" will convey a large number of distinguished visitors to Bombay, and, as already announced, they are being fitted with Marconi wireless sets.

The King's ship will be painted white, with a ribbon of royal blue and gold. She will present a graceful appearance, and the arrangement of her upper decks and bridges will be imposing. The over-all length of the "Medina" is 560 feet, beam 62½ feet, moulded depth 38¾ feet. She has a displacement of 20,000 tons, and the gross register tonnage approaches 13,000 tons. The horse-power is to be 16,000, giving a speed of about 19 knots per hour.

When complete the Admiralty will take charge of the ship, and the naval crew, numbering some hundreds, will be under the command of

Admiral Sir Colin Keppel. On the special mast will fly the Royal Standard, the rear-admiral's flag at the yardarm, the Admiralty flag on the foremast, the Union Jack at the mizzen, and the White Ensign aft on the quarter-deck.

The SS. "Espagne," belonging to the Compagnie des Transports Maritimes a Vapour of Marseilles, which met with a mishap recently, was equipped with a wireless apparatus known as the "C. G. R." According to *La Liberté*, the radio-telegraphic apparatus on board would not work, and it was impossible for the vessel to make any communications at the time of the accident.

### Wireless Records in the Pacific

Some good records were established by the wireless operator, Mr. Kearsley, during the passage of the R.M.S. "Zealandia" between Canada and Australia. On the up-trip the "Zealandia" was in communication with the Honolulu station for a distance of 1,100 miles, and at the same time linked up with Cape Flattery, on the Canadian coast, the total distance being 2,200 miles. During the down-trip she was in touch with Honolulu for 1,300 miles, and picked up Sydney 1,093 miles off. A message was received on the "Zealandia" from H.M.S. "Prometheus" at Vila, giving particulars of the mishap to the French mail steamer "Pacifique," and the news was transferred by Mr. Kearsley to Sydney. Off the coast the "Zealandia's" operator also received messages from the Adelaide S.S. Company's steamer "Grantala," which had just been equipped with wireless. The "Zealandia," it may be added, has a Marconi standard ship installation.

A wireless message received at Halifax, N.S., early last month, stated that H.M. cruiser "Cornwall" was ashore at Cape Sable, near the spot where the Canadian cruiser "Niobe" grounded on July 30th.

The wireless telegraph service established at Aden has been extended to ships, and communication between steamers at sea and Aden or Berbera is now open for the use of the public. Messages transmitted either to or from ships are charged at the rate of ten annas per word, and by arrangement with the Eastern Telegraph Co. at Aden, messages to and from ships at sea are accepted at or delivered from the Company's station, subject to a charge of eight annas for the first twenty words and four annas for every additional ten or part of ten words. We hope in an early issue to publish an account of these stations.

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## Movements of Telegraphists

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The following transfers have taken place during the past month:—

Mr. J. Gornall, from the "Lusitania" (2nd) to the "Pancras" (o.c.).

Mr. C. Allnutt, from the "Mauretani" (2nd) to the "Zeeland" (o.c.).

Mr. G. Gormlic, from the "Baltic" (2nd) to the "Leicestershire" (o.c.).

Mr. W. H. Knapman, from the "Empress of Ireland" (2nd) to the "Megantic" (2nd).

Mr. R. A. C. Lee, from the "Celtic" (2nd) to the "Virginian" (2nd).

Mr. H. Gibsone, from the "Megantic" (2nd) to the "Lake Champlain" (o.c.).

Mr. T. G. Petersen, from the "Hilary" (o.c.) to the "Cretic" (o.c.).

Mr. C. W. Perkin, from the "Ambrose" (o.c.) to the "Virginian" (o.c.).

Mr. F. White, from the "Lake Champlain" (o.c.) to the "Ambrose" (o.c.).

Mr. J. Bamford, from the "Virginian" (2nd) to the "Celtic" (2nd).

Mr. A. G. Blow, from the "Orcoma" (o.c.) to the "Romanic" (o.c.).

Mr. E. J. Day, from the "Campania" (2nd) to the "Devonian" (o.c.).

Mr. W. F. Atkinson, from the "Cedric" (2nd) to the "Empress Queen" (o.c.).

Mr. F. A. Bradley, from the "Laurentic" (2nd) to the "Ben-my-Chree" (o.c.).

Mr. W. H. Silvester, from the "Victorian" (2nd) to the "Merion" (o.c.).

Mr. G. W. Carmichael, from the "Franconia" (2nd) to the "Princess Alice" (o.c.).

Mr. L. C. Kinnear, from the "Oceanic" (2nd) to the "Minnetonka" (o.c.).

Mr. H. E. Horoy, from the "Menominee" (o.c.) to the "Mesaba" (o.c.).

Mr. E. G. Hill, from the "Majestic" (o.c.) to the "Oceanic" (2nd).

Mr. L. L. Jones, from the "Himalaya" (o.c.) to the "China" (o.c.).

Mr. A. E. Hill, from the "Ionic" (o.c.) to the Spanish Station at Barcelona.

Mr. J. B. Helders, from the "Batavier III." (o.c.) to the Spanish Station at Barcelona.

Mr. H. E. Earl, from the "Clifden" to the Spanish Station at Barcelona.

Mr. W. M. Craven, from School to the "Lusitania" (2nd).

Mr. F. R. Yoe, from School to the "Oronsa" (o.c.).

Mr. A. F. Burton, from the "Virginian" (o.c.); Mr. W. F. Storm, from the "Elmina" (o.c.); and Mr. F. L. Dennis, from the "Campania" (o.c.) have been granted sick leave, and are at present out of office.

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## Movements of Engineers

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to Aug. 22

Mr. W. S. Entwistle left for Coltano on August 12th.

Mr. H. J. Round sailed on SS. "Laurentic" on August 5th with Mr. Marconi.

Mr. C. E. Prince has gone to Athens on special duty.

Mr. A. Flood-Page is at present at Poldhu on holiday relief until September.

Mr. J. Vincent, lent by the Belgian Co., is now attached temporarily to the merchant ship fitting staff.

Mr. H. F. Merton left Chelmsford on August 9th for Liverpool, where he is continuing his instructional course at the School of Telegraphy.

Mr. J. Hudson left Madrid on May 17th for England, on leave.

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## Personal

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Mr. and the Hon. Mrs. Marconi left Liverpool on August 5 in the White Star liner "Laurentic" for Quebec and Montreal.

Mr. G. Marconi, LL.D., D.Sc., has been elected President of the Junior Institution of Engineers for the ensuing session.

Captain C. G. G. Crawley, R.M.A., has been appointed to the "Vernon," for experimental duties in wireless telegraphy, and Captain R. C. S. Waller, R.M.L.I., to the "Defiance," as instructor in wireless telegraphy, to date from date of embarkation.

Lieutenant S. C. Wace, R.M.A., has been appointed to the "Exmouth," as instructor in wireless telegraphy.

Mr. Arthur H. Brewster, of the London Office Staff of Marconi's Wireless Telegraph Co., Ltd., was married to Miss May Cumley, of Eastbourne, on August 12th. To mark the event the Directors of the Company and the staff in London presented Mr. Brewster with a handsome piano.

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## Appeal to the Benevolent

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The following amounts have been received during the past month for the fund raised on behalf of Mrs. W. J. Croxon, whose husband died recently as the result of an operation for cancer:—Mrs. Murphy, 10s.; Mr. Stone, 15s.; "The Bungalow," £4 5s.; Mr. J. Willey, 10s.; Mr. F. J. Crowley, 5s.; Mr. G. E. Macaulay, 5s.; Mr. W. L. McEwen, 10s. Ten shillings was received from Mr. and Mrs. B. Pontifex during the preceding month. We would like to remind our readers that this fund is still open and that contributions should be addressed to the Editor of *The Marconigraph*, Watergate House, Adelphi, London, W.C.

# The Transmission of Telegrams to and from Ships at Sea



**T**ELEGRAMS for transmission to ships equipped with Wireless Telegraph apparatus are accepted at nearly every telegraph office in the World. Full information regarding routes, rates, etc., will be found in the British Post Office Official Guide, or may be obtained from any telegraph office or the offices of the Marconi Companies.

Messages may also be transmitted through the Marconi Companies' High Power Stations at Poldhu, England, and Cape Cod, U.S.A., to ships fitted with special receiving apparatus at any point on the North Atlantic, at a charge of 3s. per word.

## WIRELESS MESSAGES MAY ALSO BE SENT TO CERTAIN SHIPS THROUGH THE FOLLOWING COAST STATIONS ABROAD—

ADEN.	CHINA.	INDIA.	JAPAN—contd.	RUSSIA.
ALGERIA.	Tsingtau.	Bombay.	Shiomisaki.	Nicolaiewsk.
Fort de l'Eau.	COCOS.	Calcutta.	Tsunoshima.	Petropavlovsk.
AUSTRIA.	CORSICA.	Jask.	MEXICO.	SARDINIA.
Pola.	Ajaccio.	Sandheads.	Cerritos de Sinaloa	Maddalena.
Sebenico.	DENMARK.	ITALY.	S. Jose del Cabo.	SENEGAL.
AZORES.	Copenhagen.	Asinara.	S. Rosalia de la Baja California.	Dakar.
CORVO.	FRANCE.	Bari.	MOROCCO.	Port Etienne.
Fayal.	Boulogne.	Capo Mele.	Casablanca.	Rufisque.
Flores.	Brest.	Capo Sperone.	Mogador.	SOMALILAND.
S. Maria.	Cherbourg.	Cozzo Spadaro.	Rabat.	Berbera.
S. Miguel.	Dunkirk.	Forte Spuria.	Tangiers.	SOUTH AFRICA.
BELGIUM.	Lorient.	Monte Cappuccini.	NORWAY.	Cape Town.
Nieuport.	Porquerolles.	Monte San Giuliano.	Flekkerö.	Durban.
BRAZIL.	Rochefort.	Naples.	Röst.	SWEDEN.
Amaralina (Bahia)	S. Maries - de - la Mer.	Palermo.	Sörvaagen.	Karlskrona.
Babylonia (Rio de Janeiro).	Ushant.	Palmaria.	Tjömö.	URUGUAY.
Fernando Noronha.	GERMANY.	Ponza.	PACIFIC ISLANDS.	Cerro de Montevideo.
Olinda.	Arkona.	Reggio.	Angaur (Palao Islands).	Punta del Este.
BRITISH GUIANA.	Borkum.	S. Maria di Leuca.	Jap (or Yap) (Caroline Islands).	WEST INDIES.
Demerara.	Bilk.	Venice.	ROUMANIA.	Curaço.
BURMA.	Cuxhaven.	Viesti.	Constantza.	Jamaica.
Diamond Island.	Norddeich.	JAPAN.		Tobago.
Table Island.	HOLLAND.	Choshi.		Trinidad.
Victoria Point.	Scheveningen Haven.	Fukukikaku.		ZANZIBAR.
		Osezaki.		Pemba.
		Otechishi.		

Passengers on board ships fitted with the Marconi system may obtain from the enquiry office on board, or from the Marconi Operator, full particulars regarding the despatch of messages to all parts of the world.

*Any further information required will be willingly supplied on receipt of a request addressed to any one of the following Marconi Offices—*

LONDON . . . . .	The Marconi International Marine Communication Co., Ltd., Watergate House, York Buildings, Adelphi, W.C.
BRUSSELS . . . . .	La Cie de Telegraphie sans Fil, 19 Rue du Champ de Mars.
PARIS . . . . .	La Cie Francaise Maritime et Coloniale de Telegraphie sans Fil, 35 Boulevard des Capucines.
BUENOS AYRES . . . . .	La Cia Marconi de Telegrafia sin Hilos del Rio de la Plata, 132 San Martin.
MADRID . . . . .	Cia Nacional de Telegrafia sin Hilos, Calle de Alcalá 43.
MONTREAL . . . . .	Marconi Wireless Telegraph Co. of Canada, Ltd., 86 Notre Dame St.
NEW YORK . . . . .	The Marconi Wireless Telegraph Co. of America, 27 William Street.
ROME . . . . .	Marquis L. Solari, Piazza S. Silvestro, 74.

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## French News

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**FOG SIGNALS.**—The Ministry of Public Works have decided to equip the lighthouses at Créach and at the Isle of Sein on the Coast of Brittany with radio-telegraphic apparatus for communicating with ships in foggy weather.

**WIRELESS AEROPLANES.**—Second Lieutenant Menard and Captain Brenot, of the French Army, have ascended from Saint Cyr on a biplane fitted with wireless telegraph apparatus. Evolutions were carried out at a height of nearly six hundred yards over Rambouillet, which is over thirty miles from the Eiffel Tower, and a wireless message was sent to the receiving station at the Tower, whence it was re-transmitted to the War Ministry. The wireless apparatus employed on this occasion weighed twenty-one kilogrammes. The spark which set up the waves was generated by a magnetic appliance actuated by the aeroplane engine. The experiments are considered decisive, and it will henceforward be possible for officers of the air squadrons to report immediately to headquarters the discoveries made by them with the aid of the aeroplanes.

Lieutenant Conneau ("Beaumont"), the winner of *The Daily Mail* £10,000 prize, has given some interesting views to the London correspondent of the *Temps* on the employment of aeroplanes in the Navy. Lieutenant Conneau is of the opinion that every cruiser should be equipped with an aeroplane to act as a scout, having a special platform for the starting and landing of the flying machine. Lieutenant Conneau sees the possibility of fitting the naval scout's machine with wireless apparatus, so that he may be in constant touch with his ship.

**MESSAGES FOR EIFFEL TOWER.**—The Eiffel Tower is making progress in wireless communications. It is now in connection with Fez, via Oran. Four years ago wireless field posts were established with the army at Casablanca. A post of moderate power has been established at Fez, which soon got into communication with the wireless posts at Oran. Thence the connection with the Eiffel Tower is easy, and several messages have already been sent and received.

### Canadian Boy Scouts' Message from Mid-Atlantic.

The detachment of Canadian Boy Scouts who came over to take part in the Coronation celebrations sent a Marconi message on their homeward journey on the Canadian Northern R.M.S.

"Royal George," addressed to Captain Grenfell, upon whose ground they were encamped at Rochampton, Barnes. The wireless message was in the following terms:

"We, the Canadian Boy Scouts, homeward bound, send our heartiest thanks for all kindness extended to us. Have had glorious time. Assembled on deck of 'Royal George,' have just given three cheers for King George, Queen Mary, and Royal Family, also for the Chief Scout, and Captain Grenfell, and brother scouts in Great Britain."

One of the most novel features of the Electrical Exhibition, which opens at Olympia, London, in September, will be the Marconi Company's installation of wireless telegraphy, which will enable anyone to transmit a message from the ground floor to the gallery free of charge. In order to cope with the great demand which is sure to be made, a strong staff of operators will be present throughout the Exhibition. The fond lover whose lady has been separated from him temporarily will find the department an excellent means of locating her whereabouts.

William A. Dibell, treasurer of the United Wireless Telegraph Co. of America, was liberated from jail on payment of a fine of \$2,000, although he had been sentenced to one year's imprisonment. Since his conviction he and four other officers of the company—among them Christopher Columbus Wilson, its president—have been in the Tombs, unable to get bail.

A message by wireless telegraphy was sent to Sir Wilfrid Laurier during his return journey from England to Canada on behalf of a woman lying under sentence of death in Canada. The woman's execution had been deferred, but, whilst granting this respite, the Canadian Government declined to issue a reprieve. A petition for presentation to Sir Wilfrid Laurier was prepared by the Women's Social and Political Union, and the Canadian Premier was communicated with by wireless, apprising him of the petition.

The War Office have been carrying out wireless telegraphy experiments near Dorking. The trials have proved highly satisfactory.

A wireless message received at Boston on August 17th stated that the Donaldson liner "Saturnia" collided with an iceberg 175 miles east of Belle Isle on the previous day, but was proceeding. The message asked for the Donaldson liner "Cassandra" to communicate with her. Communication was made with other vessels, and the "Saturnia" was eventually brought to Greenock for repairs.

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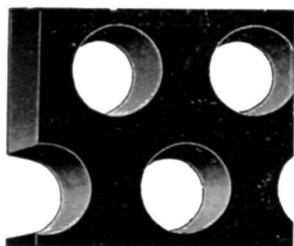
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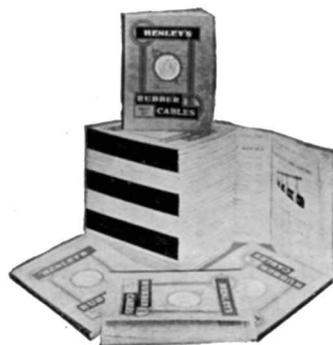
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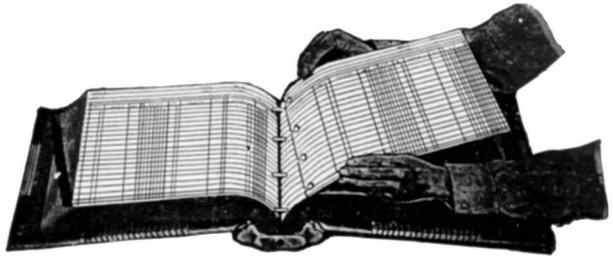
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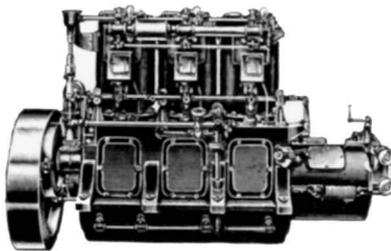
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