

New Milestones in Commercial Wireless

Sea, Land, and Air Developments during 1932

By LT.-COL. CHETWODE CRAWLEY, M.I.E.E.

THE international regulations dealing with commercial wireless communication have been under review throughout the year, and during September, October and November, were under discussion at the International Telegraph and Radiotelegraph Conference at Madrid. The previous international radiotelegraph conference was held five years ago at Washington, and this is the first time that the telegraph and radiotelegraph conferences have been combined. The convention resulting from the conference, which will be called the International Telecommunications Convention, will come into force in a year's time, but will not materially affect present practice so far as commercial wireless communication is concerned.

Long-range Telegraphy

The economic situation has prevented any striking developments in long-range wireless telegraph services, and, indeed, few of even the present circuits can have been working at full capacity. The station of the League of Nations was perhaps the most interesting development in this category during the year. This station, or, rather, group of stations, was completed in February, and within an hour of opening was in use for important communications with Japan. The transmitting station is at Prangins, about 15

miles from the receiving station, which is in a suburb of Geneva. It was quite an international affair. The buildings and some of the masts and machinery were of Swiss manufacture, and the wireless apparatus was supplied by British, French, German, and Dutch companies.

***D**ESPITE economic restrictions, commercial wireless has made some notable advances during the past year. Important events included the debut of the League of Nations station in Switzerland, the opening of the England-South Africa wireless telephone service, the extension of the telephone service to ships and important developments in the use of very short waves.*

Provision is made for beam transmission and reception on short waves, and all-round communication on long waves, so that the station is able to communicate with all parts of the world. A telephone circuit between this station and Japan has just been established.

Another service of interest was opened in May, when a new imperial wireless telegraph link was established between this country and the Central African territories, by the inauguration of a service with a beam station at Salisbury, in Southern Rhodesia.

Wireless telephony, being of such recent growth compared with telegraphy, has had a better chance of expansion, even under the present adverse conditions, and its development for communication over great distances has progressed satisfactorily throughout the year, though, of course, much of this development has consisted in the extension of wireless channels by land lines and cables.

At the end of 1931 this country was connected telephonically with the Berlin-Siam wireless circuit, and on January 1st this year with the Berlin-Venezuela cir-

cut. On January 1st, too, the wireless telephone circuit between England and New Zealand was extended by line to practically the whole of Europe.

In February the England-South Africa



The telephone service to ships at sea was extended during the past year. The photograph shows the Marconi telephony receiver on the White Star liner Homeric.

wireless service was opened, and in March the transatlantic service was extended to Bermuda and the Sandwich Islands, the former being a wireless extension from New York, the latter a land-line extension from New York to San Francisco, and thence by wireless to the Sandwich Islands.

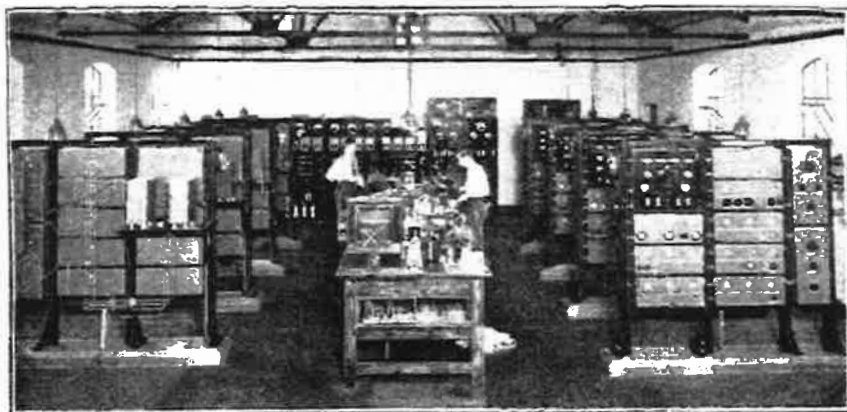
England-Canada Direct

In April the England-Australia service was extended by line to Perth in Western Australia, and in May the England-South Africa service was extended by line to Europe.

A wireless service was opened in June between this country and Egypt (Cairo and Alexandria), and was extended by line to Port Said in October.

In July the direct England-Canada service was opened. Up till then the service with Canada had been made by way of New York.

A month later the England-South Africa service was extended from the Cape Province by line to Johannesburg and Pretoria, and later to other cities. In September it was extended by wireless to transatlantic liners.



The receiving room of the Imperial and International Communications Company's station at Somerton.

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In December most of the wireless telephone services were extended by line to Lisbon.

The following is a summary of the long-range wireless telephone circuits now in operation from this country, and most of them can be connected together in London, which may be looked on as the switching centre of the world: London-New York (four channels), connecting Europe with the United States, Canada, Cuba, Mexico, Bermuda, and the Sandwich Islands; London-Sydney (one channel), connecting with Australia and New Zealand; London-Cape Town (one channel), connecting with South Africa; London-Buenos Aires (one channel), connecting with Argentina, Uruguay, and Chile; London-Rio de Janeiro (one channel), connecting with Brazil; London-Montreal (one channel), connecting with Canada direct; London-Cairo (one channel), connecting with Egypt. There are also other services available by line to foreign countries, and thence by wireless, e.g., Java via Amsterdam, French Indo-China via Paris, Siam and Venezuela via Berlin.

Ships' Telephony

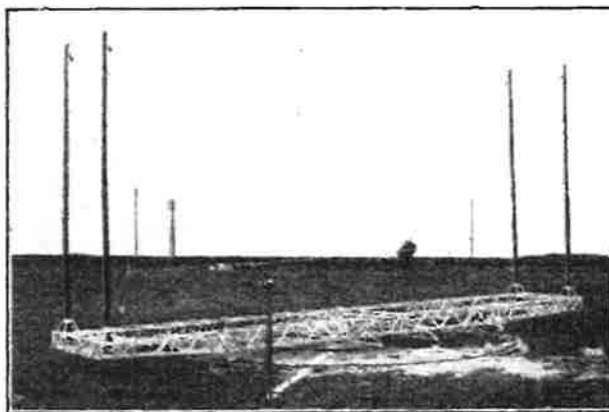
The telephone service with Atlantic liners has made some progress during the year, and there are now fifteen ships which partake in this service. Newcomers include the Bremen, Albert Ballin, Columbus, Deutschland, Europa, Hamburg, New York, Resolute, Cap Arcona, and Cap Polonia. To make the service more attractive, charges have been reduced

The telephone service with small ships, such as fishing craft and coasting vessels, has made great strides; in fact, it may be considered as having made its *début* in 1932, and has probably been the most important commercial development of the year in wireless communication. Important, that is to say, not as a commercial gold mine, but for its possibilities as a new means of communication with ships at sea.

All the stations round the coasts of Great Britain and Ireland, eleven in all, are now fitted with wireless telephone apparatus, as compared with three last year, and can communicate with ships suitably equipped up to ranges of about 250 miles, or more under favourable conditions. Waves of 177.5 and 162.6 metres are used for this service. About 200 British fishing craft and other small vessels have already been equipped, and this number will no doubt increase largely as the facilities available become more generally understood. The charge for messages to or from small ships by this service is 3d. a word, the same as if they were sent by telegraphy. The messages are dealt with in exactly the same way as in the telegraph service, except that they are exchanged between the coast station and the ships by wireless telephony instead of wireless telegraphy, which means that it is unnecessary for the ship to carry a trained telegraphist as would be the case if wireless telegraphy were used. That is the great attraction of the service for the owners of small ships, but the system suffers, of course, from all the technical disabilities of wireless telephony compared with wireless telegraphy.

creasing, will develop rapidly. At present only 115 British ships out of a total number of 3,650 fitted with wireless installations are equipped with long-range short-wave sets.

The station used for this long-range communication with ships is the Portishead Burnham station, the former for



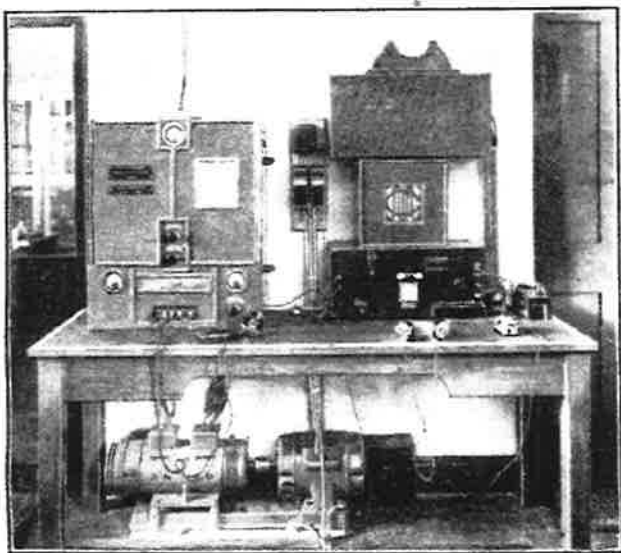
The rotating beam aerial at the Portishead P.O. radio station.

transmitting and the latter for receiving and operating. The station uses long waves in the 2,000-2,400-metre band, and short waves in the 17-, 26-, and 36-metre bands. The short-wave equipment for communication with ships all over the world has been much improved during the year, both at Portishead and at Burnham, and further improvements are now in progress.

At present there are two short-wave transmitters at Portishead, one for all-round transmission on any of the three bands, and the other for beam transmission east and west on the 36-metre band, west on the 17- or 24-metre band, and for directive transmission by a rotating aerial on the 17-metre band. This aerial is rotated so as to be directive on a ship at any place, and rotates in unison with a similar receiving aerial at Burnham, the motion being controlled electro-mechanically by the operator on watch on the corresponding receiving point at Burnham. This rotating aerial, and the fixed beam aerials, are of great value for communicating with ships in distant parts of the world. At Burnham there are three short-wave receivers working on three beam aerials, three dipoles, and the rotating aerial.

Land's End, one of the most important of the short-range coast stations which work on I.C.W. in the 600-800-metre band, has been completely re-equipped during the year and calibrated for D.F. work, in addition to being fitted with telephony. This station now carries out the ships' D.F. work, formerly handled by the Lizard station, which, for reasons of economy, was closed during the year.

As regards the safety communications of ships, an Act of Parliament, known as The Merchant Shipping (Safety and Load Line Conventions) Act, 1932, was passed during the year, and will come into force on January 1st next. This Act gives effect to the provisions of the International



The new Marconi telephone equipment at Land's End, a typical Post Office coast station.

to 12s. a minute when the ship is within 500 miles of Land's End, and 24s. at other times, with a minimum of three minutes. In September a similar service with Italian liners was opened from Coltano Radio in Italy.

traffic carried out with ships has suffered from the economic blizzard just as all other telegraph traffic has suffered, but it is clear that as soon as conditions improve the amount of long-range traffic carried out on short waves, which even now is in-

Ships' Telephony

The amount of wireless telegraph

New Milestones in Commercial Wireless.—Convention for the Safety of Life at Sea, which was signed in London in 1929. Nine other European countries and Canada have taken similar steps to bring its provisions into force on that date, but the U.S.A. have postponed action for the moment. Nearly all the technical requirements of the Convention have been complied with in this country for many years, but the new Act will make D.F. apparatus compulsory in passenger ships of 5,000 tons gross and upwards, and will affect slightly the number and qualifications of some of the wireless personnel, the hours of watch and details regarding the inspection of ships' installations.

Air Services

No commercial wireless services with aircraft—that is to say, services open to the public—have yet been started in this country, but the development of wireless telegraphy and telephony in connection with the operation of aircraft has continued to advance; indeed, wireless signalling is so much a part of air-line services that development of the latter involves development of the former.

Early in the year a new directional wireless beacon was installed at Croydon aerodrome. This beacon enables a pilot whose aeroplane is suitably equipped, to see immediately, at ranges up to 100 miles from the station, if he is on his correct course. The apparatus in the machine is automatic and interferes in no way with the ordinary wireless equipment. The accuracy of the D.F. apparatus at aerodromes is naturally of first importance for aircraft working, and the Adcock aerial system has been proved during the year to be as re-



The operating bench at Land's End station with the transmitter in the background.

liable during the worst periods of night effect as the Bellini-Tosi apparatus is under normal conditions.

Many wireless stations have been erected during the year in connection with the development of air services as well as at training centres such as Heston and Hambleton, and at the moment the first fully

equipped wireless station to be erected in this country at a municipal air port is being installed at the Manchester Corporation Aerodrome at Barton Moss.

Very Short Waves

Last year very short waves made their first appearance as a practical means of wireless communication, and this year they have made their *début* in commercial practice, although the whole subject is still in the experimental stage. At the close of last year the one thing apparently certain about these waves was that they were useless for communication beyond optical range; at the close of this year Marchese Marconi announces that he has established successful communication over a distance of 168 miles on a 57-centimetre wave. So we must wait and see.

Meanwhile, a commercial wireless telephone circuit has been in operation for several months on a wavelength of about five metres, across the Bristol Channel between Lavernock, near Cardiff, and Hut-ton, near Weston-super-Mare, a distance of twelve miles. This wireless circuit is linked in to the telephone land lines at each end, and at night works unattended.

A very short wave service was established between France and Corsica in October, and one is now being installed between the Vatican and the Pope's summer residence.

Equipment, too, has recently been ordered for Lympne airport for working telegraphy on a wave of about 15 centimetres with St. Inglevert aerodrome, which is about seven miles S.W. of Calais.

In April the first demonstration of television on a very short wave, 6.1 metres, was given by Mr. Baird in London, and

the possibility of the use of television for transmitting news was demonstrated (on a medium wave) at the meeting of the British Association in September. At the receiving end the letters appeared travelling across a screen somewhat similar to the well-known electric light bulletin signs. The year, however, has not yet come when television can be reported as having entered the stage of commercial communication.

As will be seen from this short summary, the year just closed has produced less spectacular progress than has been the case for several years past, but much has been done in the way of steady advance, especially in telephony and in the introduction of the use of very short waves for commercial communications, both by telegraphy and telephony.



The sending and receiving huts of the very short-wave station of the Post Office at Weston-super-Mare. Communication is maintained across the Bristol Channel.

CLUB NEWS

The History of H.F.

THE evolution of the high-frequency amplifier from pre-broadcasting days was outlined by Mr. Carter, of the Mullard Wireless Service Co., Ltd., at a recent meeting of the Southall Radio Society.

Full particulars of the Society can be obtained from the Hon. Secretary, Mr. H. Rayner, 114, North Road, Southall.

Pre-selection

THE Philco Baby balanced unit was demonstrated at a recent meeting of the Tottenham Wireless Society. Among the interesting features of the unit was the elaborate and careful design of the pre-selector circuits.

Hon. Secretary: Mr. W. B. Bodemeid, 29, Pendennis Road, Tottenham, London, N.17.

Transformers in the Making

SNAGS in the construction of transformers were interestingly described by Mr. F. G. Sawyer, of Messrs. Partridge Wilson and Co., manufacturers of Davenset transformers, lecturing before the Coventry Short Wave Radio Club on December 8th.

Hon. Secretary: Mr. C. Taylor, 37, Kingsland Avenue, Coventry.

A Convincing Demonstration

BUENOS AIRES was received at loud-speaker strength on a 3ft. aerial during a recent meeting of the Slough and District Radio Society, at which Mr. Hall, representing Messrs. Philips Lamps, Ltd., demonstrated a two-valve short-wave converter.

Hon. Secretary: Mr. S. Becket, 3, Melbourne Avenue, Slough.

New Northern Society

A MATEURS in the North will welcome the North Eastern Amateur Transmitters' Society, which has just been formed in Newcastle. We understand that the Society's activities will not compete in any way with those of the Newcastle-on-Tyne Radio Society.

The Hon. Secretary is Mr. H. C. D. Hornsby (G5QY), 7, Lansdowne Terrace, Newcastle-on-Tyne 3.